FORWARD, ALWAYS PROGRESSING

MD800 Series
AC Drive (Multidrive System)

Function Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

Data code 19011493 A08

Preface

Introduction

The MD800 series standard AC drive (multidrive system) is a new generation of standard multidrive product aimed at multidrive applications in the low-power market of traditional OEM industry. They are widely used in industries such as printing and packaging, woodworking machine tools, food and beverage, logistics and storage, textile printing and dyeing, and fans and pumps.

This document describes the commissioning tools, system commissioning procedures, parameters, fault codes, and product functions and applications.

More Information

Data Name	Data Code	Description
MD800 Series AC Drive (Multidrive System) Quick Installation and Commissioning Guide	19011494	This guide describes the installation, wiring, quick commissioning, commissioning parameters, and commissioning troubleshooting of the product.
MD800 Series AC Drive (Multidrive System) Design and Model Selection Guide	19011492	This guide describes the system composition, technical specifications, dimensions, detailed specifications and selection of options (installation accessories, cables, and peripheral electrical components), common EMC problems and solutions, and compliant certifications and standards.
MD800 Series AC Drive (Multidrive System) Maintenance and Repair Guide	19011495	It covers maintenance, part replacement , troubleshooting and so on.
MD800 Series AC Drive (Multidrive System) Function Guide (this guide)	19011493	This guide describes the commissioning tools, system commissioning procedures, parameters, fault codes, and product functions and applications.
MD800 Series AC Drive (Multidrive System) Communication Guide	19011496	This guide describes the communication modes, networking, and communication settings of the AC drive.
MD800 Series AC Drive (Multidrive System) User Guide	PS00009036	This guide describes model selection, installation, wiring, commissioning, function description, fault handling, maintenance, and so on.

Revision History

Date	Version	Description
September 2024	A08	• Updated *" Front Cover" on page 1*, *" Preface" on page 1*, *" Safety Instructions" on page 9*, and *" Back Cover" on page 705*. • Corrected minor errors. • Updated part of the parameters. • Corrected the V/F to V/f. • Deleted the contents about the FVC mode. • Updated part of the parameters of the power supply unit and the drive unit. The software version of the drive unit is A08.02 F7-10=U80.05/F7-11=U84.04/F7-15=000.00/F7-16=000.00; the software version of the power supply unit is A13.02 F0-02=U05.07/F0-03=000.00. • Updated *"6.1.2.2 Selecting Source for Main Frequency Reference" on page 535* to update the diagram: Main frequency source selection. • Updated *"6.1.2.7 Setting Main Frequency Through PID" on page 546* to update the diagram: Parameter settings for process PID control. • Updated *"6.1.2.9 Selecting the Auxiliary Frequency Source" on page 550* to update the diagram: Auxiliary frequency reference source selection • Updated *"6.7.7 Safety Function and Monitoring" on page 659* to update the table: STO description. • Updated *"6.2.1 Asynchronous Motor Parameter Auto-Tuning" on page 562* to delete the description of Motor 2 in instances. • Updated *"6.1.1.3 Setting Operation Commands Through Terminals" on page 530* to update the setting value of the three-wire mode 1, three-wire mode 2, and two-wire mode 2. • Updated *"6.3.4.2 Functions of Analog or Temperature Input Terminals" on page 581* to change the default filter time of A1-05 and A1-06 to 0.1s. • Updated *"6.6.8 Power Dip Ride-Through" on page 643* to replace the F9-59 and F9-62 with F9-63 and F9-66. • Updated *"6.3.2.2 Functions of DO Terminals" on page 575* to modify the frequency range of function 16 to (F8-27 minus F8-28) to (F8-27 plus F8-28). • Updated *"6.5.2.6 Acceleration/Deceleration Time Switchover Frequency" on page 623* to change the allocated function of the acceleration/ deceleration time selection terminal 1 and 2 to 18 and 19.
January 2024	A07	**Modified the following content:** • *"1.1 Parameter List of the Power Supply Unit" on page 14* • *" Parameters of the Power Supply Unit" on page 73* • *"3.1 Parameter List of the Drive Unit" on page 197* • *" Parameters of the Drive Unit" on page 262* • *"5.1.1 Operating Panel" on page 516* • *"6.3.1.2 Functions of DI Terminals" on page 570* • *"6.6.5 Overload protection" on page 638* • *"6.8 Monitoring" on page 662* • *"7.1 List of Fault Codes for the Power Supply Unit" on page 678* • *"7.2 List of Fault Codes for the Drive Unit" on page 683*
March 2023	A06	Updated parameters in Chapter 1 to Chapter 4. Added Group AD parameters for the power supply unit in Chapter 1 and Chapter 2. Updated the fault information in Chapter 7 List of Fault Codes. Deleted the FVC- and encoder-related content.
September 2022	A05	Updated F2-10 parameters, Fault code list, front cover, back cover, preface, and fundamental safety instructions. Added the following content: 2.29 and 4.5.9.
April 2022	A04	Update Parameter List of the Drive Unit and the Description.

Date	Version	Description
August 2021	A03	Modified some panel interface figures and parameter description. Modified the styles and typos.
April 2021	A02	Minor error corrections.
April 2021	A01	Modified the cover and back cover.
March 2021	A00	Initial release.

Acquisition

This guide is not in the scope of delivery. If necessary, you can download the PDF file in three ways:

- Do keyword search under Service and Support at http://www.inovance.com.
- Scan the QR code on the product with your smart phone.
- Scan the QR code below to install My Inovance app, where you can search for and download manuals.

Warranty Disclaimer

If your product becomes defective under normal use conditions, we will offer guaranteed repair services within the warranty period. Maintenance will be charged after the warranty expires.

Within the warranty period, maintenance fee will be charged for the following damage:

- your failure to operate the product in accordance with the user guide
- events beyond our reasonable control, such as fire, flood and abnormal voltage
- Damage caused by unintended use of the product
- Damage caused by use beyond the specified scope of application of the product
- Damage or secondary damage caused by force majeure (natural disaster, earthquake, and lightning strike)

The maintenance is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

For details, see Product Warranty Card.

Table of Contents

Safety Instructions

Safety Disclaimer

- This section describes the safety precautions that help you use this product correctly. Before using this product, read the user guide thoroughly and correctly understand the related safety precautions. Failure to observe the safety precautions may result in serious injuries or death of personnel or device damage.
- "Danger", "Warning", and "Caution" items in this guide do not indicate all safety precautions that need to be followed; instead, they just supplement the safety precautions.
- Use this equipment according to the designated environment requirements. Damage caused by improper use is not covered by warranty.
- Inovance shall take no responsibility for any personal injuries or property damage caused by improper usage.

Safety Levels and Definitions

DANGER Indicates that failure to comply with the notice will result in severe personal injuries or even death.

WARNING Indicates that failure to comply with the notice may result in severe personal injuries or even death.

CAUTION Indicates that failure to comply with the notice may result in minor or moderate personal injury or equipment damage.

General Safety Instructions

- Product illustrations in the user guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
- Product illustrations in this guide are for reference only. Actual products may vary.
- Operators must take mechanical precautions to protect personal safety and wear protective equipment, such as anti-smashing shoes, safety clothing, safety glasses, protective gloves, and protective sleeves.

Unpacking
WARNING • Do not install the equipment if you find damage, rust, or signs of use on the equipment or accessories upon unpacking. • Do not install the equipment if you find water seepage or missing or damaged components upon unpacking. • Do not install the equipment if you find the packing list does not conform to the equipment you received.

CAUTION

- Check whether the packing is intact and whether there is damage, water seepage, dampness, and deformation before unpacking.
- Unpack the package by following the unpacking sequence. Do not strike the package violently.
- Check whether there is damage, rust, or injuries on the surface of the equipment and equipment accessories before unpacking.
- Check whether the number of packing materials is consistent with the packing list.

Storage and Transportation

WARNING

- Large-scale or heavy equipment must be transported by qualified professionals using specialized hoisting equipment. Failure to comply may result in personal injury or equipment damage.
- Before hoisting the equipment, ensure the equipment components such as the front cover and terminal blocks are secured properly and firmly with screws. Loosely-connected components may fall off and result in personal injuries or equipment damage.
- Never stand or stay below the equipment when the equipment is being hoisted by the hoisting equipment.
- When hoisting the equipment with a steel rope, ensure the equipment is hoisted at a constant speed without suffering from vibration or shock. Do not turn the equipment over or let the equipment stay hanging in the air. Failure to comply may result in personal injuries or equipment damage.

CAUTION

- Handle the equipment with care during transportation and mind your steps to prevent personal injuries or equipment damage.
- When carrying the equipment with bare hands, hold the equipment casing firmly with care to prevent parts from falling. Failure to comply may result in personal injuries.
- Store and transport the equipment based on the storage and transportation requirements. Failure to comply will result in equipment damage.
- Avoid transporting the equipment in environments such as water splashing, rain, direct sunlight, strong electric field, strong magnetic field, and strong vibration.
- Avoid storing this product for more than three months. Long-term storage requires stricter protection and necessary inspections.
- Pack the equipment strictly before transportation. Use a sealed box for long-distance transportation.
- Never transport the equipment with other equipment or materials that may harm or have negative impacts on this equipment.

Installation

DANGER

- The equipment must be operated only by professionals with electrical knowledge. Operations by others are prohibited.

WARNING

- Read through the guide and safety instructions before installation.
- Do not install this equipment in places with strong electric or magnetic fields.
- Before installation, check that the mechanical strength of the installation site can bear the weight of the equipment. Failure to comply will result in mechanical hazards.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in an electric shock.
- When installing the equipment in a closed environment (such as a cabinet or casing), use a cooling device (such as a fan or air conditioner) to cool the environment down to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not retrofit the equipment.
- Do not fiddle with the bolts used to fix equipment components or the bolts marked in red.
- When the equipment is installed in a cabinet or final assembly, a fireproof enclosure providing both electrical and mechanical protections must be provided. The IP rating must meet IEC standards and local laws and regulations.
- Before installing devices with strong electromagnetic interference, such as a transformer, install a shielding device for the equipment to prevent malfunction.
- Install the product on an incombustible object such as metal and do not touch or attach the product to combustible objects. Failure to comply can result in fire accident.

CAUTION

- Cover the top of the equipment with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment and causing faults. After the installation is completed, remove the protective guard. Failure to comply will block the vent and affect heat dissipation, causing overheat of the product.
- Resonance may occur when the equipment operating at a constant speed executes variable speed operations. In this case, install the vibration-proof rubber under the motor frame or use the vibration suppression function to reduce resonance.

Wiring

DANGER

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals.
- Before wiring, cut off all the power supplies of the equipment, Wait as specified on the product warning sign before further operations because residual voltage exists after power-off. Measure the direct voltage of the main circuit and ensure that the voltage is within the safety range. Failure to comply will result in an electric shock.
- Never perform wiring at power-on. Failure to comply will result in an electric shock.
- Check that the equipment is grounded properly. Failure to comply can result in an electric shock.

WARNING

- Do not connect the input power supply to the output end of the equipment. Failure to comply will result in equipment damage or even a fire.
- When connecting a drive to the motor, check that the phase sequences of the drive and motor terminals are consistent to prevent reverse motor rotation.
- Cables used for wiring must meet cross sectional area and shielding requirements. The shield of the cable must be reliably grounded at one end.
- Fix the terminal screws with the tightening torque specified in the user guide. Improper tightening torque may overheat or damage the connecting part, resulting in a fire.
- After wiring is done, check that all cables are connected properly and no screws, washers or exposed cables are left inside the equipment. Failure to comply may result in electric shock or equipment damage.

CAUTION

- During wiring, follow the proper electrostatic discharge (ESD) procedures, and wear an antistatic wrist strap. Failure to comply will result in damage to internal equipment circuits.
- Use shielded twisted pairs for the control circuit. Connect the shield to the grounding terminal of the equipment for grounding purpose. Failure to comply can result in equipment malfunction.

Power-on

DANGER

- Before power-on, check that the equipment is installed properly with reliable wiring and the motor can be restarted.
- Check that the power supply meets equipment requirements before power-on to prevent equipment damage or a fire.
- After power-on, do not open the cabinet door or protective cover of the equipment. Do not touch any terminals, or remove any part of the equipment at power-on. Failure to comply will result in an electric shock.

WARNING

- Perform a trial run after wiring and parameter setting to ensure the equipment operates safely. Failure to comply may result in personal injuries or equipment damage.
- Before power-on, check that the rated voltage of the equipment is consistent with that of the power supply. Failure to comply may result in a fire.
- Before power-on, check that no one is near the equipment, motor, or machine. Failure to comply may result in death or personal injuries.

Operation

DANGER

- The equipment must be operated only by professionals. Failure to comply can result in death or personal injury.
- Do not touch any connecting terminals or disassemble any unit or component of the equipment during operation. Failure to comply can result in an electric shock.

WARNING

- Do not touch the equipment casing, fan, or resistor with bare hands to feel the temperature. Failure to comply may result in personal injuries.
- Prevent metal or other objects from falling into the equipment during operation. Failure to comply may result in a fire or equipment damage.

Maintenance

DANGER

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals.
- Do not maintain the equipment with power on. Failure to comply can result in electric shock.
- Before maintenance, cut off all equipment power supplies and wait as specified on the product warning sign.
- When a permanent magnet motor is used, do not touch the motor terminals immediately after power-off because the motor terminals can generate induced voltage during rotation even after the equipment power supply is off. Failure to comply can result in an electric shock.

WARNING

- Perform routine and periodic inspection and maintenance on the equipment according to maintenance requirements and keep a maintenance record.

Repair
DANGER • Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed only by professionals. • Do not repair the equipment with power ON. Failure to comply can result in an electric shock. • Before inspection and repair, cut off all equipment power supplies and wait as specified on the product warning sign.
WARNING • Submit the repair request according to the warranty agreement. • When the fuse is blown or the circuit breaker or earth leakage current breaker (ELCB) trips, wait for at least the time designated on the equipment warning label before power-on or further operations. Failure to comply may result in death, personal injury or equipment damage. • When the equipment is faulty or damaged, the troubleshooting and repair work must be performed by professionals that follow the repair instructions, with repair records kept properly. • Replace quick-wear parts of the equipment according to the replacement instructions. • Do not operate on damaged equipment. Failure to comply may result in death, personal injury, or severe equipment damage. • After the equipment is replaced, perform wiring inspection and parameter settings again.
Disposal
WARNING • Dispose of retired equipment in accordance with local regulations and standards. Failure to comply may result in property damage, personal injuries, or even death. • Recycle retired equipment by observing industry waste disposal standards to avoid environmental pollution.

Safety Labels

To ensure safe operations, comply with safety signs on the device, and do not damage or remove the safety labels. The following table describes the safety signs.

Safety Sign	Description
	• Read through the safety instructions before operating the equipment. Failure to comply may result in death, personal injuries, or equipment damage. • Do not touch the terminals or remove the cover with power ON or within 10 min after power-off. Failure to comply will result in an electric shock.

1 Parameter List of the Power Supply Unit

1.1 Parameter List of the Power Supply Unit

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F0-00	0xF000	Module type	1: Drive unit 2: Power supply unit	2	/	Unchangeable	“ F0-00” on page 73
F0-01	0xF001	Product No.	800 to 800	800	/	Unchangeable	“ F0-01” on page 73
F0-02	0xF002	Software version	0.00-655.35	0.00	/	Unchangeable	“ F0-02” on page 73
F0-03	0xF003	Temporary software version	0.00-655.35	0.00	/	Unchangeable	“ F0-03” on page 73
F0-04	0xF004	Customized No.	0-9999	0	/	Unchangeable	“ F0-04” on page 74
F1-00	0xF100	Bus undervoltage threshold	300 V to 440 V	330	V	Real-time	“ F1-00” on page 74
F1-01	0xF101	Bus overvoltage threshold	600 V to 820 V	820	V	Real-time	“ F1-01” on page 74
F1-02	0xF102	Braking unit action start voltage	600 V to 820 V	760	V	Real-time	“ F1-02” on page 75
F1-03	0xF103	Braking transistor open circuit	0: Disable 1: Enable	1	/	Real-time	“ F1-03” on page 75
F1-04	0xF104	Braking transistor short circuit	0: Disable 1: Enable	1	/	Real-time	“ F1-04” on page 75
F1-05	0xF105	Input phase loss	0: Disable 1: Enable 2: Warning	2	/	Real-time	“ F1-05” on page 75
F1-06	0xF106	Input overvoltage	0: Disable 1: Enable 2: Warning	2	/	Real-time	“ F1-06” on page 76
F1-07	0xF107	Fan fault enable	0: Disable 1: Enable 2: Warning	1	/	Real-time	“ F1-07” on page 76
F1-09	0xF109	Fan control	0: Running in one direction 1: Forward and reverse running	0	/	Real-time	“ F1-09” on page 76

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-00	0xF400	DI1 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	"F4-00" on page 77

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-01	0xF401	DI1 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	*" F4-01" on page 78*

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-02	0xF402	DI2 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	“F4-02” on page 79

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-03	0xF403	DI2 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	“ F4-03” on page 79

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-04	0xF404	DI3 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	" F4-04" on page 81

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-05	0xF405	DI3 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	“ F4-05” on page 81

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-06	0xF406	DI4 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	" F4-06" on page 82

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-07	0xF407	DI4 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	" F4-07" on page 82

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-08	0xF408	DI5 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	"F4-08" on page 84

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-09	0xF409	DI5 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	“ F4-09” on page 84

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-10	0xF40A	DI6 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	“F4-10” on page 85

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-11	0xF40B	DI6 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	" F4-11" on page 85

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-12	0xF40C	DI7 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	*“ F4-12” on page 87*

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-13	0xF40D	DI7 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	" F4-13" on page 87

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-14	0xF40E	DI8 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	" F4-14" on page 88

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-15	0xF40F	DI8 function selection	0: No function 1: Enable running 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Prohibit drive unit from running 7: Drive unit coasts to stop 8: Drive unit stops according to preset mode 9: Reserved	0	/	At stop	" F4-15" on page 88
F4-16	0xF410	DI1 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-16" on page 90
F4-17	0xF411	DI2 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-17" on page 90
F4-18	0xF412	DI3 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-18" on page 90
F4-19	0xF413	DI4 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-19" on page 90
F4-20	0xF414	DI5 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-20" on page 91
F4-21	0xF415	DI6 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-21" on page 91
F4-22	0xF416	DI7 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-22" on page 91
F4-23	0xF417	DI8 valid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-23" on page 91
F4-24	0xF418	DI1 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-24" on page 92
F4-25	0xF419	DI2 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-25" on page 92
F4-26	0xF41A	DI3 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-26" on page 92
F4-27	0xF41B	DI4 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-27" on page 92
F4-28	0xF41C	DI5 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-28" on page 92
F4-29	0xF41D	DI6 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	" F4-29" on page 93

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-30	0xF41E	DI7 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	"F4-30" on page 93
F4-31	0xF41F	DI8 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	"F4-31 " on page 93
F4-32	0xF420	DI (DI1 to DI5) active mode	Ones: DI1 0: Active low 1: Active high Tens: DI2 0: Active low 1: Active high Hundreds: DI3 0: Active low 1: Active high Thousands: DI4 0: Active low 1: Active high Ten thousands: DI5 0: Active low 1: Active high	0	/	Real-time	"F4-32" on page 93
F4-33	0xF421	DI (DI6 to DI8) active mode	Ones: DI6 0: Active low 1: Active high Tens: DI7 0: Active low 1: Active high Hundreds: DI8 0: Active low 1: Active high Thousands: Reserved 0: Active low 1: Active high Ten thousands: Reserved 0: Active low 1: Active high	0	/	Real-time	"F4-33 " on page 94

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-00	0xF500	DO1/RO1 hardware source	0: No selection 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Expansion card 1 - DO1/RO1 102: Expansion card 1 - DO2/RO2 103: Expansion card 1 - DO3/RO3 104: Expansion card 1 - DO4/RO4 105: Expansion card 1 - DO5/RO5 106: Expansion card 1 - DO6/RO6 107: Expansion card 1 - DO7/RO7 108: Expansion card 1 - DO8/RO8 201: Expansion card 2 - DO1/RO1 202: Expansion card 2 - DO2/RO2 203: Expansion card 2 - DO3/RO3 204: Expansion card 2 - DO4/RO4 205: Expansion card 2 - DO5/RO5 206: Expansion card 2 - DO6/RO6 207: Expansion card 2 - DO7/RO7 208: Expansion card 2 - DO8/RO8	0	/	At stop	*“ F5-00” on page 95*

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-01	0xF501	DO1/RO1 function selection	0: No function 1: Ready to run 2: Fault 3: Warning 4: Circuit breaker action 5: Bus undervoltage 6: Bus overvoltage 7: Bus voltage normal 8: Three-phase input abnormal 9: Three-phase input normal 10: Module overheat 11: Module overheat warning 12: Communication control 13: System fault	0	/	At stop	" F5-01" on page 96

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-02	0xF502	DO2/RO2 hardware source	0: No selection 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Expansion card 1 - DO1/RO1 102: Expansion card 1 - DO2/RO2 103: Expansion card 1 - DO3/RO3 104: Expansion card 1 - DO4/RO4 105: Expansion card 1 - DO5/RO5 106: Expansion card 1 - DO6/RO6 107: Expansion card 1 - DO7/RO7 108: Expansion card 1 - DO8/RO8 201: Expansion card 2 - DO1/RO1 202: Expansion card 2 - DO2/RO2 203: Expansion card 2 - DO3/RO3 204: Expansion card 2 - DO4/RO4 205: Expansion card 2 - DO5/RO5 206: Expansion card 2 - DO6/RO6 207: Expansion card 2 - DO7/RO7 208: Expansion card 2 - DO8/RO8	0	/	At stop	“ F5-02” on page 97

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-03	0xF503	DO2/RO2 output function	0: No function 1: Ready to run 2: Fault 3: Warning 4: Circuit breaker action 5: Bus undervoltage 6: Bus overvoltage 7: Bus voltage normal 8: Three-phase input abnormal 9: Three-phase input normal 10: Module overheat 11: Module overheat warning 12: Communication control 13: System fault	0	/	At stop	" F5-03" on page 98

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-04	0xF504	DO3/RO3 hardware source	0: No selection 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Expansion card 1 - DO1/RO1 102: Expansion card 1 - DO2/RO2 103: Expansion card 1 - DO3/RO3 104: Expansion card 1 - DO4/RO4 105: Expansion card 1 - DO5/RO5 106: Expansion card 1 - DO6/RO6 107: Expansion card 1 - DO7/RO7 108: Expansion card 1 - DO8/RO8 201: Expansion card 2 - DO1/RO1 202: Expansion card 2 - DO2/RO2 203: Expansion card 2 - DO3/RO3 204: Expansion card 2 - DO4/RO4 205: Expansion card 2 - DO5/RO5 206: Expansion card 2 - DO6/RO6 207: Expansion card 2 - DO7/RO7 208: Expansion card 2 - DO8/RO8	0	/	At stop	" F5-04" on page 99

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-05	0xF505	DO3/RO3 output function	0: No function 1: Ready to run 2: Fault 3: Warning 4: Circuit breaker action 5: Bus undervoltage 6: Bus overvoltage 7: Bus voltage normal 8: Three-phase input abnormal 9: Three-phase input normal 10: Module overheat 11: Module overheat warning 12: Communication control 13: System fault	0	/	At stop	*"F5-05" on page 100*

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-06	0xF506	DO4/RO4 hardware source	0: No selection 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Expansion card 1 - DO1/RO1 102: Expansion card 1 - DO2/RO2 103: Expansion card 1 - DO3/RO3 104: Expansion card 1 - DO4/RO4 105: Expansion card 1 - DO5/RO5 106: Expansion card 1 - DO6/RO6 107: Expansion card 1 - DO7/RO7 108: Expansion card 1 - DO8/RO8 201: Expansion card 2 - DO1/RO1 202: Expansion card 2 - DO2/RO2 203: Expansion card 2 - DO3/RO3 204: Expansion card 2 - DO4/RO4 205: Expansion card 2 - DO5/RO5 206: Expansion card 2 - DO6/RO6 207: Expansion card 2 - DO7/RO7 208: Expansion card 2 - DO8/RO8	0	/	At stop	“ F5-06” on page 101

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-07	0xF507	DO4/RO4 output function	0: No function 1: Ready to run 2: Fault 3: Warning 4: Circuit breaker action 5: Bus undervoltage 6: Bus overvoltage 7: Bus voltage normal 8: Three-phase input abnormal 9: Three-phase input normal 10: Module overheat 11: Module overheat warning 12: Communication control 13: System fault	0	/	At stop	“ F5-07 ” on page 102

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-08	0xF508	DO5/RO5 hardware source	0: No selection 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Expansion card 1 - DO1/RO1 102: Expansion card 1 - DO2/RO2 103: Expansion card 1 - DO3/RO3 104: Expansion card 1 - DO4/RO4 105: Expansion card 1 - DO5/RO5 106: Expansion card 1 - DO6/RO6 107: Expansion card 1 - DO7/RO7 108: Expansion card 1 - DO8/RO8 201: Expansion card 2 - DO1/RO1 202: Expansion card 2 - DO2/RO2 203: Expansion card 2 - DO3/RO3 204: Expansion card 2 - DO4/RO4 205: Expansion card 2 - DO5/RO5 206: Expansion card 2 - DO6/RO6 207: Expansion card 2 - DO7/RO7 208: Expansion card 2 - DO8/RO8	0	/	At stop	*" F5-08" on page 103*

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-09	0xF509	DO5/RO5 output function	0: No function 1: Ready to run 2: Fault 3: Warning 4: Circuit breaker action 5: Bus undervoltage 6: Bus overvoltage 7: Bus voltage normal 8: Three-phase input abnormal 9: Three-phase input normal 10: Module overheat 11: Module overheat warning 12: Communication control 13: System fault	0	/	At stop	"F5-09" on page 104
F5-10	0xF50A	DO1/RO1 valid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-10" on page 105
F5-11	0xF50B	DO2/RO2 valid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-11" on page 105
F5-12	0xF50C	DO3/RO3 valid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-12" on page 105
F5-13	0xF50D	DO4/RO4 valid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-13" on page 106
F5-14	0xF50E	DO5/RO5 active delay	0.00s to 600.00s	0.00	s	Real-time	"F5-14" on page 106
F5-15	0xF50F	DO1/RO1 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-15" on page 106
F5-16	0xF510	DO2/RO2 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-16" on page 106
F5-17	0xF511	DO3/RO3 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-17" on page 106
F5-18	0xF512	DO4/RO4 invalid delay time	0.00s to 600.00s	0.00	s	Real-time	"F5-18" on page 107
F5-19	0xF513	DO5/RO5 invalid delay	0.00s to 600.00s	0.00	s	Real-time	"F5-19" on page 107

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-20	0xF514	DO/RO output active mode	Ones position: DO1/RO1 0: Active high 1: Active low Tens position: DO2/RO2 0: Active high 1: Active low Hundreds position: DO3/RO3 0: Active high 1: Active low Thousands position: DO4/RO4 0: Active high 1: Active low Ten thousands position: DO5/RO5 0: Active high 1: Active low	0	/	Real-time	“ F5-20 model” on page 107
F5-21	0xF515	Circuit breaker action threshold	0 V to 1000 V	577	V	Real-time	“ F5-21” on page 108
FA-00	0xFA00	Fault code of the 5th fault (latest)	0-99	0	/	Unchangeable	“ FA-00” on page 108
FA-01	0xFA01	Fault subcode of the 5th fault	0 to 99	0	/	Unchangeable	“ FA-01” on page 108
FA-02	0xFA02	Bus voltage upon occurrence of the 5th fault	0.0 V to 6553.5 V	0.0	V	Unchangeable	“ FA-02” on page 108
FA-03	0xFA03	Heatsink temperature upon the 5th fault	-20°C to 999°C	0	°C	Unchangeable	“ FA-03” on page 109
FA-04	0xFA04	Ambient temperature upon the 5th fault	-20°C to 999°C	0	°C	Unchangeable	“ FA-04” on page 109
FA-06	0xFA06	Grid voltage (Usr) upon the 5th fault	0 V to 9999 V	0	V	Unchangeable	“ FA-06” on page 109
FA-07	0xFA07	Grid voltage (Ust) upon the 5th fault	0 V to 9999 V	0	V	Unchangeable	“ FA-07” on page 109
FA-08	0xFA08	Grid voltage (Utr) upon the 5th fault	0 V to 9999 V	0	V	Unchangeable	“ FA-08” on page 110

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FA-09	0xFA09	Three-phase imbalance degree upon the 5th fault	0.00% to 655.35%	0.00	%	Unchangeable	" FA-09" on page 110
FA-10	0xFA0A	DI status upon the 5th fault	0x0 to 0xFFFF	0x0	/	Unchangeable	" FA-10" on page 110
FA-11	0xFA0B	DO/RO status upon the 5th fault	0x0 to 0xFFFF	0x0	/	Unchangeable	" FA-11" on page 110
FA-12	0xFA0C	Stop command sent by the power supply unit upon the 5th fault	1: Ready to run 2: Coast to stop 3: Stop according to the preset mode	0x0	/	Unchangeable	" FA-12" on page 110
FA-13	0xFA0D	Total power-on time (in hours) upon the 5th fault	0h to 65535h	0	h	Unchangeable	" FA-13" on page 111
FA-14	0xFA0E	Total power-on time (in minutes) upon the 5th fault	0 min to 65535 min	0	min	Unchangeable	" FA-14" on page 111
FA-15	0xFA0F	Total power-on time (in seconds) upon the 5th fault	0s to 65535s	0	s	Unchangeable	" FA-15" on page 111
FA-20	0xFA14	Fault code upon the 4th fault (second latest)	0 to 99	0	/	Unchangeable	" FA-20" on page 111
FA-21	0xFA15	Fault subcode of the 4th fault	0 to 99	0	/	Unchangeable	" FA-21" on page 112
FA-22	0xFA16	Bus voltage upon occurrence of the 4th fault	0.0 V to 6553.5 V	0.0	V	Unchangeable	" FA-22 " on page 112
FA-23	0xFA17	Heatsink temperature upon the 4th fault	0°C to 999°C	0	°C	Unchangeable	" FA-23 " on page 112
FA-24	0xFA18	Ambient temperature upon the 4th fault	0°C to 999°C	0	°C	Unchangeable	" FA-24" on page 112
FA-26	0xFA1A	Grid voltage (Usr) upon the 4th fault	0 V to 9999 V	0	V	Unchangeable	" FA-26" on page 112

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FA-27	0xFA1B	Grid voltage (Ust) upon the 4th fault	0 V to 9999 V	0	V	Unchangeable	"FA-27" on page 113
FA-28	0xFA1C	Grid voltage (Utr) upon the 4th fault	0 V to 9999 V	0	V	Unchangeable	"FA-28" on page 113
FA-29	0xFA1D	Three-phase imbalance degree upon the 4th fault	0.00% to 655.35%	0.00	%	Unchangeable	"FA-29" on page 113
FA-30	0xFA1E	DI status upon the fourth fault	0 to 65535	0	/	Unchangeable	"FA-30" on page 113
FA-31	0xFA1F	DO/RO status upon the 4th fault	0 to 65535	0	/	Unchangeable	"FA-31" on page 113
FA-32	0xFA20	Stop command sent by the power supply unit upon the 4th fault	1: Ready to run 2: Coast to stop 3: Stop according to the preset mode	0	/	Unchangeable	"FA-32" on page 114
FA-33	0xFA21	Total power-on time (in hours) upon the 4th fault	0h to 65535h	0	h	Unchangeable	"FA-33" on page 114
FA-34	0xFA22	Total power-on time (in minutes) upon the 4th fault	0 min to 65535 min	0	min	Unchangeable	"FA-34" on page 114
FA-35	0xFA23	Total power-on time (in seconds) upon the 4th fault	0s to 65535s	0	s	Unchangeable	"FA-35" on page 114
FA-40	0xFA28	Fault code upon the 3rd fault (third latest)	0 to 99	0	/	Unchangeable	"FA-40" on page 115
FA-41	0xFA29	Fault subcode of the 3rd fault	0 to 99	0	/	Unchangeable	"FA-41" on page 115
FA-42	0xFA2A	Bus voltage upon the 3rd fault	0.0 V to 6553.5 V	0.0	V	Unchangeable	"FA-42" on page 115
FA-43	0xFA2B	Heatsink temperature upon the 3rd fault	0°C to 999°C	0	°C	Unchangeable	"FA-43" on page 115

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FA-44	0xFA2C	Ambient temperature upon the 3rd fault	0°C to 999°C	0	°C	Unchangeable	"FA-44" on page 115
FA-46	0xFA2E	Grid voltage (Usr) upon the 3rd fault	0 V to 9999 V	0	V	Unchangeable	"FA-46" on page 116
FA-47	0xFA2F	Grid voltage (Ust) upon the 3rd fault	0 V to 9999 V	0	V	Unchangeable	"FA-47" on page 116
FA-48	0xFA30	Grid voltage (Utr) upon the 3rd fault	0 V to 9999 V	0	V	Unchangeable	"FA-48" on page 116
FA-49	0xFA31	Three-phase imbalance degree upon the 3rd fault	0.00% to 655.35%	0.00	%	Unchangeable	"FA-49" on page 116
FA-50	0xFA32	DI status upon the 3rd fault	0 to 65535	0	/	Unchangeable	"FA-50" on page 117
FA-51	0xFA33	DO/RO status upon the 3rd fault	0 to 65535	0	/	Unchangeable	"FA-51" on page 117
FA-52	0xFA34	Stop command sent by the power supply unit upon the 3rd fault	1: Ready to run 2: Coast to stop 3: Stop according to the preset mode	0	/	Unchangeable	"FA-52" on page 117
FA-53	0xFA35	Total power-on time (in hours) upon the 3rd fault	0h to 65535h	0	h	Unchangeable	"FA-53" on page 117
FA-54	0xFA36	Total power-on time (in minute) upon the 3rd fault	0 min to 65535 min	0	min	Unchangeable	"FA-54" on page 117
FA-55	0xFA37	Total power-on time (in seconds) upon the 3rd fault	0s to 65535s	0	s	Unchangeable	"FA-55" on page 118
FA-60	0xFA3C	Fault code upon the 2nd fault (fourth latest)	0s to 99s	0	s	Unchangeable	"FA-60" on page 118
FA-61	0xFA3D	Fault subcode of 2nd fault	0 to 99	0	/	Unchangeable	"FA-61" on page 118
FA-62	0xFA3E	Bus voltage upon 2nd fault	0.0 V to 6553.5 V	0.0	V	Unchangeable	"FA-62" on page 118

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FA-63	0xFA3F	Heatsink temperature upon the 2nd fault	0°C to 999°C	0	°C	Unchangeable	“FA-63” on page 119
FA-64	0xFA40	Ambient temperature upon the 2nd fault	0°C to 999°C	0	°C	Unchangeable	“FA-64” on page 119
FA-66	0xFA42	Grid voltage (Usr) upon the 2nd fault	0 V to 9999 V	0	V	Unchangeable	“FA-66” on page 119
FA-67	0xFA43	Grid voltage (Ust) upon the 2nd fault	0 V to 9999 V	0	V	Unchangeable	“FA-67” on page 119
FA-68	0xFA44	Grid voltage (Utr) upon the 2nd fault	0 V to 9999 V	0	V	Unchangeable	“FA-68” on page 119
FA-69	0xFA45	Three-phase imbalance degree upon the 2nd fault	0.00% to 655.35%	0.00	%	Unchangeable	“FA-69” on page 120
FA-70	0xFA46	DI status upon the 2nd fault	0 to 65535	0	/	Unchangeable	“FA-70” on page 120
FA-71	0xFA47	DO/RO status upon the 2nd fault	0 to 65535	0	/	Unchangeable	“FA-71” on page 120
FA-72	0xFA48	Stop command sent by the power supply unit upon the 2nd fault	1: Ready to run 2: Coast to stop 3: Stop according to the preset mode	0	/	Unchangeable	“FA-72” on page 120
FA-73	0xFA49	Total power-on time (in hours) upon the 2nd fault	0h to 65535h	0	h	Unchangeable	“FA-73” on page 121
FA-74	0xFA4A	Total power-on time (in minutes) upon the 2nd fault	0 min to 65535 min	0	min	Unchangeable	“FA-74” on page 121
FA-75	0xFA4B	Total power-on time (in seconds) upon the 2nd fault	0s to 65535s	0	s	Unchangeable	“FA-75” on page 121
FA-80	0xFA50	Fault code upon the 1st fault (fifth latest)	0 to 99	0	/	Unchangeable	“FA-80” on page 121

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FA-81	0xFA51	Fault subcode of 1st fault	0 to 99	0	/	Unchangeable	“FA-81” on page 121
FA-82	0xFA52	Bus voltage upon 1st fault	0.0 V to 6553.5 V	0.0	V	Unchangeable	“FA-82” on page 122
FA-83	0xFA53	Heatsink temperature upon the 1st fault	0°C to 999°C	0	°C	Unchangeable	“FA-83” on page 122
FA-84	0xFA54	Ambient temperature upon the 1st fault	0°C to 999°C	0	°C	Unchangeable	“FA-84” on page 122
FA-86	0xFA56	Grid voltage (Usr) upon the 1st fault	0 V to 9999 V	0	V	Unchangeable	“FA-86” on page 122
FA-87	0xFA57	Grid voltage (Ust) upon the 1st fault	0 V to 9999 V	0	V	Unchangeable	“FA-87” on page 122
FA-88	0xFA58	Grid voltage (Utr) upon the 1st fault	0 V to 9999 V	0	V	Unchangeable	“FA-88” on page 123
FA-89	0xFA59	Three-phase imbalance degree upon the 1st fault	0.00% to 655.35%	0.00	%	Unchangeable	“FA-89” on page 123
FA-90	0xFA5A	DI status upon the 1st fault	0 to 65535	0	/	Unchangeable	“FA-90” on page 123
FA-91	0xFA5B	DO/RO status upon the 1st fault	0 to 65535	0	/	Unchangeable	“FA-91” on page 123
FA-92	0xFA5C	Stop command sent by the power supply unit upon the 1st fault	1: Ready to run 2: Coast to stop 3: Stop according to the preset mode	0	/	Unchangeable	“FA-92” on page 124
FA-93	0xFA5D	Total power-on time (in hours) upon the 1st fault	0h to 65535h	0	h	Unchangeable	“FA-93” on page 124
FA-94	0xFA5E	Total power-on time (in minutes) upon the 1st fault	0 min to 65535 min	0	min	Unchangeable	“FA-94” on page 124
FA-95	0xFA5F	Total power-on time (in seconds) upon the 1st fault	0s to 65535s	0	s	Unchangeable	“FA-95” on page 124

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FD-00	0xFD00	RS485 baud rate	0: 300 bps 1: 600 bps 2: 1200 bps 3: 2400 bps 4: 4800 bps 5: 9600 bps 6: 19200 bps 7: 38400 bps 8: 57600 bps 9: 115200 bps	5	/	At stop	“FD-00” on page 125
FD-01	0xFD01	RS485 data format	0: No check (8-N-2) 1: Even parity check (8-E-1) 2: Odd parity check (8-O-1) 3: No check (8-N-1) 4: No check (7-N-2) 5: Even parity check (7-E-1) 6: Odd parity check (7-O-1) 7: No check (7-N-1)	0	/	At stop	“FD-01” on page 125
FD-02	0xFD02	RS232 local address	1 to 127	16	/	Unchangeable	“FD-02” on page 126
FD-03	0xFD03	RS2 response delay	0 ms to 20 ms	0	ms	Real-time	“FD-03” on page 126
FD-04	0xFD04	RS485 communication timeout time	0.0s to 60.0s	0.0	s	Real-time	“FD-04” on page 126
FD-06	0xFD06	Automatic reset upon communication fault	0: Disable 1: Enable	1	/	Real-time	“FD-06” on page 127
FD-07	0xFD07	Maximum number of automatically assigned stations	0 to 8	0	/	Unchangeable	“FD-07” on page 127
FD-09	0xFD09	CANopen/ CANlink communication state	Ones: CANopen 0: Stop 1: Initialized 2: Pre-running 8: Running Tens: CANlink 0: Stop 1: Initialized 2: Pre-running 8: Running	0	/	Unchangeable	“FD-09” on page 127

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FD-10	0xFD0A	Communication type	1: CANopen 2: CANlink 3: Communication card mode	1	/	At stop	" FD-10" on page 128
FD-12	0xFD0C	CAN baud rate	0: 20kbps 1: 50kbps 2: 100kbps 3: 125kbps 4: 250kbps 5: 500kbps 6: 1Mbps	5	/	At stop	" FD-12" on page 129
FD-13	0xFD0D	CAN station number	1 to 127	16	/	Unchangeable	" FD-13" on page 129
FD-14	0xFD0E	Number of CAN frames received per unit time (real time)	0 to 65535	0	/	Unchangeable	" FD-14" on page 129
FD-15	0xFD0F	Maximum number of error frames received by node (real time)	0 to 65535	0	/	Unchangeable	" FD-15" on page 130
FD-16	0xFD10	Maximum value of error frames sent by node (real time)	0 to 65535	0	/	Unchangeable	" FD-16" on page 130
FD-17	0xFD11	Number of bus disconnection times per unit of time	0 to 65535	0	/	Unchangeable	" FD-17" on page 130
FD-18	0xFD12	Power supply unit No.	1–15	1	/	Real-time	" FD-18" on page 130
FD-19	0xFD13	CAN communication disconnection coefficient.	1 to 15	5	/	Real-time	" FD-19" on page 131
FD-34	0xFD22	CANopen mode	0: Standard mode 1: Expert mode	0	/	Real-time	" FD-34" on page 131
FD-35	0xFD23	CANopen prohibition time	0 to 65535	0	/	Real-time	" FD-35" on page 131
FD-36	0xFD24	CANopen event time	0 to 65535	0	/	Real-time	" FD-36" on page 131

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FD-39	0xFD27	Function enabling bit configuration of AC drive station number	0: Disable 1: Enable	0	/	Real-time	“ FD-39” on page 132
FD-40	0xFD28	Manually set value of power supply unit station number	0 to 127	16	/	Real-time	“ FD-40” on page 132
FD-41	0xFD29	Manually set value of drive unit 1 station number	0 to 127	1	/	Real-time	“ FD-41” on page 132
FD-42	0xFD2A	Manually set value of drive unit 2 station number	0 to 127	2	/	Real-time	“ FD-42” on page 132
FD-43	0xFD2B	Manually set value of drive unit 3 station number	0 to 127	3	/	Real-time	“ FD-43” on page 133
FD-44	0xFD2C	Manually set value of drive unit 4 station number	0 to 127	4	/	Real-time	“ FD-44” on page 133
FD-45	0xFD2D	Manually set value of drive unit 5 station number	0 to 127	5	/	Real-time	“ FD-45” on page 133
FD-46	0xFD2E	Manually set value of drive unit 6 station number	0 to 127	6	/	Real-time	“ FD-46” on page 133
FD-47	0xFD2F	Manually set value of drive unit 7 station number	0 to 127	7	/	Real-time	“ FD-47” on page 133
FD-48	0xFD30	Manually set value of drive unit 8 station number	0 to 127	8	/	Real-time	“ FD-48” on page 134
FD-50	0xFD32	Startup with slave loss	0: Disable 1: Enable	0	/	Real-time	“ FD-50” on page 134
FD-51	0xFD33	Network bridge data interaction period	0 ms to 65535 ms	0	ms	Real-time	“ FD-51” on page 134

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FD-52	0xFD34	Indicates the number of online slaves.	0 to 30	0	/	Real-time	"FD-52" on page 134
FD-53	0xFD35	Slave online state (1-15)	0 to 65535	0	/	Real-time	"FD-53" on page 135
FD-54	0xFD36	Slave online state (16-31)	0 to 65535	0	/	Real-time	"FD-54" on page 135
FD-55	0xFD37	PN timeout time	0 ms to 65535 ms	0	ms	Real-time	"FD-55" on page 135
FD-56	0xFD38	PN chip state	0 to 65535	0	/	Real-time	"FD-56" on page 135
FD-57	0xFD39	Communication card state	0: Initialization 1: Running 2: Stop 3: Reconnecting	0	/	Real-time	"FD-57" on page 136
FD-61	0xFD3D	MAC address 1	0 to 65535	0	/	Real-time	"FD-61" on page 136
FD-62	0xFD3E	MAC address 2	0 to 65535	0	/	Real-time	"FD-62" on page 136
FD-63	0xFD3F	MAC address 3	0 to 65535	0	/	Real-time	"FD-63" on page 136
FD-70	0xFD46	EtherCAT station name	0 to 65535	0	/	Unchangeable	"FD-70" on page 137
FD-71	0xFD47	EtherCAT station alias	0 to 65535	0	/	Unchangeable	"FD-71" on page 137
FD-72	0xFD48	Number of times for synchronization interruption signal loss allowed by the EtherCAT module	0–30	10	/	Real-time	"FD-72" on page 137
FD-73	0xFD49	CRC check error of EtherCAT port 0	0 to 65535	0	/	Unchangeable	"FD-73" on page 137
FD-74	0xFD4A	CRC check error of EtherCAT port 1	0 to 65535	0	/	Unchangeable	"FD-74" on page 138
FD-75	0xFD4B	Data transfer error of EtherCAT port 0 and port 1	0 to 65535	0	/	Unchangeable	"FD-75" on page 138
FD-76	0xFD4C	EtherCAT processing unit and PDI error	0 to 65535	0	/	Unchangeable	"FD-76" on page 138

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FD-77	0xFD4D	Link loss of EtherCAT port 0 and port 1	0 to 65535	0	/	Unchangeable	" FD-77" on page 138
FD-78	0xFD4E	EtherCAT master type selection	0 to 65535	0	/	Real-time	" FD-78" on page 138
FD-79	0xFD4F	EtherCAT synchronization error monitoring mode	0 to 65535	0	/	Real-time	" FD-79" on page 139
FD-80	0xFD50	EtherCAT synchronization frame loss count	0 to 65535	0	/	Unchangeable	" FD-80" on page 139
FD-81	0xFD51	EtherCAT state machine and PHYLink state	0 to 65535	0	/	Unchangeable	" FD-81" on page 139
FD-82	0xFD52	EtherCAT - AL fault code	0 to 65535	0	/	Unchangeable	" FD-82" on page 139
FD-83	0xFD53	EtherCAT - XML file version	0.00-655.35	0.00	/	Unchangeable	" FD-83" on page 139
FD-84	0xFD54	EtherCAT - FPGA firmware version	0 to 65535	0	/	Unchangeable	" FD-84" on page 140
FD-85	0xFD55	Station alias backup display	0 to 65535	0	/	Unchangeable	" FD-85" on page 140
FD-86	0xFD56	EtherCAT - EEPROM read time	0 to 65535	0	/	Real-time	" FD-86" on page 140
FD-87	0xFD57	EtherCAT - DC gain parameter	0 to 65535	0	/	Real-time	" FD-87" on page 140
FD-88	0xFD58	EtherCAT - DC acceleration limit	0 to 65535	0	/	Real-time	" FD-88" on page 141
FD-89	0xFD59	EtherCAT - DC speed limit	0 to 65535	0	/	Real-time	" FD-89" on page 141
FD-90	0xFD5A	EtherCAT - DC integral coefficient	0 to 65535	0	/	Real-time	" FD-90" on page 141
FD-91	0xFD5B	Communication card version	0.00-655.35	0.00	/	Unchangeable	" FD-91" on page 141
FD-92	0xFD5C	Communication version	0.00 to 655.35	0.00	/	Unchangeable	" FD-92" on page 141

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FD-93	0xFD5D	Station number of the device connected to expansion card slot 1	0 to 65535	0	/	Unchangeable	"FD-93" on page 142
FD-94	0xFD5E	Station number of the device connected to expansion card slot 2	0 to 65535	0	/	Unchangeable	"FD-94" on page 142
FD-95	0xFD5F	Station number of the device connected to expansion card slot 3	0 to 65535	0	/	Unchangeable	"FD-95" on page 142
FD-96	0xFD60	Station number of device connected to reserved slot 4	0 to 65535	0	/	Unchangeable	"FD-96" on page 142
FD-97	0xFD61	Station number of the device connected to reserved slot 5	0 to 65535	0	/	Unchangeable	"FD-97" on page 142
FD-98	0xFD62	Station number of the device connected to reserved slot 6	0 to 65535	0	/	Unchangeable	"FD-98" on page 143
FD-99	0xFD63	Station number of the device connected to reserved slot 7	0 to 65535	0	/	Unchangeable	"FD-99" on page 143
FP-00	0x1F00	User password	0 to 65535	0	/	Real-time	"FP-00" on page 143
FP-01	0x1F01	Parameters initialization	0: No operation 1: Restore to factory settings 2: Clear records 4: Back up current user parameters 501: Restore user backup parameters	1	/	Real-time	"FP-01" on page 143

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FP-03	0x1F03	Monitoring parameter display setting	Bit 0: Bus voltage Bit 1: Heatsink temperature Bit 2: Ambient temperature Bit 3: Usr line voltage Bit 4: Ust line voltage Bit 5: Utr line voltage Bit 6: Three-phase imbalance degree	0x4F	/	Real-time	"FP-03" on page 144
FP-05	0x1F05	I/O card parameter restoration	0: Invalid 1: I/O expansion card 1 2: I/O expansion card 2 3: I/O expansion card 3 255: All I/O expansion cards	0	/	Real-time	"FP-05" on page 144
FP-06	0x1F06	Local parameter backup mode	1: Copy all parameters 2: Copy non-motor parameters	2	/	Real-time	"FP-06" on page 145
FP-07	0x1F07	Local parameter backup operation	0 to 28	0	/	Real-time	"FP-07" on page 145
A0-00	0xA000	I/O expansion card communication cycle	0 to 100	0	/	Real-time	"A0-00" on page 145
A0-01	0xA001	Alarm times of continuous drive unit frame loss	0 to 1000	60	/	Real-time	"A0-01" on page 146
A0-02	0xA002	Alarm threshold of consecutive I/O expansion card frame loss	0 to 1000	60	/	Real-time	"A0-02" on page 146
A0-03	0xA003	Station number display of drive unit with frame loss	Bit 0: Drive unit 1 Bit 1: Drive unit 2 Bit 2: Drive unit 3 Bit 3: Drive unit 4 Bit 4: Drive unit 5 Bit 5: Drive unit 6 Bit 6: Drive unit 7 Bit 7: Drive unit 8	0x0	/	Unchangeable	"A0-03" on page 146

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A0-04	0xA004	Station number display of I/O expansion card with frame loss	Bit 0: I/O expansion card 1 Bit 1: I/O expansion card 2 Bit 2: I/O expansion card 3	0x0	/	Unchangeable	"A0-04" on page 147
A0-05	0xA005	Frame loss count of axis 1	0 to 65535	0	/	Unchangeable	"A0-05" on page 147
A0-06	0xA006	Frame loss count of axis 2	0 to 65535	0	/	Unchangeable	"A0-06" on page 147
A0-07	0xA007	Frame loss count of axis 3	0 to 65535	0	/	Unchangeable	"A0-07" on page 148
A0-08	0xA008	Frame loss count of axis 4	0 to 65535	0	/	Unchangeable	"A0-08" on page 148
A0-09	0xA009	Frame loss count of axis 5	0 to 65535	0	/	Unchangeable	"A0-09" on page 148
A0-10	0xA00A	Frame loss count of axis 6	0 to 65535	0	/	Unchangeable	"A0-10" on page 148
A0-11	0xA00B	Frame loss count of axis 7	0 to 65535	0	/	Unchangeable	"A0-11" on page 148
A0-12	0xA00C	Frame loss count of axis 8	0 to 65535	0	/	Unchangeable	"A0-12" on page 149
A0-13	0xA00D	Frame loss count of expansion card 1	0 to 65535	0	/	Unchangeable	"A0-13" on page 149
A0-14	0xA00E	Frame loss count of expansion card 2	0 to 65535	0	/	Unchangeable	"A0-14" on page 149
A0-15	0xA00F	Frame loss count of expansion card 3	0 to 65535	0	/	Unchangeable	"A0-15" on page 149
A1-00	0xA100	Power supply unit - filter time of DI1 to DI4	0.000s to 5.000s	0.010	s	Real-time	"A1-00" on page 150
A1-01	0xA101	Power supply unit - filter time of DI5 to DI8	0.000s to 5.000s	0.010	s	Real-time	"A1-01" on page 150
A1-05	0xA105	Power supply unit - AI1 filter time	0.00s to 10.00s	0.10	s	Real-time	"A1-05" on page 150
A1-06	0xA106	Filter time of AI2 for power supply unit	0.00s to 10.00s	0.10	s	Real-time	"A1-06" on page 150

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A1-10	0xA10A	Power supply unit - AI1 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	/	At stop	"A1-10" on page 151
A1-11	0xA10B	Power supply unit - AI2 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	/	At stop	"A1-11" on page 151
A2-00	0xA200	Expansion card 1 - filter time of DI1 to DI4	0.000s to 5.000s	0.010	s	Real-time	"A2-00" on page 152
A2-01	0xA201	Expansion card 1 - filter time of DI5 to DI8	0.000s to 5.000s	0.010	s	Real-time	"A2-01" on page 152
A2-05	0xA205	Expansion card 1 - AI1 filter time	0.00s to 10.00s	0.10	s	Real-time	"A2-05" on page 152
A2-06	0xA206	Expansion card 1 - AI2 filter time	0.00s to 10.00s	0.10	s	Real-time	"A2-06" on page 152
A2-10	0xA20A	Expansion card 1 - AI1 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	/	At stop	"A2-10" on page 153
A2-11	0xA20B	Expansion card 1 - AI2 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	/	At stop	"A2-11" on page 153
A3-00	0xA300	Expansion card 2 - filter time of DI1 to DI4	0.000s to 5.000s	0.010	s	Real-time	"A3-00" on page 154
A3-01	0xA301	Expansion card 2 - filter time of DI5 to DI8	0.000s to 5.000s	0.010	s	Real-time	"A3-01" on page 154
A3-05	0xA305	Expansion card 2 - AI1 filter time	0.00s to 10.00s	0.10	s	Real-time	"A3-05" on page 154

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A3-06	0xA306	Expansion card 2 - AI2 filter time	0.00s to 10.00s	0.10	s	Real-time	"A3-06" on page 154
A3-10	0xA30A	Expansion card 2 - AI1 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	/	At stop	"A3-10" on page 155
A3-11	0xA30B	Expansion card 2 - AI2 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	/	At stop	"A3-11" on page 155
AC-00	0xAC00	Power supply unit - AI1 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-00" on page 156
AC-01	0xAC01	Power supply unit - AI1 displayed voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-01" on page 156
AC-02	0xAC02	Power supply unit - AI1 measured voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-02" on page 156
AC-03	0xAC03	Power supply unit - AI1 displayed voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-03" on page 157
AC-04	0xAC04	Power supply unit - AI2 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-04" on page 157
AC-05	0xAC05	Power supply unit - AI2 displayed voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-05" on page 157
AC-06	0xAC06	Power supply unit - AI2 measured voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-06" on page 157

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
AC-07	0xAC07	Power supply unit - AI2 displayed voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-07" on page 158
AC-08	0xAC08	Expansion card 1 - AI1 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-08" on page 158
AC-09	0xAC09	Expansion card 1 - AI1 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-09" on page 158
AC-10	0xAC0A	Expansion card 1 - AI1 measured voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-10" on page 159
AC-11	0xAC0B	Expansion card 1-AI1 displayed voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-11" on page 159
AC-12	0xAC0C	Expansion card 1 - AI2 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-12" on page 159
AC-13	0xAC0D	Expansion card 1-AI2 displayed voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-13" on page 159
AC-14	0xAC0E	Expansion card 1 - AI2 measured voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-14" on page 160
AC-15	0xAC0F	Expansion card 1-AI2 displayed voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-15" on page 160
AC-16	0xAC10	Expansion card 2 - AI1 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-16" on page 160
AC-17	0xAC11	Expansion card 2 - AI1 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-17" on page 160
AC-18	0xAC12	Expansion card 2 - AI1 measured voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-18" on page 161

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
AC-19	0xAC13	Expansion card 2-AI1 displayed voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-19" on page 161
AC-20	0xAC14	Expansion card 2 - AI2 measured voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-20" on page 161
AC-21	0xAC15	Expansion card 2-AI2 displayed voltage 1	-10.000 V to 10.000 V	2.000	V	Real-time	"AC-21" on page 161
AC-22	0xAC16	Expansion card 2 - AI2 measured voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-22" on page 162
AC-23	0xAC17	Expansion card 2-AI2 displayed voltage 2	-10.000 V to 10.000 V	8.000	V	Real-time	"AC-23" on page 162
AC-24	0xAC18	Expansion card 3 - AI1 measured voltage 1	-3.300 V to 3.300 V	1.650	V	Real-time	"AC-24" on page 162
AC-25	0xAC19	Expansion card 3 - AI1 measured voltage 1	-3.300 V to 3.300 V	1.650	V	Real-time	"AC-25" on page 162
AC-26	0xAC1A	AI1 Measured voltage 2 of AI1 for expansion card 3	-3.300 V to 3.300 V	3.062	V	Real-time	"AC-26" on page 162
AC-27	0xAC1B	Expansion card 3-AI1 displayed voltage 2	-3.300 V to 3.300 V	3.062	V	Real-time	"AC-27" on page 163
AC-28	0xAC1C	Expansion card 3 - AI2 measured voltage 1	-3.300 V to 3.300 V	1.650	V	Real-time	"AC-28" on page 163
AC-29	0xAC1D	Displayed voltage 1 of AI2 for expansion card 3	-3.300 V to 3.300 V	1.650	V	Real-time	"AC-29" on page 163
AC-30	0xAC1E	Expansion card 3 - AI2 measured voltage 2	-3.300 V to 3.300 V	2.997	V	Real-time	"AC-30" on page 163

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
AC-31	0xAC1F	Expansion card 3-AI2 displayed voltage 2	-3.300 V to 3.300 V	2.997	V	Real-time	"AC-31" on page 164
AD-00	0xAD00	DHCP/BOOTP function	0: Disable 1: Enable	0	/	Real-time	"AD-00" on page 164
AD-01	0xAD01	Highest order byte of the IP address	1 to 254	192	/	Real-time	"AD-01" on page 164
AD-02	0xAD02	Second highest order byte of the IP address	0 to 254	168	/	Real-time	"AD-02" on page 164
AD-03	0xAD03	Third highest order byte of the IP address	0 to 254	1	/	Real-time	"AD-03" on page 165
AD-04	0xAD04	Lowest order byte of the IP address	1 to 253	6	/	Real-time	"AD-04" on page 165
AD-05	0xAD05	Highest order byte of the subnet mask	0 to 255	255	/	Real-time	"AD-05" on page 165
AD-06	0xAD06	Second highest order byte of the subnet mask	0 to 255	255	/	Real-time	"AD-06" on page 165
AD-07	0xAD07	Third highest order byte of the subnet mask	0 to 255	255	/	Real-time	"AD-07" on page 166
AD-08	0xAD08	Lowest order byte of the subnet mask	0 to 255	0	/	Real-time	"AD-08" on page 166
AD-09	0xAD09	Highest order byte of the gateway IP address	1 to 254	192	/	Real-time	"AD-09" on page 166
AD-10	0xAD0A	Second highest order byte of the gateway IP address	0 to 254	168	/	Real-time	"AD-10" on page 166
AD-11	0xAD0B	Third highest order byte of the gateway IP address	0 to 254	1	/	Real-time	"AD-11" on page 167
AD-12	0xAD0C	Lowest order byte of the gateway IP address	0 to 254	1	/	Real-time	"AD-12" on page 167

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
AD-13	0xAD0D	Switch commissioning address	0 to 65535	0	/	Real-time	"AD-13" on page 167
AD-14	0xAD0E	Switch commissioning data	0 to 65535	0	/	Real-time	"AD-14" on page 167
AD-15	0xAD0F	Switch commissioning control value	0 to 2	0	/	Real-time	"AD-15" on page 168
U0-00	0x7000	Bus voltage	0.0 V to 6553.5 V	0.0	V	Unchangeable	"U0-00" on page 168
U0-01	0x7001	Heatsink temperature	-32768°C to 32767°C	0	°C	Unchangeable	"U0-01" on page 168
U0-02	0x7002	Ambient temperature	-32768°C to 32767°C	0	°C	Unchangeable	"U0-02" on page 168
U0-03	0x7003	Fan speed	0rpm to 65535rpm	0	RPM	Unchangeable	"U0-03" on page 169
U0-04	0x7004	Input voltage Usr	0 V to 65535 V	0	V	Unchangeable	"U0-04" on page 169
U0-05	0x7005	Input voltage Ust	0 V to 65535 V	0	V	Unchangeable	"U0-05" on page 169
U0-06	0x7006	Input voltage Utr	0 V to 65535 V	0	V	Unchangeable	"U0-06" on page 169
U0-07	0x7007	Three-phase imbalance degree	0.00% to 655.35%	0.00	%	Unchangeable	"U0-07" on page 169
U0-12	0x700C	Code of current fault	0 to 65535	0	/	Unchangeable	"U0-12" on page 170
U0-13	0x700D	Subcode of current fault	0 to 65535	0	/	Unchangeable	"U0-13" on page 170
U0-14	0x700E	Current alarm code	0 to 65535	0	/	Unchangeable	"U0-14" on page 170
U0-15	0x700F	Current alarm subcode	0 to 65535	0	/	Unchangeable	"U0-15" on page 170
U0-16	0x7010	Online module list	0x0 to 0xFFFF	0x0	/	Unchangeable	"U0-16" on page 171
U0-17	0x7011	Number of online modules	0x0 to 0xFFFF	0x0	/	Unchangeable	"U0-17" on page 171
U0-18	0x7012	Number of online I/O modules	0 to 65535	0	/	Unchangeable	"U0-18" on page 171
U0-20	0x7014	Current power-on time - hour	0h to 65535h	0	h	Unchangeable	"U0-20" on page 171
U0-21	0x7015	Current power on time - minute	0 min to 65535 min	0	min	Unchangeable	"U0-21" on page 172

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U0-22	0x7016	Current power-on time - second	0s to 65535s	0	s	Unchangeable	"U0-22" on page 172
U0-23	0x7017	Current power on time - millisecond	0 ms to 65535 ms	0	ms	Unchangeable	"U0-23" on page 172
U0-25	0x7019	Control command word of braking unit	0 to 1	0	/	Unchangeable	"U0-25" on page 172
U0-27	0x701B	Run control of power supply unit	0 to 3	0	/	Unchangeable	"U0-27" on page 172
U0-30	0x701E	Total power-on time - hour	0h to 65535h	0	h	Unchangeable	"U0-30" on page 173
U0-31	0x701F	Total power-on time - minute	0 min to 65535 min	0	min	Unchangeable	"U0-31" on page 173
U0-32	0x7020	Total power-on time - second	0s to 65535s	0	s	Unchangeable	"U0-32" on page 173
U0-33	0x7021	Total power-on time - millisecond	0 ms to 65535 ms	0	ms	Unchangeable	"U0-33" on page 173
U0-35	0x7023	State of power supply unit	0 to 2	0	/	Unchangeable	"U0-35" on page 174
U2-00	0x7200	Local I/O module type	0 to 65535	0	/	Unchangeable	"U2-00" on page 174
U2-01	0x7201	Local I/O module version	0.00 to 655.35	0.00	/	Unchangeable	"U2-01" on page 174
U2-02	0x7202	Local I/O module - Original DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-02" on page 174
U2-03	0x7203	Local I/O module - Available DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-03" on page 175
U2-04	0x7204	Local I/O module - Original AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-04" on page 175

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U2-05	0x7205	Local I/O module - Available AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-05" on page 175
U2-06	0x7206	Local I/O module - Original DO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-06" on page 175
U2-07	0x7207	Local I/O module - Available DO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-07" on page 175
U2-08	0x7208	Local I/O module - Original AO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-08" on page 176
U2-09	0x7209	Local I/O module - Available AO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-09" on page 176
U2-10	0x720A	Local I/O module - DI input	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-10" on page 176
U2-11	0x720B	Local I/O module - DO output	0x0 to 0xFFFF	0x0	/	Unchangeable	"U2-11" on page 176
U2-12	0x720C	Local - AI1 input (before correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U2-12" on page 177
U2-13	0x720D	Local - AI2 input (before correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U2-13" on page 177
U2-14	0x720E	Local - AI1 input (after correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U2-14" on page 177
U2-15	0x720F	Local - AI2 input (after correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U2-15" on page 177

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U2-20	0x7214	Local I/O module - Condition of DI1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-20" on page 177
U2-21	0x7215	Local I/O module - Condition of DI2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-21" on page 178
U2-22	0x7216	Local I/O module - Condition of DI3 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-22" on page 178
U2-23	0x7217	Local I/O module - Condition of DI4 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-23" on page 178
U2-24	0x7218	Local I/O module - Condition of DI5 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-24" on page 178
U2-25	0x7219	Local I/O module - Condition of DI6 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-25" on page 178
U2-26	0x721A	Local I/O module - Condition of DI7 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-26" on page 179
U2-27	0x721B	Local I/O module - Condition of DI8 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-27" on page 179
U2-30	0x721E	Local I/O module - Condition of AI1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-30" on page 179

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U2-31	0x721F	Local I/O module - Condition of AI2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-31" on page 179
U2-40	0x7228	Local I/O module - Condition of DO1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-40" on page 180
U2-41	0x7229	Local I/O module - Condition of DO2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-41" on page 180
U2-42	0x722A	Local I/O module - Condition of DO3 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-42" on page 180
U2-43	0x722B	Local I/O module - Condition of DO4 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-43" on page 180
U2-44	0x722C	Local I/O module - Condition of DO5 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-44" on page 180
U2-45	0x722D	Local I/O module - Condition of DO6 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-45" on page 181
U2-46	0x722E	Local I/O module - Condition of DO7 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-46" on page 181
U2-47	0x722F	Local I/O module - Condition of DO8 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U2-47" on page 181
U3-00	0x7300	Type of I/O expansion card 1	0 to 65535	0	/	Unchangeable	" U3-00" on page 181

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U3-01	0x7301	Version of I/O expansion card 1	0.00 to 655.35	0.00	/	Unchangeable	" U3-01" on page 182
U3-02	0x7302	I/O expansion card 1 - Original DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-02" on page 182
U3-03	0x7303	I/O expansion card 1 - Available DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-03" on page 182
U3-04	0x7304	I/O expansion card 1 - Original AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-04" on page 182
U3-05	0x7305	I/O expansion card 1 - Available AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-05" on page 183
U3-06	0x7306	I/O expansion card 1 - Original DO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-06" on page 183
U3-07	0x7307	I/O expansion card 1 - Available DO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-07" on page 183
U3-08	0x7308	I/O expansion card 1 - Original AO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-08" on page 183
U3-09	0x7309	I/O expansion card 1 - Available AO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-09" on page 183
U3-10	0x730A	I/O expansion card 1 - DI input	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-10" on page 184
U3-11	0x730B	I/O expansion card 1 - DO output	0x0 to 0xFFFF	0x0	/	Unchangeable	" U3-11" on page 184

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U3-12	0x730C	I/O expansion card 1 - AI1 input (before correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U3-12" on page 184
U3-13	0x730D	I/O expansion card 1 - AI2 input (before correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U3-13" on page 184
U3-14	0x730E	I/O expansion card 1 - AI1 input (after correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U3-14" on page 185
U3-15	0x730F	I/O expansion card 1 - AI2 input (after correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U3-15" on page 185
U3-20	0x7314	I/O expansion card 1 - condition of DI1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-20" on page 185
U3-21	0x7315	I/O expansion card 1 - condition of DI2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-21" on page 185
U3-22	0x7316	I/O expansion card 1 - condition of DI3 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-22" on page 185
U3-23	0x7317	I/O expansion card 1 - condition of DI4 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-23" on page 186
U3-24	0x7318	I/O expansion card 1 - condition of DI5 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-24" on page 186
U3-25	0x7319	I/O expansion card 1 - condition of DI6 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-25" on page 186

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U3-26	0x731A	I/O expansion card 1 - condition of DI7 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-26” on page 186
U3-27	0x731B	I/O expansion card 1 - condition of DI8 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-27” on page 186
U3-30	0x731E	I/O expansion card 1 - condition of AI1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-30” on page 187
U3-31	0x731F	I/O expansion card 1 - condition of AI2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-31” on page 187
U3-40	0x7328	I/O expansion card 1 - condition of DO1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-40” on page 187
U3-41	0x7329	I/O expansion card 1 - condition of DO2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-41” on page 187
U3-42	0x732A	I/O expansion card 1 - condition of DO3 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-42” on page 188
U3-43	0x732B	I/O expansion card 1 - condition of DO4 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-43” on page 188
U3-44	0x732C	I/O expansion card 1 - condition of DO5 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	“U3-44” on page 188

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U3-45	0x732D	I/O expansion card 1 - condition of DO6 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-45" on page 188
U3-46	0x732E	I/O expansion card 1 - condition of DO7 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-46" on page 188
U3-47	0x732F	I/O expansion card 1 - condition of DO8 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U3-47" on page 189
U4-00	0x7400	Type of I/O expansion card 2	0 to 65535	0	/	Unchangeable	"U4-00" on page 189
U4-01	0x7401	Version of I/O expansion card 2	0.00 to 655.35	0.00	/	Unchangeable	"U4-01" on page 189
U4-02	0x7402	I/O expansion card 2 - Original DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-02" on page 189
U4-03	0x7403	I/O expansion card 2 - Available DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-03" on page 190
U4-04	0x7404	I/O expansion card 2 - Original AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-04" on page 190
U4-05	0x7405	I/O expansion card 2 - Available AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-05" on page 190
U4-06	0x7406	I/O expansion card 2 - Original DO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-06" on page 190
U4-07	0x7407	I/O expansion card 2 - Available DO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-07" on page 190

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U4-08	0x7408	I/O expansion card 2 - Original AO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-08" on page 191
U4-09	0x7409	I/O expansion card 2 - Available AO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-09" on page 191
U4-10	0x740A	I/O expansion card 2 - DI input	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-10" on page 191
U4-11	0x740B	I/O expansion card 2 - DO output	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-11" on page 191
U4-12	0x740C	I/O expansion card 2 - AI1 input (before correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U4-12" on page 192
U4-13	0x740D	I/O expansion card 2 - AI2 input (before correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U4-13" on page 192
U4-14	0x740E	I/O expansion card 2 - AI1 input (after correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U4-14" on page 192
U4-15	0x740F	I/O expansion card 2 - AI2 input (after correction)	-12.00 V to 12.00 V	0.00	V	Unchangeable	"U4-15" on page 192
U4-20	0x7414	I/O expansion card 2 - condition of DI1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-20" on page 192
U4-21	0x7415	I/O expansion card 2 - condition of DI2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-21" on page 193
U4-22	0x7416	I/O expansion card 2 - condition of DI3 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-22" on page 193

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U4-23	0x7417	I/O expansion card 2 - condition of DI4 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-23" on page 193
U4-24	0x7418	I/O expansion card 2 - condition of DI5 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-24" on page 193
U4-25	0x7419	I/O expansion card 2 - condition of DI6 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-25" on page 194
U4-26	0x741A	I/O expansion card 2 - condition of DI7 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-26" on page 194
U4-27	0x741B	I/O expansion card 2 - condition of DI8 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-27" on page 194
U4-30	0x741E	I/O expansion card 2 - condition of AI1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-30" on page 194
U4-31	0x741F	I/O expansion card 2 - condition of AI2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-31" on page 194
U4-40	0x7428	I/O expansion card 2 - condition of DO1 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-40" on page 195
U4-41	0x7429	I/O expansion card 2 - condition of DO2 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	"U4-41" on page 195

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U4-42	0x742A	I/O expansion card 2 - condition of DO3 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U4-42" on page 195
U4-43	0x742B	I/O expansion card 2 - condition of DO4 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U4-43" on page 195
U4-44	0x742C	I/O expansion card 2 - condition of DO5 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U4-44" on page 195
U4-45	0x742D	I/O expansion card 2 - condition of DO6 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U4-45" on page 196
U4-46	0x742E	I/O expansion card 2 - condition of DO7 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U4-46" on page 196
U4-47	0x742F	I/O expansion card 2 - condition of DO8 used by drive unit	0x0 to 0xFFFF	0x0	/	Unchangeable	" U4-47" on page 196

2 Parameters of the Power Supply Unit

2.1 F0: Basic Parameters of Power Supply Unit

F0-00 **Module type**

Address:	0xF000	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	2	Data type:	UInt16
Default:	2	Change:	Unchangeable

Value range:

1: Drive unit

2: Power supply unit

Description

Indicates the module type.

F0-01 **Product No.**

Address:	0xF001	Effective mode:	Real time
Min.:	800	Unit:	/
Max.:	800	Data type:	UInt16
Default:	800	Change:	Unchangeable

Value range:

800 to 800

Description

Shows the product No. of the AC drive.

F0-02 **Software version**

Address:	0xF002	Effective mode:	Real time
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

Indicates the software version of the AC drive.

F0-03 **Temporary software version**

Address:	0xF003	Effective mode:	Real time
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

Indicates the temporary software version of the AC drive.

F0-04 **Customized No.**

Address:	0xF004	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 9999

Description

Indicates the customized number of the AC drive.

2.2 F1 Fault Settings

F1-00 **Bus undervoltage threshold**

Address:	0xF100	Effective mode:	Real time
Min.:	300	Unit:	V
Max.:	440	Data type:	UInt16
Default:	330	Change:	Real-time

Value range:

300 V to 440 V

Description

When the bus voltage is lower than the value of F1-00 (Bus undervoltage threshold), undervoltage occurs.

When the system is in undervoltage state, the drive unit fails to run.

The default value of this parameter is 330 V for the 380 V model and the value range is 300 V to 440 V.

The default value is170 V for the 220 V model and the value range is 150 V to 220 V. It is recommended that the undervoltage threshold of the power supply unit be lower than that of the drive unit.

F1-01 **Bus overvoltage threshold**

Address:	0xF101	Effective mode:	Real time
Min.:	600	Unit:	V
Max.:	820	Data type:	UInt16
Default:	820	Change:	Real-time

Value range:

600 V to 820 V

Description

When the bus voltage is higher than the value of F1-01, the system judges it as overvoltage state.

In this case, the panel of the AC drive homepage flashes.

If the bus voltage is too high, the system may be damaged.

The default value of this parameter is 820 V for the 380 V model and the value range is 600 V to 820 V.

The default value is 410 V for the 220 V model and the value range is 300 V to 410 V.

F1-02 **Starting voltage of braking unit action**

Address:	0xF102	Effective mode:	Real time
Min.:	600	Unit:	V
Max.:	820	Data type:	UInt16
Default:	760	Change:	Real-time

Value range:

600 V to 820 V

Description

When the bus voltage is higher than the value of F1-02, the braking unit is actuated to reduce the bus voltage.

When the braking unit is actuated, a large energy consumption is generated on the braking resistor. A braking resistor shall be reasonably configured according to actual application to ensure good cooling of the braking resistor.

The default value of this parameter is 750 V for the 380 V model and the value range is 600 V to 820 V.

The default value is 370 V for the 220 V model and the value range is 300 V to 410 V.

F1-03 **Braking transistor open circuit**

Address:	0xF103	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Braking transistor open circuit

When it is set to 0, no alarm will be generated when the fault occurs.

When it is set to 1, E61.02 will be reported upon braking transistor open circuit.

F1-04 **Braking transistor short circuit**

Address:	0xF104	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Braking transistor short circuit

When it is set to 0, no alarm will be generated when the fault occurs.

When it is set to 1, E61.01 will be reported upon braking transistor short circuit.

F1-05 **Input phase loss**

Address:	0xF105	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16

Default:	2	Change:	Real-time

Value range:

0: Disable

1: Enable

2: Warning

Description

Used to select the action upon the input phase loss fault.

This parameter is only applicable to three-phase 380 V input models, and does not apply to single-phase 220 V models.

When it is set to 0, no alarm will be generated when the input phase loss occurs.

When it is set to 1, E12.01 is reported when input phase loss of the power supply unit occurs.

When it is set to 2, A12.01 is reported when input phase loss of the power supply unit occurs.

F1-06 **Input overvoltage**

Address:	0xF106	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	2	Change:	Real-time

Value range:

0: Disable

1: Enable

2: Warning

Description

Used to select the action upon the high input voltage fault

This parameter specifies whether to generate an alarm upon an input overvoltage fault.

When it is set to 0, no alarm will be generated when the fault occurs.

When it is set to 1, E12.04 will be reported if the input voltage is too high.

When it is set to 2, A12.04 will be reported if the input voltage is too high.

For three-phase 380 V models, the threshold for high input voltage is 576 V. For single-phase 220 V models, the threshold for high input voltage is 288 V.

F1-07 **Fan fault enable**

Address:	0xF107	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: Disable

1: Enable

2: Warning

Description

Used to select the action upon the fan fault.

When it is set to 0, no alarm will be generated when the fault occurs.

When it is set to 1, E80.00 will be reported when the fan is locked or damaged.

When it is set to 2, A80.00 will be reported when the fan is locked or damaged.

F1-09 **Fan control**

Address:	0xF109	Effective mode:	Real time

Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Running in one direction

1: Forward and reverse running

Description

Used to switch the running direction of the fan.

0: Uni-directional running

The fan of the power supply unit runs in one direction.

1: Forward/reverse rotation

The fan of the power supply unit runs in forward/reverse rotation for 600s and 200s in forward rotation

2.3 F4: Input Terminals

F4-00 **DI1 hardware source**

Address:	0xF400	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: Power supply unit DI1

2: Power supply unit DI2

3: Power supply unit DI3

4: Power supply unit DI4

5: Power supply unit DIO1

6: Power supply unit DIO2

7: Power supply unit DIO3

8: Power supply unit DIO4

101: Expansion card 1 DI1

102: Expansion card 1 DI2

103: Expansion card 1 DI3

104: Expansion card 1 DI4
105: Expansion card 1 DI5
106: Expansion card 1 DI5
107: Expansion card 1 DI7
108: Expansion card 1 DI8
201: Expansion card 2 DI1
202: Expansion card 2 DI2
203: Expansion card 2 DI3
204: Expansion card 2 DI4
205: Expansion card 2 DI5
206: Expansion card 2 DI6
207: Expansion card 2 DI7
208: Expansion card 2 DI8

Description

Used to select the output terminal hardware source of DI1.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-01 **DI1 function selection**

Address:	0xF401	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function
1: Enable running
2: Incoming circuit breaker feedback
3: Auxiliary circuit breaker feedback
4: Residual current device feedback
5: Fault reset
6: Prohibit drive unit from running
7: Drive unit coasts to stop
8: Drive unit stops according to preset mode
9: Reserved

Description

Used to select the DI1 function.
0: No function
The DI1 terminal has no function and is to avoid incorrect operation.
1: Enable running
The power supply unit sends a running command to the drive unit when this function is valid.
The power supply unit sends a coast to stop command to the drive unit when this function is invalid.
2: Incoming circuit breaker feedback
The power supply unit sends a running command to the drive unit when this function is valid.
The power supply unit sends a coast to stop command to the drive unit when this function is invalid.
3: Auxiliary circuit breaker feedback
The power supply unit sends a running command to the drive unit when this function is valid.

The power supply unit sends a coast to stop command to the drive unit when this function is invalid.
4: Residual current device feedback
The power supply unit sends a running command to the drive unit when this function is valid.
The power supply unit sends a coast to stop command to the drive unit when this function is invalid.
5: Fault reset
In this mode, when the DI1 input signal is on the rising edge, the AC drive performs fault reset.
6: Prohibit drive unit from running
The power supply unit sends a coast to stop command to the drive unit when this function is valid.
The power supply unit sends a running command to the drive unit when this function is invalid.
7: Drive unit coasts to stop
The power supply unit sends a coast to stop command to the drive unit when this function is valid.
The power supply unit sends a running command to the drive unit when this function is invalid.
8: Drive unit stops according to preset mode
The power supply unit sends a stop command to the drive unit to stop it according to the preset stop mode when this function is valid.
The power supply unit sends a running command to the drive unit when this function is invalid.
The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running function is valid.

F4-02 **DI2 hardware source**

Address:	0xF402	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
See F4–00.
Description
Used to select the output terminal hardware source.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-03 **DI2 function selection**

Address:	0xF403	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No function

1: Enable running

2: Incoming circuit breaker feedback

3: Auxiliary circuit breaker feedback

4: Residual current device feedback

5: Fault reset

6: Prohibit drive unit from running

7: Drive unit coasts to stop

8: Drive unit stops according to preset mode

9: Reserved

Description

Used to select the DI2 function.

0: No function

The DI terminal has no function to to avoid incorrect operation.

1: 1: Enable running

The power supply unit sends a running command to the drive unit when running is enabled.

The power supply unit sends a coast to stop command to the drive unit when running is disabled.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit when the incoming circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the incoming circuit breaker feedback is invalid.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit when the auxiliary circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the auxiliary circuit breaker feedback is invalid.

4: Residual current device feedback

The power supply unit sends a running command to the drive unit when the residual current device feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the residual current device feedback is invalid.

5: Fault reset

In this mode, when the DI2 input signal is on the rising edge, the AC drive performs fault reset

6: Prohibit drive unit from running

The power supply unit sends a coast to stop command to the drive unit to prohibit the drive unit from running.

The power supply unit sends a running command to the drive unit when this prohibition is invalid.

7: Drive unit coasts to stop

The power supply unit sends a coast to stop command to the drive unit.

The power supply unit sends a running command to the drive unit when the coast to stop function is invalid

8: Drive unit stops according to preset mode

The power supply unit sends a coast to stop command to the drive unit to stop it according to the preset stop mode.

The power supply unit sends a running command to the drive unit when the drive unit stop operation according to preset mode is invalid.

The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running is valid.

F4-04 **DI3 hardware source**

Address:	0xF404	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

See F4–00.

Description

Used to select the output terminal hardware source of DI3.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-05 **DI3 function selection**

Address:	0xF405	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Enable running

2: Incoming circuit breaker feedback

3: Auxiliary circuit breaker feedback

4: Residual current device feedback

5: Fault reset

6: Prohibit drive unit from running

7: Drive unit coasts to stop

8: Drive unit stops according to preset mode

9: Reserved

Description

Used to select the DI3 function.

0: No function

The DI terminal has no function to avoid incorrect operation.

1: 1: Enable running

The power supply unit sends a running command to the drive unit when running is enabled.

The power supply unit sends a coast to stop command to the drive unit when running is disabled.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit when the incoming circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the incoming circuit breaker feedback is invalid.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit when the auxiliary circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the auxiliary circuit breaker feedback is invalid.
4: Residual current device feedback
The power supply unit sends a running command to the drive unit when the residual current device feedback is valid.
The power supply unit sends a coast to stop command to the drive unit when the residual current device feedback is invalid.
5: Fault reset
In this mode, when the DI3 input signal is on the rising edge, the AC drive performs fault reset.
6: Prohibit drive unit from running
The power supply unit sends a coast to stop command to the drive unit to prohibit the drive unit from running.
The power supply unit sends a running command to the drive unit when this prohibition is invalid.
7: Drive unit coasts to stop
The power supply unit sends a coast to stop command to the drive unit.
The power supply unit sends a running command to the drive unit when the coast to stop function is invalid
8: Drive unit stops according to preset mode
The power supply unit sends a coast to stop command to the drive unit to stop it according to the preset stop mode.
The power supply unit sends a running command to the drive unit when the drive unit stop operation according to preset mode is invalid.

The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running is valid.

F4-06 **DI4 hardware source**

Address:	0xF406	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
See F4–00.
Description
Used to select the output terminal hardware source of DI4.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-07 **DI4 function selection**

Address:	0xF407	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Enable running

2: Incoming circuit breaker feedback

3: Auxiliary circuit breaker feedback

4: Residual current device feedback

5: Fault reset

6: Prohibit drive unit from running

7: Drive unit coasts to stop

8: Drive unit stops according to preset mode

9: Reserved

Description

Used to select the DI4 function.

0: No function

The DI terminal has no function to avoid incorrect operation.

1: 1: Enable running

The power supply unit sends a running command to the drive unit when running is enabled.

The power supply unit sends a coast to stop command to the drive unit when running is disabled.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit when the incoming circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the incoming circuit breaker feedback is invalid.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit when the auxiliary circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the auxiliary circuit breaker feedback is invalid.

4: Residual current device feedback

The power supply unit sends a running command to the drive unit when the residual current device feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the residual current device feedback is invalid.

5: Fault reset

In this mode, when the DI4 input signal is on the rising edge, the AC drive performs fault reset.

6: Prohibit drive unit from running

The power supply unit sends a coast to stop command to the drive unit to prohibit the drive unit from running.

The power supply unit sends a running command to the drive unit when this prohibition is invalid.

7: Drive unit coasts to stop

The power supply unit sends a coast to stop command to the drive unit.

The power supply unit sends a running command to the drive unit when the coast to stop function is invalid

8: Drive unit stops according to preset mode

The power supply unit sends a coast to stop command to the drive unit to stop it according to the preset stop mode.

The power supply unit sends a running command to the drive unit when the drive unit stop operation according to preset mode is invalid.

The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running is valid.

F4-08 **DI5 hardware source**

Address:	0xF408	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

See F4–00.

Description

Used to select the output terminal hardware source of DI5.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-09 **DI5 function selection**

Address:	0xF409	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Enable running

2: Incoming circuit breaker feedback

3: Auxiliary circuit breaker feedback

4: Residual current device feedback

5: Fault reset

6: Prohibit drive unit from running

7: Drive unit coasts to stop

8: Drive unit stops according to preset mode

9: Reserved

Description

Used to select the DI5 function.

0: No function

The DI terminal has no function to avoid incorrect operation.

1: 1: Enable running

The power supply unit sends a running command to the drive unit when running is enabled.

The power supply unit sends a coast to stop command to the drive unit when running is disabled.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit when the incoming circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the incoming circuit breaker feedback is invalid.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit when the auxiliary circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the auxiliary circuit breaker feedback is invalid.
4: Residual current device feedback
The power supply unit sends a running command to the drive unit when the residual current device feedback is valid.
The power supply unit sends a coast to stop command to the drive unit when the residual current device feedback is invalid.
5: Fault reset
In this mode, when the DI5 input signal is on the rising edge, the AC drive performs fault reset.
6: Prohibit drive unit from running
The power supply unit sends a coast to stop command to the drive unit to prohibit the drive unit from running.
The power supply unit sends a running command to the drive unit when this prohibition is invalid.
7: Drive unit coasts to stop
The power supply unit sends a coast to stop command to the drive unit.
The power supply unit sends a running command to the drive unit when the coast to stop function is invalid
8: Drive unit stops according to preset mode
The power supply unit sends a coast to stop command to the drive unit to stop it according to the preset stop mode.
The power supply unit sends a running command to the drive unit when the drive unit stop operation according to preset mode is invalid.

The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running is valid.

F4-10 **DI6 hardware source**

Address:	0xF40A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
See F4–00.
Description
Used to select the output terminal hardware source of DI6.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-11 **DI6 function selection**

Address:	0xF40B	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Enable running

2: Incoming circuit breaker feedback

3: Auxiliary circuit breaker feedback

4: Residual current device feedback

5: Fault reset

6: Prohibit drive unit from running

7: Drive unit coasts to stop

8: Drive unit stops according to preset mode

9: Reserved

Description

Used to select the DI6 function.

0: No function

The DI terminal has no function to avoid incorrect operation.

1: 1: Enable running

The power supply unit sends a running command to the drive unit when running is enabled.

The power supply unit sends a coast to stop command to the drive unit when running is disabled.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit when the incoming circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the incoming circuit breaker feedback is invalid.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit when the auxiliary circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the auxiliary circuit breaker feedback is invalid.

4: Residual current device feedback

The power supply unit sends a running command to the drive unit when the residual current device feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the residual current device feedback is invalid.

5: Fault reset

In this mode, when the DI6 input signal is on the rising edge, the AC drive performs fault reset.

6: Prohibit drive unit from running

The power supply unit sends a coast to stop command to the drive unit to prohibit the drive unit from running.

The power supply unit sends a running command to the drive unit when this prohibition is invalid.

7: Drive unit coasts to stop

The power supply unit sends a coast to stop command to the drive unit.

The power supply unit sends a running command to the drive unit when the coast to stop function is invalid

8: Drive unit stops according to preset mode

The power supply unit sends a coast to stop command to the drive unit to stop it according to the preset stop mode.

The power supply unit sends a running command to the drive unit when the drive unit stop operation according to preset mode is invalid.

The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running is valid.

F4-12 **DI7 hardware source**

Address:	0xF40C	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

See F4–00.

Description

Used to select the output terminal hardware source of DI7.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-13 **DI7 function selection**

Address:	0xF40D	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No function

1: Enable running

2: Incoming circuit breaker feedback

3: Auxiliary circuit breaker feedback

4: Residual current device feedback

5: Fault reset

6: Prohibit drive unit from running

7: Drive unit coasts to stop

8: Drive unit stops according to preset mode

9: Reserved

Description

Used to select the DI 7 function.

0: No function

The DI terminal has no function to avoid incorrect operation.

1: 1: Enable running

The power supply unit sends a running command to the drive unit when running is enabled.

The power supply unit sends a coast to stop command to the drive unit when running is disabled.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit when the incoming circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the incoming circuit breaker feedback is invalid.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit when the auxiliary circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the auxiliary circuit breaker feedback is invalid.
4: Residual current device feedback
The power supply unit sends a running command to the drive unit when the residual current device feedback is valid.
The power supply unit sends a coast to stop command to the drive unit when the residual current device feedback is invalid.
5: Fault reset
In this mode, when the DI7 input signal is on the rising edge, the AC drive performs fault reset.
6: Prohibit drive unit from running
The power supply unit sends a coast to stop command to the drive unit to prohibit the drive unit from running.
The power supply unit sends a running command to the drive unit when this prohibition is invalid.
7: Drive unit coasts to stop
The power supply unit sends a coast to stop command to the drive unit.
The power supply unit sends a running command to the drive unit when the coast to stop function is invalid
8: Drive unit stops according to preset mode
The power supply unit sends a coast to stop command to the drive unit to stop it according to the preset stop mode.
The power supply unit sends a running command to the drive unit when the drive unit stop operation according to preset mode is invalid.

The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running is valid.

F4-14 **DI8 hardware source**

Address:	0xF40E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
See F4–00.
Description
Used to select the output terminal hardware source of DI8.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-15 **DI8 function selection**

Address:	0xF40F	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Enable running

2: Incoming circuit breaker feedback

3: Auxiliary circuit breaker feedback

4: Residual current device feedback

5: Fault reset

6: Prohibit drive unit from running

7: Drive unit coasts to stop

8: Drive unit stops according to preset mode

9: Reserved

Description

Used to select the DI8 function.

0: No function

The DI terminal has no function to avoid incorrect operation.

1: 1: Enable running

The power supply unit sends a running command to the drive unit when running is enabled.

The power supply unit sends a coast to stop command to the drive unit when running is disabled.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit when the incoming circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the incoming circuit breaker feedback is invalid.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit when the auxiliary circuit breaker feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the auxiliary circuit breaker feedback is invalid.

4: Residual current device feedback

The power supply unit sends a running command to the drive unit when the residual current device feedback is valid.

The power supply unit sends a coast to stop command to the drive unit when the residual current device feedback is invalid.

5: Fault reset

In this mode, when the DI8 input signal is on the rising edge, the AC drive performs fault reset.

6: Prohibit drive unit from running

The power supply unit sends a coast to stop command to the drive unit to prohibit the drive unit from running.

The power supply unit sends a running command to the drive unit when this prohibition is invalid.

7: Drive unit coasts to stop

The power supply unit sends a coast to stop command to the drive unit.

The power supply unit sends a running command to the drive unit when the coast to stop function is invalid

8: Drive unit stops according to preset mode

The power supply unit sends a coast to stop command to the drive unit to stop it according to the preset stop mode.

The power supply unit sends a running command to the drive unit when the drive unit stop operation according to preset mode is invalid.

The power supply unit sends a coast to stop command to the drive unit when either enable running, incoming circuit breaker feedback, auxiliary circuit breaker feedback, or residual current device feedback is invalid or when coasting to stop or prohibiting running is valid.

F4-16 **DI1 valid delay time**

Address:	0xF410	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description
When a valid DI signal is received from the hardware, the DI1 switches from the inactive to active state after the set DI1 valid delay time is reached.

F4-17 **DI2 valid delay time**

Address:	0xF411	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description
When a valid DI signal is received from the hardware, the DI2 switches from the inactive to active state after the set DI2 valid delay time is reached.

F4-18 **DI3 valid delay time**

Address:	0xF412	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description
When a valid DI signal is received from the hardware, the DI3 switches from the inactive to active state after the set DI3 valid delay time is reached.

F4-19 **DI4 valid delay time**

Address:	0xF413	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description

When a valid DI signal is received from the hardware, the DI4 switches from the inactive to active state after the set DI4 valid delay time is reached.

F4-20 **DI5 valid delay time**

Address:	0xF414	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 600.00s

Description

When a valid DI signal is received from the hardware, the DI5 switches from the inactive to active state after the set DI5 valid delay time is reached.

F4-21 **DI6 valid delay time**

Address:	0xF415	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 600.00s

Description

When a valid DI signal is received from the hardware, the DI6 switches from the inactive to active state after the set DI6 valid delay time is reached.

F4-22 **DI7 valid delay time**

Address:	0xF416	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 600.00s

Description

When a valid DI signal is received from the hardware, the DI7 switches from the inactive to active state after the set DI7 valid delay time is reached.

F4-23 **DI8 valid delay time**

Address:	0xF417	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 600.00s

Description

When a valid DI signal is received from the hardware, the DI8 switches from the inactive to active state after the set DI8 valid delay time is reached.

F4-24 **DI1 invalid delay time**

Address:	0xF418	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description
When an invalid DI signal is received from the hardware, the DI1 switches from active to inactive state after the set DI1 invalid delay time is reached.

F4-25 **DI2 invalid delay time**

Address:	0xF419	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description
When an invalid DI signal is received from the hardware, the DI2 switches from active to inactive state after the set DI2 invalid delay time is reached.

F4-26 **DI3 invalid delay time**

Address:	0xF41A	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description
When an invalid DI signal is received from the hardware, the DI3 switches from active to inactive state after the set DI3 invalid delay time is reached.

F4-27 **DI4 invalid delay time**

Address:	0xF41B	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s

Description
When an invalid DI signal is received from the hardware, the DI4 switches from active to inactive state after the set DI4 invalid delay time is reached.

F4-28 **DI5 invalid delay time**

Address:	0xF41C	Effective mode:	Real time

Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s
Description
When an invalid DI signal is received from the hardware, the DI5 switches from active to inactive state after the set DI5 invalid delay time is reached.

F4-29 **DI6 invalid delay time**

Address:	0xF41D	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s
Description
When an invalid DI signal is received from the hardware, the DI6 switches from active to inactive state after the set DI6 invalid delay time is reached.

F4-30 **DI7 invalid delay time**

Address:	0xF41E	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s
Description
When an invalid DI signal is received from the hardware, the DI7 switches from active to inactive state after the set DI7 invalid delay time is reached.

F4-31 **DI8 invalid delay time**

Address:	0xF41F	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 600.00s
Description
When an invalid DI signal is received from the hardware, the DI8 switches from active to inactive state after the set DI8 invalid delay time is reached.

F4-32 **DI (DI1 to DI5) active mode**

Address:	0xF420	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	11111	Data type:	UInt16
Default:	0	Change:	Real-time

Value range

Ones: DI1

0: Active low

1: Active high

Tens: DI2

0: Active low

1: Active high

Hundreds: DI3

0: Active low

1: Active high

Thousands: DI4

0: Active low

1: Active high

Ten thousands: DI5

0: Active low

1: Active high

Description

The ones to ten thousands places of this parameter are used to the active status of DI1 to DI5.

0: Low level active

When low level active is selected, the DI terminal is inactive when connected with COM and active when disconnected from COM.

1: When high level active is selected,

the DI terminal is active when connected with COM and inactive when disconnected from COM.

F4-33 **DI (DI6 to DI8) active mode**

Address:	0xF421	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	11111	Data type:	UInt16
Default:	0	Change:	Real-time

Value range

Ones: DI6

0: Active low

1: Active high

Tens: DI7

0: Active low

1: Active high

Hundreds: DI8

0: Active low

1: Active high

Thousands: Reserved

0: Active low

1: Active high

Ten thousands: Reserved

0: Active low

1: Active high

Description

The active mode for DI6 to DI8 are set through the ones and tens place of this parameter.

0: Low level active

When low level active is selected, the DI terminal is inactive when connected with COM and active when disconnected from COM.

1: When high level active is selected,

the DI terminal is active when connected with COM and inactive when disconnected from COM.

2.4 F5: Output Terminals

F5-00 **DO1/RO1 hardware source**

Address:	0xF500	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type	UInt16
Default:	0	Change:	At stop

Value Range:

0: No selection

1: Power supply unit - DIO1

2: Power supply unit - DIO2

3: Power supply unit - DIO3

4: Power supply unit - DIO4

5: Power supply unit - RO1

101: Expansion card 1 - DO1/RO1

102: Expansion card 1 - DO2/RO2

103: Expansion card 1 - DO3/RO3

104: Expansion card 1 - DO4/RO4

105: Expansion card 1 - DO5/RO5

106: Expansion card 1 - DO6/RO6

107: Expansion card 1 - DO7/RO7

108: Expansion card 1 - DO8/RO8

201: Expansion card 2 - DO1/RO1

202: Expansion card 2 - DO2/RO2

203: Expansion card 2 - DO3/RO3

204: Expansion card 2 - DO4/RO4

205: Expansion card 2 - DO5/RO5

206: Expansion card 2 - DO6/RO6

207: Expansion card 2 - DO7/RO7

208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-01 **DO1/RO1 function selection**

Address:	0xF501	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	13	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Ready to run

2: Fault

3: Warning

4: Circuit breaker action

5: Bus undervoltage

6: Bus overvoltage

7: Bus voltage normal

8: Three-phase input abnormal

9: Three-phase input normal

10: Module overheat

11: Module overheat warning

12: Communication control

13: System fault

Description

Used to select the DO1/RO1 function.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.

0: No function

The terminal has no function.

1: Ready to run

The DO1/RO1 outputs an active signal when the power supply unit is ready to run.

2: Fault

The DO1/RO1 outputs an active signal when the power supply unit reports a fault.

3: Warning

The DO1/RO1 outputs an active signal when the power supply unit reports a warning.

4: Circuit breaker action

The DO1/RO1 outputs an active signal when the three-phase input voltage is higher than the circuit breaker action threshold (F5-21) for over two seconds.

The DO1/RO1 outputs an active signal when the AC drive reports that the braking transistor is short-circuited for over one second.

5: Bus undervoltage

The DO1/RO1 outputs an active signal when the bus of the power supply unit is undervoltage.

6: Bus overvoltage

The DO1/RO1 outputs an active signal when the bus of the power supply unit is overvoltage.

7: Bus voltage normal

The DO1/RO1 outputs an active signal when the bus voltage of the power supply unit is normal.

8: Three-phase input abnormal

The DO1/RO1 outputs an active signal when the input grid voltage of the power supply unit is excessively high or when an input phase loss occurs.

9: Three-phase input normal

The DO1/RO1 outputs an active signal when the input grid voltage of the power supply unit is normal and there is no input phase loss.

10: Module overheat

The DO1/RO1 outputs an active signal when the power supply unit reports the overheat error E14.00.

11: Module overheat warning

The DO1/RO1 outputs an active signal when the power supply unit reports the overheat warning A14.00.

12: Communication control

The DO1/RO1 outputs an active signal when the communication control for the DO is active.

13: System fault

The DO1/RO1 outputs an active signal when the power supply unit or any drive unit reports a fault.

F5-02 **DO2/RO2 hardware source**

Address:	0xF502	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: Power supply unit - DIO1

2: Power supply unit - DIO2

3: Power supply unit - DIO3

4: Power supply unit - DIO4

5: Power supply unit - RO1

101: Expansion card 1 - DO1/RO1

102: Expansion card 1 - DO2/RO2

103: Expansion card 1 - DO3/RO3

104: Expansion card 1 - DO4/RO4

105: Expansion card 1 - DO5/RO5

106: Expansion card 1 - DO6/RO6

107: Expansion card 1 - DO7/RO7

108: Expansion card 1 - DO8/RO8

201: Expansion card 2 - DO1/RO1

202: Expansion card 2 - DO2/RO2

203: Expansion card 2 - DO3/RO3

204: Expansion card 2 - DO4/RO4

205: Expansion card 2 - DO5/RO5

206: Expansion card 2 - DO6/RO6

207: Expansion card 2 - DO7/RO7

208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-03 **DO2/RO2 output function**

Address:	0xF503	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	13	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function
1: Ready to run
2: Fault
3: Warning
4: Circuit breaker action
5: Bus undervoltage
6: Bus overvoltage
7: Bus voltage normal
8: Three-phase input abnormal
9: Three-phase input normal
10: Module overheat
11: Module overheat warning
12: Communication control
13: System fault

Description

Used to select the DO2/RO2 function.
DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
0: No function
The terminal has no function.
1: Ready to run
The DO2/RO2 outputs an active signal when the power supply unit is ready to run.
2: Fault
The DO2/RO2 outputs an active signal when the power supply unit reports a fault.
3: Warning
The DO2/RO2 outputs an active signal when the power supply unit reports a warning.
4: Circuit breaker action
The DO2/RO2 outputs an active signal when the three-phase input voltage is higher than the circuit breaker action threshold (F5-21) for over two seconds.
The DO2/RO2 outputs an active signal when the AC drive reports that the braking transistor is short-circuited for over one second.
5: Bus undervoltage
The DO2/RO2 outputs an active signal when the bus of the power supply unit is undervoltage.
6: Bus overvoltage
The DO2/RO2 outputs an active signal when the bus of the power supply unit is overvoltage.
7: Bus voltage normal
The DO2/RO2 outputs an active signal when the bus voltage of the power supply unit is normal.

8: Three-phase input abnormal

The DO2/RO2 outputs an active signal when the input grid voltage of the power supply unit is excessively high or when an input phase loss occurs.

9: Three-phase input normal

The DO2/RO2 outputs an active signal when the input grid voltage of the power supply unit is normal and there is no input phase loss.

10: Module overheat

The DO2/RO2 outputs an active signal when the power supply unit reports the overheat error E14.00.

11: Module overheat warning

The DO2/RO2 outputs an active signal when the power supply unit reports the overheat warning A14.00.

12: Communication control

The DO2/RO2 outputs an active signal when the communication control for the DO is active.

13: System fault

The DO2/RO2 outputs an active signal when the power supply unit or any drive unit reports a fault.

F5-04 **DO3/RO3 hardware source**

Address:	0xF504	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: Power supply unit - DIO1

2: Power supply unit - DIO2

3: Power supply unit - DIO3

4: Power supply unit - DIO4

5: Power supply unit - RO1

101: Expansion card 1 - DO1/RO1

102: Expansion card 1 - DO2/RO2

103: Expansion card 1 - DO3/RO3

104: Expansion card 1 - DO4/RO4

105: Expansion card 1 - DO5/RO5

106: Expansion card 1 - DO6/RO6

107: Expansion card 1 - DO7/RO7

108: Expansion card 1 - DO8/RO8

201: Expansion card 2 - DO1/RO1

202: Expansion card 2 - DO2/RO2

203: Expansion card 2 - DO3/RO3

204: Expansion card 2 - DO4/RO4

205: Expansion card 2 - DO5/RO5

206: Expansion card 2 - DO6/RO6

207: Expansion card 2 - DO7/RO7

208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-05 **DO3/RO3 output function**

Address:	0xF505	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	13	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
0: No function
1: Ready to run
2: Fault
3: Warning
4: Circuit breaker action
5: Bus undervoltage
6: Bus overvoltage
7: Bus voltage normal
8: Three-phase input abnormal
9: Three-phase input normal
10: Module overheat
11: Module overheat warning
12: Communication control
13: System fault

Description
Used to select the DO3/RO3 function.
DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
0: No function
The terminal has no function.
1: Ready to run
The DO3/RO3 outputs an active signal when the power supply unit is ready to run.
2: Fault
The DO3/RO3 outputs an active signal when the power supply unit reports a fault.
3: Warning
The DO3/RO3 outputs an active signal when the power supply unit reports a warning.
4: Circuit breaker action
The DO3/RO3 outputs an active signal when the three-phase input voltage is higher than the circuit breaker action threshold (F5-21) for over two seconds.
The DO3/RO3 outputs an active signal when the AC drive reports that the braking transistor is short-circuited for over one second.
5: Bus undervoltage
The DO3/RO3 outputs an active signal when the bus of the power supply unit is undervoltage.
6: Bus overvoltage
The DO3/RO3 outputs an active signal when the bus of the power supply unit is overvoltage.
7: Bus voltage normal
The DO3/RO3 outputs an active signal when the bus voltage of the power supply unit is normal.

8: Three-phase input abnormal

The DO3/RO3 outputs an active signal when the input grid voltage of the power supply unit is excessively high or when an input phase loss occurs.

9: Three-phase input normal

The DO3/RO3 outputs an active signal when the input grid voltage of the power supply unit is normal and there is no input phase loss.

10: Module overheat

The DO3/RO3 outputs an active signal when the power supply unit reports the overheat error E14.00.

11: Module overheat warning

The DO3/RO3 outputs an active signal when the power supply unit reports the overheat warning A14.00.

12: Communication control

The DO3/RO3 outputs an active signal when the communication control for the DO is active.

13: System fault

The DO3/RO3 outputs an active signal when the power supply unit or any drive unit reports a fault.

F5-06 **DO4/RO4 hardware source**

Address:	0xF506	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: Power supply unit - DIO1

2: Power supply unit - DIO2

3: Power supply unit - DIO3

4: Power supply unit - DIO4

5: Power supply unit - RO1

101: Expansion card 1 - DO1/RO1

102: Expansion card 1 - DO2/RO2

103: Expansion card 1 - DO3/RO3

104: Expansion card 1 - DO4/RO4

105: Expansion card 1 - DO5/RO5

106: Expansion card 1 - DO6/RO6

107: Expansion card 1 - DO7/RO7

108: Expansion card 1 - DO8/RO8

201: Expansion card 2 - DO1/RO1

202: Expansion card 2 - DO2/RO2

203: Expansion card 2 - DO3/RO3

204: Expansion card 2 - DO4/RO4

205: Expansion card 2 - DO5/RO5

206: Expansion card 2 - DO6/RO6

207: Expansion card 2 - DO7/RO7

208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-07 **DO4/RO4 output function**

Address:	0xF507	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	13	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
0: No function
1: Ready to run
2: Fault
3: Warning
4: Circuit breaker action
5: Bus undervoltage
6: Bus overvoltage
7: Bus voltage normal
8: Three-phase input abnormal
9: Three-phase input normal
10: Module overheat
11: Module overheat warning
12: Communication control
13: System fault

Description
Used to select the DO4/RO4 function.
DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
0: No function
The terminal has no function.
1: Ready to run
The DO4/RO4 outputs an active signal when the power supply unit is ready to run.
2: Fault
The DO4/RO4 outputs an active signal when the power supply unit reports a fault.
3: Warning
The DO4/RO4 outputs an active signal when the power supply unit reports a warning.
4: Circuit breaker action
The DO4/RO4 outputs an active signal when the three-phase input voltage is higher than the circuit breaker action threshold (F5-21) for over two seconds.
The DO4/RO4 outputs an active signal when the AC drive reports that the braking transistor is short-circuited for over one second.
5: Bus undervoltage
The DO4/RO4 outputs an active signal when the bus of the power supply unit is undervoltage.
6: Bus overvoltage
The DO4/RO4 outputs an active signal when the bus of the power supply unit is overvoltage.
7: Bus voltage normal
The DO4/RO4 outputs an active signal when the bus voltage of the power supply unit is normal.

8: Three-phase input abnormal

The DO4/RO4 outputs an active signal when the input grid voltage of the power supply unit is excessively high or when an input phase loss occurs.

9: Three-phase input normal

The DO4/RO4 outputs an active signal when the input grid voltage of the power supply unit is normal and there is no input phase loss.

10: Module overheat

The DO4/RO4 outputs an active signal when the power supply unit reports the overheat error E14.00.

11: Module overheat warning

The DO4/RO4 outputs an active signal when the power supply unit reports the overheat warning A14.00.

12: Communication control

The DO4/RO4 outputs an active signal when the communication control for the DO is active.

13: System fault

The DO4/RO4 outputs an active signal when the power supply unit or any drive unit reports a fault.

F5-08 **DO5/RO5 hardware source**

Address:	0xF508	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	208	Data type	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: Power supply unit - DIO1

2: Power supply unit - DIO2

3: Power supply unit - DIO3

4: Power supply unit - DIO4

5: Power supply unit - RO1

101: Expansion card 1 - DO1/RO1

102: Expansion card 1 - DO2/RO2

103: Expansion card 1 - DO3/RO3

104: Expansion card 1 - DO4/RO4

105: Expansion card 1 - DO5/RO5

106: Expansion card 1 - DO6/RO6

107: Expansion card 1 - DO7/RO7

108: Expansion card 1 - DO8/RO8

201: Expansion card 2 - DO1/RO1

202: Expansion card 2 - DO2/RO2

203: Expansion card 2 - DO3/RO3

204: Expansion card 2 - DO4/RO4

205: Expansion card 2 - DO5/RO5

206: Expansion card 2 - DO6/RO6

207: Expansion card 2 - DO7/RO7

208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-09 **DO5/RO5 output function**

Address:	0xF509	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	13	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
0: No function
1: Ready to run
2: Fault
3: Warning
4: Circuit breaker action
5: Bus undervoltage
6: Bus overvoltage
7: Bus voltage normal
8: Three-phase input abnormal
9: Three-phase input normal
10: Module overheat
11: Module overheat warning
12: Communication control
13: System fault

Description
Used to select the DO5/RO5 function.
DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
0: No function
The terminal has no function.
1: Ready to run
The DO5/RO5 outputs an active signal when the power supply unit is ready to run.
2: Fault
The DO5/RO5 outputs an active signal when the power supply unit reports a fault.
3: Warning
The DO5/RO5 outputs an active signal when the power supply unit reports a warning.
4: Circuit breaker action
The DO5/RO5 outputs an active signal when the three-phase input voltage is higher than the circuit breaker action threshold (F5-21) for over two seconds.
The DO5/RO5 outputs an active signal when the AC drive reports that the braking transistor is short-circuited for over one second.
5: Bus undervoltage
The DO5/RO5 outputs an active signal when the bus of the power supply unit is undervoltage.
6: Bus overvoltage
The DO5/RO5 outputs an active signal when the bus of the power supply unit is overvoltage.
7: Bus voltage normal
The DO5/RO5 outputs an active signal when the bus voltage of the power supply unit is normal.

8: Three-phase input abnormal

The DO5/RO5 outputs an active signal when the input grid voltage of the power supply unit is excessively high or when an input phase loss occurs.

9: Three-phase input normal

The DO5/RO5 outputs an active signal when the input grid voltage of the power supply unit is normal and there is no input phase loss.

10: Module overheat

The DO5/RO5 outputs an active signal when the power supply unit reports the overheat error E14.00.

11: Module overheat warning

The DO5/RO5 outputs an active signal when the power supply unit reports the overheat warning A14.00.

12: Communication control

The DO5/RO5 outputs an active signal when the communication control for the DO is active.

13: System fault

The DO5/RO5 outputs an active signal when the power supply unit or any drive unit reports a fault.

F5-10 **DO1/RO1 active delay**

Address:	0xF50A	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO1/RO1 terminal switching from the inactive state to active state.

F5-11 **DO2/RO2 active delay**

Address:	0xF50B	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO2/RO2 terminal switching from the inactive state to active state.

F5-12 **DO3/RO3 active delay**

Address:	0xF50C	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO3/RO3 terminal switching from the inactive state to active state.

F5-13 **DO4/RO4 active delay**

Address:	0xF50D	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO4/RO4 terminal switching from the inactive state to active state.

F5-14 **DO5/RO5 active delay**

Address:	0xF50E	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO5/RO5 terminal switching from the inactive state to active state.

F5-15 **DO1/RO1 invalid delay**

Address:	0xF50F	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO1/RO1 terminal switching from the active state to inactive state.

F5-16 **DO2/RO2 invalid delay**

Address:	0xF510	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO2/RO2 terminal switching from the active state to inactive state.

F5-17 **DO3/RO3 invalid delay**

Address:	0xF511	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO3/RO3 terminal switching from the active state to inactive state.

F5-18 **DO4/RO4 invalid delay**

Address:	0xF512	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO4/RO4 terminal switching from the active state to inactive state.

F5-19 **DO5/RO5 invalid delay**

Address:	0xF513	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range

0.00s to 600.00s

Description

Delay of response to the DO5/RO5 terminal switching from the active state to inactive state.

F5-20 model **DO/RO output valid mode**

Address	0xF514 model	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	11111	Data type:	UInt16
Default:	0	Change:	Real-time

Setpoint

Ones position: DO1/RO1

0: Active high

1: Active low

Tens position: DO2/RO2

0: Active high

1: Active low

Hundreds position: DO3/RO3

0: Active high

1: Active low

Thousands position: DO4/RO4

0: Active high

1: Active low

Ten thousands position: DO5/RO5

0: Active high

1: Active low

Description

The active mode for terminals DO1/RO1 to DO5/RO5 are set through the ones, tens, hundreds, thousands, and ten thousands position of this parameter.
0: When high level active is selected,
the DO/RO terminal is active when connected with COM and inactive when disconnected from COM.
1: When low level active is selected,
the DO/RO terminal is inactive when connected with COM and active when disconnected from COM.

F5-21 **Circuit breaker action threshold**

Address:	0xF515	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	1000	Data type:	UInt16
Default:	577	Change:	Real-time

Value range:
0 V to 1000 V
Description
Circuit breaker action threshold of the DO function

2.5 FA Fault Record Query

FA-00 **Fault code of the 5th fault (latest)**

Address:	0xFA00	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 99
Description
Fault code of the 5th fault (latest)

FA-01 **Fault subcode of the 5th fault**

Address:	0xFA01	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 99
Description
Fault subcode of the 5th fault (the latest time fault)

FA-02 **Bus voltage upon occurrence of the 5th fault**

Address:	0xFA02	Effective mode:	Real time
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16

Default:	0.0	Change:	Unchangeable

Value Range:
0.0 V to 6553.5 V
Description
Bus voltage upon the 5th fault (the latest time fault)

FA-03 **Heatsink temperature upon the 5th fault**

Address:	0xFA03	Effective mode:	Real time
Min.:	-20	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:
-20°C to 999°C
Description
Heatsink temperature upon the 5th fault (the latest time fault)

FA-04 **Ambient temperature upon the 5th fault**

Address:	0xFA04	Effective mode:	Real time
Min.:	-20	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:
-20°C to 999°C
Description
Ambient temperature upon the 5th fault (the latest time fault)

FA-06 **Grid voltage (Usr) upon the 5th fault**

Address:	0xFA06	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 9999 V
Description
Grid voltage (Usr) upon the 5th fault (the latest time fault)

FA-07 **Grid voltage (Ust) upon the 5th fault**

Address:	0xFA07	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 9999 V
Description
Grid voltage (Ust) upon the 5th fault (the latest time fault)

FA-08 **Grid voltage (Utr) upon the 5th fault**

Address:	0xFA08	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 V to 9999 V

Description

Grid voltage (Utr) upon the 5th fault (the latest time fault)

FA-09 **Three-phase imbalance degree upon the 5th fault**

Address:	0xFA09	Effective mode:	Real time
Min.:	0.00	Unit:	%
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

0.00% to 655.35%

Description

Three-phase imbalance degree upon the 5th fault (the latest time fault)

FA-10 **DI status upon the 5th fault**

Address:	0xFA0A	Effective mode:	Real time
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

DI status upon the 5th fault (the latest time fault)

FA-11 **DO/RO status upon the 5th fault**

Address:	0xFA0B	Effective mode:	Real time
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

DO/RO status upon the 5th fault (the latest time fault)

FA-12 **Stop command sent by the power supply unit upon the 5th fault**

Address:	0xFA0C	Effective mode:	Real time
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

1: Ready to run

2: Coast to stop

3: Stop according to the preset mode

Description

Stop command sent by the power supply unit upon the 5th fault (the latest time fault)

FA-13 **Total power-on time (in hours) upon the 5th fault**

Address:	0xFA0D	Effective mode:	Real time
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0h to 65535h

Description

Total power-on time (in hours) upon the 5th fault (the latest time fault)

FA-14 **Total power-on time (in minutes) upon the 5th fault**

Address:	0xFA0E	Effective mode:	Real time
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 min to 65535 min

Description

Total power-on time (in minutes) upon the 5th fault (the latest time fault)

FA-15 **Total power-on time (in seconds) upon the 5th fault**

Address:	0xFA0F	Effective mode:	Real time
Min.:	0	Unit:	s
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0s to 65535s

Description

Total power-on time (in seconds) upon the 5th fault (the latest time fault)

FA-20 **Fault code upon the 4th fault (second latest)**

Address:	0xFA14	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 99

Description

Fault code of the fourth fault

FA-21 **Fault subcode of the 4th fault**

Address:	0xFA15	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 99

Description

Fault subcode of the 4th fault

FA-22 **Bus voltage upon occurrence of the 4th fault**

Address:	0xFA16	Effective mode:	Real time
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 V to 6553.5 V

Description

Bus voltage upon the 4th fault

FA-23 **Heatsink temperature upon the 4th fault**

Address:	0xFA17	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

0°C to 999°C

Description

Heatsink temperature upon the 4th fault

FA-24 **Ambient temperature upon the 4th fault**

Address:	0xFA18	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

0°C to 999°C

Description

Ambient temperature upon the 4th fault

FA-26 **Grid voltage (Usr) upon the 4th fault**

Address:	0xFA1A	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 V to 9999 V
Description
Grid voltage (Usr) upon the 4th fault

FA-27 **Grid voltage (Ust) upon the 4th fault**

Address:	0xFA1B	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 9999 V
Description
Grid voltage (Ust) upon the 4th fault

FA-28 **Grid voltage (Utr) upon the 4th fault**

Address:	0xFA1C	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 9999 V
Description
Grid voltage (Utr) upon the 4th fault

FA-29 **Three-phase imbalance degree upon the 4th fault**

Address:	0xFA1D	Effective mode:	Real time
Min.:	0.00	Unit:	%
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:
0.00% to 655.35%
Description
Three-phase imbalance degree upon the 4th fault

FA-30 **DI status upon the 4th fault**

Address:	0xFA1E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
DI status upon the fourth fault

FA-31 **DO/RO status upon the 4th fault**

Address:	0xFA1F	Effective mode:	Real time

Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

DO/RO status upon the 4th fault

FA-32 **Stop command sent by the power supply unit upon the 4th fault**

Address:	0xFA20	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

1: Ready to run

2: Coast to stop

3: Stop according to the preset mode

Description

Stop command sent by the power supply unit upon the 4th fault

FA-33 **Total power-on time (in hours) upon the 4th fault**

Address:	0xFA21	Effective mode:	Real time
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 h to 65535 h

Description

Total power-on time (in hours) upon the 4th fault

FA-34 **Total power-on time (in minutes) upon the 4th fault**

Address:	0xFA22	Effective mode:	Real time
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 min to 65535 min

Description

Total power-on time (in minutes) upon the 4th fault

FA-35 **Total power-on time (in seconds) upon the 4th fault**

Address:	0xFA23	Effective mode:	Real time
Min.:	0	Unit:	s
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0s to 65535s

Description

Total power-on time (in seconds) upon the 4th fault

FA-40 **Fault code upon the 3rd fault (third latest)**

Address:	0xFA28	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 99

Description

Fault code of the third fault

FA-41 **Fault subcode of the 3rd fault**

Address:	0xFA29	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 99

Description

Fault subcode of the 3rd fault

FA-42 **Bus voltage upon the 3rd fault**

Address:	0xFA2A	Effective mode:	Real time
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

0.0 V to 6553.5 V

Description

Bus voltage upon 3rd fault

FA-43 **Heatsink temperature upon the 3rd fault**

Address:	0xFA2B	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

0°C to 999°C

Description

Heatsink temperature upon the 3rd fault

FA-44 **Ambient temperature upon the 3rd fault**

Address:	0xFA2C	Effective mode:	Real time
Min.:	0	Unit:	°C

Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:
0°C to 999°C
Description
Ambient temperature upon the 3rd fault

FA-46 **Grid voltage (Usr) upon the 3rd fault**

Address:	0xFA2E	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 9999 V
Description
Grid voltage (Usr) upon the 3rd fault

FA-47 **Grid voltage (Ust) upon the 3rd fault**

Address:	0xFA2F	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 9999 V
Description
Grid voltage (Ust) upon the 3rd fault

FA-48 **Grid voltage (Utr) upon the 3rd fault**

Address:	0xFA30	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 V to 9999 V
Description
Grid voltage (Utr) upon the 3rd fault

FA-49 **Three-phase imbalance degree upon the 3rd fault**

Address:	0xFA31	Effective mode:	Real time
Min.:	0.00	Unit:	%
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:
0.00% to 655.35%
Description
Three-phase imbalance degree upon the 3rd fault

FA-50 **DI status upon the 3rd fault**

Address:	0xFA32	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

DI status upon the 3rd fault

FA-51 **DO/RO status upon the 3rd fault**

Address:	0xFA33	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

DO/RO status upon the 3rd fault

FA-52 **Stop command sent by the power supply unit upon the 3rd fault**

Address:	0xFA34	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

1: Ready to run

2: Coast to stop

3: Stop according to the preset mode

Description

Stop command sent by the power supply unit upon the 3rd fault

FA-53 **Total power-on time (in hours) upon the 3rd fault**

Address:	0xFA35	Effective mode:	Real time
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0h to 65535h

Description

Total power-on time (in hours) upon the 3rd fault

FA-54 **Total power-on time (minute) upon the 3rd fault**

Address:	0xFA36	Effective mode:	Real time
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16

Default:	0	Change:	Unchangeable

Value range:
0 min to 65535 min
Description
Total power-on time (in minutes) upon the 3rd fault

FA-55 **Total power-on time (in seconds) upon the 3rd fault**

Address:	0xFA37	Effective mode:	Real time
Min.:	0	Unit:	s
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0s to 65535s
Description
Total power-on time (in seconds) upon the 3rd fault

FA-60 **Fault code upon the 2nd fault (fourth latest)**

Address:	0xFA3C	Effective mode:	Real time
Min.:	0	Unit:	s
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0s to 99s
Description
Fault code of the 2nd fault

FA-61 **Fault subcode upon the 2nd fault**

Address:	0xFA3D	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 99
Description
Fault subcode of the 2nd fault

FA-62 **Bus voltage upon the 2nd fault**

Address:	0xFA3E	Effective mode:	Real time
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:
0.0 V to 6553.5 V
Description
Bus voltage upon the 2nd fault

FA-63 **Heatsink temperature upon the 2nd fault**

Address:	0xFA3F	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

0°C to 999°C

Description

Heatsink temperature upon the 2nd fault

FA-64 **Ambient temperature upon the 2nd fault**

Address:	0xFA40	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

0°C to 999°C

Description

Ambient temperature upon the 2nd fault

FA-66 **Grid voltage (Usr) upon the 2nd fault**

Address:	0xFA42	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 V to 9999 V

Description

Grid voltage (Usr) upon the 2nd fault

FA-67 **Grid voltage (Ust) upon the 2nd fault**

Address:	0xFA43	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 V to 9999 V

Description

Grid voltage (Ust) upon the 2nd fault

FA-68 **Grid voltage (Utr) upon the 2nd fault**

Address:	0xFA44	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 V to 9999 V

Description

Grid voltage (Utr) upon the 2nd fault

FA-69 **Three-phase imbalance degree upon the 2nd fault**

Address:	0xFA45	Effective mode:	Real time
Min.:	0.00	Unit:	%
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00% to 655.35%

Description

Three-phase imbalance degree upon the 2nd fault

FA-70 **DI status upon the 2nd fault**

Address:	0xFA46	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

DI status upon the 2nd fault

FA-71 **DO/RO status upon the 2nd fault**

Address:	0xFA47	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

DO/RO status upon the 2nd fault

FA-72 **Stop command sent by the power supply unit upon the 2nd fault**

Address:	0xFA48	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

1: Ready to run

2: Coast to stop

3: Stop according to the preset mode

Description

Stop command sent by the power supply unit upon the 2nd fault

FA-73 **Total power-on time (in hours) upon the 2nd fault**

Address:	0xFA49	Effective mode:	Real time
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0h to 65535h

Description

Total power-on time (in hours) upon the 2nd fault

FA-74 **Total power-on time (in minutes) upon the 2nd fault**

Address:	0xFA4A	Effective mode:	Real time
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 min to 65535 min

Description

Total power-on time (in minutes) upon the 2nd fault

FA-75 **Total power-on time (in seconds) upon the 2nd fault**

Address:	0xFA4B	Effective mode:	Real time
Min.:	0	Unit:	s
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0s to 65535s

Description

Total power-on time (in seconds) upon the 2nd fault

FA-80 **Fault code upon the 1st fault (fifth latest)**

Address:	0xFA50	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 99

Description

Fault code upon the 1st fault

FA-81 **Fault subcode upon the 1st fault**

Address:	0xFA51	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 99

Description

Fault code upon the 1st fault

FA-82 **Bus voltage upon 1st fault**

Address:	0xFA52	Effective mode:	Real time
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:

0.0 V to 6553.5 V

Description

Bus voltage upon the 1st fault

FA-83 **Heatsink temperature upon the 1st fault**

Address:	0xFA53	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

0°C to 999°C

Description

Heatsink temperature upon the 1st fault

FA-84 **Ambient temperature upon the 1st fault**

Address:	0xFA54	Effective mode:	Real time
Min.:	0	Unit:	°C
Max.:	999	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

0°C to 999°C

Description

Ambient temperature upon the 1st fault

FA-86 **Grid voltage (Usr) upon the 1st fault**

Address:	0xFA56	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 V to 9999 V

Description

Grid voltage (Usr) upon the 1st fault

FA-87 **Grid voltage (Ust) upon the 1st fault**

Address:	0xFA57	Effective mode:	Real time

Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 V to 9999 V
Description
Grid voltage (Ust) upon the 1st fault

FA-88 **Grid voltage (Utr) upon the 1st fault**

Address:	0xFA58	Effective mode:	Real time
Min.:	0	Unit:	V
Max.:	9999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 V to 9999 V
Description
Grid voltage (Utr) upon the 1st fault

FA-89 **Three-phase imbalance degree upon the 1st fault**

Address:	0xFA59	Effective mode:	Real time
Min.:	0.00	Unit:	%
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:
0.00% to 655.35%
Description
Three-phase imbalance degree upon the 1st fault

FA-90 **DI status upon the 1st fault**

Address:	0xFA5A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
DI status upon the 1st fault

FA-91 **DO/RO status upon the 1st fault**

Address:	0xFA5B	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
DO/RO status upon the 1st fault

FA-92 **Stop command sent by the power supply unit upon the 1st fault**

Address:	0xFA5C	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

1: Ready to run

2: Coast to stop

3: Stop according to the preset mode

Description

Stop command sent by the power supply unit upon the 1st fault

FA-93 **Total power-on time (in hours) upon the 1st fault**

Address:	0xFA5D	Effective mode:	Real time
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0h to 65535h

Description

Total power-on time (in hours) upon the 1st fault

FA-94 **Total power-on time (in minutes) upon the 1st fault**

Address:	0xFA5E	Effective mode:	Real time
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 min to 65535 min

Description

Total power-on time (in minutes) upon the 1st fault

FA-95 **Total power-on time (in seconds) upon the 1st fault**

Address:	0xFA5F	Effective mode:	Real time
Min.:	0	Unit:	s
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0s to 65535s

Description

Total power-on time (in seconds) upon the 1st fault

2.6 FD Communication parameters

FD-00 **RS485 baud rate**

Address:	0xFD00	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	9	Data type:	UInt16
Default:	5	Change:	At stop

Value range:

0: 300 bps

1: 600 bps

2: 1200 bps

3: 2400 bps

4: 4800 bps

5: 9600 bps

6: 19200 bps

7: 38400 bps

8: 57600 bps

9: 115200 bps

Description

This parameter defines the speed of data transmitted between the host controller and the AC drive. The higher the baud rate, the faster the communication speed.

Note that the RS5485 baud rate of the host controller must be the same as that of the AC drive. Otherwise, communication will fail.

FD-01 **RS485 data format**

Address:	0xFD01	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	7	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No check (8-N-2)

1: Even parity check (8-E-1)

2: Odd parity check (8-O-1)

3: No check (8-N-1)

4: No check (7-N-2)

5: Even parity check (7-E-1)

6: Odd parity check (7-O-1)

7: No check (7-N-1)

Description

This parameter defines the format of Modbus data transmitted between the host controller and the AC drive.

0: No check (8-N-2)

The data format is 8-bit data, no check, and 2-bit stop bit.

1: Even parity check (8-E-1)

The data format is 8-bit data, even parity check, and 1-bit stop bit.

2: Odd parity check (8-O-1)

The data format is 8-bit data, odd parity check, and 1-bit stop bit.

3: No check (8-N-1)
The data format is 8-bit data, no check, and 1-bit stop bit.
4: No check (7-N-2)
The data format is 7-bit data, no check, and 2-bit stop bit.
5 Even parity check (7-E-1)
The data format is 7-bit data, even parity check, and 1-bit stop bit.
6: Odd parity check (7-O-1)
The data format is 7-bit data, odd parity check, and 1-bit stop bit.
7: No check (7-N-1)
The data format is 7-bit data, no check, and 1-bit stop bit.
Note that the data format of the host controller must be the same as that of the AC drive. Otherwise, communication fails.

FD-02 **RS232 local address**

Address:	0xFD02	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	127	Data type:	UInt16
Default:	16	Change:	Unchangeable

Value range:
1 to 127
Description
Local address during RS485 communication.
Read-only. The value is actually set by FD-40.
When the local address is set to 0 (broadcast address), the host controller broadcast is enabled.
The local address must be unique in the range of 1 to 127, which is the basis for point-point communication between the AC drive and the host controller.

FD-03 **RS2 response delay**

Address:	0xFD03	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	20	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 ms to 20 ms
Description
Used to set the interval between the AC drive completing data receiving and host controller completing data sending.
If the response delay is shorter than the system processing time, the system processing time prevails. This means that the system processes data and then sends the data to the host controller.
If the response delay is longer than the system processing time, the system processes data and waits for the response delay time. After the time elapses, the system sends the data to the host controller.

FD-04 **RS485 communication timeout time**

Address:	0xFD04	Effective mode:	Real time
Min.:	0.0	Unit:	s
Max.:	60.0	Data type:	UInt16

Default:	0.0	Change:	Real-time

Value range:

0.0s to 60.0s

Description

Used to set the maximum time interval between the two consecutive successful RS485 communication.

When it is set to 0.0s, this parameter is invalid. It is generally set to an invalid value. This parameter can monitor communication status in a system with continuous communication.

When it is set to an effective value, if communication interval time between current communication and the next communication exceeds FD-04 (RS485 communication interruption detection time), the system reports a communication fault (E16.01).

FD-06 **Automatic reset upon communication fault**

Address:	0xFD06	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

This parameter defines whether to reset the communication fault.

0: Disable

Automatic reset for RS485 communication faults is disabled.

1: Enable

Automatic reset for RS485 communication faults is enabled.

FD-07 **Maximum number of automatically assigned stations**

Address:	0xFD07	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 8

Description

Set the maximum number of automatically assigned stations.

FD-09 **CANopen/CANlink communication state**

Address:	0xFD09	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

Ones: CANopen

0: Stop

1: Initialized

2: Pre-running

8: Running

Tens: CANlink

0: Stop

1: Initialized

2: Pre-running

8: Running

Description

Indicates the CANopen/CANlink communication state.

0 (ones place): Stop

The CANopen is in the stop state.

1 (ones place): Initialized

The CANopen is in the initialized state.

2 (ones place): Pre-running

The CANopen is in the pre-running state.

8 (ones place): Running

The CANopen is in the running state.

0 (tens place): Stop

The CANlink is in the stop state.

1 (tens place): Initialized

The CANlink is in the initialized state.

2 (tens place): Pre-running

The CANlink is in the pre-running state.

8 (tens place): Running

The CANlink is in the running state.

This read-only parameter is used to monitor the communication status.

FD-10 **Communication type**

Address:	0xFD0A	Effective mode:	Upon the next power-on
Min.:	1	Unit:	/
Max.:	3	Data type:	UInt16
Default:	1	Change:	At stop

Value range:

1: CANopen/Modbus

2: CANlink

3: Communication card mode

Description

Set current communication type

1: CANopen or Modbus

Set the current communication type to CANopen/Modbus.

2: CANlink

Set the current communication type to CANlink.

3: Communication card mode

Set the current communication type to communication card, including EtherCAT, PN, and EtherNet/IP.

You just need to set FD-10 of the power supply unit. When the drive unit is running, FD-10 of the power supply unit cannot be modified.

FD-12 **CAN baud rate**

Address:	0xFD0C	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	6	Data type:	UInt16
Default:	5	Change:	At stop

Value range:

0: 20kbps

1: 50kbps

2: 100kbps

3: 125kbps

4: 250kbps

5: 500kbps

6: 1Mbps

Description

This parameter defines the baud rate for CAN communication, including CANlink and CANopen communication.

In the same network, baud rates of all stations must be consistent. Otherwise, communication fails.

FD-13 **CAN station number**

Address:	0xFD0D	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	127	Data type:	UInt16
Default:	16	Change:	Unchangeable

Value range:

1 to 127

Description

This parameter defines the CAN station number, including that for CANlink and CANopen communication.

On the same network, all station numbers must be different. Otherwise, communication fails.

FD-14 **Number of CAN frames received per unit time (real time)**

Address:	0xFD0E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Number of CAN frames received within a period.

This parameter is used to monitor the bus load. It shows the number of CAN frames received by the station per second.

FD-15 **Maximum number of error frames received by node (real time)**

Address:	0xFD0F	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Number of error frames received by this node during CAN communication.

Indicates the maximum value of CAN reception errors in this node, which is used to monitor bus errors.

FD-16 **Maximum value of error frames sent by node (real time)**

Address:	0xFD10	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Number of error frames transmitted by this node during CAN communication

Indicates the maximum value of CAN transmission errors in this node, which is used to monitor bus errors.

FD-17 **Number of bus disconnection times per unit of time**

Address:	0xFD11	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Node disconnection events from the bus within a period

Indicates the number of CAN bus disconnection events of this node, which is used to monitor bus errors.

FD-18 **Power supply unit No.**

Address:	0xFD12	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	15	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

1 to 15

Description

Set the station number of the power supply unit.

This parameter is used to assign the station number to the power supply unit and the drive unit after the automatic assignment of station numbers is enabled. See the following rules:

Station number of the power supply unit = FD-18 x 16
Station number of the drive unit = Current slot number + (FD-18 - 1) x 16

FD-19 **CAN communication disconnection coefficient**

Address:	0xFD13	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	15	Data type:	UInt16
Default:	5	Change:	Real-time

Value range:
1 to 15
Description
CAN communication disconnection coefficient.
Sets the alarm cycle for the communication error. If the number of consecutive alarms exceeds the value of FD-19, CAN communication is disconnected.

FD-34 **CANopen mode**

Address:	0xFD22	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0: Standard mode
1: Expert mode
Description
Operation mode of CANopen.
0: Standard mode
Set the operation mode of CANopen to Standard mode.
1: Expert mode
Set the operation mode of CANopen to Expert mode.

FD-35 **CANopen prohibition time**

Address:	0xFD23	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
Set CANopen inhibition time.

FD-36 **CANopen event time**

Address:	0xFD24	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535

Description

Set CANopen event time.

FD-39 **Function enabling bit configuration of AC drive station number**

Address:	0xFD27	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

It specifies the mode of station number assignment.

0: Disable

Station number of the AC drive can be assigned automatically instead of being set manually.

1: Enable

Station number of the AC drive can be manually set.

FD-40 **Manually set value of power supply unit station number**

Address:	0xFD28	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	16	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of the power supply unit.

Set the station number of the power supply unit through FD-40.

FD-41 **Station number of the drive unit 1 that is manually set**

Address:	0xFD29	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 1 manually.

FD-42 **Station number of the drive unit 2 that is manually set**

Address:	0xFD2A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	2	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 2 manually.

FD-43 **Station number of the drive unit 3 that is manually set**

Address:	0xFD2B	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	3	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 3 manually.

FD-44 **Station number of the drive unit 4 that is manually set**

Address:	0xFD2C	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	4	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 4 manually.

FD-45 **Station number of the drive unit 5 that is manually set**

Address:	0xFD2D	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	5	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 5 manually.

FD-46 **Station number of the drive unit 6 that is manually set**

Address:	0xFD2E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	6	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 6 manually.

FD-47 **Station number of the drive unit 7 that is manually set**

Address:	0xFD2F	Effective mode:	Real time
Min.:	0	Unit:	/

Max.:	127	Data type:	UInt16
Default:	7	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 7 manually.

FD-48 **Station number of the drive unit 8 that is manually set**

Address:	0xFD30	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	127	Data type:	UInt16
Default:	8	Change:	Real-time

Value range:

0 to 127

Description

Set the station number of drive unit 8 manually.

FD-50 **Startup with slave loss**

Address:	0xFD32	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

This function is applicable to scenarios where you want to start the network without modifying the PLC configuration and program when a slave station fails to go online. 0: Disable

The communication error E16.74 is returned when the number of slave stations configured for the PLC is different from the actual number. 1: Enable

No communication error is returned when the number of slave stations configured for the PLC is different from the actual number.

FD-51 **Network bridge data interaction period**

Address:	0xFD33	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 ms to 65535 ms

Description

Slave communication disable time

FD-52 **Indicates the number of online slaves.**

Address:	0xFD34	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	30	Data type:	UInt16

Default:	0	Change:	Real-time

Value range:
0–30
Description
Indicates the number of online slaves.

FD-53 **Slave online state (1-15)**

Address:	0xFD35	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
This parameter defines the status of slave stations 1 to 15. Bit 1 indicates station 1, bit 2 indicates station 2, and so on.

FD-54 **Slave online state (16-31)**

Address:	0xFD36	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
This parameter shows the online status of stations 16 to 31. Bit 0 indicates station 16 status, Bit 1 indicates station 17, and so on.

FD-55 **PN timeout time**

Address:	0xFD37	Effective mode:	Real time
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 ms to 65535 ms
Description
PN timeout time
You can use this parameter to set PN communication timeout time. After the setting takes effect, the communication network stops running when the timeout period expires.

FD-56 **PN chip state**

Address:	0xFD38	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535

Description
PN chip state

FD-57 **Communication card state**

Address:	0xFD39	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0: Initialization
1: Running
2: Stop
3: Reconnecting

Description
Displays the communication status of the communication card.
0: Initialized
The communication card is in the initialized state.
1: Running
The communication card is in the running state.
2: Stop
The communication card is in the stop state.
3: Reconnecting
The communication card is reconnecting.

FD-61 **MAC address 1**

Address:	0xFD3D	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535

Description
Indicates the highest two bytes of the MAC address.

FD-62 **MAC address 2**

Address:	0xFD3E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535

Description
Indicates the middle two bytes of the MAC address.

FD-63 **MAC address 3**

Address:	0xFD3F	Effective mode:	Real time
Min.:	0	Unit:	/

Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
Indicates the lowest two bytes of the MAC address.

FD-70 **EtherCAT station name**

Address:	0xFD46	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
EtherCAT station name

FD-71 **EtherCAT station alias**

Address:	0xFD47	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the EtherCAT station alias.

FD-72 **Number of times for synchronization interruption signal loss allowed by the EtherCAT module**

Address:	0xFD48	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	30	Data type:	UInt16
Default:	10	Change:	Real-time

Value range:
0 to 30
Description
Number of times for synchronization interruption signal loss allowed by the EtherCAT module

FD-73 **CRC check error of EtherCAT port 0**

Address:	0xFD49	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Maximum number of error frames and invalid frames of EtherCAT port 0 per unit time

FD-74 **CRC check error of EtherCAT port 1**

Address:	0xFD4A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Maximum number of error frames and invalid frames of EtherCAT port 1 per unit time

FD-75 **Data transfer error of EtherCAT port 0 and port 1**

Address:	0xFD4B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Maximum number of error frames forwarded by EtherCAT port per unit time

FD-76 **EtherCAT processing unit and PDI error**

Address:	0xFD4C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Max. EtherCAT data frame processing unit error per unit time

FD-77 **Link loss of EtherCAT port 0 and port 1**

Address:	0xFD4D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Maximum number of lost links over the EtherCAT port per unit time

FD-78 **EtherCAT master type selection**

Address:	0xFD4E	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 65535

Description

Determined by the host controller type. Reserved for non-standard models.

FD-79 **EtherCAT synchronization error monitoring mode**

Address:	0xFD4F	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 65535

Description

Used to set the detection mode of failure (synchronization loss).

FD-80 **EtherCAT synchronization frame loss count**

Address:	0xFD50	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Number of synchronization loss events

FD-81 **EtherCAT state machine and PHYLink state**

Address:	0xFD51	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

State machine and PHYLink status

FD-82 **EtherCAT - AL fault code**

Address:	0xFD52	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

AL fault code

FD-83 **EtherCAT - XML file version**

Address:	0xFD53	Effective mode:	/

Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:
0.00-655.35
Description
XML file version

FD-84 **EtherCAT - FPGA firmware version**

Address:	0xFD54	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
FPGA software version

FD-85 **Station alias backup display**

Address:	0xFD55	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Station alias backup display

FD-86 **EtherCAT - EEPROM read time**

Address:	0xFD56	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
EtherCAT EEPROM reading time

FD-87 **EtherCAT - DC gain parameter**

Address:	0xFD57	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
EtherCAT DC gain

FD-88 **EtherCAT - DC acceleration limit**

Address:	0xFD58	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
EtherCAT DC acceleration limit

FD-89 **EtherCAT - DC speed limit**

Address:	0xFD59	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
EtherCAT DC speed limit

FD-90 **EtherCAT - DC integral coefficient**

Address:	0xFD5A	Effective mode:	Upon the next power-on
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
EtherCAT DC integral coefficient

FD-91 **Communication card version**

Address:	0xFD5B	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:
0.00-655.35
Description
Indicates the communication expansion card software version.

FD-92 **Communication version**

Address:	0xFD5C	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:
0.00-655.35

Description

The parameter indicates the communication software version.

FD-93 **Station number of the device connected to expansion card slot 1**

Address:	0xFD5D	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Station number of the device connected to expansion card slot 1

FD-94 **Station number of the device connected to expansion card slot 2**

Address:	0xFD5E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Station number of the device connected to expansion card slot 2

FD-95 **Station number of the device connected to expansion card slot 3**

Address:	0xFD5F	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Station number of the device connected to expansion card slot 3

FD-96 **Station number of device connected to reserved slot 4**

Address:	0xFD60	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Station number of device connected to reserved slot 4

FD-97 **Station number of the device connected to reserved slot 5**

Address:	0xFD61	Effective mode:	Real time
Min.:	0	Unit:	/

Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Station number of device connected to reserved slot 5

FD-98 **Station number of the device connected to reserved slot 6**

Address:	0xFD62	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Station number of device connected to reserved slot 6

FD-99 **Station number of the device connected to reserved slot 7**

Address:	0xFD63	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Station number of device connected to reserved slot 7

2.7 FP: User Password Parameters

FP-00 **User password**

Address:	0x1F00	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
Used to set a user password.
If this parameter is set, you need to input the correct password to access the parameter menu. The incorrect input will deny entry.

FP-01 **Parameters initialization**

Address:	0x1F01	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	501	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: No operation

1: Restore to factory settings

2: Clear records

4: Back up current user parameters

501: Restore user backup parameters

Description

This parameter is used to set the action upon parameter initialization of the AC drive.

0: No operation

The AC drive does not perform any operation.

1: Restore to factory settings

Restore factory defaults (excluding parameters in groups FA, FF, FP, CF, and AE).

2: Clear records

Clear record information. Clear fault records, cumulative power-on time, and cumulative running time of the power supply unit.

4: Back up the parameters set by the user

Back up the parameters set by the user and back up the values of all function parameters, so that these parameters can be restored after the user messes up the setting.

501: Restore user backup parameters

Restore your previously backed-up parameters, i.e. restore parameters that are backed up by setting FP-01 to 4.

FP-03 **Monitoring parameter display setting**

Address:	0x1F03	Effective mode:	Real time
Min.:	0x0	Unit:	/
Max.:	0x7F	Data type:	UInt16
Default:	0x4F	Change:	Real-time

Value range:

Bit 0: Bus voltage

Bit 1: Heatsink temperature

Bit 2: Ambient temperature

Bit 3: Usr line voltage

Bit 4: Ust line voltage

Bit 5: Utr line voltage

Bit 6: Three-phase imbalance degree

Description

Used to switch the monitoring state by pressing the Shift key in the level-0 menu of the operating panel.

When the value of the bit is 0, the parameter is not displayed; when the value of the bit is 1, the parameter is displayed on the level-0 menu.

FP-05 **I/O card parameter restoration**

Address:	0x1F05	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	255	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Invalid
1: I/O expansion card 1
2: I/O expansion card 2
3: I/O expansion card 3
255: All I/O expansion cards

Description

This parameter is applicable for parameter restoration for the expansion card with analog inputs. All AI calibration can be set through parameters in group AC. When parameters in group AC are set on site, FP-05 can be set if the factory settings need to be restored.

FP-06 **Local parameter backup mode**

Address:	0x1F06	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	2	Data type:	UInt16
Default:	2	Change:	Real-time

Value range:

1: Back up all parameters
2: Back up non-motor parameters

Description

Selects parameter backup mode.
1: Back up all parameters
2: Back up non-motor parameters

FP-07 **Local parameter backup operation**

Address:	0x1F07	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	28	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 28

Description

Used to select the axis and type to be back up.
Ones: Select the axis number to be back up.
Tens: Backup operation
0: No operation
1: Read operation
Back up the selected axis number to the power supply unit.
2:Write operation
Write the station number parameters stored on the power supply unit to the drive unit of the selected axis number.

2.8 A0 Internal Communication Parameters

A0-00 **I/O expansion card communication cycle**

Address:	0xA000	Effective mode:	Real time

Min.:	0	Unit:	/
Max.:	100	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 100

Description

I/O expansion card communication cycle

A0-01 **Alarm times of continuous drive unit frame loss**

Address:	0xA001	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1000	Data type:	UInt16
Default:	60	Change:	Real-time

Value range:

0 to 1000

Description

Indicates the allowed maximum number of I/O communication data frames lost by the drive unit.

When the detected consecutive frame loss times of the drive unit exceeds the value of A0-01, the system will report A98.01.

If the detected consecutive frame loss times of I/O expansion card exceed the value of A0-02 and the consecutive frame loss times of drive unit exceed the value of A0-01, the system will report A98.03.

A0-02 **Alarm threshold of consecutive I/O expansion card frame loss**

Address:	0xA002	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1000	Data type:	UInt16
Default:	60	Change:	Real-time

Value range:

0 to 1000

Description

Indicates the allowed maximum number of communication data frames lost by the I/O expansion card.

When the detected consecutive frame loss times of the I/O expansion card exceeds the value of A0-02, the system will report A98.02.

If the detected consecutive frame loss times of I/O expansion card exceed the value of A0-02 and the consecutive frame loss times of drive unit exceed the value of A0-01, the system will report A98.03.

A0-03 **Station number display of drive unit with frame loss**

Address:	0xA003	Effective mode:	Real time
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

Bit 0: Drive unit 1

Bit 1: Drive unit 2

Bit 2: Drive unit 3

Bit 3: Drive unit 4

Bit 4: Drive unit 5

Bit 5: Drive unit 6

Bit 6: Drive unit 7

Bit 7: Drive unit 8

Description

Station number of the drive unit axis whose I/O communication is disconnected from the power supply unit

Displayed in hexadecimal. Bits 0 to 7 correspond to axes 1 to 8 respectively. If the bit value is 1, the I/O communication between the power supply unit and the axis is interrupted.

A0-04 **Station number display of I/O expansion card with frame loss**

Address:	0xA004	Effective mode:	Real time
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

Bit 0: I/O expansion card 1

Bit 1: I/O expansion card 2

Bit 2: I/O expansion card 3

Description

Station number of the expansion card whose I/O communication is disconnected from the power supply unit

Displayed in hexadecimal. Bits 0 to 2 correspond to expansion cards 1 to 3 respectively. If the bit value is 1, the I/O communication between the power supply unit and the expansion card is interrupted.

A0-05 **Frame loss count of axis 1**

Address:	0xA005	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the continuous I/O data frame loss times between the power supply unit and the axis 1.

A0-06 **Frame loss count of axis 2**

Address:	0xA006	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the continuous I/O data frame loss times between the power supply unit and the axis 2.

A0-07 **Frame loss count of axis 3**

Address:	0xA007	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the continuous I/O data frame loss times between the power supply unit and the axis 3.

A0-08 **Frame loss count of axis 4**

Address:	0xA008	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the continuous I/O data frame loss times between the power supply unit and the axis 4.

A0-09 **Frame loss count of axis 5**

Address:	0xA009	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the continuous I/O data frame loss times between the power supply unit and the axis 5.

A0-10 **Frame loss count of axis 6**

Address:	0xA00A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the continuous I/O data frame loss times between the power supply unit and the axis 6.

A0-11 **Frame loss count of axis 7**

Address:	0xA00B	Effective mode:	Real time
Min.:	0	Unit:	/

Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the continuous I/O data frame loss times between the power supply unit and the axis 7.

A0-12 **Frame loss count of axis 8**

Address:	0xA00C	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the continuous I/O data frame loss times between the power supply unit and the axis 8.

A0-13 **Frame loss count of expansion card 1**

Address:	0xA00D	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the continuous I/O data frame loss times between the power supply unit and the expansion card 1.

A0-14 **Frame loss count of expansion card 2**

Address:	0xA00E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the continuous I/O data frame loss times between the power supply unit and the expansion card 2.

A0-15 **Frame loss count of expansion card 3**

Address:	0xA00F	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535

Description

Indicates the continuous I/O data frame loss times between the power supply unit and the expansion card 3.

2.9 A1 Local I/O Function Parameters

A1-00 **Power supply unit - filter time of DI1 to DI4**

Address:	0xA100	Effective mode:	Real time
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	Real-time

Value range:

0.000s to 5.000s

Description

DI1 to DI4 filter time

A1-01 **Power supply unit - filter time of DI5 to DI8**

Address:	0xA101	Effective mode:	Real time
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	Real-time

Value range:

0.000s to 5.000s

Description

DI5 to DI8 filter time

A1-05 **Filter time of AI1 for power supply unit**

Address:	0xA105	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.00s to 10.00s

Description

Set the AI1 filter time

A1-06 **Filter time of AI2 for power supply unit**

Address:	0xA106	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.00s to 10.00s

Description

Set the AI2 filter time

A1-10 **Function of AI1 for power supply unit**

Address:	0xA10A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

Set the configuration mode of AI1.

0: Voltage input

The AI is used as the analog voltage input.

1: Current input

The AI is used as the analog current input.

2: PT100 input

The AI is used as the temperature sensor PT100 input.

3: PT1000 input

The AI is used as the temperature sensor PT1000 input.

4: KTY84 input

The AI is used as the temperature sensor KTY84 input.

5: PTC130 input

The AI is used as the temperature sensor PTC130 input.

A1-11 **Function of AI2 for power supply unit**

Address:	0xA10B	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

Set the configuration mode of AI2.

0: Voltage input

The AI is used as the analog voltage input.

1: Current input

The AI is used as the analog current input.

2: PT100 input

The AI is used as the temperature sensor PT100 input.

3: PT1000 input

The AI is used as the temperature sensor PT1000 input.

4: KTY84 input

The AI is used as the temperature sensor KTY84 input.

5: PTC130 input

The AI is used as the temperature sensor PTC130 input.

2.10 A2 I/O Expansion Card 1 Function Parameters

A2-00 **Expansion card 1 - filter time of DI1 to DI4**

Address:	0xA200	Effective mode:	Real time
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	Real-time

Value range:

0.000s to 5.000s

Description

Sets the filter time of DI1 to DI4 on Expansion card 1.

A2-01 **Expansion card 1 - filter time of DI5 to DI8**

Address:	0xA201	Effective mode:	Real time
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	Real-time

Value range:

0.000s to 5.000s

Description

Sets the filter time of DI5 to DI8 on Expansion card 1.

A2-05 **Filter time of AI1 for expansion card 1**

Address:	0xA205	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.00s to 10.00s

Description

Sets the AI1 filter time on Expansion card 1.

A2-06 **Filter time of AI2 for expansion card 1**

Address:	0xA206	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.00s to 10.00s

Description

Sets the AI2 filter time on Expansion card 1.

A2-10 **Function of AI1 for expansion card 1**

Address:	0xA20A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

Set the configuration mode of AI1 on Expansion card 1.

0: Voltage input

The AI is used as the analog voltage input.

1: Current input

The AI is used as the analog current input.

2: PT100 input

The AI is used as the temperature sensor PT100 input.

3: PT1000 input

The AI is used as the temperature sensor PT1000 input.

4: KTY84 input

The AI is used as the temperature sensor KTY84 input.

5: PTC130 input

The AI is used as the temperature sensor PTC130 input.

A2-11 **Function of AI2 for expansion card 1**

Address:	0xA20B	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

Set the configuration mode of AI2 on Expansion card 1.

0: Voltage input

The AI is used as the analog voltage input.

1: Current input

The AI is used as the analog current input.

2: PT100 input

The AI is used as the temperature sensor PT100 input.

3: PT1000 input

The AI is used as the temperature sensor PT1000 input.

4: KTY84 input

The AI is used as the temperature sensor KTY84 input.

5: PTC130 input

The AI is used as the temperature sensor PTC130 input.

2.11 A3 I/O Expansion Card 2 Function Parameters

A3-00 **Expansion card 2 - filter time of DI1 to DI4**

Address:	0xA300	Effective mode:	Real time
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	Real-time

Value range:

0.000s to 5.000s

Description

Sets the filter time of DI1 to DI4 on Expansion card 2.

A3-01 **Expansion card 2 - filter time of DI5 to DI8**

Address:	0xA301	Effective mode:	Real time
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	Real-time

Value range:

0.000s to 5.000s

Description

Sets the filter time of DI5 to DI8 on Expansion card 1.

A3-05 **Filter time of AI1 for expansion card 2**

Address:	0xA305	Effective mode:	Real time
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.00s to 10.00s

Description

Sets the AI1 filter time on Expansion card 1.

A3-06 **Filter time of AI2 for expansion card 2**

Address:	0xA306	Effective mode:	Real time

Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.00s to 10.00s

Description

Sets the AI2 filter time on Expansion card 1.

A3-10 **Function of AI1 for expansion card 2**

Address:	0xA30A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

Set the configuration mode of AI1 on Expansion card 1.

0: Voltage input

The AI is used as the analog voltage input.

1: Current input

The AI is used as the analog current input.

2: PT100 input

The AI is used as the temperature sensor PT100 input.

3: PT1000 input

The AI is used as the temperature sensor PT1000 input.

4: KTY84 input

The AI is used as the temperature sensor KTY84 input.

5: PTC130 input

The AI is used as the temperature sensor PTC130 input.

A3-11 **Function of AI2 for expansion card 2**

Address:	0xA30B	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

Set the configuration mode of AI2 on Expansion card 2.

0: Voltage input

The AI is used as the analog voltage input.

1: Current input

The AI is used as the analog current input.

2: PT100 input

The AI is used as the temperature sensor PT100 input.

3: PT1000 input

The AI is used as the temperature sensor PT1000 input.

4: KTY84 input

The AI is used as the temperature sensor KTY84 input.

5: PTC130 input

The AI is used as the temperature sensor PTC130 input.

2.12 AC AI Correction Coefficient

AC-00 **Power supply unit - AI1 measured voltage 1**

Address:	0xAC00	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U2-12).

AC-01 **Power supply unit - AI1 displayed voltage 1**

Address:	0xAC01	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U2-12).

AC-02 **Power supply unit - AI1 measured voltage 2**

Address:	0xAC02	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16

Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U2-12).

AC-03 **Power supply unit - AI1 displayed voltage 2**

Address:	0xAC03	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U2-12).

AC-04 **Power supply unit - AI2 measured voltage 1**

Address:	0xAC04	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI2 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI2 voltage before correction (U2-13).

AC-05 **Power supply unit - AI2 displayed voltage 1**

Address:	0xAC05	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI2 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI2 voltage before correction (U2-13).

AC-06 **Power supply unit - AI2 measured voltage 2**

Address:	0xAC06	Effective mode:	Real time

Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI2 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI2 voltage before correction (U2-13).

AC-07 **Power supply unit - AI2 displayed voltage 2**

Address:	0xAC07	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI2 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI2 voltage before correction (U2-13).

AC-08 **Expansion card 1 - AI1 measured voltage 1**

Address:	0xAC08	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-12).

AC-09 **Expansion card 1 - AI1 measured voltage 1**

Address:	0xAC09	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-12).

AC-10 **Expansion card 1 - AI1 measured voltage 2**

Address:	0xAC0A	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-12).

AC-11 **Expansion card 1-AI1 displayed voltage 2**

Address:	0xAC0B	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-12).

AC-12 **Expansion card 1 - AI2 measured voltage 1**

Address:	0xAC0C	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-13).

AC-13 **Expansion card 1-AI2 displayed voltage 1**

Address:	0xAC0D	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-13).

AC-14 **Expansion card 1 - AI2 measured voltage 2**

Address:	0xAC0E	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-13).

AC-15 **Expansion card 1-AI2 displayed voltage 2**

Address:	0xAC0F	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U3-13).

AC-16 **Expansion card 2 - AI1 measured voltage 1**

Address:	0xAC10	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-12).

AC-17 **Expansion card 2 - AI1 measured voltage 1**

Address:	0xAC11	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-12).

AC-18 **Expansion card 2 - AI1 measured voltage 2**

Address:	0xAC12	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-12).

AC-19 **Expansion card 2-AI1 displayed voltage 2**

Address:	0xAC13	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-12).

AC-20 **Expansion card 2 - AI2 measured voltage 1**

Address:	0xAC14	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-13).

AC-21 **Expansion card 2-AI2 displayed voltage 1**

Address:	0xAC15	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	2.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-13).

AC-22 **Expansion card 2 - AI2 measured voltage 2**

Address:	0xAC16	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-13).

AC-23 **Expansion card 2-AI2 displayed voltage 2**

Address:	0xAC17	Effective mode:	Real time
Min.:	-10.000	Unit:	V
Max.:	10.000	Data type:	Int16
Default:	8.000	Change:	Real-time

Value range:

-10.000 V to 10.000 V

Description

To correct AI1 voltage, form a correction curve according to the voltage over two terminals. Each terminal has a measured voltage, which is measured by a meter, and a displayed voltage, which is the AI1 voltage before correction (U4-13).

AC-24 **Expansion card 3 - AI1 measured voltage 1**

Address:	0xAC18	Effective mode:	Real time
Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	1.650	Change:	Real-time

Value range:

-3.300 V to 3.300 V

Description

Measured voltage 1 of AI1 for expansion card 3

AC-25 **Expansion card 3 - AI1 measured voltage 1**

Address:	0xAC19	Effective mode:	Real time
Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	1.650	Change:	Real-time

Value range:

-3.300 V to 3.300 V

Description

Measured voltage 1 of AI1 for expansion card 3

AC-26 **AI1 Measured voltage 2 of AI1 for expansion card 3**

Address:	0xAC1A	Effective mode:	Real time

Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	3.062	Change:	Real-time

Value range:
-3.300 V to 3.300 V
Description
Measured voltage 2 of AI1 for expansion card 3

AC-27 **Displayed voltage 2 of AI1 for expansion card 2**

Address:	0xAC1B	Effective mode:	Real time
Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	3.062	Change:	Real-time

Value range:
-3.300 V to 3.300 V
Description
Displayed voltage 2 of AI1 for expansion card 2

AC-28 **Expansion card 3 - AI2 measured voltage 1**

Address:	0xAC1C	Effective mode:	Real time
Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	1.650	Change:	Real-time

Value range:
-3.300 V to 3.300 V
Description
Measured voltage 1 of AI2 for expansion card 3

AC-29 **Displayed voltage 1 of AI2 for expansion card 3**

Address:	0xAC1D	Effective mode:	Real time
Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	1.650	Change:	Real-time

Value range:
-3.300 V to 3.300 V
Description
Displayed voltage 1 of AI2 for expansion card 3

AC-30 **Expansion card 3 - AI2 measured voltage 2**

Address:	0xAC1E	Effective mode:	Real time
Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	2.997	Change:	Real-time

Value range:
-3.300 V to 3.300 V
Description
Measured voltage 2 of AI2 for expansion card 3

AC-31 **Expansion card 3-AI2 displayed voltage 2**

Address:	0xAC1F	Effective mode:	Real time
Min.:	-3.300	Unit:	V
Max.:	3.300	Data type:	Int16
Default:	2.997	Change:	Real-time

Value range:

-3.300 V to 3.300 V

Description

Displayed voltage 2 of AI2 for expansion card 3

2.13 AD: EIP Expansion Card Parameters

AD-00 **DHCP/BOOTP function**

Address:	0xAD00	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

It is used to set the Dynamic Host Configuration Protocol (DHCP) function. If the DHCP function is enabled, settings of AD01 to AD-12 do not take effect.

0: Disable

1: Enable

AD-01 **Highest order byte of the IP address**

Address:	0xAD01	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	254	Data type:	UInt16
Default:	192	Change:	Real-time

Value range:

1 to 254

Description

Set the highest order byte of the IP address, ranging from 1 to 254 (displayed in decimal format, equivalent to 0x01 to 0xFE in hexadecimal).

AD-02 **Second highest order byte of the IP address**

Address:	0xAD02	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	254	Data type:	UInt16
Default:	168	Change:	Real-time

Value range:

0 to 254

Description

Set the second highest order byte of the IP address, ranging from 0 to 254 (displayed in decimal format, equivalent to 0x00 to 0xFE in hexadecimal).

AD-03 **Third highest order byte of the IP address**

Address:	0xAD03	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	254	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0 to 254

Description

Set the third highest order byte of the IP address, ranging from 0 to 254 (displayed in decimal format, equivalent to 0x00 to 0xFE in hexadecimal).

AD-04 **Lowest order byte of the IP address**

Address:	0xAD04	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	253	Data type:	UInt16
Default:	6	Change:	Real-time

Value range:

1 to 253

Description

Set the lowest order byte of the IP address, ranging from 1 to 253 (displayed in decimal format, equivalent to 0x01 to 0xFD in hexadecimal).

AD-05 **Highest order byte of the subnet mask**

Address:	0xAD05	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	255	Data type:	UInt16
Default:	255	Change:	Real-time

Value range:

0 to 255

Description

Set the highest order byte of the subnet mask, ranging from 0 to 255 (displayed in decimal format, equivalent to 0x00 to 0xFF in hexadecimal).

AD-06 **Second highest order byte of the subnet mask**

Address:	0xAD06	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	255	Data type:	UInt16
Default:	255	Change:	Real-time

Value range:

0 to 255

Description

Set the second highest order byte of the subnet mask, ranging from 0 to 255 (displayed in decimal format, equivalent to 0x00 to 0xFF in hexadecimal).

AD-07 **Third highest order byte of the subnet mask**

Address:	0xAD07	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	255	Data type:	UInt16
Default:	255	Change:	Real-time

Value range:

0 to 255

Description

Set the third highest order byte of the subnet mask, ranging from 0 to 255 (displayed in decimal format, equivalent to 0x00 to 0xFF in hexadecimal).

AD-08 **Lowest order byte of the subnet mask**

Address:	0xAD08	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	255	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 255

Description

Set the lowest order byte of the subnet mask, ranging from 0 to 255 (displayed in decimal format, equivalent to 0x00 to 0xFF in hexadecimal).

AD-09 **Highest order byte of the gateway IP address**

Address:	0xAD09	Effective mode:	Real time
Min.:	1	Unit:	/
Max.:	254	Data type:	UInt16
Default:	192	Change:	Real-time

Value range:

1 to 254

Description

Set the highest order byte of the gateway, ranging from 1 to 254 (displayed in decimal format, equivalent to 0x01 to 0xFE in hexadecimal).

AD-10 **Second highest order byte of the gateway IP address**

Address:	0xAD0A	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	254	Data type:	UInt16
Default:	168	Change:	Real-time

Value range:
0 to 254
Description
Set the second highest order byte of the gateway, ranging from 0 to 254 (displayed in decimal format, equivalent to 0x00 to 0xFE in hexadecimal).

AD-11 **Third highest order byte of the gateway IP address**

Address:	0xAD0B	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	254	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:
0 to 254
Description
Set the third highest order byte of the gateway, ranging from 0 to 254 (displayed in decimal format, equivalent to 0x00 to 0xFE in hexadecimal).

AD-12 **Lowest order byte of the gateway IP address**

Address:	0xAD0C	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	254	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:
0 to 254
Description
Set the lowest order byte of the gateway, ranging from 0 to 254 (displayed in decimal format, equivalent to 0x00 to 0xFE in hexadecimal).

AD-13 **Switch commissioning address**

Address:	0xAD0D	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 65535
Description
0 to 65535 is directly mapped to the switch register address.

AD-14 **Switch commissioning data**

Address:	0xAD0E	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 65535

Description

0 to 65535 is directly mapped to the switch register value.

AD-15 **Switch commissioning control value**

Address:	0xAD0F	Effective mode:	Real time
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 2

Description

1: Read value of a register

2: Write value to a register

After the read and write operation, the MCU performs the clear operation.

2.14 U0: Monitoring Parameters

U0-00 **Bus voltage**

Address:	0x7000	Effective mode:	/
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:

0.0 V to 6553.5 V

Description

It displays the bus voltage of the power supply unit.

U0-01 **Heatsink temperature**

Address:	0x7001	Effective mode:	/
Min.:	-32768	Unit:	°C
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32768°C to 32767°C

Description

It displays the heatsink temperature of the power supply unit.

U0-02 **Ambient temperature**

Address:	0x7002	Effective mode:	/
Min.:	-32768	Unit:	°C
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32768°C to 32767°C

Description

Displays the environment temperature of the power supply unit.

U0-03 **Fan speed**

Address:	0x7003	Effective mode:	/
Min.:	0	Unit:	RPM
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0rpm to 65535rpm

Description

Indicates the fan speed of the power supply unit.

U0-04 **Input voltage Usr**

Address:	0x7004	Effective mode:	/
Min.:	0	Unit:	V
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 V to 65535 V

Description

Indicates the input RST voltage (Usr) of the power supply unit.

U0-05 **Input voltage Ust**

Address:	0x7005	Effective mode:	/
Min.:	0	Unit:	V
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 V to 65535 V

Description

Indicates the input RST voltage (Ust) of the power supply unit.

U0-06 **Input voltage Utr**

Address:	0x7006	Effective mode:	/
Min.:	0	Unit:	V
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 V to 65535 V

Description

Indicates the input RST voltage (Utr) of the power supply unit.

U0-07 **Three-phase imbalance degree**

Address:	0x7007	Effective mode:	/
Min.:	0.00	Unit:	%

Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:
0.00% to 655.35%
Description
Indicates the degree of input RST unbalance of the power supply unit.

U0-12 **Code of current fault**

Address:	0x700C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
It displays the current fault code of the power supply unit.

U0-13 **Subcode of current fault**

Address:	0x700D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Displays the subcode of current fault 1.

U0-14 **Code of current warning**

Address:	0x700E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
It displays the current warning code of the power supply unit.

U0-15 **Current warning subcode**

Address:	0x700F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Displays the subcode of current warning1

U0-16 **Online module list**

Address:	0x7010	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

In the online module list, if the corresponding bit value is 1, the drive unit is online.

Bit 0: Axis 1

Bit 1: Axis 2

Bit 2: Axis 3

Bit 3: Axis 4

Bit 4: Axis 5

Bit 5: Axis 6

Bit 6: Axis 7

Bit 7: Axis 8

U0-17 **Number of online modules**

Address:	0x7011	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of current online axes. The number of axes normally installed is reflected in this parameter.

U0-18 **Number of online I/O modules**

Address:	0x7012	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Displays the number of current online I/O modules. The number of I/O modules normally installed is reflected in this parameter.

U0-20 **Current power-on time - hour**

Address:	0x7014	Effective mode:	/
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0h to 65535h

Description

Current power-on time (hour) of the power supply unit.

U0-21 **Current power on time - minute**

Address:	0x7015	Effective mode:	/
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 min to 65535 min

Description

Current power-on time (minute) of the power supply unit.

U0-22 **Current power-on time - second**

Address:	0x7016	Effective mode:	/
Min.:	0	Unit:	s
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0s to 65535s

Description

Current power-on time (second) of the power supply unit.

U0-23 **Current power on time - millisecond**

Address:	0x7017	Effective mode:	/
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 ms to 65535 ms

Description

Current power-on time (millisecond) of the power supply unit.

U0-25 **Control command word of braking unit**

Address:	0x7019	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 1

Description

Control command word of braking unit of the power supply unit.

0: Disable the braking unit

1: Enable the braking unit

U0-27 **Run control of power supply unit**

Address:	0x701B	Effective mode:	/

Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 3

Description

1: Ready to run

2: Running prohibited (Coast to stop)

3: Running prohibited (Stop according to the preset mode)

U0-30 **Total power-on time - hour**

Address:	0x701E	Effective mode:	/
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0h to 65535h

Description

Cumulative power-on time (hour) of the power supply unit.

U0-31 **Total power-on time - minute**

Address:	0x701F	Effective mode:	/
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 min to 65535 min

Description

Cumulative power-on time (minute) of the power supply unit.

U0-32 **Total power-on time - second**

Address:	0x7020	Effective mode:	/
Min.:	0	Unit:	s
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0s to 65535s

Description

Cumulative power-on time (second) of the power supply unit.

U0-33 **Total power-on time - millisecond**

Address:	0x7021	Effective mode:	/
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 ms to 65535 ms

Description

Cumulative power-on time (millisecond) of the power supply unit.

U0-35 **State of power supply unit**

Address:	0x7023	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 2

Description

State of power supply unit.

0: Waiting for power on

1: Running

2: Fault

2.15 U2 Local I/O Monitoring Parameters

U2-00 **Local I/O module type**

Address:	0x7200	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Local I/O module type

U2-01 **Local I/O module version**

Address:	0x7201	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

Indicates the software version of the current local IO.

U2-02 **Local I/O module - Original DI hardware resource**

Address:	0x7202	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of DIs supported by the current local IO hardware.

U2-03 **Local I/O module - Available DI hardware resource**

Address:	0x7203	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of DIs currently available.

U2-04 **Local I/O module - Original AI hardware resource**

Address:	0x7204	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of AIs supported by the current IO hardware.

U2-05 **Local I/O module - Available AI hardware resource**

Address:	0x7205	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of AIs currently available.

U2-06 **Local I/O module - Original DO hardware resource**

Address:	0x7206	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of Dos supported by the current IO hardware.

U2-07 **Local I/O module - Available DO hardware resource**

Address:	0x7207	Effective mode:	/
Min.:	0x0	Unit:	/

Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Indicates the number of DOs currently available.

U2-08 **Local I/O module - Original AO hardware resource**

Address:	0x7208	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the number of AOs supported by the IO hardware.

U2-09 **Local I/O module - Available AO hardware resource**

Address:	0x7209	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Indicates the number of AOs currently available.

U2-10 **Local I/O module - DI input**

Address:	0x720A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current hardware DI input state. Bit 0 corresponds to DI1, Bit 1 corresponds to DI2, and so on.

U2-11 **Local I/O module - DO output**

Address:	0x720B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current hardware DO output state. Bit 0 corresponds to DO1, Bit 1 corresponds to DO2, and so on.

U2-12 **Local - AI1 input (before correction)**

Address:	0x720C	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI1 input, which has not been corrected and deviation exists.

U2-13 **Local - AI2 input (before correction)**

Address:	0x720D	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI2 input, which has not been corrected and deviation exists.

U2-14 **Local - AI1 input (after correction)**

Address:	0x720E	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI1 input, which has been corrected.

U2-15 **Local - AI2 input (after correction)**

Address:	0x720F	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI2 input, which has been corrected.

U2-20 **Local I/O module - Condition of DI1 used by drive unit**

Address:	0x7214	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U2-21 **Local I/O module - Condition of DI2 used by drive unit**

Address:	0x7215	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U2-22 **Local I/O module - Condition of DI3 used by drive unit**

Address:	0x7216	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U2-23 **Local I/O module - Condition of DI4 used by drive unit**

Address:	0x7217	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U2-24 **Local I/O module - Condition of DI5 used by drive unit**

Address:	0x7218	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U2-25 **Local I/O module - Condition of DI6 used by drive unit**

Address:	0x7219	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U2-26 Local I/O module - Condition of DI7 used by drive unit

Address:	0x721A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U2-27 Local I/O module - Condition of DI8 used by drive unit

Address:	0x721B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U2-30 Local I/O module - Condition of AI1 used by drive unit

Address:	0x721E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current AI usage.

U2-31 Local I/O module - Condition of AI2 used by drive unit

Address:	0x721F	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current AI usage.

U2-40 **Local I/O module - Condition of DO1 used by drive unit**

Address:	0x7228	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U2-41 **Local I/O module - Condition of DO2 used by drive unit**

Address:	0x7229	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U2-42 **Local I/O module - Condition of DO3 used by drive unit**

Address:	0x722A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U2-43 **Local I/O module - Condition of DO4 used by drive unit**

Address:	0x722B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U2-44 **Local I/O module - Condition of DO5 used by drive unit**

Address:	0x722C	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U2-45 **Local I/O module - Condition of DO6 used by drive unit**

Address:	0x722D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U2-46 **Local I/O module - Condition of DO7 used by drive unit**

Address:	0x722E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U2-47 **Local I/O module - Condition of DO8 used by drive unit**

Address:	0x722F	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

2.16 U3 I/O Expansion Card 1 Monitoring Parameters

U3-00 **Type of I/O expansion card 1**

Address:	0x7300	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

0: No IO expansion card

1: IO-M1: DIDOAI hybrid card

2:IO-R2: Dual relay card (4 RO relay outputs)

3:IO-R1: Single relay card (8 RO relay outputs)

U3-01 **Version of I/O expansion card 1**

Address:	0x7301	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

Indicates the software version of the current expansion card.

U3-02 **I/O expansion card 1 - Original DI hardware resource**

Address:	0x7302	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of DIs currently supported by the current expansion card hardware.

U3-03 **I/O expansion card 1 - Available DI hardware resource**

Address:	0x7303	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of DIs currently available.

U3-04 **I/O expansion card 1 - Original AI hardware resource**

Address:	0x7304	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of AIs supported by the current expansion card hardware.

U3-05 **I/O expansion card 1 - Available AI hardware resource**

Address:	0x7305	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of AIs currently available.

U3-06 **I/O expansion card 1 - Original DO hardware resource**

Address:	0x7306	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of DOs currently supported by the current expansion card hardware.

U3-07 **I/O expansion card 1 - Available DO hardware resource**

Address:	0x7307	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of DOs currently available.

U3-08 **I/O expansion card 1 - Original AO hardware resource**

Address:	0x7308	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of AOs supported by the current expansion card hardware.

U3-09 **I/O expansion card 1 - Available AO hardware resource**

Address:	0x7309	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of AOs currently available.

U3-10 **I/O expansion card 1 - DI input**

Address:	0x730A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current hardware DI input state. Bit 0 corresponds to DI1, Bit 1 corresponds to DI2, and so on.

U3-11 **I/O expansion card 1 - DO output**

Address:	0x730B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current hardware DO output state. Bit 0 corresponds to DO1, Bit 1 corresponds to DO2, and so on.

U3-12 **I/O expansion card 1 - AI1 input (before correction)**

Address:	0x730C	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI1 input, which has not been corrected and deviation exists.

U3-13 **I/O expansion card 1 - AI2 input (before correction)**

Address:	0x730D	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI2 input, which has not been corrected and deviation exists.

U3-14 **I/O expansion card 1 - AI1 input (after correction)**

Address:	0x730E	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI1 input, which has been corrected.

U3-15 **I/O expansion card 1 - AI2 input (after correction)**

Address:	0x730F	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI2 input, which has been corrected.

U3-20 **Usage of I/O expansion card 1's DI1 by drive unit**

Address:	0x7314	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U3-21 **Usage of I/O expansion card 1's DI2 by drive unit**

Address:	0x7315	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U3-22 **Usage of I/O expansion card 1's DI3 by drive unit**

Address:	0x7316	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U3-23 **Usage of I/O expansion card 1's DI4 by drive unit**

Address:	0x7317	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U3-24 **Usage of I/O expansion card 1's DI5 by drive unit**

Address:	0x7318	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U3-25 **Usage of I/O expansion card 1's DI6 by drive unit**

Address:	0x7319	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U3-26 **Usage of I/O expansion card 1's DI7 by drive unit**

Address:	0x731A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U3-27 **Usage of I/O expansion card 1's DI8 by drive unit**

Address:	0x731B	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U3-30 **Usage of I/O expansion card 1's AI1 by drive unit**

Address:	0x731E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current AI usage.

U3-31 **Usage of I/O expansion card 1's AI2 by drive unit**

Address:	0x731F	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current AI usage.

U3-40 **Usage of I/O expansion card 1's DO1 by drive unit**

Address:	0x7328	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U3-41 **Usage of I/O expansion card 1's DO2 by drive unit**

Address:	0x7329	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U3-42 **Usage of I/O expansion card 1's DO3 by drive unit**

Address:	0x732A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U3-43 **Usage of I/O expansion card 1's DO4 by drive unit**

Address:	0x732B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U3-44 **Usage of I/O expansion card 1's DO5 by drive unit**

Address:	0x732C	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U3-45 **Usage of I/O expansion card 1's DO6 by drive unit**

Address:	0x732D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U3-46 **Usage of I/O expansion card 1's DO7 by drive unit**

Address:	0x732E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U3-47 **Usage of I/O expansion card 1's DO8 by drive unit**

Address:	0x732F	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

2.17 U4 I/O Expansion Card 2 Monitoring Parameters

U4-00 **Type of I/O expansion card 2**

Address:	0x7400	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

0: No IO expansion card

1: IO-M1: DIDOAI hybrid card

2:IO-R2: Dual relay card (4 RO relay outputs)

3:IO-R1: Single relay card (8 RO relay outputs)

U4-01 **Version of I/O expansion card 2**

Address:	0x7401	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

Indicates the software version of the current expansion card.

U4-02 **I/O expansion card 2 - Original DI hardware resource**

Address:	0x7402	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of DIs currently supported by the current expansion card hardware.

U4-03 **I/O expansion card 2 - Available DI hardware resource**

Address:	0x7403	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of DIs currently available.

U4-04 **I/O expansion card 2 - Original AI hardware resource**

Address:	0x7404	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of AIs supported by the current expansion card hardware.

U4-05 **I/O expansion card 2 - Available AI hardware resource**

Address:	0x7405	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the number of AIs currently available.

U4-06 **I/O expansion card 2 - Original DO hardware resource**

Address:	0x7406	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the number of DOs currently supported by the current expansion card hardware.

U4-07 **I/O expansion card 2 - Available DO hardware resource**

Address:	0x7407	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Indicates the number of DOs currently available.

U4-08 **I/O expansion card 2 - Original AO hardware resource**

Address:	0x7408	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the number of AOs supported by the current expansion card hardware.

U4-09 **I/O expansion card 2 - Available AO hardware resource**

Address:	0x7409	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Indicates the number of AOs currently available.

U4-10 **I/O expansion card 2 - DI input**

Address:	0x740A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current hardware DI input state. Bit 0 corresponds to DI1, Bit 1 corresponds to DI2, and so on.

U4-11 **I/O expansion card 2 - DO output**

Address:	0x740B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF

Description

Displays the current hardware DO output state. Bit 0 corresponds to DO1, Bit 1 corresponds to DO2, and so on.

U4-12 **I/O expansion card 2 - AI1 input (before correction)**

Address:	0x740C	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI1 input, which has not been corrected and deviation exists.

U4-13 **I/O expansion card 2 - AI2 input (before correction)**

Address:	0x740D	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI2 input, which has not been corrected and deviation exists.

U4-14 **I/O expansion card 2 - AI1 input (after correction)**

Address:	0x740E	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI1 input, which has been corrected.

U4-15 **I/O expansion card 2 - AI2 input (after correction)**

Address:	0x740F	Effective mode:	/
Min.:	-12.00	Unit:	V
Max.:	12.00	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-12.00 V to 12.00 V

Description

Displays the current AI2 input, which has been corrected.

U4-20 **I/O expansion card 2 - condition of DI1 used by drive unit**

Address:	0x7414	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U4-21 **I/O expansion card 2 - condition of DI2 used by drive unit**

Address:	0x7415	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U4-22 **I/O expansion card 2 - condition of DI3 used by drive unit**

Address:	0x7416	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U4-23 **I/O expansion card 2 - condition of DI4 used by drive unit**

Address:	0x7417	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U4-24 **I/O expansion card 2 - condition of DI5 used by drive unit**

Address:	0x7418	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DI usage.

U4-25 **I/O expansion card 2 - condition of DI6 used by drive unit**

Address:	0x7419	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U4-26 **I/O expansion card 2 - condition of DI7 used by drive unit**

Address:	0x741A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U4-27 **I/O expansion card 2 - condition of DI8 used by drive unit**

Address:	0x741B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DI usage.

U4-30 **I/O expansion card 2 - condition of AI1 used by drive unit**

Address:	0x741E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current AI usage.

U4-31 **I/O expansion card 2 - condition of AI2 used by drive unit**

Address:	0x741F	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current AI usage.

U4-40 **I/O expansion card 2 - condition of DO1 used by drive unit**

Address:	0x7428	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U4-41 **I/O expansion card 2 - condition of DO2 used by drive unit**

Address:	0x7429	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U4-42 **I/O expansion card 2 - condition of DO3 used by drive unit**

Address:	0x742A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U4-43 **I/O expansion card 2 - condition of DO4 used by drive unit**

Address:	0x742B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Displays the current DO usage.

U4-44 **I/O expansion card 2 - condition of DO5 used by drive unit**

Address:	0x742C	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U4-45 **I/O expansion card 2 - condition of DO6 used by drive unit**

Address:	0x742D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U4-46 **I/O expansion card 2 - condition of DO7 used by drive unit**

Address:	0x742E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

U4-47 **I/O expansion card 2 - condition of DO8 used by drive unit**

Address:	0x742F	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Displays the current DO usage.

3 Parameter List of the Drive Unit

3.1 Parameter List of the Drive Unit

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F0-00	0xF000	G/P model	1: G type (constant torque load) 2: P type (fan and pump)	1	/	Unchangeable	" F0-00" on page 262
F0-01	0xF001	Motor 1 control mode	0: SVC 1: Reserved 2: V/f control 3: Reserved 4: Reserved 5: PMVVC	2	/	At stop	" F0-01" on page 262
F0-02	0xF002	Command source selection	0: Operating panel control 1: Terminal I/O control 2: Communication control	0	/	At stop	" F0-02" on page 263
F0-03	0xF003	Main frequency X source	0: Digital setting (F0-08, can be changed by UP/DOWN keys, non-retentive upon power failure) 1: Digital setting (F0-08, can be changed by UP/DOWN keys, retentive upon power failure) 2: AI1 3: AI2 4: AI3 5: Reserved 6: Multi-reference 7: Simple PLC 8: PID 9: Communication command 10: Reserved	0	/	At stop	" F0-03" on page 263
F0-04	0xF004	Auxiliary frequency Y source	0: Digital setting (F0-08, can be changed by UP/DOWN keys, non-retentive upon power failure) 1: Digital setting (F0-08, can be changed by UP/DOWN keys, retentive upon power failure) 2: AI1 3: AI2 4: AI3 5: Reserved 6: Multi-reference 7: Simple PLC 8: PID 9: Communication command 10: Reserved	0	/	At stop	" F0-04" on page 264

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F0-05	0xF005	Base value of range of auxiliary frequency Y upon superposition	0: Relative to the maximum frequency 1: Relative to the main frequency X	0	/	Real-time	"F0-05" on page 266
F0-06	0xF006	Range of auxiliary frequency Y upon superposition	0% to 150%	100	%	Real-time	"F0-06" on page 266
F0-07	0xF007	Frequency superposition selection	Ones: Frequency reference selection 0: Main frequency source X 1: Main and auxiliary operation result (based on tens position) 2: Switchover between the main frequency source X and the auxiliary frequency source Y 3: Switchover between the main frequency source X and the main and auxiliary operation result 4: Switchover between the auxiliary frequency source Y and the main and auxiliary operation result Tens: Main and auxiliary operation of the frequency reference 0: Main + Auxiliary 1: Main – Auxiliary 2: Max. (main, auxiliary) 3: Min. (main, auxiliary) 4: Main x Auxiliary	0	/	Real-time	"F0-07" on page 266
F0-08	0xF008	Preset frequency	0.00 Hz to F0-10	50.00	Hz	Real-time	"F0-08" on page 268
F0-09	0xF009	Running direction	0: Default direction 1: Opposite to the default direction	0	/	Real-time	"F0-09" on page 268
F0-10	0xF00A	Maximum frequency	5.00 Hz to 600.00 Hz	50.00	Hz	At stop	"F0-10" on page 268
F0-11	0xF00B	Frequency upper limit source	0: Set by F0-12 (Frequency upper limit) 1: AI1 2: AI2 3: AI3 4: Reserved 5 Communication setting 6: Multi-speed reference	0	/	At stop	"F0-11" on page 268

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F0-12	0xF00C	Frequency upper limit	F0-14 to F0-10	50.00	Hz	Real-time	" F0-12" on page 269
F0-13	0xF00D	Frequency upper limit offset	0.00 Hz to F0-10	0.00	Hz	Real-time	" F0-13" on page 269
F0-14	0xF00E	Frequency lower limit	0.00 Hz to F0-12	0.00	Hz	Real-time	" F0-14" on page 270
F0-15	0xF00F	Carrier frequency	0.8 kHz to 15.0 kHz	6.0	kHz	Real-time	" F0-15" on page 270
F0-16	0xF010	Carrier frequency varying with temperature	0: No 1: Yes	1	/	Real-time	" F0-16" on page 270
F0-17	0xF011	Acceleration time 1	0.0s to 6500.0s	20.0	s	Real-time	" F0-17" on page 270
F0-18	0xF012	Deceleration time 1	0.0s to 6500.0s	20.0	s	Real-time	" F0-18" on page 271
F0-19	0xF013	Acceleration/ Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	/	At stop	" F0-19" on page 271
F0-21	0xF015	Auxiliary frequency offset upon superposition	0.00 Hz to F0-10	0.00	Hz	Real-time	" F0-21" on page 272
F0-22	0xF016	Frequency reference resolution	1: 0.1 Hz 2: 0.01 Hz	2	/	At stop	" F0-22" on page 272
F0-23	0xF017	Retention of digit-set frequency upon stop	0: Non-retentive 1: Retentive	0	/	Real-time	" F0-23" on page 272
F0-25	0xF019	Acceleration/ deceleration time base frequency	0: Maximum frequency (F0-10) 1: Frequency reference 2: 100 Hz	0	/	At stop	" F0-25" on page 273
F0-26	0xF01A	Base of frequency adjusted by UP/ DOWN keys during running	0: Running frequency 1: Frequency reference	0	/	At stop	" F0-26" on page 273
F0-27	0xF01B	Main frequency coefficient	0.00% to 100.00%	10.00	%	Real-time	" F0-27" on page 273
F0-28	0xF01C	Auxiliary frequency coefficient	0.00% to 100.00%	10.00	%	Real-time	" F0-28" on page 274

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F0-29	0xF01D	G and P type	1: G type (constant torque load) 2: P type (fan and pump)	1	/	At stop	“F0-29” on page 274
F1-00	0xF100	Motor type	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Synchronous motor	0	/	At stop	“F1-00” on page 274
F1-01	0xF101	Rated motor power	0.1 kW to 1000.0 kW	3.7	kW	At stop	“F1-01” on page 275
F1-02	0xF102	Rated motor voltage	1 V to 2000 V	380	V	At stop	“F1-02” on page 275
F1-03	0xF103	Rated motor current	0.1 A to 6553.5 A	9.0	A	At stop	“F1-03” on page 275
F1-04	0xF104	Rated motor frequency	0.01 Hz to F0-10	50.00	Hz	At stop	“F1-04” on page 276
F1-05	0xF105	Rated motor speed	1rpm to 65535rpm	1460	RPM	At stop	“F1-05” on page 276
F1-06	0xF106	Asynchronous/ Synchronous motor stator resistance	0.001 Ω to 65.535 Ω	1.204	Ω	At stop	“F1-06” on page 276
F1-07	0xF107	Asynchronous motor rotor resistance	0.001 Ω to 65.535 Ω	0.908	Ω	At stop	“F1-07” on page 276
F1-08	0xF108	Asynchronous motor leakage inductance	0.01mH to 655.35mH	5.28	mH	At stop	“F1-08” on page 276
F1-09	0xF109	Asynchronous motor mutual inductance	0.1mH to 6553.5mH	156.8	mH	At stop	“F1-09” on page 277
F1-10	0xF10A	No-load current of asynchronous motor	0.1 A to F1-03	4.2	A	At stop	“F1-10” on page 277
F1-11	0xF10B	Core saturation coefficient 1 of asynchronous motor	50.0% to 100.0%	86.0	%	Real-time	“F1-11” on page 277
F1-12	0xF10C	Core saturation coefficient 2 of asynchronous motor	100.0% to 150.0%	130.0	%	Real-time	“F1-12” on page 278
F1-13	0xF10D	Core saturation coefficient 3 of asynchronous motor	100.0% to 170.0%	140.0	%	Real-time	“F1-13” on page 278

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F1-14	0xF10E	Core saturation coefficient 4 of asynchronous motor	100.0% to 180.0%	150.0	%	Real-time	" F1-14" on page 278
F1-17	0xF111	Axis D inductance of synchronous motor	0.01mH to 655.35mH	15.86	mH	At stop	" F1-17" on page 278
F1-18	0xF112	Axis Q inductance of synchronous motor	0.01mH to 655.35mH	15.86	mH	At stop	" F1-18" on page 279
F1-19	0xF113	Synchronous motor back EMF coefficient	0.0 V to 6553.5 V	300.0	V	At stop	" F1-19" on page 279
F1-24	0xF118	Number of motor pole pairs	0 to 65535	0	/	Unchangeable	" F1-24" on page 279
F1-37	0xF125	Parameter auto-tuning selection	0: No auto-tuning 1: Static auto-tuning on parameters of asynchronous motors 2: Auto-tuning on all parameters of asynchronous motors 3: With-load auto-tuning on all parameters of asynchronous motors 11: No-load auto-tuning on some parameters (excluding back EMF) of synchronous motors 12: No-load dynamic auto-tuning on parameters of synchronous motors 13: Static auto-tuning on all parameters of synchronous motors 14: Reserved	0	/	At stop	" F1-37" on page 279
F2-00	0xF200	Low-speed speed loop Kp	1 to 200	30	/	Real-time	" F2-00" on page 280
F2-01	0xF201	Low-speed speed loop Ti	0.001s to 10.000s	0.500	s	Real-time	" F2-01" on page 281
F2-02	0xF202	Switchover frequency 1	0.00 Hz to F2-05	5.00	Hz	Real-time	" F2-02" on page 281
F2-03	0xF203	High-speed speed loop Kp	1 to 200	20	/	Real-time	" F2-03" on page 281
F2-04	0xF204	High-speed speed loop Ti	0.001s to 10.000s	1.000	s	Real-time	" F2-04" on page 282

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F2-05	0xF205	Switchover frequency 2	F2-02 to F0-10	10.00	Hz	Real-time	" F2-05" on page 282
F2-06	0xF206	VC slip compensation adjustment	50% to 200%	100	%	Real-time	" F2-06" on page 282
F2-07	0xF207	Speed feedback filter time	0.000s to 0.100s	0.004	s	Real-time	" F2-07" on page 283
F2-08	0xF208	VC deceleration over-excitation gain	0 to 200	64	/	Real-time	" F2-08" on page 283
F2-09	0xF209	Torque upper limit source in speed control mode (motoring)	0: Set by F2-10 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication setting 6: Min. (AI1, AI2) 7: Max. (AI1, AI2)	0	/	Real-time	" F2-09" on page 283
F2-10	0xF20A	Digital setting of torque upper limit in speed control (motoring)	0.0% to 200.0%	150.0	%	Real-time	" F2-10" on page 284
F2-11	0xF20B	Torque upper limit source in speed control mode (generating)	0: Digital setting (F2-10) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication setting 6: Min. (AI1, AI2) 7: Max. (AI1, AI2) 8: Digital setting (F2-12)	0	/	Real-time	" F2-11" on page 284
F2-12	0xF20C	Digital setting of torque upper limit in speed control (regenerating)	0.0% to 200.0%	150.0	%	Real-time	" F2-12" on page 285
F2-13	0xF20D	Current loop Kp adjustment at low speed	0.1 to 10.0	1.0	/	Real-time	" F2-13" on page 285
F2-14	0xF20E	Current loop Ki adjustment at low speed	0.1 to 10.0	1.0	/	Real-time	" F2-14" on page 286
F2-15	0xF20F	Current loop Kp adjustment at high speed	0.1 to 10.0	1.0	/	Real-time	" F2-15" on page 286

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F2-16	0xF210	Current loop Ki adjustment at high speed	0.1 to 10.0	1.0	/	Real-time	"F2-16" on page 286
F2-17	0xF211	Speed loop Kp upon zero speed lock	1 to 100	30	/	Real-time	"F2-17" on page 286
F2-18	0xF212	Speed loop Ki upon zero speed lock	0.001s to 10.000s	0.500	s	Real-time	"F2-18" on page 287
F2-20	0xF214	Speed loop switching frequency upon zero speed lock	0.00 Hz to F2-02	0.05	Hz	Real-time	"F2-20" on page 287
F2-21	0xF215	Maximum output voltage coefficient	100 to 110	100	/	Real-time	"F2-21" on page 287
F2-22	0xF216	Output voltage filter time constant	0.000s to 0.010s	0.000	s	Real-time	"F2-22" on page 287
F2-23	0xF217	Zero speed lock	0: Disable 1: Enable	0	/	At stop	"F2-23" on page 288
F2-24	0xF218	Vector overvoltage stall suppression Kp	0 to 1000	40	/	Real-time	"F2-24" on page 288
F2-25	0xF219	Acceleration compensation gain	0 to 200	0	/	Real-time	"F2-25" on page 288
F2-26	0xF21A	Acceleration compensation filter time	0 to 500	10	/	Real-time	"F2-26" on page 288
F2-27	0xF21B	Vector overvoltage stall suppression	0: Disable 1: Enable	1	/	Real-time	"F2-27" on page 289
F2-28	0xF21C	Cut-off frequency of torque reference filter	50 Hz to 1000 Hz	500	Hz	Real-time	"F2-28" on page 289
F2-29	0xF21D	Detected current at initial position angle of synchronous motor	50 to 180	80	/	Real-time	"F2-29" on page 289

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F2-30	0xF21E	Auto-calculation of speed loop parameters	0: Disable 1: Enable	0	/	At stop	" F2-30" on page 289
F2-31	0xF21F	Expected speed loop bandwidth at high speed	1.0 Hz to 200.0 Hz	10.0	Hz	Real-time	" F2-31" on page 290
F2-32	0xF220	Expected speed loop bandwidth at low speed	1.0 Hz to 200.0 Hz	10.0	Hz	Real-time	" F2-32" on page 290
F2-33	0xF221	Expected speed loop bandwidth at zero speed	1.0 Hz to 200.0 Hz	10.0	Hz	Real-time	" F2-33" on page 290
F2-34	0xF222	Expected speed loop damping ratio	0.100 to 65.000	1.000	/	Real-time	" F2-34" on page 291
F2-52	0xF234	Decoupling control	0: Disable 1: Enable	0	/	At stop	" F2-52" on page 291
F2-53	0xF235	Generating power limit	0: Disable 1: Enable	0	/	At stop	" F2-53" on page 291
F2-54	0xF236	Generating power limit threshold	0.0% to 200.0%	0.0	%	At stop	" F2-54" on page 291
F2-55	0xF237	Magnetic flux closed loop mode selection	Ones position: Reserved Tens position: Reserved Hundreds position: Reserved Thousands position: Torque base value 0: Rated motor current 1: Rated motor torque current	1010	/	At stop	" F2-55" on page 292
F2-56	0xF238	Upper limit of AC drive output current	0.0% to 170.0%	150.0	%	At stop	" F2-56" on page 292
F3-00	0xF300	V/f curve setting	0: Linear V/f 1: Multi-point V/f 2: Square V/f 3: 1.2-power V/f 4: 1.4-power V/f 5: Reserved 6: 1.6-power V/f 7: Reserved 8: 1.8-power V/f 9: Reserved 10: V/f complete separation 11: V/f half separation	0	/	At stop	" F3-00" on page 292
F3-01	0xF301	Torque boost	0.0% to 30.0%	0.0	%	Real-time	" F3-01" on page 294

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F3-02	0xF302	Cut-off frequency of torque boost	0.00 Hz to F0-10	50.00	Hz	At stop	" F3-02" on page 294
F3-03	0xF303	Multi-point V/f frequency point 1	0.00 Hz to F3-05	0.00	Hz	At stop	" F3-03" on page 294
F3-04	0xF304	Multi-point V/f voltage point 1	0.0% to 100.0%	0.0	%	At stop	" F3-04" on page 295
F3-05	0xF305	Multi-point V/f frequency point 2	F3-03 to F3-07	0.00	Hz	At stop	" F3-05" on page 295
F3-06	0xF306	Multi-point V/f voltage point 2	0.0% to 100.0%	0.0	%	At stop	" F3-06" on page 295
F3-07	0xF307	Multi-point V/f frequency point 3	F3-05 to F1-04	0.00	Hz	At stop	" F3-07" on page 295
F3-08	0xF308	Multi-point V/f voltage point 3	0.0% to 100.0%	0.0	%	At stop	" F3-08" on page 295
F3-09	0xF309	V/f slip compensation gain	0.0% to 200.0%	0.0	%	Real-time	" F3-09" on page 296
F3-10	0xF30A	V/f over-excitation gain	0 to 200	64	/	Real-time	" F3-10" on page 296
F3-11	0xF30B	V/f oscillation suppression gain	0 to 100	0	/	Real-time	" F3-11" on page 296
F3-12	0xF30C	Oscillation suppression gain	0: Invalid 1: Reserved 2: Reserved 3: Valid	3	/	At stop	" F3-12" on page 296
F3-13	0xF30D	Voltage source for separated V/f	0: Digital setting (F3-14) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Multi-reference 6: Simple PLC 7: PID 8 Communication setting	0	/	Real-time	" F3-13" on page 297
F3-14	0xF30E	Voltage digital setting for V/f separation	0 to F1-02	0	V	Real-time	" F3-14" on page 298
F3-15	0xF30F	Voltage acceleration time for separated V/f	0.0s to 1000.0s	0.0	s	Real-time	" F3-15" on page 298

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F3-16	0xF310	Voltage deceleration time for separated V/f	0.0s to 1000.0s	0.0	s	Real-time	“ F3-16” on page 298
F3-17	0xF311	Stop mode for separated V/f	0: The frequency and voltage decline to 0 independently. 1: The frequency declines to 0 after the voltage declines to 0.	0	/	At stop	“ F3-17” on page 298
F3-18	0xF312	V/f current limit level	50% to 180%	150	%	At stop	“ F3-18” on page 299
F3-19	0xF313	V/f current limit selection	0: Disable 1: Enable	1	/	At stop	“ F3-19” on page 299
F3-20	0xF314	V/f current limit gain	0 to 100	20	/	Real-time	“ F3-20” on page 299
F3-21	0xF315	Compensation coefficient of V/f speed multiplying current limit	50 to 180	50	/	At stop	“ F3-21” on page 300
F3-22	0xF316	V/f voltage limit level	330.0 V to 800.0 V	770.0	V	At stop	“ F3-22” on page 300
F3-23	0xF317	V/f voltage limit selection	0: Disable 1: Enable	1	/	At stop	“ F3-23” on page 300
F3-24	0xF318	V/f frequency gain for voltage limit	0 to 100	30	/	Real-time	“ F3-24” on page 300
F3-25	0xF319	V/f voltage gain for voltage limit	0 to 100	30	/	Real-time	“ F3-25” on page 301
F3-26	0xF31A	Frequency rise threshold for overvoltage stall suppression	0 to 50	5	/	At stop	“ F3-26” on page 301
F3-27	0xF31B	Slip compensation time constant	0.1 to 10.0	0.5	/	Real-time	“ F3-27” on page 301
F3-33	0xF321	Online torque compensation gain	80 to 150	100	/	At stop	“ F3-33” on page 301
F3-34	0xF322	Slip startup	0 to 1	0	/	At stop	“ F3-34” on page 302
F3-35	0xF323	Slip startup threshold	0 to 50	10	/	Real-time	“ F3-35” on page 302
F3-36	0xF324	Slip start Kp	1 to 100	16	/	Real-time	“ F3-36” on page 302

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-00	0xF400	DI1 hardware source	0: No selection 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Expansion card 1 - DI1 102: Expansion card 1 - DI2 103: Expansion card 1 - DI3 104: Expansion card 1 - DI4 105: Expansion card 1 - DI5 106: Expansion card 1 - DI6 107: Expansion card 1 - DI7 108: Expansion card 1 - DI8 201: Expansion card 2 - DI1 202: Expansion card 2 - DI2 203: Expansion card 2 - DI3 204: Expansion card 2 - DI4 205: Expansion card 2 - DI5 206: Expansion card 2 - DI6 207: Expansion card 2 - DI7 208: Expansion card 2 - DI8	0	/	At stop	“ F4-00” on page 302
F4-01	0xF401	DI1 function selection	0: No function 1: Forward run (FWD) 2: Reverse run (REV) 3: Three-wire control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Function as the UP key 7: Function as the DOWN key 8: Clear information set by UP/ DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys 9: Fault reset (RESET) 10: External fault NO input 11: External fault NC input 12: User-defined fault 1 13: User-defined fault 2 14: Multi-reference terminal 1 15: Multi-reference terminal 2	1	/	At stop	“ F4-01” on page 303

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-01	0xF401	DI1 function selection	16: Multi-reference terminal 3 17: Multi-reference terminal 4 18: Acceleration/deceleration selection terminal 1 19: Acceleration/deceleration selection terminal 2 20: Acceleration/Deceleration prohibition 21: Command source switchover terminal 1 22: Command source switchover terminal 2 23: Frequency reference switchover 24: Switchover between main frequency X and preset frequency 25: Switchover between auxiliary frequency Y and preset frequency 26: Frequency modification function 27: Counter input 28: Counter reset 29: Length count input 30: Length reset 31: PID pause 32: PID integral pause	1	/	At stop	“ F4-01” on page 303
F4-01	0xF401	DI1 function selection	33: PID parameter switchover 34: PID action direction reverse 35: Torque control prohibition 36: Speed control/Torque control switchover 38: Speed tracking enable 39: Immediate DC braking 40: Deceleration DC braking 41: External stop terminal 1 42: External stop terminal 2 43: Running pause 44: Coast to stop 45: Emergency stop 46: Motor selection terminal 47: Current running time clear 48: Two-wire/Three-wire motion control switchover 49: PLC state reset 50: Wobble pause 94: Braking feedback 1 95: Braking feedback 2	1	/	At stop	“ F4-01” on page 303
F4-02	0xF402	DI2 hardware source	See F4–00.	0	/	At stop	“ F4-02” on page 309

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-03	0xF403	DI2 function selection	Same as F4–01	4	/	At stop	" F4-03" on page 310
F4-04	0xF404	DI3 hardware source	See F4–00.	0	/	At stop	" F4-04" on page 310
F4-05	0xF405	DI3 function selection	Same as F4–01	9	/	At stop	" F4-05" on page 311
F4-06	0xF406	DI4 hardware source	See F4–00.	0	/	At stop	" F4-06" on page 311
F4-07	0xF407	DI4 function selection	Same as F4–01	14	/	At stop	" F4-07" on page 312
F4-08	0xF408	DI5 hardware source	See F4–00.	0	/	At stop	" F4-08" on page 312
F4-09	0xF409	DI5 function selection	Same as F4–01	15	/	At stop	" F4-09" on page 313
F4-10	0xF40A	DI6 hardware source	See F4–00.	0	/	At stop	" F4-10" on page 313
F4-11	0xF40B	DI6 function selection	Same as F4–01	0	/	At stop	" F4-11" on page 314
F4-12	0xF40C	DI7 hardware source	See F4–00.	0	/	At stop	" F4-12" on page 314
F4-13	0xF40D	DI7 function selection	Same as F4–01	0	/	At stop	" F4-13" on page 315
F4-14	0xF40E	DI8 hardware source	See F4–00.	0	/	At stop	" F4-14" on page 315
F4-15	0xF40F	DI8 function selection	Same as F4–01	0	/	At stop	" F4-15" on page 316
F4-17	0xF411	Terminal command mode	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	0	/	At stop	" F4-17" on page 316
F4-18	0xF412	Step value of terminal functioning as UP/DOWN keys	0.001 Hz/s to 65.535 Hz/s	1.000	Hz/s	Real-time	" F4-18" on page 316
F4-19	0xF413	DI1 delay time	0.0s to 3600.0s	0.0	s	Real-time	" F4-19" on page 317
F4-20	0xF414	DI2 delay time	0.0s to 3600.0s	0.0	s	Real-time	" F4-20" on page 317
F4-21	0xF415	DI3 delay time	0.0s to 3600.0s	0.0	s	Real-time	" F4-21" on page 317
F4-22	0xF416	DI active status setting 1	Ones: DI1 0: Active high 1: Active low Tens: DI2 0: Active high 1: Active low Hundreds: DI3 0: Active high 1: Active low Thousands: DI4 0: Active high 1: Active low Ten thousands: DI5 0: Active high 1: Active low	0	/	At stop	" F4-22" on page 317

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-23	0xF417	DI active status setting 2	Ones position: DI6 0: Active high 1: Active low Tens position:DI7 0: Active high 1: Active low Hundreds position:DI8 0: Active high 1: Active low Thousands position: Reserved 0: Reserved Ten thousands position: Reserved 0: Reserved	0	/	At stop	"F4-23" on page 318
F4-25	0xF419	AI1 hardware source	0: No selection 1: AI1 of power supply unit 2: AI2 of power supply unit 101: AI1 of expansion card 1 102: AI2 of expansion card 1 201: AI1 of expansion card 2 202: AI2 of expansion card 2	0	/	At stop	"F4-25" on page 318
F4-27	0xF41B	AI2 hardware source	0: No selection 1: AI1 of power supply unit 2: AI2 of power supply unit 101: AI1 of expansion card 1 102: AI2 of expansion card 1 201: AI1 of expansion card 2 202: AI2 of expansion card 2	0	/	At stop	"F4-27" on page 319
F4-29	0xF41D	AI3 hardware source	0: No selection 1: AI1 of power supply unit 2: AI2 of power supply unit 101: AI1 of expansion card 1 102: AI2 of expansion card 1 201: AI1 of expansion card 2 202: AI2 of expansion card 2	0	/	At stop	"F4-29" on page 319
F4-31	0xF41F	Minimum input of AI curve 1	-10.00 V to F4-33	0.00	V	Real-time	"F4-31" on page 319
F4-32	0xF420	Percentage corresponding to minimum input of AI curve 1	-100.0% to 100.0%	0.0	%	Real-time	"F4-32" on page 320
F4-33	0xF421	Maximum input of AI curve 1	F4-31 to 10.00 V	10.00	V	Real-time	"F4-33" on page 320
F4-34	0xF422	Percentage corresponding to the maximum input of AI curve 1	-100.0% to 100.0%	100.0	%	Real-time	"F4-34" on page 320

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-35	0xF423	Minimum input of AI curve 2	-10.00 V to F4-37	0.00	V	Real-time	" F4-35" on page 321
F4-36	0xF424	Percentage corresponding to minimum input of AI curve 2	-100.0% to 100.0%	0.0	%	Real-time	" F4-36" on page 321
F4-37	0xF425	Maximum input of AI curve 2	F4-35 to 10.00 V	10.00	V	Real-time	" F4-37" on page 321
F4-38	0xF426	Percentage corresponding to the maximum input of AI curve 2	-100.0% to 100.0%	100.0	%	Real-time	" F4-38" on page 321
F4-39	0xF427	Minimum input of AI curve 3	-10.00 V to F4-41	0.00	V	Real-time	" F4-39" on page 322
F4-40	0xF428	Percentage corresponding to minimum input of AI curve 3	-100.0% to 100.0%	0.0	%	Real-time	" F4-40" on page 322
F4-41	0xF429	Maximum input of AI curve 3	F4-39 to 10.00 V	10.00	V	Real-time	" F4-41" on page 322
F4-42	0xF42A	Percentage corresponding to the maximum input of AI curve 3	-100.0% to 100.0%	100.0	%	Real-time	" F4-42" on page 322
F4-48	0xF430	AI curve	Ones position: AI1 1: Curve 1 (2 points) 2: Curve 2 (2 points) 3: Curve 3 (2 points) 4: Curve 4 (4 points) 5: Curve 5 (4 points) Tens position: AI2 1: Curve 1 (2 points) 2: Curve 2 (2 points) 3: Curve 3 (2 points) 4: Curve 4 (4 points) 5: Curve 5 (4 points) Hundreds position: AI3 1: Curve 1 (2 points) 2: Curve 2 (2 points) 3: Curve 3 (2 points) 4: Curve 4 (4 points) 5: Curve 5 (4 points)	0x321	/	Real-time	" F4-48" on page 322

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F4-49	0xF431	Selection when AI less than the set minimum input	Ones: AI1 0: Percentage corresponding to the minimum input 1: 0.0% Tens: AI2 0: Percentage corresponding to the minimum input 1: 0.0% Hundreds: AI3 0: Percentage corresponding to the minimum input 1: 0.0%	0x0	/	Real-time	"F4-49" on page 323
F5-00	0xF500	DO1/RO1 hardware source	0: No selection 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Expansion card 1 - DO1/RO1 102: Expansion card 1 - DO2/RO2 103: Expansion card 1 - DO3/RO3 104: Expansion card 1 - DO4/RO4 105: Expansion card 1 - DO5/RO5 106: Expansion card 1 - DO6/RO6 107: Expansion card 1 - DO7/RO7 108: Expansion card 1 - DO8/RO8 201: Expansion card 2 - DO1/RO1 202: Expansion card 2 - DO2/RO2 203: Expansion card 2 - DO3/RO3 204: Expansion card 2 - DO4/RO4 205: Expansion card 2 - DO5/RO5 206: Expansion card 2 - DO6/RO6 207: Expansion card 2 - DO7/RO7 208: Expansion card 2 - DO8/RO8	0	/	Real-time	"F5-00" on page 324

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-01	0xF501	DO1/RO1 function selection	0: No output 1: AC drive in operation 2: Ready to run 3: Fault output (stop upon fault) 4: Fault output 2 5: Fault output 3 6: Abnormal output (direct output upon fault or alarm) 7: Motor overload warning 8: AC drive overload warning 9: Motor overtemperature warning 10: AC drive load loss 11: Undervoltage state 12: Output current limit exceeded 13: Frequency level detection FDT1 output 14: Frequency level detection FDT2 output 15: Frequency reached	3	/	Real-time	" F5-01" on page 325
F5-01	0xF501	DO1/RO1 function selection	16: Frequency 1 reached 17: Frequency 2 reached 18: Frequency upper limit reached 19: Frequency lower limit reached (output at stop) 20: Frequency lower limit reached (no output at stop) 21: Timing reached 22: Cumulative power-on time reached 23: Cumulative operating time reached 24: Current operating time reached 25: Zero current state 26: Current 1 reached 27: Current 2 reached 28: AC drive overtemperature threshold reached 29: Counting value setpoint reached 30: Designated counting value reached 31: Length reached 32: Frequency limited 33: Torque limited 34: AI1 input beyond the limit 35: AI1 > AI2	3	/	Real-time	" F5-01" on page 325

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-01	0xF501	DO1/RO1 function selection	36: PLC cycle completed 37: Communication setting 38: STO-EDM 39: Reserved 40: Operating at zero speed (no output at stop) 41: Operating at zero speed 2 (active upon stop) 42: Reserved 43: Operating in reverse direction 44: Process 1 45: Process 2 46: Process 3 47: Process 4 48: Process 5 49: Process 6 50: Process 7 51: Reserved 52: Reserved 53: Brake output	3	/	Real-time	" F5-01" on page 325
F5-02	0xF502	DO2/RO2 hardware source	Same as F5–00	0	/	Real-time	" F5-02" on page 330
F5-03	0xF503	DO2/RO2 output function	Same as F5–01	15	/	Real-time	" F5-03" on page 331
F5-04	0xF504	DO3/RO3 hardware source	Same as F5–00	0	/	Real-time	" F5-04" on page 331
F5-05	0xF505	DO3/RO3 output function	Same as F5–01	0	/	Real-time	" F5-05" on page 332
F5-06	0xF506	DO4/RO4 hardware source	Same as F5–00	0	/	Real-time	" F5-06" on page 332
F5-07	0xF507	DO4/RO4 output function	Same as F5–01	0	/	Real-time	" F5-07" on page 333
F5-08	0xF508	DO5/RO5 hardware source	Same as F5–00	0	/	Real-time	" F5-08" on page 333
F5-09	0xF509	DO5/RO5 output function	Same as F5–01	0	/	Real-time	" F5-09" on page 334
F5-10	0xF50A	DO1/RO1 output delay time	0.0s to 3600.0s	0.0	s	Real-time	" F5-10" on page 334
F5-11	0xF50B	DO2/RO2 output delay time	0.0s to 3600.0s	0.0	s	Real-time	" F5-11" on page 335

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F5-12	0xF50C	DO3/RO3 output delay time	0.0s to 3600.0s	0.0	s	Real-time	“ F5-12” on page 335
F5-13	0xF50D	DO4/RO4 output delay time	0.0s to 3600.0s	0.0	s	Real-time	“ F5-13” on page 335
F5-14	0xF50E	DO5/RO5 output delay time	0.0s to 3600.0s	0.0	s	Real-time	“ F5-14” on page 335
F5-15	0xF50F	DO/RO active mode selection	Ones: DO1/ RO1 0: Positive logic 1: Negative logic Tens: DO1/ RO1 0: Positive logic 1: Negative logic Hundreds: DO3/ RO3 0: Positive logic 1: Negative logic Thousands: DO4/ RO4 0: Positive logic 1: Negative logic Ten thousands: DO5/ RO5 0: Positive logic 1: Negative logic	0	/	Real-time	“ F5-15” on page 335
F6-00	0xF600	Startup mode	0: Direct start 1: Flying start (asynchronous motor) 2: Vector pre-excitation start (asynchronous motor)	0	/	Real-time	“ F6-00” on page 336
F6-01	0xF601	Frequency for flying start mode	0: From frequency at stop 1: From 50 Hz 2: From the maximum frequency 3: Flying start	0	/	At stop	“ F6-01” on page 337
F6-02	0xF602	Flying start speed	1 to 100	20	/	Real-time	“ F6-02” on page 337
F6-03	0xF603	Startup frequency	0.00 Hz to 10.00 Hz	0.00	Hz	Real-time	“ F6-03” on page 338
F6-04	0xF604	Startup frequency holding time	0.0s to 100.0s	0.0	s	At stop	“ F6-04” on page 338
F6-05	0xF605	DC braking current/Pre-excitation current upon start	0% to 100%	0	%	At stop	“ F6-05” on page 338

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F6-06	0xF606	DC braking/Pre-excitation time upon start	0.0s to 100.0s	0.0	s	At stop	" F6-06" on page 338
F6-07	0xF607	Acceleration/ Deceleration mode	0: Linear acceleration/ deceleration 1: S-curve acceleration/ deceleration 2: Four-segment S-curve acceleration/deceleration	0	/	At stop	" F6-07" on page 339
F6-10	0xF60A	Stop Mode	0: Decelerate to stop 1: Coast to stop	0	/	Real-time	" F6-10" on page 339
F6-11	0xF60B	DC braking/ Position lock start frequency for stop	0.00 Hz to F0-10	0.00	Hz	Real-time	" F6-11" on page 339
F6-12	0xF60C	DC braking waiting time for stop	0.0s to 100.0s	0.0	s	Real-time	" F6-12" on page 340
F6-13	0xF60D	DC braking current at stop	0% to 100%	50	%	Real-time	" F6-13" on page 340
F6-14	0xF60E	Stop DC braking active time	0.0s to 100.0s	0.5	s	Real-time	" F6-14" on page 340
F6-15	0xF60F	Braking usage rate	0% to 100%	100	%	At stop	" F6-15" on page 340
F6-16	0xF610	Closed-loop current Kp of flying start	0 to 1000	500	/	Real-time	" F6-16" on page 341
F6-17	0xF611	Closed-loop current Ki of torque tracking	0 to 1000	800	/	Real-time	" F6-17" on page 341
F6-18	0xF612	Current during flying start	30 to 200	100	/	Real-time	" F6-18" on page 341
F6-19	0xF613	Gain coefficient of fast flying start	1.0 to 20.0	10.0	/	At stop	" F6-19" on page 341
F6-20	0xF614	Cut-off frequency of fast flying start	0.5 Hz to 3.0 Hz	1.1	Hz	At stop	" F6-20" on page 342
F6-21	0xF615	Demagnetization time	0.00s to 10.00s	1.00	s	Real-time	" F6-21" on page 342
F6-22	0xF616	Start pre-torque setting	0.0% to 200.0%	0.0	%	Real-time	" F6-22" on page 342

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F6-23	0xF617	Operation command on power supply unit	0: Stop according to F6-10 1: Ignore stop command from the power supply side	0	/	At stop	" F6-23" on page 342
F6-24	0xF618	Position lock Kp	0.0 to 100.0	10.0	/	Real-time	" F6-24" on page 343
F6-25	0xF619	Position lock end amplitude	0 to 16383	10	/	Real-time	" F6-25" on page 343
F6-26	0xF61A	Time proportion of S-curve acceleration start segment	0.0% to 100.0%	30.0	%	At stop	" F6-26" on page 343
F6-27	0xF61B	Time proportion of S-curve acceleration end segment	0.0% to 100.0%	30.0	%	At stop	" F6-27" on page 343
F6-28	0xF61C	Time proportion of S-curve deceleration start segment	0.0% to 100.0%	30.0	%	At stop	" F6-28" on page 343
F6-29	0xF61D	Time proportion of S-curve deceleration end segment	0.0% to 100.0%	30.0	%	At stop	" F6-29" on page 344
F6-30	0xF61E	Trial current for flying start of synchronous motor	5.0% to 50.0%	20.0	%	At stop	" F6-30" on page 344
F6-31	0xF61F	Minimum track frequency for synchronous motor flying start	0.0 Hz to 100.0 Hz	0.0	Hz	At stop	" F6-31" on page 344
F6-32	0xF620	Angle compensation for flying start of synchronous motor	0 to 360	0	/	At stop	" F6-32" on page 344
F6-33	0xF621	Proportion coefficient of synchronous motor flying start	0.1 to 10.0	2.0	/	At stop	" F6-33" on page 345
F6-34	0xF622	Integral coefficient of synchronous motor flying start	0.1 to 10.0	6.0	/	At stop	" F6-34" on page 345

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F6-35	0xF623	Reverse running inhibition for flying start	0 to 2	0	/	Real-time	" F6-35" on page 345
F7-00	0xF700	Drive unit indicator test	0 to 2	0	/	Real-time	" F7-00" on page 345
F7-01	0xF701	MF.K key function	0: MF.K key disabled 1: Switchover between operating panel control and remote command control (terminal or communication) 2: Switchover between forward and reverse running 3: Forward jog 4: Reverse jog	0	/	At stop	" F7-01" on page 346
F7-02	0xF702	STOP key function	0: Stop function of the STOP/RES key enabled only in operating panel control mode 1: Stop function of the STOP/RES key enabled in any operating mode	1	/	Real-time	" F7-02" on page 346
F7-03	0xF703	Parameter 1 displayed on LED operating panel during operation	Bit 0: Running frequency (Hz) Bit 1: Frequency Reference (Hz) Bit 2: Bus voltage (V) Bit 3: Output voltage (V) Bit 4: Output current (A) Bit 5: Output power (kW) Bit 6: Output torque (%) Bit 7: DI state Bit 8: DO state Bit 9: AI1 voltage (V) Bit 10: AI2 voltage (V) Bit 11: AI3 voltage (V) Bit 12: Count value Bit 13: Length value Bit 14: Load speed Bit 15: PID reference	0x1F	/	Real-time	" F7-03" on page 347

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F7-04	0xF704	Parameter 2 displayed on LED operating panel during operation	Bit 0: PID feedback Bit 1: PLC stage Bit 2: Reserved Bit 3: Feedback speed (Hz) Bit 4: Remaining running time Bit 5: Reserved Bit 6: Reserved Bit 7: Reserved Bit 8: Linear speed Bit 9: Current power-on duration (min.) Bit 10: Current running duration (min.) Bit 11: Reserved Bit 12: Communication setpoint Bit 13: Reserved Bit 14: Main frequency X Bit 15: Auxiliary frequency Y	0x0	/	Real-time	" F7-04" on page 347
F7-05	0xF705	Parameter displayed on the LED operating panel upon stop	Bit 0: Frequency reference (Hz) Bit 1: Bus voltage (V) Bit 2: DI state Bit 3: DO state Bit 4: AI1 voltage (V) Bit 5: AI2 voltage (V) Bit 6: AI3 voltage (V) Bit 7: Count value Bit 8: Length value Bit 9: PLC stage Bit 10: Load speed Bit 11: PID reference Bit 12: Reserved	0x33	/	Real-time	" F7-05" on page 348
F7-06	0xF706	STO software version	0.0 to 6553.5	0.0	/	Unchangeable	" F7-06" on page 349
F7-07	0xF707	Drive unit heatsink temperature	0°C to 1000°C	0	°C	Unchangeable	" F7-07" on page 349
F7-08	0xF708	Product No.	0–999	0	/	Unchangeable	" F7-08" on page 349
F7-09	0xF709	Accumulative running time	0h to 65535h	0	h	Unchangeable	" F7-09" on page 349
F7-10	0xF70A	Performance software version	0.00 to 655.35	0.00	/	Unchangeable	" F7-10" on page 349
F7-11	0xF70B	Function software version	0.00 to 655.35	0.00	/	Unchangeable	" F7-11" on page 350
F7-12	0xF70C	Cumulative power-on time	0h to 65535h	0	h	Unchangeable	" F7-12" on page 350

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F7-13	0xF70D	Cumulative power generation	0 kWh to 65535 kWh	0	kWh	Unchangeable	“ F7-13” on page 350
F7-14	0xF70E	Accumulative power consumption	0 kWh to 65535 kWh	0	kWh	Unchangeable	“ F7-14” on page 350
F7-15	0xF70F	Temporary performance software version	0.00 to 655.35	0.00	/	Unchangeable	“ F7-15” on page 350
F7-16	0xF710	Temporary version of function software	0.00 to 655.35	0.00	/	Unchangeable	“ F7-16” on page 351
F8-00	0xF800	Jog frequency	0.00 Hz to F0-10	2.00	Hz	Real-time	“ F8-00” on page 351
F8-01	0xF801	Jog acceleration time	0.0s to 6500.0s	20.0	s	Real-time	“ F8-01” on page 351
F8-02	0xF802	Jog deceleration time	0.0s to 6500.0s	20.0	s	Real-time	“ F8-02” on page 351
F8-03	0xF803	Acceleration time 2	0.0s to 6500.0s	0.0	s	Real-time	“ F8-03” on page 352
F8-04	0xF804	Deceleration time 2	0.0s to 6500.0s	0.0	s	Real-time	“ F8-04” on page 352
F8-05	0xF805	Acceleration time 3	0.0s to 6500.0s	0.0	s	Real-time	“ F8-05” on page 352
F8-06	0xF806	Deceleration time 3	0.0s to 6500.0s	0.0	s	Real-time	“ F8-06” on page 352
F8-07	0xF807	Acceleration time 4	0.0s to 6500.0s	0.0	s	Real-time	“ F8-07” on page 353
F8-08	0xF808	Deceleration time 4	0.0s to 6500.0s	0.0	s	Real-time	“ F8-08” on page 353
F8-09	0xF809	Jump frequency 1	0.00 Hz to F0-10	0.00	Hz	Real-time	“ F8-09” on page 353
F8-10	0xF80A	Jump frequency 2	0.00 Hz to F0-10	0.00	Hz	Real-time	“ F8-10” on page 353
F8-11	0xF80B	Jump frequency amplitude	0.00 Hz to 5.00 Hz	0.00	Hz	Real-time	“ F8-11” on page 354
F8-12	0xF80C	Jump frequency state during acceleration/ deceleration	0: Invalid 1: Valid	0	/	Real-time	“ F8-12” on page 354

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F8-13	0xF80D	Dead zone time of forward/ reverse run switchover	0.0s to 3000.0s	0.0	s	Real-time	“F8-13” on page 354
F8-14	0xF80E	Reverse running control	0: Allowed 1: Inhibited	0	/	Real-time	“F8-14” on page 354
F8-15	0xF80F	Running mode when frequency is below the frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	/	Real-time	“F8-15” on page 355
F8-17	0xF811	Valid mode of external fault NO input	0: Always valid 1: Valid only during operation	0	/	At stop	“F8-17” on page 355
F8-18	0xF812	NC input mode of external fault	0: Always valid 1: Valid only during operation	0	/	At stop	“F8-18” on page 355
F8-19	0xF813	Cumulative power-on time threshold	0h to 65000h	0	h	Real-time	“F8-19” on page 356
F8-20	0xF814	Cumulative running time threshold	0h to 65000h	0	h	Real-time	“F8-20” on page 356
F8-21	0xF815	Protection upon start	0: Disable 1: Enable	0	/	Real-time	“F8-21” on page 356
F8-22	0xF816	Frequency detection value 1 (FDT1)	0.00 Hz to F0-10	50.00	Hz	Real-time	“F8-22” on page 357
F8-23	0xF817	Frequency detection hysteresis 1 (FDT1)	0.00 Hz to F8-22	2.50	Hz	Real-time	“F8-23” on page 357
F8-24	0xF818	Frequency detection value 2 (FDT2)	0.00 Hz to F0-10	50.00	Hz	Real-time	“F8-24” on page 357
F8-25	0xF819	Frequency detection hysteresis 2 (FDT2)	0.00 Hz to F8-24	2.50	Hz	Real-time	“F8-25” on page 357
F8-26	0xF81A	Frequency detection range	0.00 Hz to 655.35 Hz	2.50	Hz	Real-time	“F8-26” on page 358
F8-27	0xF81B	Detection frequency 1	0.00 Hz to F0-10	50.00	Hz	Real-time	“F8-27” on page 358
F8-28	0xF81C	Range of detection frequency 1	0.00 Hz to F8-27	2.50	Hz	Real-time	“F8-28” on page 358

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F8-29	0xF81D	Detection mode when running frequency reaches detection frequency 1	0: Detection is performed at any time. 1: Detection is not performed during acceleration/deceleration.	0	/	At stop	"F8-29" on page 358
F8-30	0xF81E	Detection frequency 2	0.00 Hz to F0-10	50.00	Hz	Real-time	"F8-30" on page 359
F8-31	0xF81F	Range of detection frequency 2	0.00 Hz to F8-30	2.50	Hz	Real-time	"F8-31" on page 359
F8-32	0xF820	Detection mode when running frequency reaches detection frequency 2	0: Detection is performed at any time. 1: Detection is not performed during acceleration/deceleration.	0	/	At stop	"F8-32" on page 359
F8-35	0xF823	Frequency for switchover between acceleration time 1 and acceleration time 2	0.00 Hz to F0-10	0.00	Hz	Real-time	"F8-35" on page 359
F8-36	0xF824	Frequency for switchover between deceleration time 1 and deceleration time 2	0.00 Hz to F0-10	0.00	Hz	Real-time	"F8-36" on page 360
F8-37	0xF825	Jog with priority	0: Disable 1: Enable	0	/	At stop	"F8-37" on page 360
F8-38	0xF826	Zero current detection level	0.0% to 300.0%	5.0	%	Real-time	"F8-38" on page 360
F8-39	0xF827	Zero current detection delay	0.01s to 600.00s	0.10	s	Real-time	"F8-39" on page 361
F8-40	0xF828	Output overcurrent threshold	0.0% to 300.0%	200.0	%	Real-time	"F8-40" on page 361
F8-41	0xF829	Software overcurrent detection delay	0.00s to 600.00s	0.00	s	Real-time	"F8-41" on page 361
F8-42	0xF82A	Detection current 1	0.0% to 300.0%	100.0	%	Real-time	"F8-42" on page 361

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F8-43	0xF82B	Detection current amplitude 1	0.0% to 300.0%	0.0	%	Real-time	" F8-43" on page 362
F8-44	0xF82C	Detection current 2	0.0% to 300.0%	100.0	%	Real-time	" F8-44" on page 362
F8-45	0xF82D	Detection current amplitude 2	0.0% to 300.0%	0.0	%	Real-time	" F8-45" on page 362
F8-46	0xF82E	Timing function	0: Disable 1: Enable	0	/	At stop	" F8-46" on page 362
F8-47	0xF82F	Timing operation time setting source	0: F8-48 1: AI1 2: AI2	0	/	At stop	" F8-47" on page 363
F8-48	0xF830	Timing operation time	0.0 min to 6500.0 min	0.0	min	At stop	" F8-48" on page 363
F8-49	0xF831	Lower limit of AI1 input voltage	0.00 V to F8-50	3.10	V	Real-time	" F8-49" on page 363
F8-50	0xF832	Upper limit of AI1 input voltage	F8-49 to 11.00 V	6.80	V	Real-time	" F8-50" on page 364
F8-51	0xF833	AC drive overtemperature threshold reached	0°C to 100°C	75	°C	Real-time	" F8-51" on page 364
F8-52	0xF834	Cooling fan control	0: The fan runs forward during AC drive operation. 1: The fan runs forward at any time. 2: The fan runs forward or reversely at any time. 3: The fan runs forward or reversely during AC drive operation.	0	/	Real-time	" F8-52" on page 364
F8-54	0xF836	Wakeup frequency	F8-56 to F0-10	0.00	Hz	Real-time	" F8-54" on page 365
F8-55	0xF837	Wakeup delay	0.0s to 6500.0s	0.0	s	Real-time	" F8-55" on page 365
F8-56	0xF838	Hibernation frequency	0.00 Hz to F8-54	0.00	Hz	Real-time	" F8-56" on page 365
F8-57	0xF839	Hibernation delay	0.0s to 6500.0s	0.0	s	Real-time	" F8-57" on page 365
F8-58	0xF83A	Current running time reach	0.0 min to 6500.0 min	0.0	min	Real-time	" F8-58" on page 366

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F8-59	0xF83B	Switchover between communication address 2000H/ 2001H	0: General protocol 1: Specialized protocol	0	/	At stop	"F8-59" on page 366
F8-60	0xF83C	Deceleration time for emergency stop	0.0s to 6500.0s	0.0	s	Real-time	"F8-60" on page 366
F8-61	0xF83D	Jog enabled by LED operating panel	0 to 0	0	/	Unchangeable	"F8-61" on page 367
F8-62	0xF83E	Load speed display coefficient	0.0001 to 6.5000	1.0000	/	Real-time	"F8-62" on page 367
F8-63	0xF83F	Number of decimal places for load speed display	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	/	Real-time	"F8-63" on page 367
F8-64	0xF840	7310H address data unit	0: Frequency (Hz) 1: Speed (rpm)	0	/	At stop	"F8-64" on page 368
F8-65	0xF841	Detection time threshold for STO inconsistency fault	12 ms to 1000 ms	50	ms	At stop	"F8-65" on page 368
F8-66	0xF842	STO display mode selection	0: Display STO status 1: Display STO fault	0	/	At stop	"F8-66" on page 368
F9-00	0xF900	AC drive overload suppression	0: Disable 1: Enable	0	/	Real-time	"F9-00" on page 368
F9-01	0xF901	Motor overload protection gain	0.20 to 10.00	1.00	/	Real-time	"F9-01" on page 369
F9-02	0xF902	Motor overload warning coefficient	50% to 100%	80	%	Real-time	"F9-02" on page 369
F9-06	0xF906	Output phase loss detection before startup	0: Disable 1: Enable	0	%	Real-time	"F9-06" on page 369
F9-07	0xF907	Detection of software short circuit to ground	0: Disable 1: Enable	1	/	At stop	"F9-07" on page 370
F9-09	0xF909	Number of automatic resets upon fault	0 to 20	0	/	Real-time	"F9-09" on page 370

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F9-10	0xF90A	DO action during automatic fault reset	0: Disable 1: Enable	0	/	Real-time	" F9-10" on page 370
F9-11	0xF90B	Interval time of automatic fault reset	0.1s to 100.0s	1.0	s	Real-time	" F9-11" on page 371
F9-13	0xF90D	Automatic reset upon STO fault	0: Manual reset 1: Automatic reset	1	/	At stop	" F9-13" on page 371
F9-14	0xF90E	Type of the 1st fault	0 to 99	0	/	Unchangeable	" F9-14" on page 371
F9-15	0xF90F	Type of the 2nd fault	0 to 99	0	/	Unchangeable	" F9-15" on page 371
F9-16	0xF910	Type of the 3rd (latest) fault	0 to 99	0	/	Unchangeable	" F9-16" on page 372
F9-17	0xF911	Frequency upon 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-17" on page 372
F9-18	0xF912	Current upon the 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-18" on page 372
F9-19	0xF913	Bus voltage upon 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-19" on page 372
F9-20	0xF914	Input terminal state upon the 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-20" on page 373
F9-21	0xF915	Output terminal state upon the 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-21" on page 373
F9-22	0xF916	AC drive state upon 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-22" on page 373
F9-23	0xF917	Power-on time upon the 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-23" on page 373
F9-24	0xF918	Running time upon the 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-24" on page 374
F9-25	0xF919	IGBT temperature upon the 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-25" on page 374
F9-26	0xF91A	Fault subcode of the 3rd (latest) fault	0 to 0	0	/	Unchangeable	" F9-26" on page 374

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F9-27	0xF91B	Frequency upon the 2nd fault	0 to 0	0	/	Unchangeable	"F9-27" on page 374
F9-28	0xF91C	Current upon 2nd fault	0 to 0	0	/	Unchangeable	"F9-28" on page 374
F9-29	0xF91D	Bus voltage upon 2nd fault	0 to 0	0	/	Unchangeable	"F9-29" on page 375
F9-30	0xF91E	Input terminal state upon 2nd fault	0 to 0	0	/	Unchangeable	"F9-30" on page 375
F9-31	0xF91F	Output terminal state upon 2nd fault	0 to 0	0	/	Unchangeable	"F9-31" on page 375
F9-32	0xF920	AC drive state upon 2nd fault	0 to 0	0	/	Unchangeable	"F9-32" on page 375
F9-33	0xF921	Power-on time upon the 2nd fault	0 to 0	0	/	Unchangeable	"F9-33" on page 375
F9-34	0xF922	Running time upon the 2nd fault	0 to 0	0	/	Unchangeable	"F9-34" on page 376
F9-35	0xF923	IGBT temperature upon the 2nd fault	0 to 0	0	/	Unchangeable	"F9-35" on page 376
F9-36	0xF924	Fault subcode of 2nd fault	0–0	0	/	Unchangeable	"F9-36" on page 376
F9-37	0xF925	Frequency upon the 1st fault	0 to 0	0	/	Unchangeable	"F9-37" on page 376
F9-38	0xF926	Current upon 1st fault	0 to 0	0	/	Unchangeable	"F9-38" on page 377
F9-39	0xF927	Bus voltage upon 1st fault	0 to 0	0	/	Unchangeable	"F9-39" on page 377
F9-40	0xF928	Input terminal state upon 1st fault	0 to 0	0	/	Unchangeable	"F9-40" on page 377
F9-41	0xF929	Output terminal state upon 1st fault	0 to 0	0	/	Unchangeable	"F9-41" on page 377
F9-42	0xF92A	AC drive state upon 1st fault	0 to 0	0	/	Unchangeable	"F9-42" on page 377
F9-43	0xF92B	Power-on time upon the 1st fault	0 to 0	0	/	Unchangeable	"F9-43" on page 378

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F9-44	0xF92C	Running time upon the 1st fault	0 to 0	0	/	Unchangeable	“ F9-44” on page 378
F9-45	0xF92D	IGBT temperature upon the 1st fault	0 to 0	0	/	Unchangeable	“ F9-45” on page 378
F9-46	0xF92E	Fault subcode of 1st fault	0–0	0	/	Unchangeable	“ F9-46” on page 378
F9-47	0xF92F	Protection action section 0 upon fault	0 to 55555	500	/	At stop	“ F9-47” on page 378
F9-48	0xF930	Fault protection action selection 1	Ones: E11 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel Tens: Reserved 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel Hundreds: E13 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel Thousands: E14 0: Coast to stop Ten thousands: E15 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	10050	/	At stop	“ F9-48” on page 379
F9-49	0xF931	Fault protection action selection 2	Ones: Value of E16 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Tens: Reserved 5: Disable Hundreds: Reserved 0: Coast to stop Thousands: Value of E19 0: Coast to stop 4: Warning 5: Disable Ten thousands: Reserved 5: Disable	50050	/	At stop	“ F9-49” on page 380

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F9-50	0xF932	Fault protection action selection 3	Ones: Value of E21 0: Coast to stop Tens: Value of E22 0: Coast to stop Hundreds: Value of E23 0: Coast to stop 5: Disable Thousands: Reserved 5: Disable Ten thousands: Value of E25 2: Decelerate to stop 5: Disable	15000	/	At stop	" F9-50" on page 380
F9-51	0xF933	Fault protection action selection 4	Ones: Value of E26 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Tens: Value of E27 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Hundreds: Value of E28 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Thousands: Value of E29 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Ten thousands: Value of E30 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable	51111	/	At stop	" F9-51" on page 381

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F9-52	0xF934	Fault protection action selection 5	Ones: Value of E31 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Tens: Reserved 5: Disable Hundreds: Reserved 5: Disable Thousands: Value of E42 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Ten thousands: Value of E43 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable	551	/	At stop	" F9-52" on page 382
F9-53	0xF935	Fault protection action selection 6	Ones: Value of E45 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disable Tens: Reserved 5: Disable Hundreds: Reserved 5: Disable Thousands: Reserved 5: Disable Ten thousands: Value of E80 0: Coast to stop 1: Decelerate to stop 5: Disable	5500	/	At stop	" F9-53" on page 383
F9-54	0xF936	Frequency for continuing to run upon fault	0: Current running frequency 1: Frequency reference 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon error	1	/	Real-time	" F9-54" on page 384
F9-55	0xF937	Backup frequency reference upon error	0.0% to 100.0%	100.0	%	Real-time	" F9-55" on page 384
F9-57	0xF939	Motor overtemperature protection threshold 1	0°C to 200°C	110	°C	Real-time	" F9-57" on page 385

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F9-58	0xF93A	Motor overheat warning threshold 1	0°C to 200°C	90	°C	Real-time	" F9-58" on page 385
F9-59	0xF93B	Motor overtemperature protection threshold 2	0°C to 200°C	110	°C	Real-time	" F9-59" on page 385
F9-60	0xF93C	Motor overtemperature pre-alarm threshold 2	0°C to 200°C	90	°C	Real-time	" F9-60" on page 386
F9-61	0xF93D	Motor overtemperature protection threshold 3	0°C to 200°C	110	°C	Real-time	" F9-61" on page 386
F9-62	0xF93E	Motor overheat warning threshold 3	0°C to 200°C	90	°C	Real-time	" F9-62" on page 386
F9-63	0xF93F	Power dip ride-through action	0: Disabled 1: Decelerate (Bus voltage constant control) 2: Decelerate to stop	0	/	At stop	" F9-63" on page 386
F9-64	0xF940	Threshold for recovery from power dip ride-through	8.0% to 10.0%	8.5	%	Real-time	" F9-64" on page 387
F9-65	0xF941	Time threshold for voltage recovery from power dip ride-through	0.0s to 100.0s	0.5	s	Real-time	" F9-65" on page 387
F9-66	0xF942	Threshold for enabling power dip ride-through	60% to 100%	80	%	Real-time	" F9-66" on page 387
F9-67	0xF943	Alarm threshold of continuous frame loss times for I/O module	0 to 1000	60	/	At stop	" F9-67" on page 388
F9-68	0xF944	Load loss detection level	0.0% to 100.0%	10.0	%	Real-time	" F9-68" on page 388
F9-69	0xF945	Load loss detection time	0.1s to 60.0s	1.0	s	Real-time	" F9-69" on page 388
F9-71	0xF947	Overspeed detection level	0.0% to 50.0%	5.0	%	Real-time	" F9-71" on page 389
F9-72	0xF948	Overspeed detection time	0.0 to 60.0	1.0	/	Real-time	" F9-72" on page 389

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
F9-73	0xF949	Detection level for excessive speed deviation	0.0% to 50.0%	20.0	%	Real-time	"F9-73" on page 389
F9-74	0xF94A	Detection time for excessive speed deviation	0.0s to 60.0s	5.0	s	Real-time	"F9-74" on page 389
F9-75	0xF94B	Power dip ride-through gain	0 to 100	40	/	Real-time	"F9-75" on page 390
F9-76	0xF94C	Power dip ride-through integral	0 to 100	30	/	Real-time	"F9-76" on page 390
F9-77	0xF94D	Deceleration time of power dip ride-through	0.0s to 300.0s	20.0	s	Real-time	"F9-77" on page 390
FA-00	0xFA00	PID reference source	0: PID digital reference (FA-01) 1: AI1 2: AI2 3: AI3 4: Reserved 5 Communication 6: Multi-reference	0	/	Real-time	"FA-00" on page 391
FA-01	0xFA01	PID digital reference	0.0% to 100.0%	50.0	%	Real-time	"FA-01" on page 391
FA-02	0xFA02	PID feedback source	0: AI1 1: AI2 2: AI3 3: AI1 – AI2 4: Reserved 5: Communication 6: AI1 + AI2 7: Max. (|AI1|, |AI2|) 8: Min. (|AI1|, |AI2|)	0	/	Real-time	"FA-02" on page 392
FA-03	0xFA03	PID action direction	0: Positive effect 1: Negative effect	0	/	Real-time	"FA-03" on page 392
FA-04	0xFA04	PID reference and feedback range	0 to 65535	1000	/	Real-time	"FA-04" on page 392
FA-05	0xFA05	Proportional gain Kp1	0.0 to 1000.0	20.0	/	Real-time	"FA-05" on page 393
FA-06	0xFA06	Integral time Ti1	0.01s to 100.00s	2.00	s	Real-time	"FA-06" on page 393
FA-07	0xFA07	Differential time Td1	0.000s to 10.000s	0.000	s	Real-time	"FA-07" on page 393
FA-08	0xFA08	PID reverse cut-off frequency	0.00 Hz to F0-10	2.00	Hz	Real-time	"FA-08" on page 393
FA-09	0xFA09	PID error limit	0.0% to 100.0%	0.0	%	Real-time	"FA-09" on page 394

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FA-10	0xFA0A	PID differential limit	0.00% to 100.00%	0.10	%	Real-time	" FA-10" on page 394
FA-11	0xFA0B	PID reference change time	0.00s to 650.00s	0.00	s	Real-time	" FA-11" on page 394
FA-12	0xFA0C	PID feedback filter time	0.00s to 60.00s	0.00	s	Real-time	" FA-12" on page 394
FA-13	0xFA0D	PID deviation gain	0.0% to 100.0%	100.0	%	Real-time	" FA-13" on page 395
FA-15	0xFA0F	Proportional gain Kp 2	0.0 to 1000.0	20.0	/	Real-time	" FA-15" on page 395
FA-16	0xFA10	Integral time Ti 2	0.01s to 100.00s	2.00	s	Real-time	" FA-16" on page 395
FA-17	0xFA11	Differential time Td1	0.000s to 10.000s	0.000	s	Real-time	" FA-17" on page 395
FA-18	0xFA12	PID parameter switchover condition	0: No switchover 1: Switchover by DI 2: Automatic switchover based on deviation 3: Switchover based on running frequency 4: Reserved 5:Reserved 6: Automatic adjustment based on roll diameter 7: Automatic adjustment based on maximum roll diameter percentage	0	/	Real-time	" FA-18" on page 396
FA-19	0xFA13	PID deviation 1 for auto switchover	0.0% to FA-20	20.0	%	Real-time	" FA-19" on page 397
FA-20	0xFA14	PID parameter switchover deviation 2	FA-19 to 100.0%	80.0	%	Real-time	" FA-20" on page 397
FA-21	0xFA15	PID initial value	0.0% to 100.0%	0.0	%	Real-time	" FA-21" on page 397
FA-22	0xFA16	Active time of PID initial value	0.00s to 650.00s	0.00	s	Real-time	" FA-22" on page 398
FA-23	0xFA17	Maximum deviation between two PID outputs in forward direction	0.00% to 100.00%	1.00	%	Real-time	" FA-23" on page 398

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FA-24	0xFA18	Maximum deviation between two PID outputs in reverse direction	0.00% to 100.00%	1.00	%	Real-time	"FA-24" on page 398
FA-25	0xFA19	PID integral pause	0: Disable 1: Enable	0	/	Real-time	"FA-25" on page 398
FA-26	0xFA1A	Detected value of PID feedback loss	0.0% to 100.0%	0.0	%	Real-time	"FA-26" on page 399
FA-27	0xFA1B	Detection time of PID feedback loss	0.0s to 20.0s	0.0	s	Real-time	"FA-27" on page 399
FB-00	0xFB00	Wobble setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0	/	Real-time	"FB-00" on page 399
FB-01	0xFB01	Wobble amplitude	0.0% to 100.0%	0.0	%	Real-time	"FB-01" on page 400
FB-02	0xFB02	Jump frequency amplitude	0.0% to 50.0%	0.0	%	Real-time	"FB-02" on page 400
FB-03	0xFB03	Wobble cycle	0.1s to 3000.0s	10.0	s	Real-time	"FB-03" on page 400
FB-04	0xFB04	Triangular wave rising time of wobble frequency	0.1% to 100.0%	50.0	%	Real-time	"FB-04" on page 400
FB-05	0xFB05	Length reference	0 m to 65535 m	1000	m	Real-time	"FB-05" on page 401
FB-06	0xFB06	Actual length	0 m to 65535 m	0	m	Real-time	"FB-06" on page 401
FB-07	0xFB07	Number of pulses per meter	0.1 to 6553.5	100.0	/	Real-time	"FB-07" on page 401
FB-08	0xFB08	Count value reference	1 to 65535	1000	/	Real-time	"FB-08" on page 401
FB-09	0xFB09	Designated count value	1 to 65535	1000	/	Real-time	"FB-09" on page 401
FC-00	0xFC00	Multi-reference 0	-100.0% to 100.0%	0.0	%	Real-time	"FC-00" on page 402
FC-01	0xFC01	Multi-reference 1	-100.0% to 100.0%	0.0	%	Real-time	"FC-01" on page 402
FC-02	0xFC02	Multi-reference 2	-100.0% to 100.0%	0.0	%	Real-time	"FC-02" on page 403
FC-03	0xFC03	Multi-reference 3	-100.0% to 100.0%	0.0	%	Real-time	"FC-03" on page 403

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FC-04	0xFC04	Multi-reference 4	-100.0% to 100.0%	0.0	%	Real-time	"FC-04" on page 404
FC-05	0xFC05	Multi-reference 5	-100.0% to 100.0%	0.0	%	Real-time	"FC-05" on page 404
FC-06	0xFC06	Multi-reference 6	-100.0% to 100.0%	0.0	%	Real-time	"FC-06" on page 405
FC-07	0xFC07	Multi-reference 7	-100.0% to 100.0%	0.0	%	Real-time	"FC-07" on page 405
FC-08	0xFC08	Multi-reference 8	-100.0% to 100.0%	0.0	%	Real-time	"FC-08" on page 406
FC-09	0xFC09	Multi-reference 9	-100.0% to 100.0%	0.0	%	Real-time	"FC-09" on page 406
FC-10	0xFC0A	Multi-reference 10	-100.0% to 100.0%	0.0	%	Real-time	"FC-10" on page 407
FC-11	0xFC0B	Multi-reference 11	-100.0% to 100.0%	0.0	%	Real-time	"FC-11" on page 407
FC-12	0xFC0C	Multi-reference 12	-100.0% to 100.0%	0.0	%	Real-time	"FC-12" on page 408
FC-13	0xFC0D	Multi-reference 13	-100.0% to 100.0%	0.0	%	Real-time	"FC-13" on page 408
FC-14	0xFC0E	Multi-reference 14	-100.0% to 100.0%	0.0	%	Real-time	"FC-14" on page 409
FC-15	0xFC0F	Multi-reference 15	-100.0% to 100.0%	0.0	%	Real-time	"FC-15" on page 409
FC-16	0xFC10	Simple PLC operation mode	0: Stop after operating for one cycle 1: Keep final values after operating for one cycle 2: Operating cyclically	0	/	Real-time	"FC-16" on page 410
FC-17	0xFC11	Simple PLC retention selection upon power failure	Ones: Retention selection upon power failure 0: Disable 1: Enable Tens: Retention selection upon stop 0: Disable 1: Enable	0	/	Real-time	"FC-17" on page 410
FC-18	0xFC12	Running time of multi-reference 0 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-18" on page 411
FC-19	0xFC13	Acceleration/ Deceleration time of multi-reference 0 set by simple PLC	0 to 3	0	/	Real-time	"FC-19" on page 411

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FC-20	0xFC14	Running time of multi-reference 1 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-20" on page 411
FC-21	0xFC15	Acceleration/ Deceleration time of multi-reference 1 set by simple PLC	0 to 3	0	/	Real-time	"FC-21" on page 411
FC-22	0xFC16	Running time of multi-reference 2 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-22" on page 412
FC-23	0xFC17	Acceleration/ Deceleration time of multi-reference 2 set by simple PLC	0 to 3	0	/	Real-time	"FC-23" on page 412
FC-24	0xFC18	Running time of multi-reference 3 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-24" on page 412
FC-25	0xFC19	Acceleration/ Deceleration time of multi-reference 3 set by simple PLC	0 to 3	0	/	Real-time	"FC-25" on page 413
FC-26	0xFC1A	Running time of multi-reference 4 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-26" on page 413
FC-27	0xFC1B	Acceleration/ Deceleration time of multi-reference 4 set by simple PLC	0 to 3	0	/	Real-time	"FC-27" on page 413
FC-28	0xFC1C	Running time of multi-reference 5 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-28" on page 413
FC-29	0xFC1D	Acceleration/ Deceleration time of multi-reference 5 set by simple PLC	0 to 3	0	/	Real-time	"FC-29" on page 414

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FC-30	0xFC1E	Running time of multi-reference 6 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	" FC-30" on page 414
FC-31	0xFC1F	Acceleration/ Deceleration time of multi-reference 6 set by simple PLC	0 to 3	0	/	Real-time	" FC-31" on page 414
FC-32	0xFC20	Running time of multi-reference 7 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	" FC-32" on page 414
FC-33	0xFC21	Acceleration/ Deceleration time of multi-reference 7 set by simple PLC	0 to 3	0	/	Real-time	" FC-33" on page 415
FC-34	0xFC22	Running time of multi-reference 8 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	" FC-34" on page 415
FC-35	0xFC23	Acceleration/ Deceleration time of multi-reference 8 set by simple PLC	0 to 3	0	/	Real-time	" FC-35" on page 415
FC-36	0xFC24	Running time of multi-reference 9 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	" FC-36" on page 416
FC-37	0xFC25	Acceleration/ Deceleration time of multi-reference 9 set by simple PLC	0 to 3	0	/	Real-time	" FC-37" on page 416
FC-38	0xFC26	Running time of multi-reference 10 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	" FC-38" on page 416
FC-39	0xFC27	Acceleration/ Deceleration time of multi-reference 10 set by simple PLC	0 to 3	0	/	Real-time	" FC-39" on page 416

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FC-40	0xFC28	Running time of multi-reference 11 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-40" on page 417
FC-41	0xFC29	Acceleration/ Deceleration time of multi-reference 11 set by simple PLC	0 to 3	0	/	Real-time	"FC-41" on page 417
FC-42	0xFC2A	Running time of multi-reference 12 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-42" on page 417
FC-43	0xFC2B	Acceleration/ Deceleration time of multi-reference 12 set by simple PLC	0 to 3	0	/	Real-time	"FC-43" on page 417
FC-44	0xFC2C	Running time of multi-reference 13 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-44" on page 418
FC-45	0xFC2D	Acceleration/ Deceleration time of multi-reference 13 set by simple PLC	0 to 3	0	/	Real-time	"FC-45" on page 418
FC-46	0xFC2E	Running time of multi-reference 14 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-46" on page 418
FC-47	0xFC2F	Acceleration/ Deceleration time of multi-reference 14 set by simple PLC	0 to 3	0	/	Real-time	"FC-47" on page 419
FC-48	0xFC30	Running time of multi-reference 15 set by simple PLC	0.0s (h) to 6553.5s (h)	0.0	s (h)	Real-time	"FC-48" on page 419
FC-49	0xFC31	Acceleration/ Deceleration time of multi-reference 15 set by simple PLC	0 to 3	0	/	Real-time	"FC-49" on page 419
FC-50	0xFC32	PLC operating time unit	0: second (s) 1: hour (h)	0	/	Real-time	"FC-50" on page 419

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FC-51	0xFC33	Multi-reference 0 source	0: FC-00 (Multi-reference 0) 1: AI1 2: AI2 3: AI3 4: Reserved 5: PID 6: F0-08 (Preset frequency, which can be changed by pressing UP or DOWN key)	0	/	Real-time	" FC-51" on page 420
FD-02	0xFD02	Local address	0 to 247	1	/	Unchangeable	" FD-02" on page 420
FD-03	0xFD03	RS2 response delay	0 ms to 20 ms	2	ms	Real-time	" FD-03" on page 421
FD-04	0xFD04	RS485 communication timeout time	0.0s to 60.0s	0.0	s	Unchangeable	" FD-04" on page 421
FD-06	0xFD06	Communication fault reset	0 to 1	1	/	At stop	" FD-06" on page 421
FD-08	0xFD08	Last assigned station No.	0 to 65535	0	/	Unchangeable	" FD-08" on page 421
FD-09	0xFD09	CANopen/ CANlink communication state	Ones: CANopen 0: Stop 1: Initialized 2: Pre-running 8: Running Tens: CANlink 0: Stop 1: Initialized 2: Pre-running 8: Running	0	/	Unchangeable	" FD-09" on page 422
FD-10	0xFD0A	Switchover between CANopen and CANlink	1: CANopen 2: CANlink	1	/	Unchangeable	" FD-10" on page 422
FD-11	0xFD0B	CANopen402 enable	0: Disable 1: Enable	0	/	At stop	" FD-11" on page 423
FD-13	0xFD0D	CAN station number	1 to 127	1	/	Unchangeable	" FD-13" on page 423
FD-14	0xFD0E	Number of CAN frames received within a period	0 to 65535	1	/	Unchangeable	" FD-14" on page 423
FD-19	0xFD13	CAN communication disconnection coefficient.	1 to 15	5	/	At stop	" FD-19" on page 423
FD-92	0xFD5C	Communication version	0.00–655.35	0.00	/	Unchangeable	" FD-92" on page 424

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FE-00	0x2F00	User-defined parameter 0	0x0 to 0x0	0x0	/	Real-time	"FE-00" on page 424
FE-01	0x2F01	User-defined parameter 1	0x0 to 0x0	0x0	/	Real-time	"FE-01" on page 424
FE-02	0x2F02	User-defined parameter 2	0x0 to 0x0	0x0	/	Real-time	"FE-02" on page 424
FE-03	0x2F03	User-defined parameter 3	0x0 to 0x0	0x0	/	Real-time	"FE-03" on page 425
FE-04	0x2F04	User-defined parameter 4	0x0 to 0x0	0x0	/	Real-time	"FE-04" on page 425
FE-05	0x2F05	User-defined parameter 5	0x0 to 0x0	0x0	/	Real-time	"FE-05" on page 425
FE-06	0x2F06	User-defined parameter 6	0x0 to 0x0	0x0	/	Real-time	"FE-06" on page 425
FE-07	0x2F07	User-defined parameter 7	0x0 to 0x0	0x0	/	Real-time	"FE-07" on page 426
FE-08	0x2F08	User-defined parameter 8	0x0 to 0x0	0x0	/	Real-time	"FE-08" on page 426
FE-09	0x2F09	User-defined parameter 9	0x0 to 0x0	0x0	/	Real-time	"FE-09" on page 426
FE-10	0x2F0A	User-defined parameter 10	0x0 to 0x0	0x0	/	Real-time	"FE-10" on page 426
FE-11	0x2F0B	User-defined parameter 11	0x0 to 0x0	0x0	/	Real-time	"FE-11" on page 427
FE-12	0x2F0C	User-defined parameter 12	0x0 to 0x0	0x0	/	Real-time	"FE-12" on page 427
FE-13	0x2F0D	User-defined parameter 13	0x0 to 0x0	0x0	/	Real-time	"FE-13" on page 427
FE-14	0x2F0E	User-defined parameter 14	0x0 to 0x0	0x0	/	Real-time	"FE-14" on page 427
FE-15	0x2F0F	User-defined parameter 15	0x0 to 0x0	0x0	/	Real-time	"FE-15" on page 427
FE-16	0x2F10	User-defined parameter 16	0x0 to 0x0	0x0	/	Real-time	"FE-16" on page 428
FE-17	0x2F11	User-defined parameter 17	0x0 to 0x0	0x0	/	Real-time	"FE-17" on page 428
FE-18	0x2F12	User-defined parameter 18	0x0 to 0x0	0x0	/	Real-time	"FE-18" on page 428
FE-19	0x2F13	User-defined parameter 19	0x0 to 0x0	0x0	/	Real-time	"FE-19" on page 428
FE-20	0x2F14	User-defined parameter 20	0x0 to 0x0	0x0	/	Real-time	"FE-20" on page 429

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FE-21	0x2F15	User-defined parameter 21	0x0 to 0x0	0x0	/	Real-time	“ FE-21” on page 429
FE-22	0x2F16	User-defined parameter 22	0x0 to 0x0	0x0	/	Real-time	“ FE-22” on page 429
FE-23	0x2F17	User-defined parameter 23	0x0 to 0x0	0x0	/	Real-time	“ FE-23” on page 429
FE-24	0x2F18	User-defined parameter 24	0x0 to 0x0	0x0	/	Real-time	“ FE-24” on page 430
FE-25	0x2F19	User-defined parameter 25	0x0 to 0x0	0x0	/	Real-time	“ FE-25” on page 430
FE-26	0x2F1A	User-defined parameter 26	0x0 to 0x0	0x0	/	Real-time	“ FE-26” on page 430
FE-27	0x2F1B	User-defined parameter 27	0x0 to 0x0	0x0	/	Real-time	“ FE-27” on page 430
FE-28	0x2F1C	User-defined parameter 28	0x0 to 0x0	0x0	/	Real-time	“ FE-28” on page 431
FE-29	0x2F1D	User-defined parameter 29	0x0 to 0x0	0x0	/	Real-time	“ FE-29” on page 431
FE-30	0x2F1E	User-defined parameter 30	0x0 to 0x0	0x0	/	Real-time	“ FE-30” on page 431
FE-31	0x2F1F	User-defined parameter 31	0x0 to 0x0	0x0	/	Real-time	“ FE-31” on page 431
FP-00	0x1F00	User password	0 to 65535	0	/	Real-time	“ FP-00” on page 432
FP-01	0x1F01	Parameters initialization	0: No operation 1: Restore default settings 1 2: Clear records 4: Back up current user parameters 501: Restore user backup parameters 503: Restore default settings 2	1	/	At stop	“ FP-01” on page 432
FP-02	0x1F02	Function parameter display	Ones: Group U 0: Not displayed 1: Displayed Tens: Group A 0: Not displayed 1: Displayed Hundreds: Group B 0: Not displayed 1: Displayed Thousands: Group C 0: Not displayed 1: Displayed	111	/	Real-time	“ FP-02” on page 432

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
FP-03	0x1F03	Display of individualized parameters	Ones: Display of user-defined parameter groups 0: Hide 1: Display Tens: Display of user-modified parameter groups 0: Hide 1: Display	0	/	Real-time	"FP-03" on page 433
FP-04	0x1F04	Parameter modification function	0: Enable 1: Disable	0	/	Real-time	"FP-04" on page 433
A0-00	0xA000	Speed/Torque control mode	0: Speed control 1: Torque control	0	/	At stop	"A0-00" on page 434
A0-01	0xA001	Torque reference source	0: Set by A0-03 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication setting 6: Min. (AI1, AI2) 7: Max. (AI1, AI2)	0	/	At stop	"A0-01" on page 434
A0-03	0xA003	Torque digital setting	-200.0% to 200.0%	100.0	%	Real-time	"A0-03" on page 435
A0-04	0xA004	Torque filter time	0.000s to 5.000s	0.000	s	Real-time	"A0-04" on page 435
A0-05	0xA005	Digital setting of speed limit	-120.0% to 120.0%	0.0	%	Real-time	"A0-05" on page 435
A0-07	0xA007	Torque acceleration time	0.00s to 650.00s	1.00	s	Real-time	"A0-07" on page 436
A0-08	0xA008	Torque deceleration time	0.00s to 650.00s	1.00	s	Real-time	"A0-08" on page 436
A0-09	0xA009	Speed limit reference source	0: A0-05 1: Frequency source	0	/	Real-time	"A0-09" on page 436
A0-10	0xA00A	Speed limit offset	0.00 to F0-10	5.00	/	Real-time	"A0-10" on page 436
A0-11	0xA00B	Active mode of speed limit offset	0: Bidirectional offset 1: Unidirectional offset	1	/	At stop	"A0-11" on page 436
A0-12	0xA00C	Frequency acceleration time	0.0s to 6500.0s	1.0	s	Real-time	"A0-12" on page 437

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A0-13	0xA00D	Frequency deceleration time	0.0s to 6500.0s	1.0	s	Real-time	"A0-13" on page 437
A0-14	0xA00E	Torque mode switchover	0: No switchover 1: Switch to speed control mode upon stop. 2: Set the target torque to 0 upon stop.	1	/	At stop	"A0-14" on page 437
A1-00	0xA100	VDI1 function	0: No function 1: Forward run (FWD) 2: Reverse run (REV) 3: Three-wire control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Function as the UP key 7: Function as the DOWN key 8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys 9: Fault reset (RESET) 10: External fault NO input 11: External fault NC input 12: User-defined fault 1 13: User-defined fault 2 14: Multi-reference terminal 1 15: Multi-reference terminal 2 16: Multi-reference terminal 3 17: Multi-reference terminal 4 18: Acceleration/deceleration selection terminal 1 19: Acceleration/deceleration selection terminal 2 20: Acceleration/Deceleration prohibition 21: Command source switchover terminal 1 22: Command source switchover terminal 2 23: Frequency reference switchover 24: Switchover between main frequency X and preset frequency 25: Switchover between auxiliary frequency Y and preset frequency	0	/	At stop	"A1-00" on page 438

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A1-00	0xA100	VDI1 function	26: Frequency modification function 27: Counter input 28: Counter reset 29: Length count input 30: Length reset 31: PID pause 32: PID integral pause 33: PID parameter switchover 34: Opposite to PID action direction 35: Torque control prohibition 36: Speed control/Torque control switchover 38: Flying start 39: Immediate DC braking 40: Deceleration DC braking 41: External stop terminal 1 42: External stop terminal 2 43: Running pause 44: Coast to stop 45: Emergency stop 46: Motor selection terminal 47: Clear current running time 48: Two-wire/Three-wire motion control switchover 49: PLC state reset 50: Wobble frequency pause 94: Brake feedback 1 95: Brake feedback 2	0	/	At stop	"A1-00" on page 438
A1-01	0xA101	VDI1 function selection	Same as A1–00	0	/	At stop	"A1-01" on page 443
A1-02	0xA102	VDI1 function selection	Same as A1–00	0	/	At stop	"A1-02" on page 443
A1-03	0xA103	VDI1 function selection	Same as A1–00	0	/	At stop	"A1-03" on page 443
A1-04	0xA104	VDI5 function	Same as A1–00	0	/	At stop	"A1-04" on page 444

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A1-05	0xA105	VDI state setting source	Ones: VDI1 0: Set by A1-06 1: DO state 2: DI state Tens: VDI2 0: Set by A1-06 1: DO state 2: DI state Hundreds: VDI3 0: Set by A1-06 1: DO state 2: DI state Thousands: VDI4 0: Set by A1-06 1: DO state 2: DI state Ten thousands: VDI5 0: Set by A1-06 1: DO state 2: DI state	0	/	At stop	" A1-05" on page 444
A1-06	0xA106	VDI state setting	Ones: VDI1 0: Invalid 1: Valid Tens: VDI2 0: Invalid 1: Valid Hundreds: VDI3 0: Invalid 1: Valid Thousands: VDI4 0: Invalid 1: Valid Ten thousands: VDI5 0: Invalid 1: Valid	0	/	Real-time	" A1-06" on page 444

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A1-07	0xA107	AI1 function (used as DI)	0: No function 1: Forward run (FWD) 2: Reverse run (REV) 3: Three-wire control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Function as the UP key 7: Function as the DOWN key 8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys 9: Fault reset (RESET) 10: External fault NO input 11: External fault NC input 12: User-defined fault 1 13: User-defined fault 2 14: Multi-reference terminal 1 15: Multi-reference terminal 2 16: Multi-reference terminal 3 17: Multi-reference terminal 4 18: Acceleration/deceleration selection terminal 1 19: Acceleration/deceleration selection terminal 2 20: Acceleration/Deceleration prohibition 21: Command source switchover terminal 1 22: Command source switchover terminal 2 23: Frequency reference switchover 24: Switchover between main frequency X and preset frequency 25: Switchover between auxiliary frequency Y and preset frequency	0	/	At stop	"A1-07" on page 445

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A1-07	0xA107	AI1 function (used as DI)	26: Frequency modification function 27: Counter input 28: Counter reset 29: Length count input 30: Length reset 31: PID pause 32: PID integral pause 33: PID parameter switchover 34: Opposite to PID action direction 35: Torque control prohibition 36: Speed control/Torque control switchover 38: Flying start 39: Immediate DC braking 40: Deceleration DC braking 41: External stop terminal 1 42: External stop terminal 2 43: Running pause 44: Coast to stop 45: Emergency stop 46: Motor selection terminal 47: Clear current running time 48: Two-wire/Three-wire motion control switchover 49: PLC state reset 50: Wobble frequency pause 94: Brake feedback 1 95: Brake feedback 2	0	/	At stop	“A1-07” on page 445
A1-08	0xA108	AI2 function (used as DI)	Same as A1–07	0	/	At stop	“A1-08” on page 451
A1-09	0xA109	AI3 function (used as DI)	Same as A1–07	0	/	At stop	“A1-09” on page 457
A1-10	0xA10A	Active status of AI used as DI	Ones: AI1 0: Active high 1: Active low Tens: AI2 0: Active high 1: Active low Hundreds: AI3 0: Active high 1: Active low	0	/	At stop	“A1-10” on page 462
A5-00	0xA500	Frequency upper limit for DPWM switchover	0.00 Hz to F0-10	12.00	Hz	Real-time	“A5-00” on page 462

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A5-01	0xA501	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation 2: Reserved 3: Reserved	0	/	Real-time	"A5-01" on page 463
A5-02	0xA502	Dead-zone compensation mode	0: Disable 1: Enable	1	/	At stop	"A5-02" on page 463
A5-03	0xA503	Random PWM depth	0 to 10	0	/	Real-time	"A5-03" on page 464
A5-04	0xA504	Fast current limit	0: Disable 1: Enable	0	/	Real-time	"A5-04" on page 464
A5-05	0xA505	Sampling delay time	1 to 13	5	/	Real-time	"A5-05" on page 464
A5-06	0xA506	Undervoltage threshold	150.0 V to 455.0 V	350.0	V	Real-time	"A5-06" on page 464
A5-07	0xA507	SVC optimization	0: No optimization 1: Optimization mode 1 2: Optimization mode 2	1	/	At stop	"A5-07" on page 465
A6-00	0xA600	Minimum input of curve 4	-10.00 V to A6-02	0.00	V	Real-time	"A6-00" on page 465
A6-01	0xA601	Percentage corresponding to minimum input of curve 4	-100.0% to 100.0%	0.0	%	Real-time	"A6-01" on page 465
A6-02	0xA602	Input of curve 4 inflection point 1	A6-00 to A6-04	3.00	V	Real-time	"A6-02" on page 465
A6-03	0xA603	Percentage corresponding to input of curve 4 inflection point 1	-100.0% to 100.0%	30.0	%	Real-time	"A6-03" on page 466
A6-04	0xA604	Input of curve 4 inflection point 2	A6-02 to A6-06	6.00	V	Real-time	"A6-04" on page 466
A6-05	0xA605	Percentage corresponding to curve 4 inflection point 2 input	-100.0% to 100.0%	60.0	%	Real-time	"A6-05" on page 466
A6-06	0xA606	Maximum input of curve 4	A6-04 to 10.00 V	10.00	V	Real-time	"A6-06" on page 466

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A6-07	0xA607	Percentage corresponding to maximum input of curve 4	-100.0% to 100.0%	100.0	%	Real-time	"A6-07" on page 467
A6-08	0xA608	Curve 5 minimum input	-10.00 V to A6-10	-10.00	V	Real-time	"A6-08" on page 467
A6-09	0xA609	Percentage corresponding to minimum input of curve 5	-100.0% to 100.0%	-100.0	%	Real-time	"A6-09" on page 467
A6-10	0xA60A	Input of curve 5 inflection point 1	A6-08 to A6-12	-3.00	V	Real-time	"A6-10" on page 467
A6-11	0xA60B	Percentage corresponding to input of curve 5 inflection point 1	-100.0% to 100.0%	-30.0	%	Real-time	"A6-11" on page 467
A6-12	0xA60C	Input of curve 5 inflection point 2	A6-10 to A6-14	3.00	V	Real-time	"A6-12" on page 468
A6-13	0xA60D	Percentage corresponding to curve 5 inflection point 2 input	-100.0% to 100.0%	30.0	%	Real-time	"A6-13" on page 468
A6-14	0xA60E	Curve 5 maximum input	A6-12 to 10.00 V	10.00	V	Real-time	"A6-14" on page 468
A6-15	0xA60F	Percentage corresponding to maximum input of curve 5	-100.0% to 100.0%	100.0	%	Real-time	"A6-15" on page 468
A6-16	0xA610	AI1 gain	-10.00 to 10.00	1.00	/	Real-time	"A6-16" on page 469
A6-17	0xA611	AI1 offset	-100.0% to 100.0%	0.0	%	Real-time	"A6-17" on page 469
A6-18	0xA612	AI2 gain	-10.00 to 10.00	1.00	/	Real-time	"A6-18" on page 469
A6-19	0xA613	AI2 offset	-100.0% to 100.0%	0.0	%	Real-time	"A6-19" on page 469
A6-20	0xA614	AI3 gain	-10.00 to 10.00	1.00	/	Real-time	"A6-20" on page 469
A6-21	0xA615	AI3 offset	-100.0% to 100.0%	0.0	%	Real-time	"A6-21" on page 470
A6-24	0xA618	AI1 jump point	-100.0% to 100.0%	0.0	%	Real-time	"A6-24" on page 470
A6-25	0xA619	AI1 jump amplitude	0.0% to 100.0%	0.5	%	Real-time	"A6-25" on page 470

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A6-26	0xA61A	Jump point of AI1 input corresponding setting	-100.0% to 100.0%	0.0	%	Real-time	"A6-26" on page 470
A6-27	0xA61B	Jump amplitude of AI1 input corresponding setting	0.0% to 100.0%	0.5	%	Real-time	"A6-27" on page 471
A6-28	0xA61C	Jump point set through AI3	-100.0% to 100.0%	0.0	%	Real-time	"A6-28" on page 471
A6-29	0xA61D	Jump amplitude of AI1 input corresponding setting	0.0% to 100.0%	0.5	%	Real-time	"A6-29" on page 471
A9-00	0xA900	Online auto-tuning of rotor time constant for asynchronous motor	0: Disable 1: Enable	0	/	Real-time	"A9-00" on page 472
A9-04	0xA904	Maximum torque limit coefficient in the field-weakening range for asynchronous motors	30 to 150	80	/	Real-time	"A9-04" on page 472
A9-05	0xA905	Speed filter of asynchronous motor in SVC mode	5 ms to 32 ms	15	ms	Real-time	"A9-05" on page 472
A9-06	0xA906	Speed feedback handling in speed control of asynchronous motors in SVC mode	0: No operation 1: Minimum synchronization frequency limited based on load change 2: Fixed current output during low-speed operation 3: Fixed current output during low-speed operation	0	/	Real-time	"A9-06" on page 472
A9-07	0xA907	Magnetic field regulation bandwidth of asynchronous motor in SVC mode	0.0 to 8.0	2.0	/	Real-time	"A9-07" on page 473

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A9-08	0xA908	Low-speed running current of asynchronous motor in SVC mode	30 to 170	100	/	Real-time	"A9-08" on page 473
A9-09	0xA909	Switchover frequency for fixed current output of asynchronous motor in SVC mode	2.0 Hz to 100.0 Hz	3.0	Hz	Real-time	"A9-09" on page 473
A9-10	0xA90A	Speed fluctuation suppression coefficient of asynchronous motor in SVC mode	0 to 6	3	/	Real-time	"A9-10" on page 473
A9-11	0xA90B	Acceleration/ Deceleration time of asynchronous motor in SVC mode	0.1s to 3000.0s	20.0	s	Real-time	"A9-11" on page 473
A9-12	0xA90C	Quick auto-tuning of asynchronous motor stator resistance before startup	0: Disable 1: Enable	0	/	Real-time	"A9-12" on page 474
A9-13	0xA90D	Quick auto-tuning of stator resistance coefficient 1 for asynchronous motor	0 to 65535	10	/	At stop	"A9-13" on page 474
A9-14	0xA90E	Quick auto-tuning of stator resistance coefficient 2 for asynchronous motors	0 to 65535	10	/	At stop	"A9-14" on page 474
A9-15	0xA90F	Synchronous motor energy-saving control	0 to 1	0	/	At stop	"A9-15" on page 474

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A9-17	0xA911	Synchronous motor real-time angle	0 to 65535	0	/	Unchangeable	"A9-17" on page 475
A9-18	0xA912	Initial angle detection of synchronous motor	0: Detected every time upon operation 1: Not detected 2: Detected upon initial power-on	0	/	Real-time	"A9-18" on page 475
A9-20	0xA914	Field weakening mode selection	0: Automatic mode 1: Synchronous motor adjustment mode 2: Synchronous motor hybrid mode 3: Disable	1	/	At stop	"A9-20" on page 475
A9-21	0xA915	Field weakening gain of synchronous motor	0 to 50	5	/	Real-time	"A9-21" on page 475
A9-22	0xA916	Margin of upper limit of synchronous motor output voltage	0% to 50%	5	%	Real-time	"A9-22" on page 476
A9-23	0xA917	Maximum force adjustment gain of synchronous motor	20% to 300%	100	%	Real-time	"A9-23" on page 476
A9-24	0xA918	Adjustment gain for calculated excitation current of synchronous motor	40% to 200%	100	%	Real-time	"A9-24" on page 476
A9-25	0xA919	Integral gain for speed estimation of synchronous motor in SVC mode	5 to 1000	30	/	Real-time	"A9-25" on page 476
A9-26	0xA91A	Proportional gain for speed estimation of synchronous motor in SVC mode	5 to 300	20	/	Real-time	"A9-26" on page 477

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A9-27	0xA91B	Estimated speed filter of synchronous motor in SVC mode	10 to 2000	100	/	Real-time	"A9-27" on page 477
A9-28	0xA91C	Minimum carrier frequency of synchronous motor in SVC mode	0.8 to F0-15	2.0	/	Real-time	"A9-28" on page 477
A9-29	0xA91D	Low-speed excitation current of synchronous motor in SVC mode	0% to 80%	30	%	Real-time	"A9-29" on page 477
A9-40	0xA928	Low-speed closed-loop current function (used in PMVVC)	0: Disable 1: Enable	0	/	At stop	"A9-40" on page 477
A9-41	0xA929	Closed-loop current at low speed (used in PMVVC)	30 to 200	50	/	At stop	"A9-41" on page 478
A9-42	0xA92A	Oscillation suppression damping coefficient (used in PMVVC)	0 to 500	100	/	Real-time	"A9-42" on page 478
A9-43	0xA92B	Initial position compensation angle (used in PMVVC)	0 to 5	0	/	At stop	"A9-43" on page 478
A9-45	0xA92D	Synchronous motor low-speed handling	0: Disable 1: Enable	0	/	At stop	"A9-45" on page 478
A9-46	0xA92E	Low-speed handling switchover frequency of synchronous motor	0.01 Hz to F0-10	5.00	Hz	At stop	"A9-46" on page 479

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
A9-47	0xA92F	Low-speed handling current of synchronous motor	10 to 200	100	/	At stop	" A9-47" on page 479
A9-48	0xA930	Low-speed handling feedback suppression coefficient of synchronous motor	0 to 300	32	/	At stop	" A9-48" on page 479
A9-51	0xA933	Advanced settings for parameter auto-tuning of asynchronous motor	Ones: Rotor resistance and leakage inductance DC offset 0: Standard offset 1: Large offset Tens: Auto-tuning algorithm of new rotor resistance and leakage inductance 0: Disable 1: Enable Hundreds: New mutual inductance static auto-tuning algorithm 0: Disable 1: Enable Thousands: Stator resistance auto-tuning algorithm 0: Current open loop 1: Current closed loop	111	/	At stop	" A9-51" on page 479
A9-52	0xA934	Feedback torque selection (displayed in U0-06)	0: The motoring torque direction is positive and the generating torque direction is negative. 1: The torque direction that is the same as the forward speed direction is positive, and the torque direction that is the same as the reverse speed direction is negative.	1	/	Real-time	" A9-52" on page 480
B7-00	0xB700	Target frequency limit	0.00 Hz to 20.00 Hz	2.00	Hz	Real-time	" B7-00" on page 480
B7-01	0xB701	Brake release frequency (forward)	0.00 Hz to 20.00 Hz	2.00	Hz	Real-time	" B7-01" on page 480
B7-02	0xB702	Brake release frequency (reverse)	0.00 Hz to 20.00 Hz	2.00	Hz	Real-time	" B7-02" on page 481

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
B7-03	0xB703	Brake release torque (forward)	0.0% to 200.0%	30.0	%	Real-time	" B7-03" on page 481
B7-04	0xB704	Brake release torque (reverse)	0.0% to 200.0%	30.0	%	Real-time	" B7-04" on page 481
B7-05	0xB705	Brake release time	0.00s to 5.00s	0.50	s	Real-time	" B7-05" on page 481
B7-06	0xB706	Brake applying frequency (forward)	0.00 Hz to 20.00 Hz	2.00	Hz	Real-time	" B7-06" on page 482
B7-07	0xB707	Brake applying frequency (reverse)	0.00 Hz to 20.00 Hz	2.00	Hz	Real-time	" B7-07" on page 482
B7-08	0xB708	Brake applying delay time	0.00s to 5.00s	0.00	s	Real-time	" B7-08" on page 482
B7-09	0xB709	Brake applying time	0.00s to 5.00s	0.50	s	Real-time	" B7-09" on page 482
B7-10	0xB70A	Excitation time at stop	0.00s to 500.00s	0.00	s	Real-time	" B7-10" on page 483
B7-11	0xB70B	Restart waiting time	0.00s to 15.00s	0.30	s	Real-time	" B7-11" on page 483
B7-12	0xB70C	Startup direction	0: Same as the running direction 1: Always forward	0	/	Real-time	" B7-12" on page 483
B7-13	0xB70D	Pre-torque source	0: Digital setting 1: Pre-torque 2: Disable	2	/	Real-time	" B7-13" on page 483
B7-14	0xB70E	Pre-torque setting value (forward)	0.0% to 200.0%	30.0	%	Real-time	" B7-14" on page 484
B7-15	0xB70F	Pre-torque setting value (reverse)	0.0% to 200.0%	30.0	%	Real-time	" B7-15" on page 484
B7-16	0xB710	Current acceleration/ deceleration time	0.00s to 5.00s	0.50	s	Real-time	" B7-16" on page 484
B7-17	0xB711	Reverse running command	0: Disable 1: Enable (applicable to FVC) The AC drive does not support FVC; therefore, the value 1 is invalid.	0	/	Real-time	" B7-17" on page 484
B7-18	0xB712	Brake release timeout period	0.00s to 5.00s	2.00	s	Real-time	" B7-18" on page 485
B7-21	0xB715	Frequency exception detection cycle	0.00s to 1.00s	0.50	s	Real-time	" B7-21" on page 485

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
B7-22	0xB716	Frequency following error	0% to 30%	20	%	Real-time	"B7-22" on page 485
B7-23	0xB717	Frequency following detection cycle	0.00s to 1.00s	0.50	s	Real-time	"B7-23" on page 485
B7-24	0xB718	Detection time for torque limit reach	0.00s to 5.00s	0.00	s	Real-time	"B7-24" on page 486
U0-00	0x7000	Operating frequency	0.00 Hz to 655.35 Hz	0.00	Hz	Unchangeable	"U0-00" on page 486
U0-01	0x7001	Frequency reference	0.00 Hz to 655.35 Hz	0.00	Hz	Unchangeable	"U0-01" on page 486
U0-02	0x7002	Bus voltage	0.0 V to 6553.5 V	0.0	V	Unchangeable	"U0-02" on page 486
U0-03	0x7003	Output voltage	0 V to 65535 V	0	V	Unchangeable	"U0-03" on page 487
U0-04	0x7004	Output current	0.00 A to 655.35 A	0.00	A	Unchangeable	"U0-04" on page 487
U0-05	0x7005	Output power	-3276.8 kW to 3276.7 kW	0.0	kW	Unchangeable	"U0-05" on page 487
U0-06	0x7006	Output torque	-3276.8% to 3276.7%	0.0	%	Unchangeable	"U0-06" on page 487
U0-07	0x7007	DI input state	0x0 to 0xFFFF	0x0	/	Unchangeable	"U0-07" on page 488
U0-08	0x7008	RO/DO output state	0x0 to 0x1F	0x0	/	Unchangeable	"U0-08" on page 488
U0-09	0x7009	AI1 voltage	-327.68 V to 327.67 V	0.00	V	Unchangeable	"U0-09" on page 488
U0-10	0x700A	AI2 voltage	-327.68 V to 327.67 V	0.00	V	Unchangeable	"U0-10" on page 489
U0-11	0x700B	AI3 voltage	-327.68 V to 327.67 V	0.00	V	Unchangeable	"U0-11" on page 489
U0-12	0x700C	Counting value	0 to 65535	0	/	Unchangeable	"U0-12" on page 489
U0-13	0x700D	Length value	0 to 65535	0	/	Unchangeable	"U0-13" on page 489
U0-14	0x700E	Load speed display	0 to 65535	0	/	Unchangeable	"U0-14" on page 489
U0-15	0x700F	PID reference	0 to 65535	0	/	Unchangeable	"U0-15" on page 490
U0-16	0x7010	PID feedback	0 to 65535	0	/	Unchangeable	"U0-16" on page 490
U0-17	0x7011	PLC stage	0 to 65535	0	/	Unchangeable	"U0-17" on page 490

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U0-19	0x7013	Feedback speed	-327.68 Hz to 327.67 Hz	0.00	Hz	Unchangeable	"U0-19" on page 490
U0-20	0x7014	Remaining running time	0.0 min to 6553.5 min	0.0	min	Unchangeable	"U0-20" on page 491
U0-21	0x7015	AI1 gain and voltage after offset	-32.768 V to 32.767 V	0.000	V	Unchangeable	"U0-21" on page 491
U0-22	0x7016	AI2 gain and voltage after offset	-32.768 V to 32.767 V	0.000	V	Unchangeable	"U0-22" on page 491
U0-23	0x7017	AI3 gain and voltage after offset	-32.768 V to 32.767 V	0.000	V	Unchangeable	"U0-23" on page 491
U0-24	0x7018	Linear speed	0 m/min to 65535 m/min	0	m/min	Unchangeable	"U0-24" on page 491
U0-25	0x7019	Current power-on time	0 min to 65535 min	0	min	Unchangeable	"U0-25" on page 492
U0-26	0x701A	Current operating time	0.0 min to 6553.5 min	0.0	min	Unchangeable	"U0-26" on page 492
U0-28	0x701C	Communication setpoint	-327.68% to 327.67%	0.00	%	Unchangeable	"U0-28" on page 492
U0-30	0x701E	Display of main frequency X	-327.68 Hz to 327.67 Hz	0.00	Hz	Unchangeable	"U0-30" on page 492
U0-31	0x701F	Display of auxiliary frequency Y	-327.68 Hz to 327.67 Hz	0.00	Hz	Unchangeable	"U0-31" on page 493
U0-33	0x7021	Synchronous motor rotor position	0.0°to 6553.5°	0.0	°	Unchangeable	"U0-33" on page 493
U0-35	0x7023	Target torque	-327.68% to 327.67%	0.0	%	Unchangeable	"U0-35" on page 493
U0-37	0x7025	Power factor angle	-3276.8° to 3276.7°	0.0	°	Unchangeable	"U0-37" on page 493
U0-39	0x7027	Target voltage upon V/f separation	0 V to 65535 V	0	V	Unchangeable	"U0-39" on page 493
U0-40	0x7028	Output voltage upon V/f separation	0 V to 65535 V	0	V	Unchangeable	"U0-40" on page 494
U0-41	0x7029	DI input state display	0 to 65535	0	/	Unchangeable	"U0-41" on page 494
U0-42	0x702A	DO/RO output state display	0 to 65535	0	/	Unchangeable	"U0-42" on page 494

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U0-43	0x702B	DI function state display 1	0 to 65535	0	/	Unchangeable	"U0-43" on page 494
U0-44	0x702C	DI function state display 2	0 to 65535	0	/	Unchangeable	"U0-44" on page 495
U0-45	0x702D	Fault code	0 to 65535	0	/	Unchangeable	"U0-45" on page 495
U0-46	0x702E	Fault subcode	0 to 65535	0	/	Unchangeable	"U0-46" on page 495
U0-47	0x702F	Drive unit temperature	-32768°C to 32767°C	0	°C	Unchangeable	"U0-47" on page 495
U0-48	0x7030	Voltage received by PTC channel 1	-32.768 V to 32.767 V	0.000	V	Unchangeable	"U0-48" on page 496
U0-49	0x7031	Voltage received by PTC channel 2	-32.768 V to 32.767 V	0.000	V	Unchangeable	"U0-49" on page 496
U0-50	0x7032	Voltage received by PTC channel 3	-32.768 V to 32.767 V	0.000	V	Unchangeable	"U0-50" on page 496
U0-51	0x7033	PTC1 temperature	-32768°C to 32767°C	0	°C	Unchangeable	"U0-51" on page 496
U0-52	0x7034	PTC2 temperature	-32768°C to 32767°C	0	°C	Unchangeable	"U0-52" on page 496
U0-53	0x7035	PTC3 temperature	-32768°C to 32767°C	0	°C	Unchangeable	"U0-53" on page 497
U0-54	0x7036	Motor velocity	0rpm to 65535rpm	0	RPM	Unchangeable	"U0-54" on page 497
U0-55	0x7037	Automatically-allocated station number	0 to 65535	0	/	Unchangeable	"U0-55" on page 497
U0-56	0x7038	Auto-tuned axis type	0 to 3	0	/	Unchangeable	"U0-56" on page 497
U0-61	0x703D	AC drive operation status word 1	0 to 5	0	/	Unchangeable	"U0-61" on page 498
U0-64	0x7040	Special protocol status word	0 to 2047	0	/	Unchangeable	"U0-64" on page 498
U0-68	0x7044	AC drive operation status word 2	0 to 65535	0	/	Unchangeable	"U0-68" on page 498
U0-78	0x704E	AC drive rated current	0.0 A to 6553.5 A	0.0	A	Unchangeable	"U0-78" on page 499
U0-79	0x704F	AC drive power	0.0 kW to 6553.5 kW	0.0	kW	Unchangeable	"U0-79" on page 499

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U0-81	0x7051	Local LED state	0 to 3	0	/	Unchangeable	"U0-81" on page 499
U0-82	0x7052	Three-phase output phase A current	0.00 A to 655.35 A	0.00	A	Unchangeable	"U0-82" on page 499
U0-83	0x7053	Three-phase output phase B current	0.00 A to 655.35 A	0.00	A	Unchangeable	"U0-83" on page 500
U0-84	0x7054	Three-phase output phase C current	0.00 A to 655.35 A	0.00	A	Unchangeable	"U0-84" on page 500
U0-88	0x7058	Alarm code	0 to 65535	0	/	Unchangeable	"U0-88" on page 500
U0-89	0x7059	Alarm subcode	0 to 65535	0	/	Unchangeable	"U0-89" on page 500
U0-90	0x705A	Percentage of preset fan speed	0 to 65535	0	/	Unchangeable	"U0-90" on page 500
U0-91	0x705B	PTC1 mode	0 to 5	0	/	Unchangeable	"U0-91" on page 501
U0-92	0x705C	PTC2 mode	0 to 5	0	/	Unchangeable	"U0-92" on page 501
U0-93	0x705D	PTC3 mode	0 to 5	0	/	Unchangeable	"U0-93" on page 501
U0-95	0x705F	STO initialization flag	0 to 1	0	/	Unchangeable	"U0-95" on page 502
U0-96	0x7060	STO status word monitoring	0 to 15	0	/	Unchangeable	"U0-96" on page 502
U0-97	0x7061	STO model	0 to 1	0	/	Unchangeable	"U0-97" on page 502
U0-98	0x7062	STO AD sampling value	0 to 65535	0	/	Unchangeable	"U0-98" on page 503
U0-99	0x7063	STO internal execution flag	0 to 65535	0	/	Unchangeable	"U0-99" on page 503
U3-16	0x7310	Frequency set by communication	0 to 65535	0	/	Unchangeable	"U3-16" on page 503
U3-17	0x7311	Communication control command	0 to 65535	0	/	Unchangeable	"U3-17" on page 503
U3-18	0x7312	Communication control DO/RO	0 to 65535	0	/	Unchangeable	"U3-18" on page 504

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U5-00	0x7500	Power supply unit DI - hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-00" on page 504
U5-01	0x7501	Power supply unit - DO/RO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-01" on page 504
U5-02	0x7502	Power supply unit - AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-02" on page 505
U5-04	0x7504	Expansion card 1 - DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-04" on page 505
U5-05	0x7505	Expansion card 1 - DO/RO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-05" on page 505
U5-06	0x7506	Expansion card 1 - AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-06" on page 505
U5-08	0x7508	Expansion card 2 - DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-08" on page 505
U5-09	0x7509	Expansion card 2 - DO/RO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-09" on page 506
U5-10	0x750A	Expansion card 2 - AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-10" on page 506
U5-12	0x750C	Expansion card 3 - DI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-12" on page 506
U5-13	0x750D	Expansion card 3 - DO/RO hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-13" on page 506
U5-14	0x750E	Expansion card 3 - AI hardware resource	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-14" on page 506
U5-20	0x7514	Power supply unit - DI mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-20" on page 507

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U5-21	0x7515	Power supply unit - DO/RO mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-21" on page 507
U5-22	0x7516	Power supply unit - AI mapping	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-22" on page 507
U5-24	0x7518	Expansion card 1 - DI mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-24" on page 507
U5-25	0x7519	Expansion card 1 - DO/RO mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-25" on page 508
U5-26	0x751A	Expansion card 1 - AI mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-26" on page 508
U5-28	0x751C	Expansion card 2 - DI mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-28" on page 508
U5-29	0x751D	Expansion card 2 - DO/RO mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-29" on page 508
U5-30	0x751E	Expansion card 2 - AI mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-30" on page 508
U5-32	0x7520	Expansion card 3 - DI mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-32" on page 509
U5-33	0x7521	Expansion card 3 - DO/RO mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-33" on page 509
U5-34	0x7522	Expansion card 3 - AI mapping relation	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-34" on page 509
U5-40	0x7528	Power supply unit - DI data	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-40" on page 509
U5-41	0x7529	Expansion card 1 - DI data	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-41" on page 509
U5-42	0x752A	Expansion card 2 - DI data	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-42" on page 510
U5-43	0x752B	Expansion card 3 - DI data	0x0 to 0xFFFF	0x0	/	Unchangeable	"U5-43" on page 510

Parameter	Address	Parameter Name	Value Range	Default	Unit	Change Mode	Page
U5-45	0x752D	Drive unit DO/ RO data	0x0 to 0xFFFF	0x0	/	Unchangeable	" U5-45" on page 510
U5-50	0x7532	Power supply unit - AI1 function	0 to 65535	0	/	Unchangeable	" U5-50" on page 510
U5-51	0x7533	Power supply unit - AI2 function	0 to 65535	0	/	Unchangeable	" U5-51" on page 511
U5-52	0x7534	Expansion card 1 - AI1 function	0 to 65535	0	/	Unchangeable	" U5-52" on page 511
U5-53	0x7535	Expansion card 1 - AI2 function	0 to 65535	0	/	Unchangeable	" U5-53" on page 511
U5-54	0x7536	Expansion card 2 - AI1 function	0 to 65535	0	/	Unchangeable	" U5-54" on page 512
U5-55	0x7537	Expansion card 2 - AI2 function	0 to 65535	0	/	Unchangeable	" U5-55" on page 512
U5-56	0x7538	Expansion card 3 - AI1 function	0 to 65535	0	/	Unchangeable	" U5-56" on page 512
U5-57	0x7539	Expansion card 3 - AI2 function	0 to 65535	0	/	Unchangeable	" U5-57" on page 513
U5-60	0x753C	Power supply unit - AI1 voltage	-32767 to 32767	0	/	Unchangeable	" U5-60" on page 513
U5-61	0x753D	Power supply unit - AI2 voltage	-32767 to 32767	0	/	Unchangeable	" U5-61" on page 513
U5-62	0x753E	Expansion card 1 - AI1 voltage	-32767 to 32767	0	/	Unchangeable	" U5-62" on page 514
U5-63	0x753F	Expansion card 1 - AI2 voltage	-32767 to 32767	0	/	Unchangeable	" U5-63" on page 514
U5-64	0x7540	Expansion card 2 - AI1 voltage	-32767 to 32767	0	/	Unchangeable	" U5-64" on page 514
U5-65	0x7541	Expansion card 2 - AI2 voltage	-32767 to 32767	0	/	Unchangeable	" U5-65" on page 514
U5-66	0x7542	Expansion card 3 - AI1 voltage	-32767 to 32767	0	/	Unchangeable	" U5-66" on page 514
U5-67	0x7543	Expansion card 3 - AI2 voltage	-32767 to 32767	0	/	Unchangeable	" U5-67" on page 515

4 Parameters of the Drive Unit

4.1 F0: Basic Function Parameters

F0-00 **G/P model**

Address:	0xF000	Effective mode:	/
Min.:	1	Unit:	/
Max.:	2	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value Range:

1: G type (constant torque load)

2: P type (fan and pump)

Description

Indicates the current load type of the AC drive.

1: G type (constant-torque load)

The G type models typically carry constant-torque loads with large overload capacity. The overload capacity is 150% in general. Such loads are conveyor belt and cranes, for example.

2: P type (fan and pump)

The P type models typically carry variable-torque loads such as fan and water pump. Fan pump

F0-01 **Motor 1 control mode**

Address:	0xF001	Effective mode:	/
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	2	Change:	At stop

Value Range:

0: SVC

1: Reserved

2: V/f control

3: Reserved

4: Reserved

5: PMVVC

Description

This parameter is used to set the motor control mode based on the application scenario and motor type.

0: Sensorless vector control (SVC)

Indicates open-loop vector control, which is applicable to high-performance control applications. In this case, one AC drive can drive only one motor. This mode applies to such loads as machine tools, centrifuges, wire drawing machines, and injection molding machines.

2: V/f control (open loop speed control and not applicable to synchronous motor)

It is applicable to scenarios with low requirements on load control performance, such as fans and pumps. If one AC drive is used to control multiple motors, only the V/f control mode can be used.

5: PMVVC (open loop speed control for synchronous motor)

This mode is used for loads such as fans and water pumps that do not require high accuracy. It applies to the scenario that the motor type is synchronous.

F0-02 **Command source selection**

Address:	0xF002	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Operating panel control

1: Terminal I/O control

2: Communication control

Description

This parameter is used to select the input channel of the AC drive control commands, such as run, stop, forward run, reverse run, and jog operation.

0: Operating panel control

Operation commands are input using the keys on the operating panel, external operating panel, and software commands. This mode is suitable for initial commissioning.

1: Terminal (indicator ON)

Control commands are input through the DIs of the AC drive. The control commands input through the DIs can be set according to different scenarios, such as start/stop, forward/reverse run, jog, two-wire/three-wire mode, and multi-speed. It is suitable for most applications.

2: Communication control

Control commands are input through remote communication. The AC drive can communicate with the host controller through RS485, CAN communication, or communication card. This mode is suitable for remote control or centralized control on multiple equipment.

F0-03 **Main frequency X source**

Address:	0xF003	Effective mode:	/
Min.:	0	Unit:	/
Max.:	10	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Digital setting (F0-08, can be changed by UP/DOWN keys, non-retentive upon power failure)

1: Digital setting (F0-08, can be changed by UP/DOWN keys, retentive upon power failure)

2: AI1

3: AI2

4: AI3

5: Reserved

6: Multi-reference

7: Simple PLC

8: PID

9: Communication command

10: Reserved

Description

0: Digital setting (non-retentive at power failure)

The initial value of the frequency reference is the value of F0-08 (Preset frequency). The frequency can be changed by using the ▲ and ▼ keys on the keypad or the multi-functional input terminal functioning as the UP/DOWN key. When the AC drive is powered on again after a power failure, the frequency reference is restored to the value of F0-08.

1: Digital setting (retentive at power failure)

The initial value of the frequency reference is set by F0-08 (preset frequency). The frequency can be changed by using the ▲ and ▼ keys on the keypad or the multi-functional input terminal functioning as the UP/DOWN key. When the AC drive is powered on again after a power failure, the frequency reference is the same as that at the moment of the last power failure. Modifications made by using keys ▲ and ▼ keys on the operating panel or the multi-functional input terminal functioning as the UP and DOWN key remain effective.

2: AI1

The frequency reference is input by the AI1 through current or voltage signals. The frequency is calculated according to the preset AI curve.

3: AI2

The frequency reference is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve.

4: AI3

The frequency reference is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve.

6: Multi-reference

In multi-reference control mode, different combinations of DI terminal states correspond to different frequency references. The four multi-reference terminals can provide 16 states, corresponding to 16 frequencies.

7: Simple PLC

The simple PLC is a multi-speed running command that can control the running time and the acceleration and deceleration time. Parameters FC-00 to FC-15 are used to set the values of each frequency. FC-18 to FC-49 are used to set the running time and acceleration and deceleration time of each frequency. Up to 16 frequencies can be set.

8: PID

PID is selected as the frequency reference. As a general process control method, PID control is a closed-loop mechanism in which each controlled variable is stabilized at the target level. This is implemented through proportional, integral, and differential calculation of the difference between the feedback signal and the target signal of the controlled variable and through adjustment of the AC drive output frequency. PID control is generally used in closed-loop control scenarios, such as constant pressure closed-loop control and constant tension closed-loop control.

9: Communication setting

The main frequency value is set through communication. The frequency can be input through remote communication. The AC drive can communicate with the host controller through RS485, CAN communication, or communication card. This mode is suitable for remote control or centralized control on multiple equipment.

10: Reserved

F0-04 **Auxiliary frequency Y source**

Address:	0xF004	Effective mode:	/
Min.:	0	Unit:	/
Max.:	10	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Digital setting (F0-08, can be changed by UP/DOWN keys, non-retentive upon power failure)
1: Digital setting (F0-08, can be changed by UP/DOWN keys, retentive upon power failure)
2: AI1
3: AI2
4: AI3
5: Reserved
6: Multi-reference
7: Simple PLC
8: PID
9: Communication command
10: Reserved

Description

0: Digital setting (non-retentive at power failure)

The initial value of the frequency reference is the value of F0-08 (Preset frequency). The frequency can be changed by using the ▲ and ▼ keys on the keypad or the multi-functional input terminal functioning as the UP/DOWN key. When the AC drive is powered on again after a power failure, the frequency reference is restored to the value of F0-08.

1: Digital setting (retentive at power failure)

The initial value of the frequency reference is set by F0-08 (preset frequency). The frequency can be changed by using the ▲ and ▼ keys on the keypad or the multi-functional input terminal functioning as the UP/DOWN key. When the AC drive is powered on again after a power failure, the frequency reference is the same as that at the moment of the last power failure. Modifications made by using keys ▲ and ▼ keys on the operating panel or the multi-functional input terminal functioning as the UP and DOWN key remain effective.

2: AI1

The frequency reference is input by the AI1 through current or voltage signals. The frequency is calculated according to the preset AI curve.

3: AI2

The frequency reference is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve.

4: AI3

The frequency reference is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve.

6: Multi-reference

In multi-reference control mode, different combinations of DI terminal states correspond to different frequency references. The four multi-reference terminals can provide 16 states, corresponding to 16 frequencies.

7: Simple PLC

The simple PLC is a multi-speed running command that can control the running time and the acceleration and deceleration time. Parameters FC-00 to FC-15 are used to set the values of each frequency. FC-18 to FC-49 are used to set the running time and acceleration and deceleration time of each frequency. Up to 16 frequencies can be set.

8: PID

PID is selected as the frequency reference. As a general process control method, PID control is a closed-loop mechanism in which each controlled variable is stabilized at the target level. This is implemented through proportional, integral, and differential calculation of the difference between the feedback signal and the target signal of the controlled variable and through adjustment of the AC drive output frequency. PID control is generally used in closed-loop control scenarios, such as constant pressure closed-loop control and constant tension closed-loop control.

9: Communication setting

The torque upper limit in the speed control mode is set through communication. The frequency can be input through remote communication. The AC drive can communicate with the host controller through RS485, CAN communication, or communication card. This mode is suitable for remote control or centralized control on multiple equipment.

10: Reserved

F0-05 **Base value of range of auxiliary frequency Y upon superposition**

Address:	0xF005	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Relative to the maximum frequency

1: Relative to the main frequency X

Description

The auxiliary frequency source range is set as a percentage. This parameter is used to switch the base value of the frequency source range.

0: Relative to the maximum frequency

The auxiliary frequency at superposition is equal to the value of auxiliary frequency source Y at superposition (F0-06) multiplied by the maximum frequency (F0-10).

1: Relative to the main frequency source X

The auxiliary frequency at superposition is equal to the value of auxiliary frequency source Y at superposition (F0-06) multiplied by the main frequency source X.

F0-06 **Range of auxiliary frequency Y upon superposition**

Address:	0xF006	Effective mode:	/
Min.:	0	Unit:	%
Max.:	150	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:

0% to 150%

Description

Range of auxiliary frequency source Y

F0-07 **Frequency superposition selection**

Address:	0xF007	Effective mode:	/
Min.:	0	Unit:	/
Max.:	44	Data type:	UInt16

Default:	0	Change:	Real-time

Value range:

Ones: Frequency reference selection

0: Main frequency source X

1: Main and auxiliary operation result (based on tens position)

2: Switchover between the main frequency source X and the auxiliary frequency source Y

3: Switchover between the main frequency source X and the main and auxiliary operation result

4: Switchover between the auxiliary frequency source Y and the main and auxiliary operation result

Tens: Main and auxiliary operation of the frequency reference

0: Main + Auxiliary

1: Main – Auxiliary

2: Max. (main, auxiliary)

3: Min. (main, auxiliary)

4: Main x Auxiliary

Description

This parameter is used to set the operation mode of the main frequency source X and auxiliary frequency source Y.

Ones place: Frequency source selection

0: Main frequency reference X

The running frequency of the AC drive is determined by the main frequency reference X.

1: Main and auxiliary operation result (based on the tens place)

The running frequency of the AC drive is the operation result of the main and auxiliary frequencies, and the operation method is determined by the tens position of F0-07.

2: Switchover between the main frequency source X and the auxiliary frequency source Y

The running frequency of the AC drive is selected or switched between the main frequency source X and the auxiliary frequency source Y through the DI. In this case, the function of the DI terminal must be set to the frequency source switching function. If the DI2 terminal is used for switchover, set F4-03 to 23.

3: Switchover between the main frequency source X and the main and auxiliary operation result

The running frequency of the AC drive is selected or switched between the main frequency source X and the main and auxiliary operation result through the DI.

4: Switchover between the auxiliary frequency source Y and the main and auxiliary operation result

The running frequency of the AC drive is selected or switched between the auxiliary frequency source Y and the main and auxiliary operation result through the DI.

Tens place: Main and auxiliary frequency operation result

0: Main + Auxiliary

The main and auxiliary operation result is the main frequency source X plus the auxiliary frequency source Y.

1: Main – Auxiliary

The main and auxiliary operation result is the main frequency source X minus the auxiliary frequency source Y.

2: Max. (main, auxiliary)

The main and auxiliary operation result is the larger value between the main frequency source X and the auxiliary frequency source Y.

3: Min. (main, auxiliary)

The main and auxiliary operation result is the smaller value between the main frequency source X and the auxiliary frequency source Y.

4: Main x Auxiliary

The main and auxiliary operation result is the main frequency X multiplied by the auxiliary frequency Y.

F0-08 **Preset frequency**

Address:	0xF008	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	50.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

When the frequency source (F0-03) is set by digital setting (0 or 1), this parameter is the target frequency set by the AC drive.

F0-09 **Running direction**

Address:	0xF009	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Default direction

1: Opposite to the default direction

Description

Used to change the motor rotation direction through parameter modification, which equals to adjusting any two of UVW cables.

F0-10 **Maximum frequency**

Address:	0xF00A	Effective mode:	/
Min.:	5.00	Unit:	Hz
Max.:	600.00	Data type:	UInt16
Default:	50.00	Change:	At stop

Value Range:

5.00 Hz to 600.00 Hz

Description

This parameter defines the maximum output frequency of the AC drive.

F0-11 **Frequency upper limit source**

Address:	0xF00B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	6	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Set by F0-12 (Frequency upper limit)
1: AI1
2: AI2
3: AI3
4: Reserved
5 Communication setting
6: Multi-speed reference

Description

It is used to set the source of the frequency upper limit, including digital setting (F0-12), AI, pulse setting or communication setting.

0: F0-12 (Frequency upper limit)

The frequency upper limit is set by F0-12.

1: AI1

The frequency upper limit is input by the AI1 through current or voltage signals. The frequency is calculated according to the set AI curve.

2: AI2

The frequency upper limit is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve.

3: AI3

The frequency upper limit is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve.

5: Communication

The frequency upper limit is set through communication.

6: Multi-reference

Values of FC-00 to FC-15 correspond to each speed of frequency upper limit.

F0-12 **Frequency upper limit**

Address:	0xF00C	Effective mode:	/
Min.:	F0-14	Unit:	Hz
Max.:	F0-10	Data type	UInt16
Default:	50.00	Change:	Real-time

Value range:

F0-14 to F0-10

Description

This parameter defines the maximum operating frequency of motors.

F0-13 **Frequency upper limit offset**

Address:	0xF00D	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

It sets the offset of the frequency upper limit to adjust the output frequency value upon minimum frequency setting signal when the frequency is set by an external analog signal (voltage or current).

F0-14 **Frequency lower limit**

Address:	0xF00E	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-12	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to F0-12

Description

This parameter defines the minimum operating frequency of motors.

F0-15 **Carrier frequency**

Address:	0xF00F	Effective mode:	/
Min.:	0.8	Unit:	kHz
Max.:	15.0	Data type:	UInt16
Default:	6.0	Change:	Real-time

Value range:

0.8 kHz to 15.0 kHz

Description

The carrier frequency of the AC drive determines the number of times the power switching device (such as IGBT) of the inverter is turned on and off, so it is also called switching frequency. It mainly affects the following aspects:

The power loss of the power module IGBT is related to the carrier frequency. As the carrier frequency increases, the power loss increases and the heating of the power module increases, which is unfavorable to the AC drive.

When the carrier frequency is high, the current waveform is sinusoidal and smooth. In this way, the harmonic wave is small, but the interference is relatively large, and vice versa. When the carrier frequency is too low, the effective torque of the motor decreases, the loss increases, and the temperature rises. On the contrary, when the carrier frequency is too high, the loss of the AC drive increases, the IGBT temperature rises, and the change rate dv/dt of the output voltage increases, which affects the motor insulation performance.

F0-16 **Carrier frequency varying with temperature**

Address:	0xF010	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: No

1: Yes

Description

Defines whether carrier frequency changes with temperature.

0: No

1: Yes

F0-17 **Acceleration time 1**

Address:	0xF011	Effective mode:	/

Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

This parameter indicates the time required for the output frequency to increase from 0 to the base frequency for acceleration/deceleration time (F0-25). When the motor accelerates, the rising rate of the frequency reference must be limited to prevent overcurrent.

Acceleration time setting requirements: The acceleration current must be limited below the overcurrent capacity of the AC drive, so as not to cause the AC drive to trip due to overcurrent stall.

This parameter sets the acceleration time accuracy and range according to F0-19:

When F0-19 is set to 0 (accuracy: 1s), the range of the acceleration time is 0s to 65000s, and the default value is 200s.

When F0-19 is set to 1 (accuracy: 0.1s), the range of the acceleration time is 0.0s to 6500.0s, and the default value is 20.0s

When F0-19 is set to 2 (accuracy: 0.01s), the range of the acceleration time is 0.00s to 650.00s, and the default value is 2.00s

F0-18 **Deceleration time 1**

Address:	0xF012	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

This parameter indicates the time required for the output frequency to decrease from the acceleration/deceleration base frequency (F0-25) to 0. When the motor decelerates, the dropping rate of the frequency must be limited to prevent overvoltage.

Deceleration time setting requirements: Avoid too large smoothing circuit voltage, so as not to cause the AC drive to trip due to overvoltage stall.

This parameter sets the acceleration time accuracy and range according to F0-19:

When F0-19 is set to 0 (accuracy: 1s), the range of the acceleration time is 0s to 65000s, and the default value is 200s.

When F0-19 is set to 1 (accuracy: 0.1s), the range of the acceleration time is 0.0s to 6500.0s, and the default value is 20.0s

When F0-19 is set to 2 (accuracy: 0.01s), the range of the acceleration time is 0.00s to 650.00s, and the default value is 2.00s

F0-19 **Acceleration/Deceleration time unit**

Address:	0xF013	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	1	Change:	At stop

Value range:

0: 1s

1: 0.1s

2: 0.01s

Description

By setting F0-19, you can select an acceleration/deceleration time unit.

0: 1s

Acceleration/Deceleration time accuracy is 1s.

1: 0.1s

Acceleration/Deceleration time accuracy is 0.1s.

2: 0.01s

Acceleration/Deceleration time accuracy is 0.01s.

Note: The upper limit of the acceleration/deceleration time is based on the selected time unit Time unit 1 second results in an upper limit of 65535 seconds. Time unit 0.1 seconds results in an upper limit of 6553.5 seconds. Time unit 0.01 seconds results in an upper limit of 655.35 seconds.

F0-21 **Auxiliary frequency offset upon superposition**

Address:	0xF015	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

Defines the offset of the auxiliary frequency during superposition, which is used to adjust the auxiliary frequency upon minimum frequency setting signal when the frequency is set by an external analog signal (voltage or current).

F0-22 **Frequency reference resolution**

Address:	0xF016	Effective mode:	/
Min.:	1	Unit:	/
Max.:	2	Data type:	UInt16
Default:	2	Change:	At stop

Value range:

1: 0.1 Hz

2: 0.01 Hz

Description

Decimal places of frequency reference

This parameter sets the acceleration frequency accuracy and range according to F0-19:

When F0-19 is set to 1 (accuracy: 0.1), the range of the acceleration time is 0.0 Hz to F0-10, and the default value is 500.0 Hz.

When F0-19 is set to 2 (accuracy: 0.01), the range of the acceleration time is 0.00 Hz to F0-10, and the default value is 50.00 Hz.

F0-23 **Retention of digit-set frequency upon stop**

Address:	0xF017	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Non-retentive

1: Retentive

Description

Define if the digit-set frequency is retentive upon stop.

0: Non-retentive

F0-08 (preset frequency) is set through the operating panel and the frequency is modified by using the ▲ and ▼ keys on the operating panel or the terminal functioning as the UP/DOWN key. When the AC drive stops, the modification will be cleared.

1: Retentive

F0-08 (preset frequency) is set through the operating panel and the frequency is modified by using the ▲ and ▼ keys on the operating panel or the terminal functioning as the UP/DOWN key. When the AC drive stops, the modification will be retained.

F0-25 **Acceleration/deceleration time base frequency**

Address:	0xF019	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Maximum frequency (F0-10)

1: Frequency reference

2: 100 Hz

Description

Defines the base frequency for acceleration/deceleration time.

0: Maximum frequency (F0-10)

1: Frequency reference

2: 100 Hz

F0-26 **Base of frequency adjusted by UP/DOWN keys during running**

Address:	0xF01A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Running frequency

1: Frequency reference

Description

During operation, use the UP/DOWN key of the operating panel to adjust the reference value of the target frequency.

If it is set to 0 and the running frequency is 25 Hz, the target frequency will change from 25 Hz at a certain rate when the UP key is pressed.

If it is set to 1, the target frequency will change from the original target frequency when the UP key is pressed.

F0-27 **Main frequency coefficient**

Address:	0xF01B	Effective mode:	/
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	10.00	Change:	Real-time

Value range:
0.00% to 100.00%
Description
Used to set the main frequency reference coefficient when the frequency superposition mode is Main x Auxiliary. 100.00% corresponds to the given target main frequency.

F0-28 **Auxiliary frequency coefficient**

Address:	0xF01C	Effective mode:	/
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	10.00	Change:	Real-time

Value range:
0.00% to 100.00%
Description
Used to set the auxiliary frequency reference coefficient when the frequency superposition mode is Main x Auxiliary. 100.00% corresponds to the given auxiliary main frequency.

F0-29 **G and P type**

Address:	0xF01D	Effective mode:	/
Min.:	1	Unit:	/
Max.:	2	Data type:	UInt16
Default:	1	Change:	At stop

Value range:
1: G type (constant torque load)
2: P type (fan and pump)
Description
Indicates the current load type of the AC drive.
1: G type (constant-torque load)
The G type models typically carry constant-torque loads with large overload capacity. The overload capacity is 150% in general. Such loads are conveyor belt and cranes, for example.
2: P type (fan and pump)
The P type models typically carry variable-torque loads such as fan and water pump.

4.2 F1: Motor 1 Parameters

F1-00 **Motor type**

Address:	0xF100	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
0: Common asynchronous motor
1: Variable frequency asynchronous motor
2: Synchronous motor
Description
This parameter is used to set the motor type.

0: Common asynchronous motor
A common asynchronous motor is suitable for applications with normal voltage but often full load. It is designed based on constant frequency and constant voltage. Therefore, it may not meet all the frequency and speed control requirements.
1: Variable frequency asynchronous motor
A variable frequency motor can adjust its frequency and speed according to the load. When the voltage is low, the variable frequency motor can reduce the frequency for a reliable start. When the load is light, it can reduce the frequency, speed, and current to save electric energy.
2: Synchronous motor
The synchronous motor supported by MD800 is a permanent magnet synchronous motor

F1-01 **Rated motor power**

Address:	0xF101	Effective mode:	/
Min.:	0.1	Unit:	kW
Max.:	1000.0	Data type:	UInt16
Default:	3.7	Change:	At stop

Value range:
0.1 kW to 1000.0 kW
Description
The rated motor power indicates the axis output power of the motor working in rated conditions. Select a motor with a proper power rating on the premise that the motor can meet the requirements of mechanical load. Take the motor heat dissipation, allowable overload capacity, and starting capacity into account.

F1-02 **Rated motor voltage**

Address:	0xF102	Effective mode:	/
Min.:	1	Unit:	V
Max.:	2000	Data type:	UInt16
Default:	380	Change:	At stop

Value range:
1 V to 2000 V
Description
The rated motor voltage indicates the voltage of the motor during normal operation, which usually refers to the line voltage.

F1-03 **Rated motor current**

Address:	0xF103	Effective mode:	/
Min.:	0.1	Unit:	A
Max.:	6553.5	Data type:	UInt16
Default:	9.0	Change:	At stop

Value range:
0.1 A to 6553.5 A
Description
The rated motor current indicates the current of the motor during normal operation, which usually refers to the line current.

F1-04 **Rated motor frequency**

Address:	0xF104	Effective mode:	/
Min.:	0.01	Unit:	Hz
Max.:	F0-10	Data type	UInt16
Default:	50.00	Change:	At stop

Value range:

0.01 to F0-10

Description

The rated motor frequency indicates the frequency of the power supply connected to the stator winding under the rated operation conditions of the motor.

F1-05 **Rated motor speed**

Address:	0xF105	Effective mode:	/
Min.:	1	Unit:	RPM
Max.:	65535	Data type:	UInt16
Default:	1460	Change:	At stop

Value range:

1rpm to 65535rpm

Description

The rated motor speed indicates the speed (in the unit of rpm) of the rotor under the rated frequency operating conditions.

F1-06 **Asynchronous/Synchronous motor stator resistance**

Address:	0xF106	Effective mode:	/
Min.:	0.001	Unit:	Ω
Max.:	65.535	Data type:	UInt16
Default:	1.204	Change:	At stop

Value range:

0.001 Ω to 65.535 Ω

Description

Indicates the DC resistance (phase value) of stator winding of asynchronous/synchronous motor, which can be obtained by motor auto-tuning.

F1-07 **Asynchronous motor rotor resistance**

Address:	0xF107	Effective mode:	/
Min.:	0.001	Unit:	Ω
Max.:	65.535	Data type:	UInt16
Default:	0.908	Change:	At stop

Value range:

0.001 Ω to 65.535 Ω

Description

The motor rotor resistance is the DC resistance of the motor rotor winding, which can be obtained through motor static or dynamic auto-tuning.

F1-08 **Asynchronous motor leakage inductance**

Address:	0xF108	Effective mode:	/

Min.:	0.01	Unit:	mH
Max.:	655.35	Data type:	UInt16
Default:	5.28	Change:	At stop

Value range:

0.01mH to 655.35mH

Description

The leakage inductance of the asynchronous motor is caused by the leakage flux of motor winding. Flux is generated upon current injection into the motor winding, which can be divided into main flux and leakage flux. The leakage flux is the leakage inductance. The parameter value can be obtained by static or dynamic auto-tuning of the motor.

F1-09 **Asynchronous motor mutual inductance**

Address:	0xF109	Effective mode:	/
Min.:	0.1	Unit:	mH
Max.:	6553.5	Data type:	UInt16
Default:	156.8	Change:	At stop

Value range:

0.1mH to 6553.5mH

Description

When the current in one coil of the motor changes, induced EMF is generated in the coil adjacent to it. This mutually induced EMF can be expressed by mutual inductance.

The mutual inductance of a motor can be roughly divided into two types. One is the inter-phase inductance of the stator or rotor, which is the reactance between two phases of the stator or rotor. The other is the inductance between the stator and the rotor. The inductance of the first type does not change with the rotation of the rotor, whereas the inductance of the second type changes accordingly with the rotation of the rotor.

Both types are motor mutual inductance, which can be obtained by dynamic motor auto-tuning.

F1-10 **No-load current of asynchronous motor**

Address:	0xF10A	Effective mode:	/
Min.:	0.1	Unit:	A
Max.:	F1-03	Data type	UInt16
Default:	4.2	Change:	At stop

Value Range:

0.1 A to F1-03

Description

This parameter indicates the current that passes through the three-phase winding of the stator during no-load operation of the asynchronous motor. The parameter can be obtained by dynamic motor auto-tuning.

F1-11 **Core saturation coefficient 1 of asynchronous motor**

Address:	0xF10B	Effective mode:	/
Min.:	50.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	86.0	Change:	Real-time

Value range:

50.0% to 100.0%

Description

This parameter defines core saturation coefficient 1 of the asynchronous motor with a default setting in general cases.

F1-12 **Core saturation coefficient 2 of asynchronous motor**

Address:	0xF10C	Effective mode:	/
Min.:	100.0	Unit:	%
Max.:	150.0	Data type:	UInt16
Default:	130.0	Change:	Real-time

Value range:

100.0% to 150.0%

Description

This parameter defines core saturation coefficient 1 of the asynchronous motor with a default setting in general cases.

F1-13 **Core saturation coefficient 3 of asynchronous motor**

Address:	0xF10D	Effective mode:	/
Min.:	100.0	Unit:	%
Max.:	170.0	Data type:	UInt16
Default:	140.0	Change:	Real-time

Value range:

100.0% to 170.0%

Description

This parameter defines core saturation coefficient 1 of the asynchronous motor with a default setting in general cases.

F1-14 **Core saturation coefficient 4 of asynchronous motor**

Address:	0xF10E	Effective mode:	/
Min.:	100.0	Unit:	%
Max.:	180.0	Data type:	UInt16
Default:	150.0	Change:	Real-time

Value range:

100.0% to 180.0%

Description

This parameter defines core saturation coefficient 1 of the asynchronous motor with a default setting in general cases.

F1-17 **Axis D inductance of synchronous motor**

Address:	0xF111	Effective mode:	/
Min.:	0.01	Unit:	mH
Max.:	655.35	Data type:	UInt16
Default:	15.86	Change:	At stop

Value Range:

0.01mH to 655.35mH

Description

This parameter defines the inductance of the main magnetic pole axis (longitudinal axis) of the synchronous motor.

F1-18 **Axis Q inductance of synchronous motor**

Address:	0xF112	Effective mode:	/
Min.:	0.01	Unit:	mH
Max.:	655.35	Data type:	UInt16
Default:	15.86	Change:	At stop

Value Range:

0.01mH to 655.35mH

Description

This parameter defines the inductance of the center line (quadrature axis) between the adjacent magnetic pole axes of the synchronous motor rotor.

F1-19 **Synchronous motor back EMF coefficient**

Address:	0xF113	Effective mode:	/
Min.:	0.0	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	300.0	Change:	At stop

Value Range:

0.0 V to 6553.5 V

Description

This parameter indicates the valid value of the motor back EMF at the rated motor frequency defined by F1-04.

F1-24 **Number of motor pole pairs**

Address:	0xF118	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

Number of motor pole pairs

F1-37 **Parameter auto-tuning selection**

Address:	0xF125	Effective mode:	/
Min.:	0	Unit:	/
Max.:	14	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No auto-tuning

1: Static auto-tuning on parameters of asynchronous motors

2: Auto-tuning on all parameters of asynchronous motors

3: With-load auto-tuning on all parameters of asynchronous motors

11: No-load auto-tuning on some parameters (excluding back EMF) of synchronous motors

12: No-load dynamic auto-tuning on parameters of synchronous motors

13: Static auto-tuning on all parameters of synchronous motors

14: Reserved

Description

For high-performance motor operation, accurate motor parameters are required. Select different motor auto-tuning modes based on the motor type to obtain motor parameters.

0: No operation

No auto-tuning.

1: Static auto-tuning on parameters of asynchronous motors

This mode is applicable to scenarios where the motor cannot be disconnected from loads and dynamic auto-tuning is not feasible.

In this mode, some motor parameters are auto-tuned, including F1-06 (Stator resistance of asynchronous motor), F1-07 (Rotor resistance of asynchronous motor), and F1-08 (Leakage inductance of asynchronous motor).

2: Auto-tuning on all parameters of asynchronous motors

This mode is applicable to scenarios where the motor can be easily disconnected from the application system. In this mode, the motor rotates during auto-tuning.

In this mode, all motor parameters are auto-tuned, including F1-06 (Stator resistance of asynchronous motor), F1-07 (Rotor resistance of asynchronous motor), F1-08 (Leakage inductance of asynchronous motor), F1-09 (Mutual inductance of asynchronous motor), and F1-10 (No-load current of asynchronous motor).

3: With-load auto-tuning on all parameters of asynchronous motors

This mode is applicable to scenarios where the motor cannot be disconnected from the load and dynamic complete auto-tuning is not feasible. The motor does not rotate during auto-tuning.

In this mode, all motor parameters are auto-tuned, including F1-06 (Stator resistance of asynchronous motor), F1-07 (Rotor resistance of asynchronous motor), F1-08 (Leakage inductance of asynchronous motor), F1-09 (Mutual inductance of asynchronous motor), and F1-10 (No-load current of asynchronous motor).

11: No-load partial auto-tuning for synchronous motor (excluding back EMF)

This mode is applicable to scenarios where the motor cannot be disconnected from the load. The motor may rotate for several revolutions slowly during auto-tuning. Auto-tuned motor parameters include F1-06 (Motor stator resistance), F1-17 (Synchronous motor d-axis inductance), and F1-18 (Synchronous motor q-axis inductance).

12: No-load dynamic auto-tuning on parameters of synchronous motors

This mode is applicable to scenarios where the motor can be disconnected from the load. In this mode, the motor rotates during auto-tuning.

13: Static auto-tuning on all parameters of synchronous motors

This mode is applicable to scenarios where the motor cannot be disconnected from the load and dynamic complete auto-tuning is not feasible. The motor does not rotate during auto-tuning. Auto-tuned motor parameters include F1-06 (Motor stator resistance), F1-17 (Synchronous motor d-axis inductance), and F1-18 (Synchronous motor q-axis inductance).

14: Reserved

4.3 F2: Motor 1 Vector Control Parameters

F2-00 **Low-speed speed loop Kp**

Address:	0xF200	Effective mode:	/
Min.:	1	Unit:	/

Max.:	200	Data type:	UInt16
Default:	30	Change:	Real-time

Value range:
1 to 200
Description
This is the PID control parameter Kp for the speed loop, which affects the response to the motor speed. A larger Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller Kp value indicates lower adjustment sensitivity and adjustment intensity. The low-speed speed loop Kp is used at the low speed.

F2-01 **Low-speed speed loop Ti**

Address:	0xF201	Effective mode:	/
Min.:	0.001	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.500	Change:	Real-time

Value range:
0.001s to 10.000s
Description
The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The low-speed speed loop Ti is used at the low speed.

F2-02 **Switchover frequency 1**

Address:	0xF202	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F2-05	Data type:	UInt16
Default:	5.00	Change:	Real-time

Value range:
0.00 Hz to F2-05
Description
The speed loop PI parameters are divided into low-speed and high-speed groups. If the running frequency is lower than F2-02 (Switchover frequency 1), the speed loop PI adjustment parameters are F2-00 and F2-01. If the running frequency is higher than F2-05 (Switchover frequency 2), the speed loop PI adjustment parameters are F2-03 and F3-04. If the running frequency is between switchover frequency 1 and switchover frequency 2, the speed loop PI parameters are obtained from the linear switchover between the two groups of PI parameters. The parameter value must be lower than F2-05 (switching frequency 2).

F2-03 **High-speed speed loop Kp**

Address:	0xF203	Effective mode:	/
Min.:	1	Unit:	/
Max.:	200	Data type:	UInt16
Default:	20	Change:	Real-time

Value range:
1 to 200

Description

This is the PID control parameter Kp for the speed loop, which affects the response to the motor speed. A larger Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller Kp value indicates lower adjustment sensitivity and adjustment intensity. The high-speed speed loop Kp is used at the high speed.

F2-04 **High-speed speed loop Ti**

Address:	0xF204	Effective mode:	/
Min.:	0.001	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	1.000	Change:	Real-time

Value range:

0.001s to 10.000s

Description

The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The high-speed speed loop Ti is used at the high speed.

F2-05 **Switchover frequency 2**

Address:	0xF205	Effective mode:	/
Min.:	F2-02	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	10.00	Change:	Real-time

Value range:

F2-02 to F0-10

Description

The speed loop PI parameters are divided into low-speed and high-speed groups. If the running frequency is lower than F2-02 (Switchover frequency 1), the speed loop PI adjustment parameters are F2-00 and F2-01. If the running frequency is higher than F2-05 (Switchover frequency 2), the speed loop PI adjustment parameters are F2-03 and F3-04. If the running frequency is between switchover frequency 1 and switchover frequency 2, the speed loop PI parameters are obtained from the linear switchover between the two groups of PI parameters. The parameter value must be lower than F2-05 (switching frequency 2).

F2-06 **VC slip compensation adjustment**

Address:	0xF206	Effective mode:	/
Min.:	50	Unit:	%
Max.:	200	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:

50% to 200%

Description

In the SVC mode, this parameter is used to adjust the speed stability accuracy of the motor. For example, when the running frequency of the motor is lower than the output frequency of the AC drive, you can increase the value of this parameter.

F2-07 **Speed feedback filter time**

Address:	0xF207	Effective mode:	/
Min.:	0.000	Unit:	s
Max.:	0.100	Data type:	UInt16
Default:	0.004	Change:	Real-time

Value range:

0.000s to 0.100s

Description

In the SVC mode (F0-01=0), the speed loop feedback filter time is effective. By adjusting this parameter, the stability of motor is improved, and the speed loop feedback filter time increases, which can improve the stability of motor and weaken the dynamic response. When the speed loop feedback filter time is reduced, the dynamic response is strengthened. Note that an excessively low value will lead to motor oscillation. The default value of this parameter applies to most of applications.

F2-08 **VC deceleration over-excitation gain**

Address:	0xF208	Effective mode:	/
Min.:	0	Unit:	/
Max.:	200	Data type:	UInt16
Default:	64	Change:	Real-time

Value range:

0 to 200

Description

The strength of the over-excitation function when the deceleration over-excitation function is active under the vector control mode

F2-09 **Torque upper limit source in speed control mode (motoring)**

Address:	0xF209	Effective mode:	/
Min.:	0	Unit:	/
Max.:	7	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Digital setting (F2-10)

1: AI1

2: AI2

3: AI3

4: Reserved

5: Communication setting

6: Min. (AI1, AI2)

7: Max. (AI1, AI2)

Description

The motor is in the motoring state when the actual running direction of the motor is the same as the torque direction. The motor is in the generating state when the actual running direction of the motor is opposite to the torque direction. This parameter is used to set torque upper limit in speed control mode (motoring). The details are as follows:

0: F2-10

The torque upper limit in the speed control mode is set by F2-10 (digital setting of torque upper limit in speed control).

1: AI1

The torque upper limit in the speed control mode is input by the AI1 through current or voltage signals. The frequency is calculated according to the preset AI curve.

2: AI2

The torque upper limit is input with the current or voltage signal through the AI2 terminal. The frequency is calculated according to the preset AI curve.

3: AI3

The torque upper limit is input with the current or voltage signal through the AI3 terminal. The frequency is calculated according to the preset AI curve.

5: Communication setting

The torque upper limit in the speed control mode is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode applies to applications requiring remote control or centralized control of multiple devices.

6: MIN (AI1, AI2)

The torque upper limit in speed control mode is the smallest value between AI1 and AI2 inputs.

7: MAX (AI1, AI2)

The torque upper limit in speed control mode is the largest value between AI1 and AI2 inputs.

F2-10 **Digital setting of torque limit in speed control (motoring)**

Address:	0xF20A	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	150.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

The torque upper limit in the motoring state takes the rated current of the motor as the base.

F2-11 **Torque upper limit source in speed control mode (generating)**

Address:	0xF20B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	8	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Digital setting (F2-10)

1: AI1

2: AI2

3: AI3

4: Reserved

5: Communication setting

6: Min. (AI1, AI2)

7: Max. (AI1, AI2)

8: Digital setting (F2-12)

Description

The motor is in the motoring state when the actual running direction of the motor is the same as the torque direction. The motor is in the generating state when the actual running direction of the motor is opposite to the torque direction. This parameter is used to set torque upper limit in speed control mode (generating). The details are as follows:

0: F2-10

The torque upper limit in the speed control mode is set by F2-10 (digital setting of torque upper limit in speed control).

1: AI1

The torque upper limit in the speed control mode is input by the AI1 through current or voltage signals. The frequency is calculated according to the preset AI curve.

2: AI2

The torque upper limit is input with the current or voltage signal through the AI2 terminal. The frequency is calculated according to the preset AI curve.

3: AI3

The torque upper limit is input with the current or voltage signal through the AI3 terminal. The frequency is calculated according to the preset AI curve.

5: Communication setting

The torque upper limit in the speed control mode is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode applies to applications requiring remote control or centralized control of multiple devices.

6: MIN (AI1, AI2)

The torque upper limit in speed control mode is the smallest value between AI1 and AI2 inputs.

7: MAX (AI1, AI2)

The torque upper limit in speed control mode is the largest value between AI1 and AI2 inputs.

8: F2-12

The torque upper limit in the speed control mode is set by F2-12 (digital setting of regenerative torque limit).

F2-12 **Digital setting of torque upper limit in speed control (regenerating)**

Address:	0xF20C	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	150.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

The torque upper limit in the generating state takes the rated current of the motor as the base.

F2-13 **Current loop Kp adjustment at low speed**

Address:	0xF20D	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:

0.1 to 10.0

Description

Used to adjust the proportion coefficient of low-speed current loop. The larger the value, the faster the current response. The default value is recommended.

F2-14 **Current loop Ki adjustment at low speed**

Address:	0xF20E	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:

0.1 to 10.0

Description

Used to adjust the integral coefficient of low-speed current loop. The larger the value, the faster the current response. The default value is recommended.

F2-15 **Current loop Kp adjustment at high speed**

Address:	0xF20F	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:

0.1 to 10.0

Description

Used to adjust the proportion coefficient of high-speed current loop. The larger the value, the faster the current response. The default value is recommended.

F2-16 **Current loop Ki adjustment at high speed**

Address:	0xF210	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:

0.1 to 10.0

Description

Used to adjust the integral coefficient of high-speed current loop. The larger the value, the faster the current response. The default value is recommended.

F2-17 **Speed loop Kp upon zero speed lock**

Address:	0xF211	Effective mode:	/
Min.:	1	Unit:	/
Max.:	100	Data type:	UInt16
Default:	30	Change:	Real-time

Value range:

1 to 100

Description

Used to adjust the proportion coefficient of speed loop upon zero-speed lock. The larger the value, the stronger the rigidity. The default value is recommended.

F2-18 **Speed loop Ki upon zero speed lock**

Address:	0xF212	Effective mode:	/
Min.:	0.001	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.500	Change:	Real-time

Value range:

0.001s to 10.000s

Description

Used to adjust the integral coefficient of speed loop upon zero-speed lock. The larger the value, the stronger the rigidity. The default value is recommended.

F2-20 **Speed loop switching frequency upon zero speed lock**

Address:	0xF214	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F2-02	Data type:	UInt16
Default:	0.05	Change:	Real-time

Value range:

0.00 Hz to F2-02

Description

Used to set the switchover frequency of speed loop upon zero-speed lock. If the value is too large, vibration may be caused. The default value is recommended.

F2-21 **Maximum output voltage coefficient**

Address:	0xF215	Effective mode:	/
Min.:	100	Unit:	/
Max.:	110	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:

100 to 110

Description

This parameter indicates the boost capacity of the maximum voltage of the AC drive.

Increasing F2-21 improves the maximum load-carrying capacity in motor field weakening area but may increase the motor current ripple and lead to motor overtemperature. On the contrary, decreasing F2-21 reduces motor current ripple and alleviates the motor overtemperature condition, but the maximum load-carrying capacity in motor field weakening area can be weakened. The default value applies to most of application.

F2-22 **Output voltage filter time constant**

Address:	0xF216	Effective mode:	/

Min.:	0.000	Unit:	s
Max.:	0.010	Data type:	UInt16
Default:	0.000	Change:	Real-time

Value range:

0.000s to 0.010s

Description

Large value of this parameter will lead to poor control delay effect.

F2-23 **Zero speed lock**

Address:	0xF217	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disable

1: Enable

Description

Zero speed lock enabling bit

0: Disable

Disable zero-speed lock.

1: Enable

Enable zero-speed lock.

F2-24 **Vector overvoltage stall suppression Kp**

Address:	0xF218	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1000	Data type:	UInt16
Default:	40	Change:	Real-time

Value range:

0 to 1000

Description

Used to adjust the proportional coefficient of vector overvoltage suppression. If overvoltage occurs, the parameter value can be appropriately increased.

F2-25 **Acceleration compensation gain**

Address:	0xF219	Effective mode:	/
Min.:	0	Unit:	/
Max.:	200	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 200

Description

This parameter defines the acceleration compensation gain.

F2-26 **Acceleration compensation filter time**

Address:	0xF21A	Effective mode:	/
Min.:	0	Unit:	/

Max.:	500	Data type:	UInt16
Default:	10	Change:	Real-time

Value range:

0 to 500

Description

Acceleration compensation filter time

F2-27 **Vector overvoltage stall suppression**

Address:	0xF21B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Enabling bit of overvoltage suppression in vector control

0: Disable

Disable vector overvoltage stall suppression.

1: Enable

Enable vector overvoltage stall suppression.

F2-28 **Cut-off frequency of torque reference filter**

Address:	0xF21C	Effective mode:	/
Min.:	50	Unit:	Hz
Max.:	1000	Data type:	UInt16
Default:	500	Change:	Real-time

Value range:

50 Hz to 1000 Hz

Description

Used to set the cut-off frequency of torque filter reference. This parameter can be adjusted according to the torque source.

F2-29 **Detected current at initial position angle of synchronous motor**

Address:	0xF21D	Effective mode:	/
Min.:	50	Unit:	/
Max.:	180	Data type:	UInt16
Default:	80	Change:	Real-time

Value range:

50 to 180

Description

Used to set the initial position angle detection current of the synchronous motor. The default value is recommended.

F2-30 **Auto-calculation of speed loop parameters**

Address:	0xF21E	Effective mode:	/
Min.:	0	Unit:	/

Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disable

1: Enable

Description

If this parameter is enabled, the speed loop parameters are auto-calculated according to the motor parameters.

0: Disable

Disable auto-calculation of speed loop parameters

1: Enable

Enable auto-calculation of speed loop parameters

F2-31 **Expected speed loop bandwidth at high speed**

Address:	0xF21F	Effective mode:	/
Min.:	1.0	Unit:	Hz
Max.:	200.0	Data type:	UInt16
Default:	10.0	Change:	Real-time

Value range:

1.0 Hz to 200.0 Hz

Description

Expected speed loop bandwidth at high speed. The higher the bandwidth, the faster the calculated high-speed loop response.

F2-32 **Expected speed loop bandwidth at low speed**

Address:	0xF220	Effective mode:	/
Min.:	1.0	Unit:	Hz
Max.:	200.0	Data type:	UInt16
Default:	10.0	Change:	Real-time

Value range:

1.0 Hz to 200.0 Hz

Description

Expected speed loop bandwidth at low speed. The higher the bandwidth, the faster the calculated low-speed loop response.

F2-33 **Expected speed loop bandwidth at zero speed**

Address:	0xF221	Effective mode:	/
Min.:	1.0	Unit:	Hz
Max.:	200.0	Data type:	UInt16
Default:	10.0	Change:	Real-time

Value range:

1.0 Hz to 200.0 Hz

Description

Expected speed loop bandwidth at zero speed. The higher the bandwidth, the faster the calculated zero-speed loop response.

F2-34 **Expected speed loop damping ratio**

Address:	0xF222	Effective mode:	/
Min.:	0.100	Unit:	/
Max.:	65.000	Data type:	UInt16
Default:	1.000	Change:	Real-time

Value range:

0.100 to 65.000

Description

Expected zero speed speed loop damping ratio. It is recommended to use the default value.

F2-52 **Decoupling control**

Address:	0xF234	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disable

1: Enable

Description

Enabling bit of decoupling control

0: Disable

Disable decoupling control.

1: Enable

Enable decoupling control.

F2-53 **Generating power limit**

Address:	0xF235	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disable

1: Enable

Description

Enabling bit of generating power limit

0: Disable generating power limit selection

1: Enable generating power limit selection

F2-54 **Generating power limit threshold**

Address:	0xF236	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value range:

0.0% to 200.0%

Description

Used to set the generating power limit, which can limit the generating power according to actual applications.

F2-55 **Magnetic flux closed loop mode selection**

Address:	0xF237	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1111	Data type:	UInt16
Default:	1010	Change:	At stop

Value range:

Ones position: Reserved

Tens position: Reserved

Hundreds position: Reserved

Thousands position: Torque base value

0: Rated motor current

1: Rated motor torque current

Description

Used to select the magnetic flux closed loop mode. The default value is recommended.

Thousands position: Torque base value

Select the base value for torque in the per-unit system.

0: Rated current of the motor

The torque takes the rated current of the motor as the base.

1: Rated torque current of the motor

The torque takes the rated torque current of the motor as the base.

F2-56 **Upper limit of AC drive output current**

Address:	0xF238	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	170.0	Data type:	UInt16
Default:	150.0	Change:	At stop

Value range:

0.0% to 170.0%

Description

Used to set the AC drive output current upper limit. The default value is recommended.

4.4 Group F3: V/f Control Parameters

F3-00 **V/f curve setting**

Address:	0xF300	Effective mode:	/
Min.:	0	Unit:	/
Max.:	11	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Linear V/f
1: Multi-point V/f
2: Square V/f
3: 1.2-power V/f
4: 1.4-power V/f
5: Reserved
6: 1.6-power V/f
7: Reserved
8: 1.8-power V/f
9: Reserved
10: V/f complete separation
11: V/f half separation

Description

V/f curve setting. Used to set different V/f curves according to different applications.

0: Straight-line V/f curve

Under the rated frequency, the output voltage of the AC drive changes linearly with the output frequency. This curve is applicable to general mechanical drive applications such as large-inertia fan acceleration, punch presses, centrifuges, and water pumps.

1: Multi-point V/f curve

The range of the frequency point is 0.00 Hz to the rated motor frequency. The range of the voltage point is 0.0% to 100.0%, which corresponds to 0 V to the rated motor voltage. Set the multi-point V/f curve based on motor’ s load characteristic. Observe this formula during settings: F3-03 ⩽ F3-05 ⩽ F3-07

2: Square V/f curve

Under the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 2-power curve. This curve is applicable to applications with light loads that seldom change, such as fans and water pumps.

3: 1.2-power V/f curve

The AC drive output voltage and output frequency change according to the 1.2-power curve when below the rated frequency.

4: 1.4-power V/f curve

The AC drive output voltage and output frequency change according to the 1.4-power curve when below the rated frequency.

6: 1.6-power V/f curve

The AC drive output voltage and output frequency change according to the 1.6-power curve when below the rated frequency.

8: 1.8-power V/f curve

The AC drive output voltage and output frequency change according to the 1.8-power curve when below the rated frequency.

10: V/f complete separation mode

The output frequency and output voltage of the AC drive are independent of each other. The output frequency is determined by the frequency source, and the output voltage is determined by voltage source for V/f separation. This curve applies to torque motor control applications.

11: V/f half separation mode

In this mode, the voltage and the frequency are proportional and can be set through the voltage source. The relationship between the voltage and the frequency is also related to the rated motor voltage and rated motor frequency in group F1. If the voltage source input is X (0 to 100%), the relationship between the voltage and frequency is as follows: V/f = 2 x X x (Rated motor voltage) ÷ (Rated motor frequency)

F3-01 **Torque boost**

Address:	0xF301	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	30.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 30.0%

Description

The torque boost function is generally applicable to low-frequency operations of the drive. The output torque of the AC drive in the V/f control mode is proportional to the frequency. During operation at low frequencies, the motor torque is low when the motor runs at a low speed. In this case, you can set this parameter to increase the output voltage of the drive to improve the output torque.

Note that the torque boost value must be set properly. Otherwise, overload protection will be triggered.

F3-02 **Cut-off frequency of torque boost**

Address:	0xF302	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	50.00	Change:	At stop

Value range:

0.00 Hz to F0-10

Description

When the operating frequency reaches the cutoff frequency of torque boost, the torque boost function is disabled.

F3-03 **Multi-point V/f frequency point 1**

Address:	0xF303	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F3-05	Data type:	UInt16
Default:	0.00	Change:	At stop

Value range:

0.00 Hz to F3-05

Description

Indicates the frequency point 1 set by multi-point V/f curve.

F3-04 **Multi-point V/f voltage point 1**

Address:	0xF304	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value range:

0.0% to 100.0%

Description

Indicates the voltage point 1 set by multi-point V/f curve.

F3-05 **Multi-point V/f frequency point 2**

Address:	0xF305	Effective mode:	/
Min.:	F3-03	Unit:	Hz
Max.:	F3-07	Data type:	UInt16
Default:	0.00	Change:	At stop

Value range:

F3-03 to F3-07

Description

Indicates the frequency point 2 set by multi-point V/f curve.

F3-06 **Multi-point V/f voltage point 2**

Address:	0xF306	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value range:

0.0% to 100.0%

Description

Indicates the voltage point 2 set by multi-point V/f curve.

F3-07 **Multi-point V/f frequency point 3**

Address:	0xF307	Effective mode:	/
Min.:	F3-05	Unit:	Hz
Max.:	F1-04	Data type:	UInt16
Default:	0.00	Change:	At stop

Value range:

F3-05 to F1-04

Description

Indicates the frequency point 3 set by multi-point V/f curve.

F3-08 **Multi-point V/f voltage point 3**

Address:	0xF308	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value range:

0.0% to 100.0%

Description

Indicates the voltage point 3 set by multi-point V/f curve.

F3-09 **V/f slip compensation gain**

Address:	0xF309	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

In V/f mode, the output frequency can be increased to compensate for the reduced speed of the motor. The greater the gain, the greater the compensation frequency. However, if the gain is too large, overcompensation will occur and the motor speed will be higher than the set frequency.

F3-10 **V/f over-excitation gain**

Address:	0xF30A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	200	Data type:	UInt16
Default:	64	Change:	Real-time

Value range:

0 to 200

Description

The higher the over-excitation gain, the better the suppression effect will be.

When a braking resistor, braking unit, or energy feedback unit is used, set this parameter to 0. Otherwise, overcurrent may occur during operation.

F3-11 **V/f oscillation suppression gain**

Address:	0xF30B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	100	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 100

Description

The higher the oscillation gain, the better the suppression effect will be.

F3-12 **Oscillation suppression gain**

Address:	0xF30C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	3	Change:	At stop

Value range:

0: Invalid

1: Reserved

2: Reserved

3: Valid

Description

In the V/f mode, speed or current oscillation can occur at low frequencies for most of motors. Such oscillation may lead to drive overcurrent. Oscillation can be eliminated by enabling oscillation suppression.

0: Invalid

Disable oscillation suppression and oscillation cannot be eliminated.

1: Valid

Enable oscillation suppression to eliminate oscillation.

F3-13 **Voltage source for separated V/f**

Address:	0xF30D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	8	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Digital setting (F3-14)

1: AI1

2: AI2

3: AI3

4: Reserved

5: Multi-reference

6: Simple PLC

7: PID

8 Communication setting

Description

Defines the target voltage reference source in case of separated V/f.

0: Digital setting (F3-14)

The V/f separation voltage is set by F3-14.

1: AI1

The V/f separation voltage is input by the AI1 through current or voltage signals. The frequency is calculated according to the AI curve.

2: AI2

The V/f separation voltage is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve.

3: AI3

The V/f separation voltage is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve. The AC drive has two AI terminals by default, and the AI3 terminal needs to be provided through the I/O expansion card.

5: Multi-reference

In multi-reference mode, different combinations of DI terminal states correspond to different reference values. The four multi-reference terminals can be grouped in different ways to indicate 16 states, which correspond to 16 frequency references (percentage x maximum frequency) in group FC.

6: Simple PLC

The V/f separation voltage is set by simple PLC. For details, see the function description of simple PLC.

7: PID

The V/f separation voltage is set through PID. For details, see descriptions of the PID function.

8: Communication setting

The torque upper limit in the speed control mode is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode is suitable for remote control or centralized control on multiple equipment.

F3-14 **Voltage digital setting for V/f separation**

Address:	0xF30E	Effective mode:	/
Min.:	0	Unit:	V
Max.:	F1-02	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to F1-02

Description

The setting range is 0 V to the rated voltage.

F3-15 **Voltage acceleration time for separated V/f**

Address:	0xF30F	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	1000.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 1000.0s

Description

Indicates the time required for the output voltage to rise from 0 to the rated motor voltage.

F3-16 **Voltage deceleration time for separated V/f**

Address:	0xF310	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	1000.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 1000.0s

Description

Indicates the time required for the output voltage to decline from the rated motor voltage to 0.

F3-17 **Stop mode for separated V/f**

Address:	0xF311	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: The frequency and voltage decline to 0 independently.

1: The frequency declines to 0 after the voltage declines to 0.

Description

This parameter defines the stop mode for V/f separation. Use stop mode 1 for applications requiring energy discharge upon stop with load.

0: The frequency/voltage declines to 0 independently based on respective deceleration time.

1: The voltage declines to 0 based on the deceleration time. Then the frequency declines to 0 based on the deceleration time.

F3-18 **V/f current limit level**

Address:	0xF312	Effective mode:	/
Min.:	50	Unit:	%
Max.:	180	Data type:	UInt16
Default:	150	Change:	At stop

Value range:

50% to 180%

Description

When the motor current reaches this value, the AC drive starts overcurrent stall function. The default value is 150%, corresponding to 1.5 times the rated current of the AC drive.

F3-19 **V/f overcurrent stall suppression**

Address:	0xF313	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value range:

0: Disable

1: Enable

Description

This parameter defines whether to enable V/f overcurrent stall suppression

0: Disable V/f current limit selection

1: Enable V/f current limit selection

F3-20 **V/f overcurrent stall suppression gain**

Address:	0xF314	Effective mode:	/
Min.:	0	Unit:	/
Max.:	100	Data type:	UInt16
Default:	20	Change:	Real-time

Value range:

0 to 100

Description

When the current exceeds the action current of overcurrent stall, the overcurrent stall function is enabled and output frequency decreases. After the current falls below the overcurrent stall threshold, the output frequency increases to the target frequency again, which prolongs the actual acceleration time automatically. The higher the setpoint, the better the suppression effect.

F3-21 **Compensation coefficient of V/f speed multiplying overcurrent stall action current**

Address:	0xF315	Effective mode:	/
Min.:	50	Unit:	/
Max.:	180	Data type:	UInt16
Default:	50	Change:	At stop

Value range:

50 to 180

Description

This parameter defines the compensation coefficient of V/f speed multiplying overcurrent stall action current, which can be used to adjust the overcurrent suppression current threshold in the field-weakening range.

F3-22 **V/f voltage limit level**

Address:	0xF316	Effective mode:	/
Min.:	330.0	Unit:	V
Max.:	800.0	Data type:	UInt16
Default:	770.0	Change:	At stop

Value range:

330.0 V to 800.0 V

Description

When the bus voltage reaches this value, the AC drive starts the overvoltage stall protection.

F3-23 **V/f overvoltage stall suppression**

Address:	0xF317	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value range:

0: Disable

1: Enable

Description

This parameter defines whether to enable V/f overvoltage stall suppression.

0: Disable V/f overvoltage stall suppression

1:Enable V/f overvoltage stall suppression

F3-24 **V/f frequency gain for overvoltage stall suppression**

Address:	0xF318	Effective mode:	/
Min.:	0	Unit:	/
Max.:	100	Data type:	UInt16
Default:	30	Change:	Real-time

Value range:

0 to 100

Description

Increasing F3-24 improves the control accuracy on the bus voltage, but leads to fluctuation of the output frequency. If the output frequency fluctuates greatly, reduce F3-24 appropriately.

F3-25 **V/f voltage gain for overvoltage stall suppression**

Address:	0xF319	Effective mode:	/
Min.:	0	Unit:	/
Max.:	100	Data type:	UInt16
Default:	30	Change:	Real-time

Value range:

0 to 100

Description

This parameter suppresses the bus voltage. Increasing the setpoint can reduce the overshoot of the bus voltage.

F3-26 **Frequency rise threshold for overvoltage stall suppression**

Address:	0xF31A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	50	Data type:	UInt16
Default:	5	Change:	At stop

Value range:

0 to 50

Description

The running frequency may increase during overvoltage stall suppression. This parameter limits the increase of the running frequency.

F3-27 **Slip compensation time constant**

Address:	0xF31B	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	10.0	Data type:	UInt16
Default:	0.5	Change:	Real-time

Value range:

0.1 to 10.0

Description

Indicates th time constant of the slip compensation frequency. As the time constant increases, the frequency of slip compensation is more reliable, and the influence of the load disturbance and noise interference is lowered. However, the response to load change will be slower.

F3-33 **Online torque compensation gain**

Address:	0xF321	Effective mode:	/
Min.:	80	Unit:	/
Max.:	150	Data type:	UInt16
Default:	100	Change:	At stop

Value range:

80 to 150

Description

Used to set the automatic torque boosting gain. The automatic torque boost function takes effect when the setting value is greater than or equal to 100. The default value is recommended.

F3-34 **Slip startup**

Address:	0xF322	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0 to 1

Description

Defines whether the slip startup is enabled. This function is supported only in the V/f mode. When When the AC drive operates continuously and the contactor controls whether to disconnect the motor, you need to use slip start to achieve a soft start and prevent overcurrent faults.

F3-35 **Slip startup threshold**

Address:	0xF323	Effective mode:	/
Min.:	0	Unit:	/
Max.:	50	Data type:	UInt16
Default:	10	Change:	Real-time

Value range:

0 to 50

Description

Set the current threshold for the slip startup.

F3-36 **Slip start Kp**

Address:	0xF324	Effective mode:	/
Min.:	1	Unit:	/
Max.:	100	Data type:	UInt16
Default:	16	Change:	Real-time

Value range:

1 to 100

Description

It sets the KP of the slip startup P controller to adjust the voltage output speed. The larger the parameter, the faster the startup.

4.5 F4: Input Terminals

F4-00 **DI1 hardware source**

Address:	0xF400	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection
1: Power supply unit DI1
2: Power supply unit DI2
3: Power supply unit DI3
4: Power supply unit DI4
5: Power supply unit DIO1
6: Power supply unit DIO2
7: Power supply unit DIO3
8: Power supply unit DIO4
101: Expansion card 1 DI1
102: Expansion card 1 DI2
103: Expansion card 1 DI3
104: Expansion card 1 DI4
105: Expansion card 1 DI5
106: Expansion card 1 DI6
107: Expansion card 1 DI7
108: Expansion card 1 DI8
201: Expansion card 2 DI1
202: Expansion card 2 DI2
203: Expansion card 2 DI3
204: Expansion card 2 DI4
205: Expansion card 2 DI5
206: Expansion card 2 DI6
207: Expansion card 2 DI7
208: Expansion card 2 DI8

Description

Used to select the input terminal hardware source.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-01 **DI1 function selection**

Address:	0xF401	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	1	Change:	At stop

Value range:

0: No function
1: Forward run (FWD)
2: Reverse run (REV)
3: Three-wire control
4: Forward jog (FJOG)
5: Reverse jog (RJOG)
6: Function as the UP key
7: Function as the DOWN key
8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys
9: Fault reset (RESET)
10: External fault NO input
11: External fault NC input
12: User-defined fault 1
13: User-defined fault 2
14: Multi-reference terminal 1
15: Multi-reference terminal 2
16: Multi-reference terminal 3
17: Multi-reference terminal 4
18: Acceleration/deceleration selection terminal 1
19: Acceleration/deceleration selection terminal 2
20: Acceleration/Deceleration prohibition
21: Command source switchover terminal 1
22: Command source switchover terminal 2
23: Frequency reference switchover
24: Switchover between main frequency X and preset frequency
25: Switchover between auxiliary frequency Y and preset frequency

26: Frequency modification function
27: Counter input
28: Counter reset
29: Length count input
30: Length reset
31: PID pause
32: PID integral pause
33: PID parameter switchover
34: Opposite to PID action direction
35: Torque control prohibition
36: Speed control/Torque control switchover
38: Flying start
39: Immediate DC braking
40: Deceleration DC braking
41: External stop terminal 1
42: External stop terminal 2
43: Running pause
44: Coast to stop
45: Emergency stop
46: Motor selection terminal
47: Clear current running time
48: Two-wire/Three-wire motion control switchover
49: PLC state reset
50: Wobble frequency pause
94: Brake feedback 1
95: Brake feedback 2

Description

Used to select th DI1function.

0: No function

The DI has no function.

1: Forward run (FWD)

Gives the forward running signal. In the case of two-wire mode 1 (F4-17 = 0), forward run applies. In the case of two-wire mode 2 (F4-17 = 1), the operation command applies.

2: Reverse run (REV)

Gives the reverse running signal. In the case of three-wire mode 1 (F4-17 = 2), reverse run applies. In the case of three-wire mode 2 (F4-17 = 3), the reverse running direction applies.

3: Three-wire operation control

The AC drive operation mode is three-wire control mode. To set the running command source to the terminal, set F4-17 (terminal command mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set the DI to function 3.

4: Forward jog (FJOG)

The operating mode of the AC drive is forward jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

5: Reverse jog (RJOG)

The operation mode of the AC drive is reverse jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

6: Function as the UP key

The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the UP key is released.

7: Function as the DOWN key

The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the DOWN key is released.

8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys

When the main frequency is set through the operating panel and this function is selected, the frequency set by UP and DOWN key on the operating panel or by terminal functioning as the UP/ DOWN key (6 or 7) can be cleared, and the frequency reference will be reset to the value of F0-08.

9: Fault reset (RESET)

The terminal is used to reset faults of the AC drive and reset upon detection of a rising edge on the DI signal. Remote fault reset is also supported.

10: External fault NO input

When the terminal is active, the AC drive reports E15.01 upon receiving an external active signal.

11: External fault NC input

When the terminal is active, the AC drive reports E15.02 upon receiving an external inactive signal.

12: User-defined fault 1

When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

13: User-defined fault 2

When E28.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

14: Multi-reference terminals 1

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

15: Multi-reference terminals 2

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

16: Multi-reference terminals 3

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

17: Multi-reference terminals 4

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

18: Acceleration/deceleration selection terminals 1

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

19: Acceleration/deceleration selection terminals 2

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

20: Acceleration/Deceleration inhibited

The terminal is used to maintain the current running frequency of the AC drive regardless of changes of the external input frequency (unless a stop command is received).

21: Command source switchover terminal 1

When the operation command is set through the terminal (F0-02 = 1), this function can implement switchover between terminal control and keypad control.

When the operation command is set through communication (F0-02 = 2), this function can implement switchover between communication control and keypad control.

22: Command source switchover terminal 2

The terminal is used for switchover between terminal control and communication control.

When the command is set through the terminal, activating the terminal switches the drive to the communication control mode.

When the command is set through communication, activating the terminal switches the drive to the terminal control mode.

23: Frequency reference switching

The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).

24: Switchover between frequency source X and preset frequency

The terminal is used to switch from the main frequency to the preset frequency (F0-08).

25: Switchover between auxiliary frequency source Y and preset frequency

The terminal is used to switch from the auxiliary frequency to the preset frequency (F0-08).

26: Frequency modification enable

When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.

27: Counter input

In the count process, a count pulse is input when the terminal is active.

28: Counter reset

In the count process, the counter status is cleared when the terminal is active.

29: Length count input

In the fixed length process, the length count is input when the terminal is active.

30: Length reset

In the fixed length process, the length is cleared when the terminal is active.

31: PID pause

PID is invalid temporarily. The AC drive maintains the current output frequency without supporting PID adjustment of frequency source.

32: PID integral pause

The integral adjustment function pauses when the terminal is active. However, the proportional and derivative adjustment functions are still valid.

33: PID parameter switchover

If PID parameters are switched by using the DI terminal (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.

34: PID action direction reversal

The PID action direction is reversed to the direction set by FA-03 (PID action direction).

35: Torque control disable

In torque control mode, the system switches to speed control when this terminal is active. The drive switches back to the torque control mode when the terminal becomes inactive.

36: Switchover between speed control and torque control

The terminal is used to switch between speed control and torque control.

If A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive.

If A0-00 (speed/torque control mode) is set to 1, the speed control mode is used when the terminal is active, and the torque control mode is used when the terminal is inactive.
38: Flying start
Flying start of the AC drive
39: Immediate DC braking
The terminal is used to directly switch the AC drive to the DC braking state.
40: Deceleration DC braking
The terminal is used to make the AC drive decelerate to the start frequency of DC braking during stop (F6-11) and then enter the DC braking state.
41: External stop terminal 1
When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42: External stop terminal 2
The terminal is used to make the AC drive decelerate to stop in any control mode (operating panel, terminal, or communication control). In this case, the deceleration time is fixed to the value of F8-08 (deceleration time 4).
43: Running pause
When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44: Coast to stop
When the terminal is active, the AC drive stops output, and the motor coasts to stop under the action of mechanical inertia.
45: Emergency stop
When the system is in the emergency state, the AC drive decelerates according to F8-60 (terminal deceleration time for emergency stop). When the deceleration time for emergency stop is 0s in V/f mode, the AC drive decelerates according to the minimum unit time. The input terminal does not need to be in the closed state continuously. Even if it is closed only for a moment, an emergency stop will occur immediately.
Different from general deceleration time, the emergency stop input terminal is opened after the deceleration time for emergency stop expires. In this case, if the operation signal is still active, the drive will not restart. To restart the drive, disconnect the operation terminal and input the operation command again.
46: Motor selection
The terminal is used to select the motor. When this terminal is active, motor 2 is selected. When this terminal is inactive, motor 1 is selected.
47: Clear the current running time
The terminal is used to clear the current running time of the AC drive.
If the current running time is shorter than the set value (greater than 0) of F8-57 (Current running time threshold) and the terminal is active, the current running timing is cleared.
If the current running time is longer than the set value (greater than 0) of F8-53 and the terminal is active, and the current running time is not cleared.
48: Switchover between two-wire and three-wire control
The terminal is used to switch between two-wire and three-wire control.
If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active.
If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active.

If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active.
If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49: PLC state reset

The terminal is used to restore the AC drive to the initial state of the simple PLC.

50: Wobble pause

In the wobble process, when this terminal is active, the wobble function is paused (the AC drive outputs at the center frequency).

94: Brake feedback 1

Give the brake release feedback signal

95: Brake feedback 2

Give the brake feedback signal

F4-02 **DI2 hardware source**

Address:	0xF402	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: Power supply unit - DI1

2: Power supply unit - DI2

3: Power supply unit - DI34: Power supply unit - DI4

5: Power supply unit - DIO1

6: Power supply unit - DIO2

7: Power supply unit - DIO3

8: Power supply unit - DIO4

101: Expansion card 1 - DI1

102: Expansion card 1 - DI2

103: Expansion card 1 - DI3

104: Expansion card 1 - DI4

105: Expansion card 1 - DI5

106: Expansion card 1 - DI6

107: Expansion card 1 - DI7

108: Expansion card 1 - DI8

201: Expansion card 2 - DI1

202: Expansion card 2 - DI2

203: Expansion card 2 - DI3

204: Expansion card 2 - DI4

205: Expansion card 2 - DI5

206: Expansion card 2 - DI6

207: Expansion card 2 - DI7

208: Expansion card 2 - DI8

Description

Used to select the input terminal hardware source.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner). Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-03 **DI2 function selection**

Address:	0xF403	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	4	Change:	At stop

Value range:

See F4–01.

Description

See F4–01.

F4-04 **DI3 hardware source**

Address:	0xF404	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: Power supply unit - DI1

2: Power supply unit - DI2

3: Power supply unit - DI3

4: Power supply unit - DI4

5: Power supply unit - DIO1

6: Power supply unit - DIO2

7: Power supply unit - DIO3

8: Power supply unit - DIO4

101: Expansion card 1 - DI1

102: Expansion card 1 - DI2

103: Expansion card 1 - DI3

104: Expansion card 1 - DI4

105: Expansion card 1 - DI5

106: Expansion card 1 - DI6

107: Expansion card 1 - DI7

108: Expansion card 1 - DI8

201: Expansion card 2 - DI1

202: Expansion card 2 - DI2

203: Expansion card 2 - DI3

204: Expansion card 2 - DI4

205: Expansion card 2 - DI5

206: Expansion card 2 - DI6

207: Expansion card 2 - DI7

208: Expansion card 2 - DI8

Description

Used to select the input terminal hardware source.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-05 **DI3 function selection**

Address:	0xF405	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	9	Change:	At stop

Value range:

See F4–01.

Description

See F4–01.

F4-06 **DI4 hardware source**

Address:	0xF406	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection
1: Power supply unit - DI1
2: Power supply unit - DI2
3: Power supply unit - DI3
4: Power supply unit - DI4
5: Power supply unit - DIO1
6: Power supply unit - DIO2
7: Power supply unit - DIO3
8: Power supply unit - DIO4
101: Expansion card 1 - DI1
102: Expansion card 1 - DI2
103: Expansion card 1 - DI3
104: Expansion card 1 - DI4
105: Expansion card 1 - DI5
106: Expansion card 1 - DI6
107: Expansion card 1 - DI7
108: Expansion card 1 - DI8
201: Expansion card 2 - DI1
202: Expansion card 2 - DI2
203: Expansion card 2 - DI3
204: Expansion card 2 - DI4
205: Expansion card 2 - DI5
206: Expansion card 2 - DI6
207: Expansion card 2 - DI7
208: Expansion card 2 - DI8

Description

Used to select the input terminal hardware source.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-07 **DI4 function selection**

Address:	0xF407	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	14	Change:	At stop

Value range:
See F4–01.
Description
See F4–01.

F4-08 **DI5 hardware source**

Address:	0xF408	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
0: No selection
1: Power supply unit - DI1
2: Power supply unit - DI2
3: Power supply unit - DI3
4: Power supply unit - DI4
5: Power supply unit - DIO1
6: Power supply unit - DIO2
7: Power supply unit - DIO3
8: Power supply unit - DIO4
101: Expansion card 1 - DI1
102: Expansion card 1 - DI2
103: Expansion card 1 - DI3
104: Expansion card 1 - DI4
105: Expansion card 1 - DI5
106: Expansion card 1 - DI6
107: Expansion card 1 - DI7
108: Expansion card 1 - DI8
201: Expansion card 2 - DI1
202: Expansion card 2 - DI2
203: Expansion card 2 - DI3
204: Expansion card 2 - DI4
205: Expansion card 2 - DI5
206: Expansion card 2 - DI6
207: Expansion card 2 - DI7
208: Expansion card 2 - DI8
Description
Used to select the input terminal hardware source.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-09 **DI5 function selection**

Address:	0xF409	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	15	Change:	At stop

Value range:

See F4–01.

Description

See F4–01.

F4-10 **DI6 hardware source**

Address:	0xF40A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection
1: Power supply unit - DI1
2: Power supply unit - DI2
3: Power supply unit - DI3
4: Power supply unit - DI4
5: Power supply unit - DIO1
6: Power supply unit - DIO2
7: Power supply unit - DIO3
8: Power supply unit - DIO4
101: Expansion card 1 - DI1
102: Expansion card 1 - DI2
103: Expansion card 1 - DI3
104: Expansion card 1 - DI4
105: Expansion card 1 - DI5
106: Expansion card 1 - DI6
107: Expansion card 1 - DI7
108: Expansion card 1 - DI8
201: Expansion card 2 - DI1
202: Expansion card 2 - DI2
203: Expansion card 2 - DI3
204: Expansion card 2 - DI4
205: Expansion card 2 - DI5
206: Expansion card 2 - DI6
207: Expansion card 2 - DI7
208: Expansion card 2 - DI8

Description

Used to select the input terminal hardware source.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-11 **DI6 function selection**

Address:	0xF40B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

See F4–01.

Description

See F4–01.

F4-12 **DI7 hardware source**

Address:	0xF40C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection
1: Power supply unit - DI1
2: Power supply unit - DI2
3: Power supply unit - DI3
4: Power supply unit - DI4
5: Power supply unit - DIO1
6: Power supply unit - DIO2
7: Power supply unit - DIO3
8: Power supply unit - DIO4
101: Expansion card 1 - DI1
102: Expansion card 1 - DI2
103: Expansion card 1 - DI3
104: Expansion card 1 - DI4
105: Expansion card 1 - DI5
106: Expansion card 1 - DI6
107: Expansion card 1 - DI7
108: Expansion card 1 - DI8
201: Expansion card 2 - DI1
202: Expansion card 2 - DI2
203: Expansion card 2 - DI3
204: Expansion card 2 - DI4
205: Expansion card 2 - DI5
206: Expansion card 2 - DI6
207: Expansion card 2 - DI7
208: Expansion card 2 - DI8

Description

Used to select the input terminal hardware source.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-13 **DI7 function selection**

Address:	0xF40D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

See F4–01.

Description

See F4–01.

F4-14 **DI8 hardware source**

Address:	0xF40E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection
1: Power supply unit - DI1
2: Power supply unit - DI2
3: Power supply unit - DI3
4: Power supply unit - DI4
5: Power supply unit - DIO1
6: Power supply unit - DIO2
7: Power supply unit - DIO3
8: Power supply unit - DIO4
101: Expansion card 1 - DI1
102: Expansion card 1 - DI2
103: Expansion card 1 - DI3
104: Expansion card 1 - DI4
105: Expansion card 1 - DI5
106: Expansion card 1 - DI6
107: Expansion card 1 - DI7
108: Expansion card 1 - DI8
201: Expansion card 2 - DI1
202: Expansion card 2 - DI2
203: Expansion card 2 - DI3
204: Expansion card 2 - DI4
205: Expansion card 2 - DI5
206: Expansion card 2 - DI6
207: Expansion card 2 - DI7
208: Expansion card 2 - DI8

Description

Used to select the input terminal hardware source.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F4-15 **DI8 function selection**

Address:	0xF40F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

See F4–01.

Description

See F4–01.

F4-17 **Terminal command mode**

Address:	0xF411	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Two-wire mode 1

1: Two-wire mode 2

2: Three-wire mode 1

3: Three-wire mode 2

Description

This parameter defines the mode in which the AC drive is controlled by external terminals.

0: Two-wire mode 1

Two DIs are connected. One is used to start/stop the AC drive in the forward run mode, and the other is used to start/stop the AC drive in the reverse run mode.

1: Two-wire mode 2

Two DIs are connected. One is used to start/stop the AC drive, and the other is used to control the running direction.

2: Three-wire mode 1

Three DIs are connected. One is used to start/stop the AC drive, and the other two are used to control the running direction.

3: Three-wire mode 2

Three DIs are connected. One is used to start the AC drive, one is used to stop the AC drive, and the other is used to control the running direction.

F4-18 **Step value of terminal functioning as UP/DOWN keys**

Address:	0xF412	Effective mode:	/
Min.:	0.001	Unit:	Hz/s
Max.:	65.535	Data type:	UInt16
Default:	1.000	Change:	Real-time

Value range:

0.001 Hz/s to 65.535 Hz/s

Description

Indicates the change rate when the frequency is adjusted through terminal UP/DOWN.
When the DI terminal function is set to terminal UP or DOWN, this parameter must be set (values of F4-01 to F4-15 are 6 or 7).

F4-19 **DI1 delay time**

Address:	0xF413	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s to 3600.0s
Description
Indicates the delay of the AC drive when the DI state changes.
It is only available for DI1, DI2, and DI3 currently.

F4-20 **DI2 delay time**

Address:	0xF414	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s to 3600.0s
Description
Indicates the delay of the AC drive when the DI state changes.
It is only available for DI1, DI2, and DI3 currently.

F4-21 **DI3 delay time**

Address:	0xF415	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s to 3600.0s
Description
Indicates the delay of the AC drive when the DI state changes.
It is only available for DI1, DI2, and DI3 currently.

F4-22 **DI active status setting 1**

Address:	0xF416	Effective mode:	/
Min.:	0	Unit:	/
Max.:	11111	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
Ones: DI1 0: Active high 1: Active low Tens: DI2 0: Active high 1: Active low Hundreds: DI3 0: Active high 1: Active low Thousands: DI4 0: Active high 1: Active low Ten thousands: DI5 0: Active high 1: Active low
Description

The active mode for terminals DI1 to DI5 are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.
0: Active high
The DI terminals (DI1 to DI5) are active when connected to COM and inactive when disconnected from COM.
1: Active low
The DI terminals (DI1 to DI5) are inactive when connected to COM and active when disconnected from COM.

F4-23 **DI active status setting 2**

Address:	0xF417	Effective mode:	/
Min.:	0	Unit:	/
Max.:	11111	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
Ones position: DI6
0: Active high
1: Active low
Tens position:DI7
0: Active high
1: Active low
Hundreds position:DI8
0: Active high
1: Active low
Thousands position: Reserved
0: Reserved
Ten thousands position: Reserved
0: Reserved
Description
The ones to ten thousands of this parameter are used to set the active status of DI6 to DI8.
0: Active high
The DI terminals (DI6 to DI8) are active when connected to COM and inactive when disconnected from COM.
1: Active low
The DI terminals (DI6 to DI8) are inactive when connected to COM and active when disconnected from COM.

F4-25 **AI1 hardware source**

Address:	0xF419	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: AI1 of power supply unit

2: AI2 of power supply unit

101: AI1 of expansion card 1

102: AI2 of expansion card 1

201: AI1 of expansion card 2

202: AI2 of expansion card 2

Description

Used to select the analog/temperature input source.

F4-27 **AI2 hardware source**

Address:	0xF41B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: AI1 of power supply unit

2: AI2 of power supply unit

101: AI1 of expansion card 1

102: AI2 of expansion card 1

201: AI1 of expansion card 2

202: AI2 of expansion card 2

Description

Used to select the analog/temperature input source.

F4-29 **AI3 hardware source**

Address:	0xF41D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No selection

1: AI1 of power supply unit

2: AI2 of power supply unit

101: AI1 of expansion card 1

102: AI2 of expansion card 1

201: AI1 of expansion card 2

202: AI2 of expansion card 2

Description

Used to select the analog/temperature input source.

F4-31 **Minimum input of AI curve 1**

Address:	0xF41F	Effective mode:	/
Min.:	-10.00	Unit:	V
Max.:	F4-33	Data type:	Int16

Default:	0.00	Change:	Real-time

Value range:

-10.00 V to F4-33

Description

F4-31 corresponds to the x axis of the AI curve 1 minimum input, that is, the minimum analog input voltage or current.

When the main frequency is set by analog input, the AI terminals are used as frequency sources. Five types of different AI curves can be set for each AI terminal.

The AI curve is used to set the relationship between the analog input voltage (or current) and the percentage corresponding to the maximum frequency (F0-10). The x axis of the AI curve represents the analog input voltage or current, and the y axis represents the set value corresponding to the analog input, which is the percentage of the maximum frequency (F0-10).

Five AI curves are provided. Curves 1 to 3 are two-point curves, and their relevant parameters are F4-31 to F4-42. Curves 4 and 5 are four-point curves, and their relevant parameters are A6-00 to A6-15.

The two points on curves 1 to 3 are the minimum input point and maximum input point, respectively.

F4-32 **Percentage corresponding to minimum input of AI curve 1**

Address:	0xF420	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter corresponds to the y axis of AI curve 1 minimum input, that is, the set value (percentage) corresponding to the minimum analog input.

F4-33 **Maximum input of AI curve 1**

Address:	0xF421	Effective mode:	/
Min.:	F4-31	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	Real-time

Value range:

F4-31 to 10.00 V

Description

This parameter corresponds to the x axis of AI curve 1 maximum input, that is, the maximum analog input voltage (or maximum analog input current).

F4-34 **Percentage corresponding to the maximum input of AI curve 1**

Address:	0xF422	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter corresponds to the y axis of AI curve 1 minimum input, that is, the set value (percentage) corresponding to the minimum analog input.

F4-35 **Minimum input of AI curve 2**

Address:	0xF423	Effective mode:	/
Min.:	-10.00	Unit:	V
Max.:	F4-37	Data type:	Int16
Default:	0.00	Change:	Real-time

Value range:

-10.00 V to F4-37

Description

This parameter corresponds to the x axis of AI curve 2 minimum input, that is, the minimum analog input voltage (or minimum analog input current).

F4-36 **Percentage corresponding to minimum input of AI curve 2**

Address:	0xF424	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter corresponds to the y axis of AI curve 1 minimum input, that is, the set value (percentage) corresponding to the minimum analog input.

F4-37 **Maximum input of AI curve 2**

Address:	0xF425	Effective mode:	/
Min.:	F4-35	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	Real-time

Value range:

F4-35 to 10.00 V

Description

This parameter corresponds to the x axis of AI curve 2 maximum input, that is, the maximum analog input voltage (or maximum analog input current).

F4-38 **Percentage corresponding to the maximum input of AI curve 2**

Address:	0xF426	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter corresponds to the y axis of AI curve 1 minimum input, that is, the set value (percentage) corresponding to the minimum analog input.

F4-39 **Minimum input of AI curve 3**

Address:	0xF427	Effective mode:	/
Min.:	-10.00	Unit:	V
Max.:	F4-41	Data type:	Int16
Default:	0.00	Change:	Real-time

Value range:

-10.00 V to F4-41

Description

This parameter corresponds to the x axis of AI curve 3 minimum input, that is, the minimum analog input voltage (or minimum analog input current).

F4-40 **Percentage corresponding to minimum input of AI curve 3**

Address:	0xF428	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter corresponds to the y axis of AI curve 1 minimum input, that is, the set value (percentage) corresponding to the minimum analog input.

F4-41 **Maximum input of AI curve 3**

Address:	0xF429	Effective mode:	/
Min.:	F4-39	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	Real-time

Value range:

F4-39 to 10.00 V

Description

This parameter corresponds to the x axis of AI curve 3 maximum input, that is, the maximum analog input voltage (or maximum analog input current).

F4-42 **Percentage corresponding to the maximum input of AI curve 3**

Address:	0xF42A	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter corresponds to the y axis of AI curve 1 minimum input, that is, the set value (percentage) corresponding to the minimum analog input.

F4-48 **AI curve**

Address:	0xF430	Effective mode:	/

Min.:	0x111	Unit:	/
Max.:	0x555	Data type:	UInt16
Default:	0x321	Change:	Real-time

Value range:

Ones position: AI1

1: Curve 1 (2 points)

2: Curve 2 (2 points)

3: Curve 3 (2 points)

4: Curve 4 (4 points)

5: Curve 5 (4 points)

Tens position: AI2

1: Curve 1 (2 points)

2: Curve 2 (2 points)

3: Curve 3 (2 points)

4: Curve 4 (4 points)

5: Curve 5 (4 points)

Hundreds position: AI3

1: Curve 1 (2 points)

2: Curve 2 (2 points)

3: Curve 3 (2 points)

4: Curve 4 (4 points)

5: Curve 5 (4 points)

Description

The curves corresponding to AI1 to AI3 are set through the ones, tens, and hundreds of this parameter. You can select any AI curve for each AI.

1: Curve 1 (2 points)

Two-point curve. The relationship between voltage and frequency is set by F4-31 to F4-34.

2: Curve 2 (2 points)

Two-point curve. The relationship between voltage and frequency is set by F4-35 to F4-38.

3: Curve 3 (2 points)

Two-point curve. The relationship between voltage and frequency is set by F4-39 to F4-42.

4: Curve 4 (4 points)

Four-point curve. The relationship between voltage and frequency is set by A6-00 to A6-07.

5: Curve 5 (4 points)

Four-point curve. The relationship between voltage and frequency is set by A6-08 to A6-15.

F4-49 **Selection when AI less than the set minimum input**

Address:	0xF431	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x111	Data type:	UInt16
Default:	0x0	Change:	Real-time

Value range:

Ones: AI1
0: Percentage corresponding to the minimum input
1: 0.0%
Tens: AI2
0: Percentage corresponding to the minimum input
1: 0.0%
Hundreds: AI3
0: Percentage corresponding to the minimum input
1: 0.0%

Description

The settings for AI1 to AI3 that lower than minimum input are set through the ones, tens, and hundreds of this parameter.

0: Percentage corresponding to minimum input

When the AI input is lower than the minimum setting value, the frequency is calculated based on the minimum input.

1: 0.0%

When the AI input is lower than the minimum setting value, the frequency is calculated based on the AI input being 0.0%.

4.6 F5: Output Terminals

F5-00 **DO1/RO1 hardware source**

Address:	0xF500	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: No selection
1: Power supply unit - DIO1
2: Power supply unit - DIO2
3: Power supply unit - DIO3
4: Power supply unit - DIO4
5: Power supply unit - RO1
101: Expansion card 1 - DO1/RO1
102: Expansion card 1 - DO2/RO2
103: Expansion card 1 - DO3/RO3
104: Expansion card 1 - DO4/RO4
105: Expansion card 1 - DO5/RO5
106: Expansion card 1 - DO6/RO6
107: Expansion card 1 - DO7/RO7
108: Expansion card 1 - DO8/RO8
201: Expansion card 2 - DO1/RO1
202: Expansion card 2 - DO2/RO2
203: Expansion card 2 - DO3/RO3
204: Expansion card 2 - DO4/RO4
205: Expansion card 2 - DO5/RO5
206: Expansion card 2 - DO6/RO6
207: Expansion card 2 - DO7/RO7
208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-01 **DO1/RO1 function selection**

Address:	0xF501	Effective mode:	/
Min.:	0	Unit:	/
Max.:	53	Data type:	UInt16
Default:	3	Change:	Real-time

Value range:

0: No output
1: AC drive in operation
2: Ready to run
3: Fault output (stop upon fault)
4: Fault output 2
5: Fault output 3
6: Abnormal output (direct output upon fault or alarm)
7: Motor overload warning
8: AC drive overload warning
9: Motor overtemperature warning
10: AC drive load loss
11: Undervoltage state
12: Output current limit exceeded
13: Frequency level detection FDT1 output
14: Frequency level detection FDT2 output
15: Frequency reached
16: Frequency 1 reached
17: Frequency 2 reached
18: Frequency upper limit reached
19: Frequency lower limit reached (output at stop)
20: Frequency lower limit reached (no output at stop)
21: Timing reached
22: Cumulative power-on time reached
23: Cumulative operating time reached
24: Current operating time reached
25: Zero current state

26: Current 1 reached
27: Current 2 reached
28: AC drive overtemperature threshold reached
29: Counting value setpoint reached
30: Designated counting value reached
31: Length reached
32: Frequency limited
33: Torque limited
34: AI1 input beyond the limit
35: AI1 > AI2
36: PLC cycle completed
37: Communication setting
38: STO-EDM
39: Reserved
40: Operating at zero speed (no output at stop)
41: Operating at zero speed 2 (active upon stop)
42: Reserved
43: Operating in reverse direction
44: Process 1
45: Process 2
46: Process 3
47: Process 4
48: Process 5
49: Process 6
50: Process 7
51: Reserved
52: Reserved
53: Brake output

Description

Used to select the output terminal function.
AI is the analog input.
0: No output
The DO has no function.
1: AC drive in running
The terminal outputs an active signal when the AC drive is running with output frequency (which can be 0).
2: Ready to run
The terminal outputs an active signal when the AC drive is ready for running without any fault after power-on.
3: Fault output 1 (stop upon fault)
When the AC drive coasts to stop or decelerates to stop upon a fault, the DO/RO terminal outputs an active signal after the AC drive stops completely.
4: Fault output 2
When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO/RO terminal outputs an active signal after the AC drive stops completely.

5: Fault output 3
When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO/RO terminal outputs an active signal.
6: Exception output (direct output upon fault or alarm)
When the AC drive has a fault or alarm, the DO terminal outputs an active signal.
7: Motor overload pre-warning
The AC drive determines whether the motor load exceeds the overload pre-warning threshold according to the overload pre-warning coefficient (F9-02) before performing the protection action. The terminal outputs an active signal when the overload pre-warning threshold is exceeded.
8: AC drive overload warning
The DO outputs an active signal 10s before the AC drive performs overload protection.
9: Motor over-temperature pre-warning
The terminal outputs an active signal when the motor temperature reaches the threshold defined by F9-58, F9-60, or F9-62 (motor overtemperature pre-warning threshold).
10: AC drive load loss output
The terminal outputs an active signal when load loss occurs.
11: Undervoltage state output
The terminal outputs an active signal when undervoltage occurs on the AC drive.
12: Output current limit exceeded
When the output current of the AC drive is greater than F8-40 (output overcurrent threshold) for a period exceeding F8-41 (output overcurrent detection delay), the DO/RO outputs an active signal.
13: Frequency-level detection FDT1 output
When the running frequency is higher than the detected value, the DO/RO terminal outputs an active signal. When the running frequency is lower than the result of the detected value minus the FDT hysteresis value, the active signal is canceled. For details, see the description of F8-22 and F8-23.
14: Frequency-level detection FDT2 output
When the running frequency is higher than the detected value, the DO/RO terminal outputs an active signal. When the running frequency is lower than the result of the detected value minus the FDT hysteresis value, the active signal is canceled. For details, see the description of F8-24 and F8-25.
15: Frequency reach
The DO/RO terminal outputs an active signal when the running frequency of the AC drive is within a certain range (target frequency±setpoint of F8-26).
16: Frequency 1 reach output
The DO/RO terminal outputs an active signal when the running frequency of the AC drive is within the frequency detection range of F8-27 (detection value 1 for frequency reach). The frequency detection range is as follows: (F8-27–F8-28) to (F8-27+F8-28).
17: Frequency 2 reach output
The DO/RO terminal outputs an active signal when the running frequency of the AC drive is within the frequency detection range of F8-30 (detection value 2 for frequency reach). The frequency detection range is as follows: (F8-30–F8-31) to (F8-30+F8-31).
18: Frequency upper limit reach
The terminal outputs an active signal when the running frequency reaches the frequency upper limit (F0-12).
19: Frequency lower limit reach (output even at stop)
The terminal outputs an active signal when the running frequency reaches the frequency lower limit (F0-14). The terminal still outputs the active signal when the drive is in the stop state.

20: Frequency lower limit reach (no output at stop)

If F8-15 (running mode when frequency reference lower than lower limit) is set to 1 (stop), the terminal outputs an "inactive" signal no matter whether the running frequency reaches the frequency lower limit.

When F8-14 is set to 0 (run at the lower limit frequency) or 2 (run at zero speed) and the running frequency reaches the lower limit, the terminal outputs an active signal.

21: Timing reach output

When the timing function (F8-46) is enabled, the terminal outputs an active signal when the current operation time of the AC drive reaches the set timing duration. The timing duration is defined by F8-47 and F8-48.

22: Accumulative power-on time reached

The DO outputs an active signal when the accumulative power-on time of the AC drive (F7-12) equals to or exceeds the value of F8-19 (accumulative power-on time threshold).

23: Accumulative running time reach

The DO outputs an active signal when the accumulative running time of the AC drive equals to or exceeds the value of F8-20 (accumulative running time threshold).

24: Present running time reach

The DO outputs an active signal when the present running time of the AC drive equals to or exceeds the value of F8-58 (current running time threshold).

25: Zero current state

When the output current of the AC drive is within the zero-current range for a period exceeding F8-39 (zero current detection delay), the DO/RO outputs an active signal. Zero current detection range = 0 to F8-38 x F1-03

26: Current 1 reach output

The DO/RO terminal outputs an active signal when the output current of the AC drive is within the detection range of F8-42 (detection level of current 1). The current detection range is (F8-42 minus F8-43) x F1-03 to (F8-42 plus F8-43) x F1-03.

27: Current 2 reach output

The DO/RO terminal outputs an active signal when the output current of the AC drive is within the detection range of F8-44 (detection level of current 2). The current detection range is (F8-44–F8-45) x F1-03 (rated motor current) to (F8-44+F8-45) x F1-03.

28: AC drive overtemperature threshold reached

The terminal outputs an active signal when the drive unit heatsink temperature (F7-07) reaches the value of F8-51 (AC drive overtemperature threshold reached).

29: Set count value reached

The terminal outputs an active signal when the count value reaches the value of FB-08.

30: Designated count value reached

The terminal outputs an active signal when the count value reaches the value of FB-09.

31: Length reached

The terminal outputs an active signal when the actual length detected equals to or is higher than the length defined by FB-05.

32: Frequency limit reach

The terminal outputs an active signal when the frequency reference exceeds the frequency upper or lower limit, and the output frequency of AC drive reaches the upper or lower limit.

33: Torque limit reach

The terminal outputs an active signal when the output torque of the AC drive reaches the toque limit in speed control mode.

34: AI1 input limit exceeded

The terminal outputs an active signal when AI1 input is higher than the value of F8-49 (AI1 input voltage lower limit) or lower than the value of F8-50 (AI1 input voltage upper limit).

35: AI1 > AI2

The terminal outputs an active signal when the AI1 input is higher than the AI2 input.

36: PLC cycle completed

The DO outputs a pulse signal with the width of 250 ms when the simple PLC completes one cycle.

37: Communication setting

Whether the terminal is active or inactive is determined by communication address 0x2001 or 0x7312.

38: STO-EDM

The DO terminal outputs an active signal when STO is triggered.

39 Reserved

40: Running at zero speed (no output at stop)

The terminal outputs an active signal when the output frequency of the AC drive is 0 during running. When the AC drive is in the stop state, the signal is inactive.

41: Running at zero speed 2 (output at stop)

The terminal outputs an active signal when the output frequency of the AC drive is 0 during running. The signal is still active when the AC drive stops.

42: Reserved

43: Operating in reverse direction

The DO outputs an active signal when the AC drive runs in the reverse direction.

44: Reserved (Process 1)

45: Reserved (Process 2)

46: Reserved (Process 3)

47: Reserved (Process 4)

48: Reserved (Process 5)

49: Reserved (Process 6)

50: Reserved (Process 7)

53: Brake output

F5-02 **DO2/RO2 hardware source**

Address:	0xF502	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: No selection
1: Power supply unit - DIO1
2: Power supply unit - DIO2
3: Power supply unit - DIO3
4: Power supply unit - DIO4
5: Power supply unit - RO1
101: Expansion card 1 - DO1/RO1
102: Expansion card 1 - DO2/RO2
103: Expansion card 1 - DO3/RO3
104: Expansion card 1 - DO4/RO4
105: Expansion card 1 - DO5/RO5
106: Expansion card 1 - DO6/RO6
107: Expansion card 1 - DO7/RO7
108: Expansion card 1 - DO8/RO8
201: Expansion card 2 - DO1/RO1
202: Expansion card 2 - DO2/RO2
203: Expansion card 2 - DO3/RO3
204: Expansion card 2 - DO4/RO4
205: Expansion card 2 - DO5/RO5
206: Expansion card 2 - DO6/RO6
207: Expansion card 2 - DO7/RO7
208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.
DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.
Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).
Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-03 **DO2/RO2 output function**

Address:	0xF503	Effective mode:	/
Min.:	0	Unit:	/
Max.:	53	Data type:	UInt16
Default:	15	Change:	Real-time

Value range:

See F5–01.

Description

See F5–01.

F5-04 **DO3/RO3 hardware source**

Address:	0xF504	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: No selection
1: Power supply unit - DIO1
2: Power supply unit - DIO2
3: Power supply unit - DIO3
4: Power supply unit - DIO4
5: Power supply unit - RO1
101: Expansion card 1 - DO1/RO1
102: Expansion card 1 - DO2/RO2
103: Expansion card 1 - DO3/RO3
104: Expansion card 1 - DO4/RO4
105: Expansion card 1 - DO5/RO5
106: Expansion card 1 - DO6/RO6
107: Expansion card 1 - DO7/RO7
108: Expansion card 1 - DO8/RO8
201: Expansion card 2 - DO1/RO1
202: Expansion card 2 - DO2/RO2
203: Expansion card 2 - DO3/RO3
204: Expansion card 2 - DO4/RO4
205: Expansion card 2 - DO5/RO5
206: Expansion card 2 - DO6/RO6
207: Expansion card 2 - DO7/RO7
208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-05 **DO3/RO3 output function**

Address:	0xF505	Effective mode:	/
Min.:	0	Unit:	/
Max.:	53	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

See F5–01.

Description

See F5–01.

F5-06 **DO4/RO4 hardware source**

Address:	0xF506	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: No selection
1: Power supply unit - DIO1
2: Power supply unit - DIO2
3: Power supply unit - DIO3
4: Power supply unit - DIO4
5: Power supply unit - RO1
101: Expansion card 1 - DO1/RO1
102: Expansion card 1 - DO2/RO2
103: Expansion card 1 - DO3/RO3
104: Expansion card 1 - DO4/RO4
105: Expansion card 1 - DO5/RO5
106: Expansion card 1 - DO6/RO6
107: Expansion card 1 - DO7/RO7
108: Expansion card 1 - DO8/RO8
201: Expansion card 2 - DO1/RO1
202: Expansion card 2 - DO2/RO2
203: Expansion card 2 - DO3/RO3
204: Expansion card 2 - DO4/RO4
205: Expansion card 2 - DO5/RO5
206: Expansion card 2 - DO6/RO6
207: Expansion card 2 - DO7/RO7
208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-07 **DO4/RO4 output function**

Address:	0xF507	Effective mode:	/
Min.:	0	Unit:	/
Max.:	53	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

See F5–01.

Description

See F5–01.

F5-08 **DO5/RO5 hardware source**

Address:	0xF508	Effective mode:	/
Min.:	0	Unit:	/
Max.:	308	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: No selection
1: Power supply unit - DIO1
2: Power supply unit - DIO2
3: Power supply unit - DIO3
4: Power supply unit - DIO4
5: Power supply unit - RO1
101: Expansion card 1 - DO1/RO1
102: Expansion card 1 - DO2/RO2
103: Expansion card 1 - DO3/RO3
104: Expansion card 1 - DO4/RO4
105: Expansion card 1 - DO5/RO5
106: Expansion card 1 - DO6/RO6
107: Expansion card 1 - DO7/RO7
108: Expansion card 1 - DO8/RO8
201: Expansion card 2 - DO1/RO1
202: Expansion card 2 - DO2/RO2
203: Expansion card 2 - DO3/RO3
204: Expansion card 2 - DO4/RO4
205: Expansion card 2 - DO5/RO5
206: Expansion card 2 - DO6/RO6
207: Expansion card 2 - DO7/RO7
208: Expansion card 2 - DO8/RO8

Description

Used to select the output terminal hardware source.

DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output.

Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner).

Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).

F5-09 **DO5/RO5 output function**

Address:	0xF509	Effective mode:	/
Min.:	0	Unit:	/
Max.:	53	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

See F5–01.

Description

See F5–01.

F5-10 **DO1/RO1 output delay time**

Address:	0xF50A	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-11 **DO2/RO2 output delay time**

Address:	0xF50B	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-12 **DO3/RO3 output delay time**

Address:	0xF50C	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-13 **DO4/RO4 output delay time**

Address:	0xF50D	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-14 **DO5/RO5 output delay time**

Address:	0xF50E	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-15 **DO/RO active mode selection**

Address:	0xF50F	Effective mode:	/
Min.:	0	Unit:	/

Max.:	11111	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

Ones: DO1/ RO1

0: Positive logic

1: Negative logic

Tens: DO1/ RO1

0: Positive logic

1: Negative logic

Hundreds: DO3/ RO3

0: Positive logic

1: Negative logic

Thousands: DO4/ RO4

0: Positive logic

1: Negative logic

Ten thousands: DO5/ RO5

0: Positive logic

1: Negative logic

Description

0: Positive logic (same as NO contact)

Active state: The DO terminal terminal is active when it is internally connected to the COM terminal.
Inactive state: The DO terminal is disconnected from the COM terminal.

1: Negative logic (same as NC contact)

Active state: The DO terminal terminal is active when it is disconnected from the COM terminal.
Inactive state: The DO terminal and COM terminal are internally connected.

4.7 F6: Start/Stop Control Parameters

F6-00 **Startup mode**

Address:	0xF600	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Direct start

1: Flying start (asynchronous motor)

2: Vector pre-excitation start (asynchronous motor)

Description

This parameter is used to set the start mode of the motor. Flying start is recommended if you need to start a motor that is rotating at a high speed. SVC quick start and pre-excitation start apply only to asynchronous AC motor.

0: Direct start

This mode is applicable to most loads. Startup with the startup frequency is applicable to load hoisting applications such as elevators and cranes.

1: Flying start

In some applications, the motor rotates before the AC drive is started. In flying start, the AC drive tracks the motor speed and direction automatically to start the spinning motor without impact. For example, when an instantaneous power failure of the grid occurs, the AC drive in the running state is powered off, but the motor is still running due to inertia. In this case, the AC drive must detect the actual speed of the motor to control the asynchronous motor again. Otherwise, overcurrent or overvoltage will occur on the AC drive during start, which may damage the power transistor of the AC drive.

2： Pre-excitation start (asynchronous motor)

This mode applies only to asynchronous motors in SVC mode. Performing pre-excitation on the motor before start improves the responsiveness of the motor and reduces the starting current. The time sequence of the pre-excitation start is the same as that of the DC braking restart.

F6-01 **Frequency for flying start mode**

Address:	0xF601	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: From frequency at stop

1: From 50 Hz

2: From the maximum frequency

3: Flying start

Description

Indicates the initial frequency for speed tracking in the flying start mode.

The start frequency of flying start upon restart varies with different modes.

0: Starting from the stop frequency

The search mode from the stop frequency is to search for 0 Hz from the frequency at the previous stop. If external force drives the motor to a higher speed than the speed at stop, this mode is not applicable.

1: Starting from the mains frequency

This mode is applicable to the scenario where the motor is restarted after stop for a long time.

2: Starting from the max. frequency

This mode is applicable to generating load.

3: Flying start

This mode is applicable to the V/f mode after the static parameter auto-tuning.

F6-02 **Flying start speed**

Address:	0xF602	Effective mode:	/
Min.:	1	Unit:	/
Max.:	100	Data type:	UInt16
Default:	20	Change:	Real-time

Value range:

1 to 100

Description

Used to set the flying start speed coefficient. The higher the value, the faster the speed. It is only valid for flying start mode 0/1/2. The default value is recommended.

F6-03 **Startup frequency**

Address:	0xF603	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	10.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to 10.00 Hz

Description

This parameter defines the startup frequency for direct start of the AC drive. When the startup frequency is higher than the frequency reference, the AC drive will not start but stay standby.

F6-04 **Startup frequency holding time**

Address:	0xF604	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0s to 100.0s

Description

This parameter defines the hold time during which the output frequency remains at the startup frequency. After this hold time expires, the AC drive accelerates to the frequency reference.

F6-05 **DC braking current/Pre-excitation current upon start**

Address:	0xF605	Effective mode:	/
Min.:	0	Unit:	%
Max.:	100	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0% to 100%

Description

When start with DC braking is enabled, DC braking will be performed first after a start command is set. A greater DC braking current indicates greater braking force. The setpoint 100% corresponds to the rated motor current. The upper limit of the current is 80% of the rated current of the drive. which can be set by F6-34. The maximum upper limit of the DC braking current for stop is 135% of the rated drive current.

F6-06 **DC braking/Pre-excitation time upon start**

Address:	0xF606	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0s to 100.0s

Description

Indicates the time for DC braking, which is active only when the start mode is set to direct start.

F6-07 **Acceleration/Deceleration mode**

Address:	0xF607	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Linear acceleration/deceleration

1: S-curve acceleration/deceleration

2: Four-segment S-curve acceleration/deceleration

Description

Used to set the frequency change mode during the start and stop of the AC drive.

0: Linear acceleration/deceleration

The output frequency increases or decreases linearly.

1: S-curve acceleration/deceleration

When the target frequency changes dynamically in real time, the output frequency increases or decreases based on the S-curve. This mode is applicable to applications requiring smooth running and quick response in real time.

2: Four-segment S-curve acceleration/deceleration

On the basis of S-curve acceleration/deceleration, the start and end segments of acceleration and deceleration of S curve can be set by F6-26 to F6-29.

F6-10 **Stop mode**

Address:	0xF60A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Decelerate to stop

1: Coast to stop

Description

This parameter is used to select the stop mode of the AC drive.

0: Decelerate to stop

Upon receiving the stop command, the AC drive decreases the output frequency to 0 and then stops based on the deceleration time.

1: Coast to stop

Upon receiving the stop command, the AC drive immediately stops output. The motor then coasts to stop according to the mechanical inertia.

F6-11 **DC braking/Position lock start frequency for stop**

Address:	0xF60B	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

During decelerating to stop, the drive starts DC braking when the operating frequency drops below the value of F6-11.

F6-12 **DC braking waiting time for stop**

Address:	0xF60C	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 100.0s

Description

When the operating frequency decreases to the start frequency of DC braking for stop, the drive stops output temporarily and then starts DC braking. This prevents faults such as overcurrent caused by DC braking at a high speed.

F6-13 **Stop DC braking current**

Address:	0xF60D	Effective mode:	/
Min.:	0	Unit:	%
Max.:	100	Data type:	UInt16
Default:	50	Change:	Real-time

Value range:

0% to 100%

Description

The higher the DC braking current, the stronger the braking force. The value 100.0% corresponds to the rated current of the motor. The default upper limit of the DC braking current for stop is 80% of the rated drive current,

which can be set by F6-34. The maximum upper limit of the DC braking current for stop is 135% of the rated drive current.

F6-14 **Stop DC braking active time**

Address:	0xF60E	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	Real-time

Value range:

0.0s to 100.0s

Description

This parameter specifies the hold time of DC braking. If it is set to 0, DC braking is disabled.

F6-15 **Braking usage rate**

Address:	0xF60F	Effective mode:	/
Min.:	0	Unit:	%
Max.:	100	Data type:	UInt16
Default:	100	Change:	At stop

Value range:

0% to 100%

Description

Indicates the braking usage rate.

F6-16 **Closed-loop current Kp of flying start**

Address:	0xF610	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1000	Data type:	UInt16
Default:	500	Change:	Real-time

Value range:

0 to 1000

Description

It takes effect when F6-01 is set to 0, 1, or 2. It is used to set the proportional gain of the current suppression PI regulator during the speed search process in the flying start mode.

F6-17 **Closed-loop current Ki of torque tracking**

Address:	0xF611	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1000	Data type:	UInt16
Default:	800	Change:	Real-time

Value range:

0 to 1000

Description

It takes effect when F6-01 is set to 0, 1, or 2. It is used to set the integral gain of the current suppression PI regulator during the speed search process in the flying start mode.

F6-18 **Current during flying start**

Address:	0xF612	Effective mode:	/
Min.:	30	Unit:	/
Max.:	200	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:

30 to 200

Description

Generally, overcurrent will occur on the asynchronous motor due to large slip when flying start is adopted. The current must be limited for preventing overcurrent. This parameter is used to set the motor current to be suppressed in the process of flying start.

F6-19 **Gain coefficient of fast flying start**

Address:	0xF613	Effective mode:	/
Min.:	1.0	Unit:	/
Max.:	20.0	Data type:	UInt16
Default:	10.0	Change:	At stop

Value range:

1.0 to 20.0

Description

This parameter is valid when F6-01 is set to 3. The larger the value is set, the faster the flying start is.

F6-20 **Cut-off frequency of fast flying start**

Address:	0xF614	Effective mode:	/
Min.:	0.5	Unit:	Hz
Max.:	3.0	Data type:	UInt16
Default:	1.1	Change:	At stop

Value range:

0.5 Hz to 3.0 Hz

Description

This parameter is valid when F6-01 is set to 3. The default value is recommended.

F6-21 **Demagnetization time**

Address:	0xF615	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	1.00	Change:	Real-time

Value range:

0.00s to 10.00s

Description

In the vector mode, when flying start is enabled (F6-00 = 1), the AC drive cannot be started when the motor has residual magnetism. The AC drive can only be started after the voltage of the AC drive is disconnected for at least the demagnetization time set by F6-21.

F6-22 **Start pre-torque setting**

Address:	0xF616	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

Used to set the startup pre-torque value, which can be used to fasten the dynamic motor response.

F6-23 **Operation command on power supply unit**

Address:	0xF617	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Stop according to F6-10

1: Ignore stop command

Description

Used to determine whether the drive unit stops according to the specified mode when receiving a stop command from the power supply unit.

0: Stop in the mode defined by F6-10 of the drive unit

1: Continue to run, ignoring the stop command sent from the power supply unit

F6-24 **Position lock Kp**

Address:	0xF618	Effective mode:	/
Min.:	0.0	Unit:	/
Max.:	100.0	Data type:	UInt16
Default:	10.0	Change:	Real-time

Value range:

0.0 to 100.0

Description

Used to set the proportion coefficient of position lock. The larger the value, the stronger the rigidity.

F6-25 **Position lock end amplitude**

Address:	0xF619	Effective mode:	/
Min.:	0	Unit:	/
Max.:	16383	Data type:	UInt16
Default:	10	Change:	Real-time

Value range:

0 to 16383

Description

Used to set the position lock end amplitude. An excessively high setpoint can lead to vibration.

F6-26 **Time proportion of S-curve acceleration start segment**

Address:	0xF61A	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value range:

0.0% to 100.0%

Description

This parameter defines the time proportion of S-curve acceleration at start. The setpoint 100% corresponds to the acceleration time of the current frequency.

F6-27 **Time proportion of S-curve acceleration end segment**

Address:	0xF61B	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value range:

0.0% to 100.0%

Description

This parameter defines the time proportion of S-curve acceleration at end. The setpoint 100% corresponds to the acceleration time of the current frequency.

F6-28 **Time proportion of S-curve deceleration start segment**

Address:	0xF61C	Effective mode:	/
Min.:	0.0	Unit:	%

Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value range:
0.0% to 100.0%

Description
This parameter defines the time proportion of S-curve deceleration at start. The setpoint 100% corresponds to the deceleration time of the current frequency.

F6-29 **Time proportion of S-curve deceleration end segment**

Address:	0xF61D	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value range:
0.0% to 100.0%

Description
This parameter defines the time proportion of S-curve deceleration at end. The setpoint 100% corresponds to the deceleration time of the current frequency.

F6-30 **Trial current for flying start of synchronous motor**

Address:	0xF61E	Effective mode:	/
Min.:	5.0	Unit:	%
Max.:	50.0	Data type:	UInt16
Default:	20.0	Change:	At stop

Value range:
5.0% to 50.0%

Description
The default value is recommended.

F6-31 **Minimum track frequency for synchronous motor flying start**

Address:	0xF61F	Effective mode:	/
Min.:	0.0	Unit:	Hz
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value range:
0.0 Hz to 100.0 Hz

Description
The default value is recommended.

F6-32 **Angle compensation for flying start of synchronous motor**

Address:	0xF620	Effective mode:	/
Min.:	0	Unit:	/
Max.:	360	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
0 to 360

Description

The default value is recommended.

F6-33 **Proportion coefficient of synchronous motor flying start**

Address:	0xF621	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	10.0	Data type:	UInt16
Default:	2.0	Change:	At stop

Value range:

0.1 to 10.0

Description

The default value is recommended.

F6-34 **Integral coefficient of synchronous motor flying start**

Address:	0xF622	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	10.0	Data type:	UInt16
Default:	6.0	Change:	At stop

Value range:

0.1 to 10.0

Description

The default value is recommended.

F6-35 **Reverse running inhibition for flying start**

Address:	0xF623	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 2

Description

/

4.8 F7 Operating Panel and Display

F7-00 **Drive unit indicator test**

Address:	0xF700	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 2

Description

This parameter is used to set the LED indicators of the drive unit and check whether the LED is damaged. When this parameter is set to a non-zero value, the three LED indicators stay on.

F7-01 **MF.K key function**

Address:	0xF701	Effective mode:	/
Min.:	0	Unit:	/
Max.:	4	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: MF.K key disabled

1: Switchover between operating panel control and remote command control (terminal or communication)

2: Switchover between forward and reverse running

3: Forward jog

4: Reverse jog

Description

The MF.K key is a multi-functional key. This parameter is used to set the function of the MF.K key.

0: MF.K key disabled

The MF.K key does not work.

1: Switchover between operating panel control and remote control (terminal I/O control or communication control)

When F0-02 is set to 0 (operating panel), the MF.K key does not work. When F0-02 is set to 1 (terminal), the MF.K key is used for switchover between terminal I/O control and operating panel control. When F0-02 is set to 2 (communication), the MF.K key is used for switchover between the communication control and operating panel control.

2: Switchover between forward and reverse running

The MF.K key is used for changing the direction of the frequency reference. This function is valid only when the command source is set to the operating panel.

3: Forward jog

The MF.K key is used for enabling forward jog (FJOG). This function is valid only when the command source is set to the operating panel or communication control and when you long press the key,.

4: Reverse jog

Reverse jog (RJOG) is enabled by using the MF.K key. This function is valid only when the command source is set to the operating panel or communication control and when you long press the key,.

F7-02 **STOP key function**

Address:	0xF702	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: Stop function of the STOP/RES key enabled only in operating panel control mode

1: Stop function of the STOP/RES key enabled in any operating mode

Description

The STOP key on the operating panel is used for stop/reset. This parameter is used for setting the function of this key.

0: STOP key enabled only in operating panel control mode

The STOP key is valid only in operating panel control mode.

1: STOP key enabled in any operating mode

The STOP key is valid in any operating mode.

F7-03 **Parameter 1 displayed on LED operating panel during operation**

Address:	0xF703	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x1F	Change:	Real-time

Value range:

Bit 0: Running frequency (Hz)

Bit 1: Frequency reference (Hz)

Bit 2: Bus voltage (V)

Bit 3: Output voltage (V)

Bit 4: Output current (A)

Bit 5 Output power (kW)

Bit 6: Output torque (%)

Bit 7: DI status

Bit 8: DO status

Bit 9: AI1 voltage (V)

Bit 10: AI2 voltage (V)

Bit 11: AI3 voltage (V)

Bit 12: Count value

Bit 13: Length value

Bit 14: Load speed display

Bit 15: PID reference

Description

If a parameter needs to be displayed during operation, set its corresponding bit to 1. After converting this binary number to a hexadecimal number, set it in F7-03.

For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H.

F7-04 **Parameter 2 displayed on LED operating panel during operation**

Address:	0xF704	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Real-time

Value range:

Bit 0: PID feedback
Bit 1: PLC stage
Bit 2: Reserved
Bit 3: Feedback speed (Hz)
Bit 4: Remaining running time
Bit 5: Reserved
Bit 6: Reserved
Bit 7: Reserved
Bit 8: Linear speed
Bit 9: Current power-on duration (min.)
Bit 10: Current running duration (min.)
Bit 11: Reserved
Bit 12: Communication setpoint
Bit 13: Reserved
Bit 14: Main frequency X
Bit 15: Auxiliary frequency Y

Description

If a parameter needs to be displayed during running, set its corresponding bit to 1. After converting the binary number to a hexadecimal number, set F7-04 to the hexadecimal number.

For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H.

F7-05 **Parameter displayed on the LED operating panel upon stop**

Address:	0xF705	Effective mode:	/
Min.:	0x1	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x33	Change:	Real-time

Value range:

Bit 0: Frequency reference (Hz)
Bit 1: Bus voltage (V)
Bit 2: DI state
Bit 3: DO state
Bit 4: AI1 voltage (V)
Bit 5: AI2 voltage (V)
Bit 6: AI3 voltage (V)
Bit 7: Count value
Bit 8: Length value
Bit 9: PLC stage
Bit 10: Load speed display
Bit 11: PID reference
Bit 12: Reserved

Description

If a parameter needs to be displayed when the AC drive stops, set its corresponding bit to 1. After converting the binary number to a hexadecimal number, set it in F7-05.

For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H.

F7-06 **STO software version**

Address:	0xF706	Effective mode:	/
Min.:	0.0	Unit:	/
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:

0.0 to 6553.5

Description

Indicates the STO software version of the AC drive.

F7-07 **Drive unit heatsink temperature**

Address:	0xF707	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	1000	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

0°C to 1000°C

Description

Displays the temperature of the drive unit heatsink.

F7-08 **Product No.**

Address:	0xF708	Effective mode:	/
Min.:	0	Unit:	/
Max.:	999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 999

Description

This parameter shows the product No. of the AC drive.

F7-09 **Accumulative running time**

Address:	0xF709	Effective mode:	/
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0h to 65535h

Description

This parameter indicates the accumulative running time of the AC drive.

F7-10 **Performance software version**

Address:	0xF70A	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

This parameter displays the performance software version of the AC drive.

F7-11 **Function software version**

Address:	0xF70B	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

This parameter displays the function software version of the AC drive.

F7-12 **Cumulative power-on time**

Address:	0xF70C	Effective mode:	/
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0h to 65535h

Description

This parameter indicates the accumulative power-on time of the AC drive.

F7-13 **Cumulative power generation**

Address:	0xF70D	Effective mode:	/
Min.:	0	Unit:	kWh
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0kWh to 65535kWh

Description

Indicates the accumulative power generation of the AC drive.

F7-14 **Accumulative power consumption**

Address:	0xF70E	Effective mode:	/
Min.:	0	Unit:	kWh
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0kWh to 65535kWh

Description

This parameter indicates the accumulative power consumption of the AC drive.

F7-15 **Temporary performance software version**

Address:	0xF70F	Effective mode:	/
Min.:	0.00	Unit:	/

Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

Temporary performance software version

F7-16 **Temporary version of function software**

Address:	0xF710	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

Temporary function software version

4.9 F8: Auxiliary Functions

F8-00 **Jog frequency**

Address:	0xF800	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

Indicates the running frequency of the AC drive in the jog mode.

F8-01 **Jog acceleration time**

Address:	0xF801	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

Indicates the acceleration time of the AC drive in the jogging mode.

F8-02 **Jog deceleration time**

Address:	0xF802	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

Indicates the deceleration time of the AC drive in the jog mode.

F8-03 **Acceleration time 2**

Address:	0xF803	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

This parameter specifies the second acceleration time.

The AC drive provides four groups of acceleration time, which can be switched by the DI or F8-35 (Switchover frequency of acceleration time 1 and acceleration time 2).

F8-04 **Deceleration time 2**

Address:	0xF804	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

This parameter specifies the second deceleration time.

The AC drive provides four groups of deceleration time, which can be switched by the DI or F8-36 (Switchover frequency of deceleration time 1 and deceleration time 2).

F8-05 **Acceleration time 3**

Address:	0xF805	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

This parameter specifies the third acceleration time.

The AC drive provides four groups of acceleration time, which can be switched by the DI.

F8-06 **Deceleration time 3**

Address:	0xF806	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

This parameter specifies the third deceleration time.
The AC drive provides four groups of deceleration time, which can be switched by the DI.

F8-07 **Acceleration time 4**

Address:	0xF807	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s to 6500.0s
Description
This parameter specifies the fourth acceleration time.
The AC drive provides four groups of acceleration time, which can be switched by the DI.

F8-08 **Deceleration time 4**

Address:	0xF808	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s to 6500.0s
Description
This parameter specifies the fourth deceleration time.
The AC drive provides four groups of deceleration time, which can be switched by the DI.

F8-09 **Jump frequency 1**

Address:	0xF809	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00 Hz to F0-10
Description
The jump frequency enables the AC drive to avoid mechanical resonance points of the load.
This parameter defines the first jump frequency. If it is set to 0, the first jump frequency function is disabled.

F8-10 **Jump frequency 2**

Address:	0xF80A	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00 Hz to F0-10
Description
The jump frequency enables the AC drive to avoid mechanical resonance points of the load.
This parameter defines the second jump frequency. If it is set to 0, the second jump frequency function is disabled.

F8-11 **Jump frequency amplitude**

Address:	0xF80B	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	5.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to 5.00 Hz

Description

When the running frequency approaches the jump frequency during acceleration, the AC drive runs at the current frequency for a period and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude).

When the running frequency approaches the jump frequency during deceleration, the AC drive runs at the current frequency for a period and then skips over the jump frequency. The jump range is twice the value of F8-11.

F8-12 **Jump frequency state during acceleration/deceleration**

Address:	0xF80C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Used to set the jump frequency function during acceleration/deceleration.

0: Disable

The jump frequency function is disabled during acceleration and deceleration.

1: Enable

The jump frequency function is enabled during acceleration and deceleration.

F8-13 **Dead zone time of forward/reverse run switchover**

Address:	0xF80D	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	3000.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 3000.0s

Description

Defines the transition time at 0 Hz output during switchover between forward run and reverse run.

F8-14 **Reverse running control**

Address:	0xF80E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Allowed

1: Inhibited

Description

This parameter determines whether reverse running control is allowed.

0: Reverse running allowed

1: Reverse running disallowed When F8-14 is set to 1, the motor runs at zero frequency after a reverse run command is sent to the AC drive.

F8-15 **Running mode when frequency is below the frequency lower limit**

Address:	0xF80F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Run at frequency lower limit

1: Stop

2: Run at zero speed

Description

Used to set the AC drive status when the set frequency is below the frequency lower limit.

0: Run at frequency lower limit

If the frequency reference is lower than the frequency lower limit, the AC drive runs at the frequency lower limit.

1: Stop

If the running frequency is lower than the frequency lower limit, the AC drive stops.

2: Run at zero speed

If the frequency reference is lower than the frequency lower limit, the AC drive runs at zero speed.

F8-17 **Valid mode of external fault NO input**

Address:	0xF811	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Valid at any time

1: Valid only during running

Description

Defines the active mode of DI function 10: External fault NO input.

0: Valid at any time

E15.01 is reported whenever DI function 10 (external fault NO input) is triggered.

1: Valid only during running

E15.01 is reported when DI function 10 (external fault NO input) is triggered during running.

F8-18 **Valid mode of external fault NC input**

Address:	0xF812	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Valid at any time

1: Valid only during running

Description

Defines the active mode of DI function 11: External fault NC input.

0: Valid at any time

E15.02 is reported whenever DI function 11 (external fault NC input) is triggered.

1: Valid only during running

E15.02 is reported when DI function 11 (external fault NC input) is triggered during running.

F8-19 **Cumulative power-on time threshold**

Address:	0xF813	Effective mode:	/
Min.:	0	Unit:	h
Max.:	65000	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0h to 65000h

Description

Used to set the accumulative power-on time threshold of the AC drive. When F7-12 (Accumulative power-on time threshold) exceeds F8-19 (Accumulative power-on time threshold), the DO terminal outputs an active signal.

F8-20 **Cumulative running time threshold**

Address:	0xF814	Effective mode:	/
Min.:	0	Unit:	h
Max.:	65000	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0h to 65000h

Description

Used to set the accumulative running time threshold of the AC drive. When F7-09 (Accumulative running time) exceeds F8-20 (Accumulative running time threshold), the DO terminal outputs an active signal.

F8-21 **Protection upon start**

Address:	0xF815	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

The AC drive is equipped with startup protection to prevent the motor from responding to commands upon unexpected power-on or fault reset.

F8-22 **Frequency detection value 1 (FDT1)**

Address:	0xF816	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	50.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

DO function is set to 13 (Frequency-level detection FDT1 output).

When the running frequency is higher than the frequency detection value (FDT1), the DO outputs an active signal. When the running frequency is lower than the result of the frequency detection value (FDT1) minus the frequency detection hysteresis (FDT1), the DO outputs an inactive signal.

The valid range is from 0.00 Hz to F0-10 (maximum frequency).

F8-23 **Frequency detection hysteresis 1 (FDT1)**

Address:	0xF817	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F8-22	Data type:	UInt16
Default:	2.50	Change:	Real-time

Value range:

0.00 Hz to F8-22

Description

When the running frequency of the AC drive is higher than F8-22, the DO outputs an active signal. When the operating frequency is lower than a specific value (F8-22 minus F8-23), the DO outputs an inactive signal.

F8-24 **Frequency detection value 2 (FDT2)**

Address:	0xF818	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	50.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

DO function is set to 14 (Frequency-level detection FDT2 output).

When the running frequency is higher than the frequency detection value (FDT2), the DO outputs an active signal. When the running frequency is lower than the result of the frequency detection value (FDT2) minus the frequency detection hysteresis (FDT2), the DO outputs an inactive signal.

The valid range is from 0.00 Hz to F0-10 (maximum frequency).

F8-25 **Frequency detection hysteresis 2 (FDT2)**

Address:	0xF819	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F8-24	Data type:	UInt16
Default:	2.50	Change:	Real-time

Value range:

0.00 Hz to F8-24

Description

When the running frequency of the AC drive is higher than F8-24, the DO outputs an active signal. When the operating frequency is lower than a specific value (F8-24 minus F8-25), the DO outputs an inactive signal.

F8-26 **Frequency detection range**

Address:	0xF81A	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	2.50	Change:	Real-time

Value range:

0.00 Hz to 655.35 Hz

Description

The DO terminal outputs an active signal when the running frequency of the AC drive is in the specific range (Frequency reference ± F8-26) and the DO function is set to 15 (frequency reached).

F8-27 **Detection frequency 1**

Address:	0xF81B	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	50.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

When the DO function is set to 16 and the running frequency of the AC drive is within the frequency detection range, the DO outputs an active signal.

The valid range is from 0.00 Hz to F0-10 (maximum frequency).

F8-28 **Range of detection frequency 1**

Address:	0xF81C	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F8-27	Data type:	UInt16
Default:	2.50	Change:	Real-time

Value range:

0.00 Hz to F8-27

Description

The frequency detection range is F8-27 (Frequency detection value 1) ± F8-28 (Frequency detection frequency 1).

F8-29 **Detection mode when running frequency reaches detection frequency 1**

Address:	0xF81D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Detection is performed at any time.

1: Detection is not performed during acceleration/deceleration.

Description

Set DO function 16: Frequency 1 output detection mode.

0: The DO function 16 outputs at any time when the frequency meets the detection condition.

1: The DO function 16 does not output during acceleration and deceleration even if the detection condition is met.

F8-30 **Detection frequency 2**

Address:	0xF81E	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	50.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

When the DO function is set to 17 and the running frequency of the AC drive is within the frequency detection range, the DO outputs an active signal. The valid range is from 0.00 Hz to F0-10 (maximum frequency).

F8-31 **Range of detection frequency 2**

Address:	0xF81F	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F8-30	Data type:	UInt16
Default:	2.50	Change:	Real-time

Value range:

0.00 Hz to F8-30

Description

The frequency detection range is F8-30 (Frequency detection value 2) ± F8-31 (Frequency detection frequency 2).

F8-32 **Detection mode when running frequency reaches detection frequency 2**

Address:	0xF820	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Detection is performed at any time.

1: Detection is not performed during acceleration/deceleration.

Description

Set DO function 17: Frequency 2 output detection mode.

0: The DO function 17 outputs at any time when the frequency meets the detection condition.

1: The DO function 17 does not output during acceleration and deceleration even if the detection condition is met.

F8-35 **Frequency for switchover between acceleration time 1 and acceleration time 2**

Address:	0xF823	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16

Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

This function is used to switch the acceleration/deceleration time based on the running frequency range when the AC drive is running.

This function is value when the DI is not allocated with function 16 (acceleration/deceleration time selection terminal 1) or 17 (acceleration/deceleration time selection terminal 2).

The valid range is from 0.00 Hz to F0-10 (maximum frequency).

F8-36 **Frequency for switchover between deceleration time 1 and deceleration time 2**

Address:	0xF824	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

This function is used to switch the acceleration/deceleration time based on the running frequency range when the AC drive is running.

This function is value when the DI is not allocated with function 16 (acceleration/deceleration time selection terminal 1) or 17 (acceleration/deceleration time selection terminal 2).

The valid range is from 0.00 Hz to F0-10 (maximum frequency).

F8-37 **Jog with priority**

Address:	0xF825	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Invalid

1: Valid

Description

This parameter defines whether to set the highest priority to jogging.

0: The jog command is not enabled during operation.

1: If F8-37 is set to 1 and any of F4-00 to F4-09 to is set to 4 (forward jog) or 5 (reverse jog) becomes active, the AC drive enters jog status immediately.

F8-38 **Zero current detection level**

Address:	0xF826	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	5.0	Change:	Real-time

Value range:

0.0% to 300.0%

Description

When the DO function is set to 25 (zero current status) and the output current of the AC drive is lower than or equal to F8-38 (zero current detection value) for a period longer than F8-39 (zero current detection delay), the DO outputs an active signal.

F8-39 **Zero current detection delay**

Address:	0xF827	Effective mode:	/
Min.:	0.01	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.01s to 600.00s

Description

When the DO function is set to 25 (zero current status) and the output current of the AC drive is lower than or equal to F8-38 (zero current detection value) for a period longer than F8-39 (zero current detection delay), the DO outputs an active signal.

F8-40 **Output overcurrent threshold**

Address:	0xF828	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	200.0	Change:	Real-time

Value range:

0.0% to 300.0%

Description

12: Output current limit exceeded When the output current of the AC drive is greater than F8-40 (output overcurrent threshold) multiplied by F1-03 (rated motor current) for a time exceeding F8-41 (Output overcurrent detection delay), the DO outputs an active signal.

F8-41 **Software overcurrent detection delay**

Address:	0xF829	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 600.00s

Description

12: Output current limit exceeded When the output current of the AC drive is greater than F8-40 (output overcurrent threshold) multiplied by F1-03 (rated motor current) for a time exceeding F8-41 (Output overcurrent detection delay), the DO outputs an active signal.

F8-42 **Detection current 1**

Address:	0xF82A	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	100.0	Change:	Real-time

Value range:

0.0% to 300.0%

Description

When the DO function is 26 and the output current of the drive is in the range of [F8-42 (Detection level of current 1)±F8-43 (Detection width of current 1)] x F1-03 (Rated motor current), the DO terminal outputs an active signal.

F8-43 **Detection current amplitude 1**

Address:	0xF82B	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 300.0%

Description

When the DO function is 26 and the output current of the drive is in the range of [F8-42 (Detection level of current 1)±F8-43 (Detection width of current 1)] x F1-03 (Rated motor current), the DO terminal outputs an active signal.

F8-44 **Detection current 2**

Address:	0xF82C	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	100.0	Change:	Real-time

Value range:

0.0% to 300.0%

Description

When the output current of the AC drive is in the range of F8-44 (Detection current 2)±F8-45 (Detection width of current 2) x F1-03 (Rated motor current), the DO outputs an active signal.

F8-45 **Detection current amplitude 2**

Address:	0xF82D	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 300.0%

Description

When the output current of the AC drive is in the range of F8-44 (Detection current 2)±F8-45 (Detection width of current 2) x F1-03 (Rated motor current), the DO outputs an active signal.

F8-46 **Timing function**

Address:	0xF82E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Invalid

1: Valid

Description

When the DO function is set to 21 (timing duration reached), F8-46 is set to 1, and the current running time of the AC drive reaches the set timing duration, the DO outputs an active signal. The timing duration is defined by F8-47 and F8-48.

F8-47 **Timing operation time setting source**

Address:	0xF82F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: F8-48

1: AI1

2: AI2

Description

Set timing operation source.

When this parameter is set to 0, the timing operation time is set by F8-48.

When this parameter is set 1, the timing operation time is equal to the result of AI1 voltage ÷ 10 V x F8-48. 100% of the analog input range corresponds to the value of F8-48.

When this parameter is set 2, the timing operation time is equal to the result of AI2 voltage ÷ 10 V x F8-48. 100% of the analog input range corresponds to the value of F8-48.

F8-48 **Timing operation time**

Address:	0xF830	Effective mode:	/
Min.:	0.0	Unit:	min
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0 min to 6500.0 min

Description

The timing duration is set by F8-47 and F8-48.

F8-49 **Lower limit threshold of AI1 input voltage protection value**

Address:	0xF831	Effective mode:	/
Min.:	0.00	Unit:	V
Max.:	F8-50	Data type:	UInt16
Default:	3.10	Change:	Real-time

Value range:

0.00 V to F8-50

Description

When the DO function is set to 34 and the AI1 input is higher than F8-50 (AI1 input voltage higher limit) or lower than F8-49 (AI1 input voltage lower limit), the DO terminal outputs an "AI1 input limit exceeded" active signal to indicate whether the AI1 input voltage is in the setting range.

F8-50 **Upper limit threshold of AI1 input voltage protection value**

Address:	0xF832	Effective mode:	/
Min.:	F8-49	Unit:	V
Max.:	11.00	Data type:	UInt16
Default:	6.80	Change:	Real-time

Value range:

F8-49 to 11.00 V

Description

When the DO function is set to 34 and the AI1 input is higher than F8-50 (AI1 input voltage higher limit) or lower than F8-49 (AI1 input voltage lower limit), the DO terminal outputs an "AI1 input limit exceeded" active signal to indicate whether the AI1 input voltage is in the setting range.

F8-51 **AC drive overtemperature threshold reached**

Address:	0xF833	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	100	Data type:	UInt16
Default:	75	Change:	Real-time

Value range:

0°C to 100°C

Description

When the DO function is set to 28 (AC drive overtemperature threshold reached) and the temperature of the drive unit heatsink reaches the value of F8-51, the DO outputs an active signal.

F8-52 **Cooling fan control**

Address:	0xF834	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: The fan runs forward during AC drive operation.

1: The fan runs forward at any time.

2: The fan runs forward or reversely at any time.

3: The fan runs forward or reversely during AC drive operation.

Description

Single-axis drive unit and axis 1 of dual-axis drive unit:

When this parameter is set to 0, the fan works when the AC drive is running. When the AC drive stops, the fan works when the heatsink temperature higher than 40°C and stops when the heatsink temperature lower than 40°C.

When it is set to 1, the fan keeps forward running after power-on.

When it is set to 2, the fan keeps forward/reverse running after power-on. After power-on, the fan keeps forward running for 600s and reverse running for 200s, and then repeats this running cycle.

When it is set to 3, the fan keeps forward/reverse running after power-on. When the AC drive is in operation, the fan keeps forward running for 600s and reverse running for 200s, and then repeats this running cycle.When the AC drive stops, the fan keeps forward running for 600s and reverse running for 200s, and then repeats this running cycle if heatsink temperature is above 40°C. If heatsink temperature is below 40°C, the fan stops

Axis 2 of dual-axis drive unit:
F8-52 is not editable. The default value is 0, that is, the fan keeps forward running when Axis 2 of the dual-axis drive unit is running.

F8-54 **Wakeup frequency**

Address:	0xF836	Effective mode:	/
Min.:	F8-56	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
F8-56 to F0-10
Description
In the sleep state, when the frequency reference is equal to or larger than F8-54 (Wakeup frequency) and the current running command is active, the drive starts directly after the time set by F8-55 (Wakeup delay) elapses.

F8-55 **Wakeup delay**

Address:	0xF837	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s to 6500.0s
Description
In the sleep state, when the frequency reference is equal to or larger than F8-54 (Wakeup frequency) and the current running command is active, the drive starts directly after the time set by F8-55 (Wakeup delay) elapses.

F8-56 **Hibernation frequency**

Address:	0xF838	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F8-54	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00 Hz to F8-54
Description
During operation of the AC drive, when the frequency reference is lower than or equal to F8-56 (Sleep frequency), the drive enters the sleep state and coasts to stop after the time set by F8-57 (Sleep delay) elapses.

F8-57 **Hibernation delay**

Address:	0xF839	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

During operation of the AC drive, when the frequency reference is lower than or equal to F8-56 (Sleep frequency), the drive enters the sleep state and coasts to stop after the time set by F8-57 (Sleep delay) elapses.

F8-58 **Current running time reach**

Address:	0xF83A	Effective mode:	/
Min.:	0.0	Unit:	min
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0 min to 6500.0 min

Description

When the current running time reaches the value of F8-58 and the DO function is set to 24, the DO outputs an active signal. This parameter is valid only for the present AC drive running time. The previous running time is not accumulated.

F8-59 **Switchover between communication address 2000H/2001H**

Address:	0xF83B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: General protocol

1: Specialized protocol

Description

Used to change the address and meaning of 2000H and 2001H.

0: General protocol

The control word is written to 2000H, and DO output control is written to 2001H.

1: Dedicated protocol

The special control word is written to 2000H, and the frequency reference is written to 2001H.

F8-60 **Deceleration Time for Emergency Stop**

Address:	0xF83C	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

This parameter defines the deceleration time for emergency stop. The terminal emergency stop function decelerates according to the set deceleration time. When the deceleration time is 0s under V/F mode, the function decelerates according to the minimum unit time.

F8-61 **Jogging by LED operating panel**

Address:	0xF83D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Select F8-61 on the operating panel of the power supply unit, and then press the ENT key to enter the jog mode or press the UP/DOWN key on the operating panel of the power supply unit to implement forward/reverse jog.

F8-62 **Load speed display coefficient**

Address:	0xF83E	Effective mode:	/
Min.:	0.0001	Unit:	/
Max.:	6.5000	Data type:	UInt16
Default:	1.0000	Change:	Real-time

Value range:

0.0001 to 6.5000

Description

This parameter defines the ratio of the actual speed with load to motor speed and sets U0-14 (Load speed).

F8-63 **Number of decimal places for load speed display**

Address:	0xF83F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: 0 decimal place

1: 1 decimal place

2: 2 decimal places

3: 3 decimal places

Description

The ones position of this parameter is used to set the number of decimal places of U0-14 (Load speed).

0: 0 decimal places

No decimal places are retained.

1: 1 decimal place

One decimal place is retained.

2: 2 decimal places

The value is rounded to two decimal places.

3: 3 decimal places

The value is rounded to three decimal places.

F8-64 **7310H address data unit**

Address:	0xF840	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Frequency (Hz)

1: Speed (rpm)

Description

This parameter defines the unit of data written to the address 7310.

0: Frequency (Hz)

The unit of the written data is Hz.

1: Speed (RPM)

The unit of the written data is rpm.

F8-65 **Detection time threshold for STO inconsistency fault**

Address:	0xF841	Effective mode:	/
Min.:	12	Unit:	ms
Max.:	1000	Data type:	UInt16
Default:	50	Change:	At stop

Value range:

12 ms to 1000 ms

Description

Detection time threshold for STO inconsistency fault

F8-66 **STO display mode selection**

Address:	0xF842	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Display STO status

1: Display STO fault

Description

0: STO is displayed as a status without associated fault code. No fault output is generated; only the STO function output is active.

1: STO is displayed as a fault with fault code E47.00 being present. The fault is output and the panel still displays STO.

4.10 F9 Fault and protection parameters

F9-00 **AC drive overload suppression**

Address:	0xF900	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16

Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Defines whether to enable the motor overload protection function. The drive determines whether the motor is overloaded according to the inverse time lag curve. When the motor overload is detected, the AC drive will report an overload fault.

0: Disable

Motor overload protection is disabled. When this parameter is set to 0, it is recommended to install a thermal relay before the motor for protection.

1: Enable

Motor overload protection is enabled.

F9-01 **Motor overload protection gain**

Address:	0xF901	Effective mode:	/
Min.:	0.20	Unit:	/
Max.:	10.00	Data type:	UInt16
Default:	1.00	Change:	Real-time

Value range:

0.20 to 10.00

Description

The motor overload protection gain is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting an overload fault.

It is used to adjust the actual overload fault report time of the AC drive when motor overload occurs.

F9-02 **Motor overload warning coefficient**

Address:	0xF902	Effective mode:	/
Min.:	50	Unit:	%
Max.:	100	Data type:	UInt16
Default:	80	Change:	Real-time

Value range:

50% to 100%

Description

The motor overload alarm coefficient is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting overload alarm. An alarm signal is sent to the control system through the DO before motor overload protection.

This signal is used to determine how long in advance to send the alarm signal before the motor overload protection applies. The higher the coefficient is, the later the alarm signal is sent.

When the cumulative output current of the drive exceeds the product of the overload time (Y value of motor overload protection inverse time lag curve) multiplied by F9-02 (motor overload alarm coefficient), the DO outputs a motor overload alarm signal.

F9-06 **Output phase loss detection before startup**

Address:	0xF906	Effective mode:	/

Min.:	0	Unit:	%
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

It takes about several seconds to detect output phase loss during running. For low-frequency running applications or applications where risks exist during startup, this function enables quick detection of output phase loss during startup. However, it is not suitable for applications that have strict requirements on startup time.

0: Disable output phase loss detection before start

1: Enable output phase loss detection before start

F9-07 **Detection of software short circuit to ground**

Address:	0xF907	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value range:

0: Disable

1: Enable

Description

Used to enable or disable the short-circuit to ground detection function.

0: Software short circuit to ground is not detected.

1: Software short circuit to ground is detected at power-on.

F9-09 **Number of automatic resets upon fault**

Address:	0xF909	Effective mode:	/
Min.:	0	Unit:	/
Max.:	20	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 20

Description

Used to set the automatic fault reset times of the drive. If the number of reset times exceed the value of this parameter, the AC drive remains in the faulty state.

F9-10 **DO action during automatic fault reset**

Address:	0xF90A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Used to determine whether the fault output of the DO takes effect during the automatic fault reset.

0: The fault output function of the DO does not take effect during the automatic fault reset of the AC drive.
1: The fault output function of the DO takes effect during the automatic fault reset of the AC drive. The fault output function of the DO is defined by setting DO function to 3.

F9-11 **Interval time of automatic fault reset**

Address:	0xF90B	Effective mode:	/
Min.:	0.1	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:
0.1s to 100.0s
Description
This parameter defines the duration from the time when the AC drive reports a fault to the time when an automatic fault reset is performed.

F9-13 **Automatic reset upon STO fault**

Address:	0xF90D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value range:
0: Manual reset
1: Automatic reset
Description
Used to determine whether the STO fault is automatically reset after it is triggered and then recovered.
0: Manual
After the system triggers STO and then recovers, manual reset is required.
1: Auto
After the system triggers STO and then recovers, auto reset is performed.

F9-14 **Type of the 1st fault**

Address:	0xF90E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 99
Description
Defines the last three fault codes of the AC drive. The third fault code corresponds to the latest fault. The host controller reads the communication address to obtain the fault code of the AC drive and triggers the AC drive to report the fault. The fault code can be viewed through the operating panel.

F9-15 **Type of the 2nd fault**

Address:	0xF90F	Effective mode:	/

Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 99

Description

Defines the last three fault codes of the AC drive. The third fault code corresponds to the latest fault. The host controller reads the communication address to obtain the fault code of the AC drive and triggers the AC drive to report the fault. The fault code can be viewed through the operating panel.

F9-16 **Type of the 3rd (latest) fault**

Address:	0xF910	Effective mode:	/
Min.:	0	Unit:	/
Max.:	99	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 99

Description

Defines the last three fault codes of the AC drive. The third fault code corresponds to the latest fault. The host controller reads the communication address to obtain the fault code of the AC drive and triggers the AC drive to report the fault. The fault code can be viewed through the operating panel.

F9-17 **Frequency upon 3rd (latest) fault**

Address:	0xF911	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

This parameter indicates the frequency of the AC drive upon the latest fault.

F9-18 **Current upon the 3rd (latest) fault**

Address:	0xF912	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

This parameter indicates the current of the AC drive upon the latest fault.

F9-19 **Bus voltage upon 3rd (latest) fault**

Address:	0xF913	Effective mode:	/
Min.:	0	Unit:	/

Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
This parameter indicates the bus voltage of the AC drive upon the latest fault.

F9-20 **Input terminal state upon 3rd (latest) fault**

Address:	0xF914	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the DI state of the AC drive upon the latest fault.

F9-21 **Output terminal state upon the 3rd (latest) fault**

Address:	0xF915	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the DO state of the AC drive upon the latest fault.

F9-22 **AC drive state upon 3rd (latest) fault**

Address:	0xF916	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the state of the AC drive upon the latest fault.

F9-23 **Power-on time upon the 3rd (latest) fault**

Address:	0xF917	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the power-on time of the AC drive upon the latest fault.

F9-24 **Running time upon the 3rd (latest) fault**

Address:	0xF918	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the running time of the AC drive upon the latest fault.

F9-25 **IGBT temperature upon the 3rd (latest) fault**

Address:	0xF919	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the IGBT temperature of the AC drive upon the latest fault.

F9-26 **Fault subcode of the 3rd (latest) fault**

Address:	0xF91A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the fault subcode of the AC drive upon the latest fault.

F9-27 **Frequency upon the 2nd fault**

Address:	0xF91B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the frequency of the AC drive upon the second fault.

F9-28 **Current upon 2nd fault**

Address:	0xF91C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the current of the AC drive upon the second fault.

F9-29 **Bus voltage upon 2nd fault**

Address:	0xF91D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the bus voltage of the AC drive upon the second fault.

F9-30 **Input terminal state upon 2nd fault**

Address:	0xF91E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the DI state of the AC drive upon the second fault.

F9-31 **Output terminal state upon 2nd fault**

Address:	0xF91F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the DO state of the AC drive upon the second fault.

F9-32 **AC drive state upon 2nd fault**

Address:	0xF920	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the state of the AC drive upon the second fault.

F9-33 **Power-on time upon the 2nd fault**

Address:	0xF921	Effective mode:	/

Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the power-on time of the AC drive upon the second fault.

F9-34 **Running time upon the 2nd fault**

Address:	0xF922	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
This parameter shows the operation time of the AC drive upon the second fault.

F9-35 **IGBT temperature upon the 2nd fault**

Address:	0xF923	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the IGBT temperature of the AC drive upon the second fault.

F9-36 **Fault subcode of 2nd fault**

Address:	0xF924	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the fault subcode of the AC drive upon the second fault.

F9-37 **Frequency upon 1st fault**

Address:	0xF925	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the frequency of the AC drive upon the first fault.

F9-38 **Current upon 1st fault**

Address:	0xF926	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the current of the AC drive upon the first fault.

F9-39 **Bus voltage upon 1st fault**

Address:	0xF927	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the bus voltage of the AC drive upon the first fault.

F9-40 **Input terminal state upon 1st fault**

Address:	0xF928	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the DI state of the AC drive upon the first fault.

F9-41 **Output terminal state upon 1st fault**

Address:	0xF929	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0

Description

Indicates the DO state of the AC drive upon the first fault.

F9-42 **AC drive state upon 1st fault**

Address:	0xF92A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 0
Description
Indicates the state of the AC drive upon the first fault.

F9-43 **Power-on time upon the 1st fault**

Address:	0xF92B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the power-on time of the AC drive upon the first fault.

F9-44 **Running time upon the 1st fault**

Address:	0xF92C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
This parameter shows the operation time of the AC drive upon the first fault.

F9-45 **IGBT temperature upon the 1st fault**

Address:	0xF92D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the IGBT temperature of the AC drive upon the first fault.

F9-46 **Fault subcode of 1st fault**

Address:	0xF92E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 0
Description
Indicates the fault subcode of the AC drive upon the first fault.

F9-47 **Protection action section 0 upon fault**

Address:	0xF92F	Effective mode:	/

Min.:	0	Unit:	/
Max.:	55555	Data type:	UInt16
Default:	500	Change:	At stop

Value Range:

0 to 55555

Description

The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disable

Fault detection is disabled.

F9-48 **Fault protection action selection 1**

Address:	0xF930	Effective mode:	/
Min.:	0	Unit:	/
Max.:	55555	Data type:	UInt16
Default:	10050	Change:	At stop

Value Range:

Ones: E11

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Cancel

Tens: Reserved

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Cancel

Hundreds: E13

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Cancel

Thousands: E14

0: Coast to stop

Ten thousands: E15

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Cancel

Description

The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disable

Fault detection is disabled.

F9-49 **Fault protection action selection 2**

Address:	0xF931	Effective mode:	/
Min.:	0	Unit:	/
Max.:	55555	Data type:	UInt16
Default:	50050	Change:	At stop

Value Range:

Ones: Value of E16

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Disable

Tens: Reserved

5: Disable

Hundreds: Reserved

0: Coast to stop

Thousands: Value of E19

0: Coast to stop

4: Warning

5: Disable

Ten thousands: Reserved

5: Disable

Description

The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disable

Fault detection is disabled.

F9-50 **Fault protection action selection 3**

Address:	0xF932	Effective mode:	/
Min.:	0	Unit:	/
Max.:	55555	Data type:	UInt16
Default:	15000	Change:	At stop

Value Range:

Ones: Value of E21

0: Coast to stop

Tens: Value of E22

0: Coast to stop

Hundreds: Value of E23

0: Coast to stop

5: Disable

Thousands: Reserved

5: Disable

Ten thousands: Value of E25

2: Decelerate to stop

5: Disable

Description

The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disable

Fault detection is disabled.

F9-51 **Fault protection action selection 4**

Address:	0xF933	Effective mode:	/
Min.:	0	Unit:	/
Max.:	55555	Data type:	UInt16
Default:	51111	Change:	At stop

Value Range:

Ones: Value of E26
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable
Tens: Value of E27
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable
Hundreds: Value of E28
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable
Thousands: Value of E29
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable
Ten thousands: Value of E30
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable

Description

The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disable

Fault detection is disabled.

F9-52 **Fault protection action selection 5**

Address:	0xF934	Effective mode:	/
Min.:	0	Unit:	/
Max.:	55555	Data type:	UInt16
Default:	551	Change:	At stop

Value Range:

Ones: Value of E31
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable
Tens: Reserved
5: Disable
Hundreds: Reserved
5: Disable
Thousands: Value of E42
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable
Ten thousands: Value of E43
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable

Description

The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disable

Fault detection is disabled.

F9-53 **Fault protection action selection 6**

Address:	0xF935	Effective mode:	/
Min.:	0	Unit:	/
Max.:	55555	Data type:	UInt16
Default:	5500	Change:	At stop

Value range:

Ones: Value of E45
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disable
Tens: Reserved
5: Disable
Hundreds: Reserved
5: Disable
Thousands: Reserved
5: Disable
Ten thousands: Value of E80
0: Coast to stop
1: Decelerate to stop
5: Disable

Description

The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disable

Fault detection is disabled.

F9-54 **Frequency for continuing to run upon fault**

Address:	0xF936	Effective mode:	/
Min.:	0	Unit:	/
Max.:	4	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: Current running frequency
1: Frequency reference
2: Frequency upper limit
3: Frequency lower limit
4: Backup frequency upon error

Description

This parameter is used to select the frequency at which the AC drive continues operation upon a fault.

If this parameter is set to 1, the drive displays Axx and continues to run at the frequency defined by F9-54.

F9-55 **Backup frequency reference upon error**

Address:	0xF937	Effective mode:	/
Min.:	0.0	Unit:	%

Max.:	100.0	Data type:	UInt16
Default:	100.0	Change:	Real-time

Value range:
0.0% to 100.0%
Description
This parameter defines the backup frequency of the drive upon a fault.
If a fault occurs during the operation of the drive and the fault protection action is set to "Operating at backup frequency" (F9-54 = 4), the drive displays Axx and continues operation at the backup frequency.

F9-57 **Motor overtemperature protection threshold 1**

Address:	0xF939	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	200	Data type:	UInt16
Default:	110	Change:	Real-time

Value range:
0°C to 200°C
Description
When AI2 is assigned with the temperature sensor input function and the motor temperature exceeds the value of F9-57 (Motor overheat protection threshold 1), the drive reports a motor overtemperature fault (E45.00) and acts as defined by F9-48.

F9-58 **Motor overheat warning threshold 1**

Address:	0xF93A	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	200	Data type:	UInt16
Default:	90	Change:	Real-time

Value range:
0°C to 200°C
Description
When AI1 is assigned with the temperature sensor input function and the motor temperature exceeds the value of F9-60 (Motor overtemperature pre-alarm threshold 1), the DO terminal assigned with function 9 (Motor overtemperature) outputs an active signal.

F9-59 **Motor overtemperature protection threshold 2**

Address:	0xF93B	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	200	Data type:	UInt16
Default:	110	Change:	Real-time

Value range:
0°C to 200°C
Description
When AI2 is allocated with the temperature sensor input function and the motor temperature exceeds the value of F9-59 (Motor overheat protection threshold 2), the AC drive reports a motor overheat fault (E45.00) and acts as selected by F9-48.

F9-60 **Motor overtemperature pre-alarm threshold 2**

Address:	0xF93C	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	200	Data type:	UInt16
Default:	90	Change:	Real-time

Value range:

0°C to 200°C

Description

When AI2 is allocated with the temperature sensor input function and the motor temperature exceeds the value of F9-60 (Motor overheat pre-waring threshold 2), the DO terminal allocated with function 9 (Motor overheat) outputs an active signal.

F9-61 **Motor overtemperature protection threshold 3**

Address:	0xF93D	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	200	Data type:	UInt16
Default:	110	Change:	Real-time

Value range:

0°C to 200°C

Description

When AI3 is assigned with the temperature sensor input function and the motor temperature exceeds the value of F9-61 (Motor overheat protection threshold 3), the drive reports a motor overtemperature fault (E45.00) and acts as defined by F9-48.

F9-62 **Motor overheat warning threshold 3**

Address:	0xF93E	Effective mode:	/
Min.:	0	Unit:	°C
Max.:	200	Data type:	UInt16
Default:	90	Change:	Real-time

Value range:

0°C to 200°C

Description

When AI3 is allocated with the temperature sensor input function and the motor temperature exceeds the value of F9-62 (Motor overheat pre-waring threshold 3), the DO terminal allocated with function 9 (Motor overheat) outputs an active signal.

F9-63 **Power dip ride-through action**

Address:	0xF93F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disabled

1: Decelerate (Bus voltage constant control)

2: Decelerate to stop

Description

The function enables the AC drive to keep running upon an instantaneous power failure. When an instantaneous power failure occurs, the AC drive keeps the motor in the power generation state to keep the bus voltage at a value around the threshold for enabling power dip ride-through. This prevents the AC drive from stopping due to undervoltage.
0: Disabled
The power dip ride-through function is disabled.
1: Decelerate (Bus voltage constant control)
When power failure occurs, the bus voltage stays at a value around the "threshold for enabling power dip ride-through". In this mode, when the power grid recovers from the failure, the AC drive restores the output frequency to the target output frequency based on the acceleration time.
2: Decelerate to stop
When power failure occurs, the AC drive decelerates to stop. In this mode, when the grid voltage recovers, the AC drive decelerates to 0 Hz and stops. The AC drive will start again only when a new startup command is received.
"Bus voltage constant control" is applicable to large-inertia applications such as fan, water pump and centrifuge. "Decelerate to stop" is applicable to the textile industry.

F9-64 **Threshold for recovery from power dip ride-through**

Address:	0xF940	Effective mode:	/
Min.:	8.0	Unit:	%
Max.:	10.0	Data type:	UInt16
Default:	8.5	Change:	Real-time

Value range:
8.0% to 10.0%
Description
This parameter defines the voltage threshold for disabling power dip ride-through. 100% corresponds to 540 V. This value is slightly lower than the bus voltage before a power failure.
Upon power failure, the bus voltage is maintained at about F9-66 (Threshold for enabling power dip ride-through). When the power supply recovers, the bus voltage rises from F9-66 (Threshold for enabling power dip ride-through) to F9-64 (Threshold for disabling power dip ride-through). During this period, the output frequency of the drive keeps decreasing until the bus voltage reaches F9-64 (Threshold for recovering from power dip ride-through).

F9-65 **Time threshold for voltage recovery from power dip ride-through**

Address:	0xF941	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	Real-time

Value range:
0.0s to 100.0s
Description
Used to set the time required for the bus voltage to rise from F9-64 (Threshold for disabling power dip ride-through) to the voltage before power failure.

F9-66 **Threshold for enabling power dip ride-through**

Address:	0xF942	Effective mode:	/

Min.:	60	Unit:	%
Max.:	100	Data type:	UInt16
Default:	80	Change:	Real-time

Value range:
60% to 100%
Description
This parameter defines the bus voltage level upon a power failure. When power failure occurs, the bus voltage is retained at a value around F9-66 (Threshold for enabling power dip ride-through).

F9-67 **Alarm threshold of continuous frame loss times for I/O module**

Address:	0xF943	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1000	Data type:	UInt16
Default:	60	Change:	At stop

Value range:
0 to 1000
Description
Used to set the alarm times of continuous frame loss of I/O data. When the continuous frame loss times is greater than this value, E16.04 is reported.

F9-68 **Load loss detection level**

Address:	0xF944	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	10.0	Change:	Real-time

Value range:
0.0% to 100.0%
Description
When the output current of the AC drive falls below F9-68 (Load loss detection level) for a period longer than the time set by F9-69 (Load loss detection time), the AC drive performs load loss protection action (selected through F9-49).
Once the load recovers during protection, the drive will restore to run at the set frequency.

F9-69 **Load loss detection time**

Address:	0xF945	Effective mode:	/
Min.:	0.1	Unit:	s
Max.:	60.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:
0.1s to 60.0s
Description
When the output current of the AC drive falls below F9-68 (Load loss detection level) for a period longer than the time set by F9-69 (Load loss detection time), the AC drive performs load loss protection action (selected through F9-49).
Once the load recovers during protection, the drive will restore to run at the set frequency.

F9-71 **Overspeed detection level**

Address:	0xF947	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	50.0	Data type:	UInt16
Default:	5.0	Change:	Real-time

Value range:

0.0% to 50.0%

Description

During overspeed protection, when the detected motor speed exceeds F0-10 (Maximum frequency) for a percentage higher than F9-71 (Overspeed detection level) and for longer than the time set by F9-72 (Overspeed detection time), the AC drive reports a motor overspeed fault (E43.00) and acts as selected by F9-50 (Fault protection action).

When F9-72 (Overspeed detection time) is set to 0.0s, the overspeed detection function is disabled.

The overspeed protection is valid only when the FVC mode is selected for the AC drive (F0-01 = 1).

F9-72 **Overspeed detection time**

Address:	0xF948	Effective mode:	/
Min.:	0.0	Unit:	/
Max.:	60.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:

0.0 to 60.0

Description

During overspeed protection, when the detected motor speed exceeds F0-10 (Maximum frequency) for a percentage higher than F9-71 (Overspeed detection level) and for longer than the time set by F9-72 (Overspeed detection time), the AC drive reports a motor overspeed fault (E43.00) and acts as selected by F9-50 (Fault protection action).

When F9-72 (Overspeed detection time) is set to 0.0s, the overspeed detection function is disabled.

The overspeed protection is valid only when the FVC mode is selected for the AC drive (F0-01 = 1).

F9-73 **Detection level for excessive speed deviation**

Address:	0xF949	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	50.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0% to 50.0%

Description

When the detected motor speed is larger than the value of F9-69 (Detection level of speed error) for longer than the time set by F9-70 (Detection time of speed error), the AC drive reports the excessive speed deviation fault (E42.00) and acts as selected by F9-50 (Fault protection action selection 4).

If F9-74 is set to 0.0s, the excessive speed deviation detection is disabled.

The excessive speed deviation detection function is active only when the SVC mode (F0-01 = 1) is selected for the AC drive.

F9-74 **Detection time for excessive speed deviation**

Address:	0xF94A	Effective mode:	/

Min.:	0.0	Unit:	s
Max.:	60.0	Data type:	UInt16
Default:	5.0	Change:	Real-time

Value range:
0.0s to 60.0s
Description
When the detected motor speed is larger than the value of F9-69 (Detection level of speed error) for longer than the time set by F9-70 (Detection time of speed error), the AC drive reports the excessive speed deviation fault (E42.00) and acts as selected by F9-50 (Fault protection action selection 4).
If F9-74 is set to 0.0s, the excessive speed deviation detection is disabled.
The excessive speed deviation detection function is active only when the SVC mode (F0-01 = 1) is selected for the AC drive.

F9-75 Power dip ride-through gain

Address:	0xF94B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	100	Data type:	UInt16
Default:	40	Change:	Real-time

Value range:
0 to 100
Description
This parameter is valid only when F9-63 (power dip ride-through function) is set to 1 (bus voltage constant control).
If undervoltage is likely to occur during power dip ride-through, increase the power dip ride-through gain and the power dip ride-through integral coefficient.

F9-76 Power dip ride-through integral

Address:	0xF94C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	100	Data type:	UInt16
Default:	30	Change:	Real-time

Value range:
0 to 100
Description
This parameter is valid only when F9-63 (power dip ride-through function) is set to 1 (bus voltage constant control).
If undervoltage is likely to occur during power dip ride-through, increase the power dip ride-through gain and the power dip ride-through integral coefficient.

F9-77 Deceleration time of power dip ride-through

Address:	0xF94D	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	300.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:
0.0s to 300.0s
Description

This parameter is valid only when F9-63 (power dip ride-through function) is set to 2 (decelerate to stop).
When the bus voltage is lower than the value of F9-66, the AC drive decelerates to stop. The deceleration time is determined by this parameter instead of F0-18.

4.11 FA: Process Control PID Function

FA-00 **PID reference source**

Address:	0xFA00	Effective mode:	/
Min.:	0	Unit:	/
Max.:	6	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0: PID digital reference (FA-01)
1: AI1
2: AI2
3: AI3
4: Reserved
5 Communication
6: Multi-reference
Description
This parameter specifies the reference channel of the PID target value. The PID reference is a relative value. The value 100% corresponds to 100% of the feedback signal of the controlled system.
0: PID digital setting of (FA-01)
The PID reference source is set by FA-01 (PID reference value).
1: AI1
The PID reference source is set by AI1.
2: AI2
The PID reference source is set by AI1.
3: AI3
The PID reference source is set by AI3.
5: Communication
The PID reference is set by remote communication.
6: Multi-reference
The PID reference source is set by multi-reference. In this case, different combinations of DI states correspond to different frequency references. The four multi-reference terminals can be combined to form 16 states, corresponding to 16 frequencies respectively. Note: When FA-00 is set to 6 (Multi-reference), FC-51 (Reference 0 source) cannot be set to 5 (PID reference).

FA-01 **PID digital reference**

Address:	0xFA01	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	50.0	Change:	Real-time

Value range:

0.0% to 100.0%

Description

When FA-00 (PID reference setting channel) is set to 0, this parameter must be set. When the parameter value is set to 100%, it corresponds to the maximum feedback value.

FA-02 **PID feedback source**

Address:	0xFA02	Effective mode:	/
Min.:	0	Unit:	/
Max.:	8	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: AI1

1: AI2

2: AI3

3: AI1 – AI2

4: Reserved

5: Communication

6: AI1 + AI2

7: Max. (|AI1|, |AI2|)

8: Min. (|AI1|, |AI2|)

Description

It is used to select the PID feedback channel.

FA-03 **PID action direction**

Address:	0xFA03	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Positive effect

1: Negative effect

Description

0: Positive effect

When the feedback signal value is lower than the PID reference signal value, the output frequency of the AC drive rises.

1: Negative effect

When the feedback signal value is lower than the PID reference signal value, the output frequency of the AC drive declines.

FA-04 **PID reference and feedback range**

Address:	0xFA04	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	1000	Change:	Real-time

Value range:

0 to 65535

Description

Dimensionless unit, only used for the currently displayed PID setting and feedback value. For example, if the parameter value is set to 1000, the PID setting (0% to 100%) linearly corresponds to the feedback value (0 to 1000).

FA-05 **Proportional gain Kp1**

Address:	0xFA05	Effective mode:	/
Min.:	0.0	Unit:	/
Max.:	1000.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0 to 1000.0

Description

Indicates the proportional gain Kp in PID control. The deviation reduction speed depends on the proportional coefficient Kp. A larger Kp value indicates faster deviation reduction but higher possibility of oscillation. A smaller Kp value indicates lower possibility of oscillation but slower deviation reduction.

FA-06 **Integral time Ti1**

Address:	0xFA06	Effective mode:	/
Min.:	0.01	Unit:	s
Max.:	100.00	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:

0.01s to 100.00s

Description

Indicates the integral time Ti in PID control. It decides the integral regulating intensity. The shorter the integral time, the greater the adjustment intensity will be.

FA-07 **Differential time Td1**

Address:	0xFA07	Effective mode:	/
Min.:	0.000	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.000	Change:	Real-time

Value range:

0.000s to 10.000s

Description

This parameter defines the differential time Td in PID control. It decides the regulating intensity of the PID regulator on the deviation change. Longer differential time indicates greater adjustment intensity.

FA-08 **PID reverse cut-off frequency**

Address:	0xFA08	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type	UInt16
Default:	2.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

When the frequency source is pure PID, the PID cut-off frequency in the reverse direction is the minimum PID output value.

When the frequency source is main frequency + PID, FA-08 acts on the main frequency + PID and outputs the minimum frequency value after "main frequency + PID" operation.

FA-09 **PID error limit**

Address:	0xFA09	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 100.0%

Description

When the deviation is within the PID deviation limit, no adjustment is required. This parameter is used to ensure the accuracy and stability of the system output.

FA-10 **PID differential limit**

Address:	0xFA0A	Effective mode:	/
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	0.10	Change:	Real-time

Value range:

0.00% to 100.00%

Description

This parameter is used to set the PID differential output range. In PID control, the differential operation is prone to cause system oscillation. Therefore, the PID differential output is restricted to a specific range.

FA-11 **PID reference change time**

Address:	0xFA0B	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 650.00s

Description

Indicates the time required for PID setting to change from 0.0% to 100.0%.

FA-12 **PID feedback filter time**

Address:	0xFA0C	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	60.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 60.00s

Description

Used to filter the PID feedback, which helps to reduce the interference on the feedback but slowers the response of the process closed-loop system.

FA-13 **PID deviation gain**

Address:	0xFA0D	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	100.0	Change:	Real-time

Value range:

0.0% to 100.0%

Description

Used to reduce the deviation value in equal proportion, after which, the deviation value = deviation value x FA-13.

FA-15 **Proportional gain Kp 2**

Address:	0xFA0F	Effective mode:	/
Min.:	0.0	Unit:	/
Max.:	1000.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0 to 1000.0

Description

Indicates the proportional gain Kp in PID control. The deviation reduction speed depends on the proportional coefficient Kp. A larger Kp value indicates faster deviation reduction but higher possibility of oscillation. A smaller Kp value indicates lower possibility of oscillation but slower deviation reduction.

FA-16 **Integral time Ti 2**

Address:	0xFA10	Effective mode:	/
Min.:	0.01	Unit:	s
Max.:	100.00	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:

0.01s to 100.00s

Description

Indicates the integral time Ti in PID control. It decides the integral regulating intensity. The shorter the integral time, the greater the adjustment intensity will be.

FA-17 **FA-07 (Differential time Td2)**

Address:	0xFA11	Effective mode:	/
Min.:	0.000	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.000	Change:	Real-time

Value range:

0.000s to 10.000s

Description

This parameter defines the differential time Td in PID control. It decides the regulating intensity of the PID regulator on the deviation change. Longer differential time indicates greater adjustment intensity.

FA-18 **PID parameter switchover condition**

Address:	0xFA12	Effective mode:	/
Min.:	0	Unit:	/
Max.:	7	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: No switchover

1: Switchover by DI

2: Automatic switchover based on deviation

3: Switchover based on running frequency

4: Reserved

5:Reserved

6: Automatic adjustment based on roll diameter

7: Automatic adjustment based on maximum roll diameter percentage

Description

Used for switchover between two groups of PID parameters.

0: Disable switchover

No switchover is performed.

1: Switchover by DI

To use this function, the DI must be assigned with function 33 (PID parameter switchover). If the DI is inactive, parameter group 1 (FA-05 to FA-07) is selected. If the DI is active, parameter group 2 (FA-15 to FA-17) is selected.

2: Automatic switchover based on deviation

If the absolute value of the deviation between the reference and the feedback is smaller than FA-19 (PID parameter switchover deviation 1), parameter group 1 is selected. If the absolute value of the deviation between the reference and the feedback is greater than FA-20 (PID parameter switchover deviation 2), parameter group 2 is selected. If the absolute value of the deviation between the reference and the feedback is between FA-19 (PID parameter switchover deviation 1) and FA-20 (PID parameter switchover deviation 2), the PID parameters are linear interpolation values of the two sets of PID parameters.

3: Automatic switchover based on operating frequency

PID parameters are switched automatically based on the running frequency of the AC drive. If the ratio of the current running frequency to the maximum frequency is smaller than FA-19 (PID parameter switchover deviation 1), PID selects parameter group 1. If the ratio of the current running frequency to the maximum frequency is greater than FA-20 (PID parameter switchover deviation 2), PID selects parameter group 2. When the ratio of the current running frequency to the maximum frequency is between FA-19 (PID parameter switchover deviation 1) and FA-20 (PID parameter switchover deviation 2), the PID parameters are linear interpolation values of the two sets of PID parameters.

6: Automatic adjustment based on roll diameter

When the current roll diameter changes between the maximum roll diameter (B0-08) and the minimum roll diameter (B0-09), the PID parameters are the linear interpolation values of the two sets of PID parameters. The minimum roll diameter corresponds to the first group of parameters (FA-05 to FA-07), and the maximum roll diameter corresponds to the second group of parameters (FA-15 to FA-17).

7: Automatic adjustment based on maximum roll diameter percentage

When the current roll diameter changes between the maximum roll diameter (B0-08) x FA-20 and the maximum roll diameter (B0-08) x FA-19, the PID parameters are the linear interpolation values of the two groups of PID parameters.

FA-19 **PID deviation 1 for auto switchover**

Address:	0xFA13	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	FA-20	Data type	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.0% to FA-20

Description

The value 100% corresponds to the maximum deviation between the reference and feedback. The setting range is 0.0% to FA-20 (PID parameter switchover deviation 2).

FA-20 **PID deviation 2 for auto switchover**

Address:	0xFA14	Effective mode:	/
Min.:	FA-19	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	80.0	Change:	Real-time

Value range:

FA-19 to 100.0%

Description

The value 100% corresponds to the maximum deviation between the reference and feedback. The setting range is FA-19 (PID parameter switchover deviation 1) to 100.0%.

FA-21 **PID initial value**

Address:	0xFA15	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 100.0%

Description

When the AC drive starts, the PID starts closed-loop algorithm only after the PID output is fixed to the PID initial value (FA-21) and lasts for the time longer than the value of FA-22 (PID initial value active time).

FA-22 **Active time of PID initial value**

Address:	0xFA16	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 650.00s

Description

When the AC drive starts, the PID starts closed-loop algorithm only after the PID output is fixed to the PID initial value (FA-21) and lasts for the time longer than the value of FA-22 (PID initial value active time).

FA-23 **Maximum deviation between two PID outputs in forward direction**

Address:	0xFA17	Effective mode:	/
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	1.00	Change:	Real-time

Value range:

0.00% to 100.00%

Description

When the difference between two adjacent deviations is greater than FA-23, the PID output value is equal to the current calculation value + FA-23.

FA-24 **Maximum deviation between two PID outputs in reverse direction**

Address:	0xFA18	Effective mode:	/
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	1.00	Change:	Real-time

Value range:

0.00% to 100.00%

Description

When the difference between two adjacent deviations is less than FA-24, the PID output value is equal to the current computation - FA-24.

FA-25 **PID integral pause**

Address:	0xFA19	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Inactive

1: Active

Description

0: Inactive When integral pause is inactive, it remains inactive no matter whether the multi-functional DI is active.

1: Active When the integral pause is active and the DI assigned with the PID integral pause function is active (F4-00 = 22), the PID integral operation stops. In this case, only proportional and derivative operations take effect.

FA-26 **Detected value of PID feedback loss**

Address:	0xFA1A	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 100.0%

Description

Used to check whether the PID feedback is lost. If the PID feedback keeps lower than the value of FA-26 (Detection level of PID feedback loss) after the time defined by FA-27 (Detection time of PID feedback loss) elapses, the AC drive reports E31.00.

When this parameter is set to 0, PID feedback loss detection is disabled.

FA-27 **Detection time of PID feedback loss**

Address:	0xFA1B	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	20.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s to 20.0s

Description

Used to check whether the PID feedback is lost. If the PID feedback keeps lower than the value of FA-26 (Detection level of PID feedback loss) after the time defined by FA-27 (Detection time of PID feedback loss) elapses, the AC drive reports E31.00.

4.12 FB: Wobble Function, Fixed Length, and Counting

FB-00 **Wobble setting mode**

Address:	0xFB00	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Relative to the central frequency

1: Relative to the maximum frequency

Description

0: Relative to the center frequency (F0-07, frequency reference superposition). This option applies to variable wobble systems, in which the wobble changes with the center frequency (frequency reference).

1: Relative to the maximum frequency (F0-10). This option applies to fixed wobble systems, in which the wobble is a fixed value calculated based on the maximum frequency.

FB-01 **Wobble amplitude**

Address:	0xFB01	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 100.0%

Description

When FB-01 is set to 0, the wobble function is disabled.

FB-02 **Jump frequency amplitude**

Address:	0xFB02	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	50.0	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0% to 50.0%

Description

This parameter defines the wobble amplitude and jump frequency amplitude. The wobble frequency is limited by the frequency upper limit and frequency lower limit.

FB-03 **Wobble cycle**

Address:	0xFB03	Effective mode:	/
Min.:	0.1	Unit:	s
Max.:	3000.0	Data type:	UInt16
Default:	10.0	Change:	Real-time

Value range:

0.1s to 3000.0s

Description

This parameter defines the time of a complete wobble cycle.

FB-04 **Triangular wave rising time of wobble frequency**

Address:	0xFB04	Effective mode:	/
Min.:	0.1	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	50.0	Change:	Real-time

Value range:

0.1% to 100.0%

Description

This parameter indicates the percentage of triangular wave rising time to FB-03 (wobble cycle).

FB-05 **Length reference**

Address:	0xFB05	Effective mode:	/
Min.:	0	Unit:	m
Max.:	65535	Data type:	UInt16
Default:	1000	Change:	Real-time

Value range:

0 m to 65535 m

Description

This parameter specifies the length value to be controlled in fixed length control mode.

FB-06 **Actual length**

Address:	0xFB06	Effective mode:	/
Min.:	0	Unit:	m
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 m to 65535 m

Description

The actual length is a monitored value. Actual length (FB-06) = Number of pulses sampled by terminal ÷ Number of pulses per meter (FB-07).

FB-07 **Number of pulses per meter**

Address:	0xFB07	Effective mode:	/
Min.:	0.1	Unit:	/
Max.:	6553.5	Data type:	UInt16
Default:	100.0	Change:	Real-time

Value range:

0.1 to 6553.5

Description

This parameter indicates the number of pulses outputted per meter. The length pulse is collected by DI5, which must be assigned with the length count input function (F4-04 = 29).

FB-08 **Count value reference**

Address:	0xFB08	Effective mode:	/
Min.:	1	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	1000	Change:	Real-time

Value range:

1 to 65535

Description

When DO is allocated with function 29 (the count value reaches the counting value reference FB-08), the DO terminal outputs an active signal.

FB-09 **Designated count value**

Address:	0xFB09	Effective mode:	/
Min.:	1	Unit:	/

Max.:	65535	Data type:	UInt16
Default:	1000	Change:	Real-time

Value range:
1 to 65535
Description
When DO is allocated with function 30 (the count value reaches the designated counting value FB-09), the DO terminal outputs an active signal.
FB-09 must be lower than or equal to FB-08 (counting value reference).

4.13 FC: Multi-Reference and Simple PLC Parameters

FC-00 **Multi-reference 0**

Address:	0xFC00	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC. The source of multi-reference 0 is selected by FC-51, and the other multi-references are set by other parameters.

FC-01 **Multi-reference 1**

Address:	0xFC01	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description

Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-02 **Multi-reference 2**

Address:	0xFC02	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-03 **Multi-reference 3**

Address:	0xFC03	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.

Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-04 **Multi-reference 4**

Address:	0xFC04	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%

Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-05 **Multi-reference 5**

Address:	0xFC05	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%

Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.

Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-06 **Multi-reference 6**

Address:	0xFC06	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-07 **Multi-reference 7**

Address:	0xFC07	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.

Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-08 **Multi-reference 8**

Address:	0xFC08	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-09 **Multi-reference 9**

Address:	0xFC09	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.

Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-10 **Multi-reference 10**

Address:	0xFC0A	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-11 **Multi-reference 11**

Address:	0xFC0B	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.

Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-12 **Multi-reference 12**

Address:	0xFC0C	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-13 **Multi-reference 13**

Address:	0xFC0D	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.

Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-14 **Multi-reference 14**

Address:	0xFC0E	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%

Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.
Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-15 **Multi-reference 15**

Address:	0xFC0F	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%

Description
Indicates the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setting values ranging from 0 to 15 segments. The frequency settings are calculated as a percentage of the relative maximum frequency, not a frequency value. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references.

Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.

When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC.

FC-16 **Simple PLC running mode**

Address:	0xFC10	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Stop after operating for one cycle

1: Keep final values after operating for one cycle

2: Operating cyclically

Description

When using the simple PLC to set the main frequency, set FC-16 to select the operation mode of the simple PLC and FC-17 to select whether to remain the operating status and frequency of the PLC after power failure or stop.

0: Stop after running for one cycle

The AC drive stops automatically after running for one cycle and starts again only after receiving a running command.

1: Keep final values after running for one cycle

The AC drive keeps the final running frequency and direction after running for one cycle and starts to run from the initial PLC state upon restart.

2: Repeat after running for one cycle

The AC drive automatically starts another cycle after running for one cycle and stops only after receiving a stop command.

FC-17 **Simple PLC retention selection upon power failure**

Address:	0xFC11	Effective mode:	/
Min.:	0	Unit:	/
Max.:	11	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

Ones: Retention selection upon power failure

0: Disable

1: Enable

Tens: Retention selection upon stop

0: Disable

1: Enable

Description

When using the simple PLC to set the main frequency, set FC-16 to select the operation mode of the PLC and FC-17 to select whether to remain the operating status and frequency of the PLC after power failure or stop.

Ones: Retention selection upon power failure
The AC drive restarts the PLC process upon power-on. When it is set to 1, the AC drive retains the PLC operation stage and operating frequency upon power failure and continues to run from the retained values after the drive is powered on again.
Tens: Retention selection upon stop
The AC drive restarts the PLC process upon power-on. When it is set to 1, the AC drive retains the PLC operation stage and operating frequency upon stop and continues to run from the retained values after the drive is started again.

FC-18 **Running time of multi-reference 0 set by simple PLC**

Address:	0xFC12	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s (h) to 6553.5s (h)
Description
Running time of multi-reference 0 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-19 **Acceleration/Deceleration time of multi-reference 0 set by simple PLC**

Address:	0xFC13	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 3
Description
Acceleration/Deceleration time of simple PLC reference 0
0: Group 1 acceleration/deceleration time (F0-17 and F0-18)
1: Group 2 acceleration/deceleration time (F8-03 and F8-04)
2: Group 3 acceleration/deceleration time (F8-05 and F8-06)
3: Group 4 acceleration/deceleration time (F8-07 and F8-08)

FC-20 **Running time of multi-reference 1 set by simple PLC**

Address:	0xFC14	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s (h) to 6553.5s (h)
Description
Running time of multi-reference 1 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-21 **Acceleration/Deceleration time of multi-reference 1 set by simple PLC**

Address:	0xFC15	Effective mode:	/

Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 1

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-09)

FC-22 **Running time of multi-reference 2 set by simple PLC**

Address:	0xFC16	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 2 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-23 **Acceleration/Deceleration time of multi-reference 2 set by simple PLC**

Address:	0xFC17	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 2

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-10)

FC-24 **Running time of multi-reference 3 set by simple PLC**

Address:	0xFC18	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 3 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-25 **Acceleration/Deceleration time of multi-reference 3 set by simple PLC**

Address:	0xFC19	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 3

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-11)

FC-26 **Running time of multi-reference 4 set by simple PLC**

Address:	0xFC1A	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 4 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-27 **Acceleration/Deceleration time of multi-reference 4 set by simple PLC**

Address:	0xFC1B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 4

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-12)

FC-28 **Running time of multi-reference 5 set by simple PLC**

Address:	0xFC1C	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 5 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-29 **Acceleration/Deceleration time of multi-reference 5 set by simple PLC**

Address:	0xFC1D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 5

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-13)

FC-30 **Running time of multi-reference 6 set by simple PLC**

Address:	0xFC1E	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 6 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-31 **Acceleration/Deceleration time of multi-reference 6 set by simple PLC**

Address:	0xFC1F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 6

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-14)

FC-32 **Running time of multi-reference 7 set by simple PLC**

Address:	0xFC20	Effective mode:	/
Min.:	0.0	Unit:	s (h)

Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 7 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-33 **Acceleration/Deceleration time of multi-reference 7 set by simple PLC**

Address:	0xFC21	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 7

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-15)

FC-34 **Running time of multi-reference 8 set by simple PLC**

Address:	0xFC22	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 8 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-35 **Acceleration/Deceleration time of multi-reference 8 set by simple PLC**

Address:	0xFC23	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 8

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-16)

FC-36 **Running time of multi-reference 9 set by simple PLC**

Address:	0xFC24	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 9 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-37 **Acceleration/Deceleration time of multi-reference 9 set by simple PLC**

Address:	0xFC25	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 9

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-17)

FC-38 **Running time of multi-reference 10 set by simple PLC**

Address:	0xFC26	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 10 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-39 **Acceleration/Deceleration time of multi-reference 10 set by simple PLC**

Address:	0xFC27	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 10
0: Group 1 acceleration/deceleration time (F0-17 and F0-18)
1: Group 2 acceleration/deceleration time (F8-03 and F8-04)
2: Group 3 acceleration/deceleration time (F8-05 and F8-06)
3: Group 4 acceleration/deceleration time (F8-07 and F8-18)

FC-40 **Running time of multi-reference 11 set by simple PLC**

Address:	0xFC28	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s (h) to 6553.5s (h)
Description
Running time of multi-reference 11 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-41 **Acceleration/Deceleration time of multi-reference 11 set by simple PLC**

Address:	0xFC29	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0 to 3
Description
Acceleration/Deceleration time of simple PLC reference 11
0: Group 1 acceleration/deceleration time (F0-17 and F0-18)
1: Group 2 acceleration/deceleration time (F8-03 and F8-04)
2: Group 3 acceleration/deceleration time (F8-05 and F8-06)
3: Group 4 acceleration/deceleration time (F8-07 and F8-19)

FC-42 **Running time of multi-reference 12 set by simple PLC**

Address:	0xFC2A	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:
0.0s (h) to 6553.5s (h)
Description
Running time of multi-reference 12 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-43 **Acceleration/Deceleration time of multi-reference 12 set by simple PLC**

Address:	0xFC2B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16

Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 12

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-20)

FC-44 **Running time of multi-reference 13 set by simple PLC**

Address:	0xFC2C	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 13 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-45 **Acceleration/Deceleration time of multi-reference 13 set by simple PLC**

Address:	0xFC2D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 13

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-21)

FC-46 **Running time of multi-reference 14 set by simple PLC**

Address:	0xFC2E	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 14 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-47 **Acceleration/Deceleration time of multi-reference 14 set by simple PLC**

Address:	0xFC2F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 14

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-08)

FC-48 **Running time of multi-reference 15 set by simple PLC**

Address:	0xFC30	Effective mode:	/
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Real-time

Value range:

0.0s (h) to 6553.5s (h)

Description

Running time of multi-reference 15 set by simple PLC Operating time of each speed reference = acceleration or deceleration time + operating time at constant speed and target frequency.

FC-49 **Acceleration/Deceleration time of multi-reference 15 set by simple PLC**

Address:	0xFC31	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 3

Description

Acceleration/Deceleration time of simple PLC reference 15

0: Group 1 acceleration/deceleration time (F0-17 and F0-18)

1: Group 2 acceleration/deceleration time (F8-03 and F8-04)

2: Group 3 acceleration/deceleration time (F8-05 and F8-06)

3: Group 4 acceleration/deceleration time (F8-07 and F8-09)

FC-50 **PLC operating time unit**

Address:	0xFC32	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: second (s)

1: hour (h)

Description

This parameter defines the unit of the PLC running time for each speed.

FC-51 **Multi-reference 0 source**

Address:	0xFC33	Effective mode:	/
Min.:	0	Unit:	/
Max.:	6	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Reference 0 (FC-00)

1: AI1

2: AI2

3: AI3

4: Reserved

5: PID

6: Preset frequency (F0-08), modified by terminal UP/DOWN

Description

Reference 0 can be selected through seven ways, including digital setting, analog input, PID, and preset frequency.

0: Multi-reference 0 (FC-00)

The frequency reference of multi-reference 0 is set by FC-00.

1: AI1

The frequency of multi-reference 0 is set by AI1.

2: AI2

The frequency of multi-reference 0 is set by AI1.

3: AI3

The frequency of multi-reference 0 is set by AI1.

5: PID

The frequency of multi-reference 0 is set by PID.

6: Preset frequency (F0-08)

The frequency of multi-reference 0 is set by F0-08 (preset frequency).

4.14 FD Communication parameters

FD-02 **Local address**

Address:	0xFD02	Effective mode:	/
Min.:	0	Unit:	/
Max.:	247	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value range:

0 to 247

Description

Local address

When the local address is set to 0 (broadcast address), the host controller broadcast is enabled. The local address must be unique in the range of 1 to 247, which is the basis for point-point communication between the AC drive and the host controller.

FD-03 **RS2 response delay**

Address:	0xFD03	Effective mode:	/
Min.:	0	Unit:	ms
Max.:	20	Data type:	UInt16
Default:	2	Change:	Real-time

Value range:
0 ms to 20 ms
Description
Used to set the interval between the AC drive completing data receiving and host controller completing data sending.
If the response delay is shorter than the system processing time, the system processing time prevails. This means that the system processes data and then sends the data to the host controller.
If the response delay is longer than the system processing time, the system processes data and waits for the response delay time. After the time elapses, the system sends the data to the host controller.

FD-04 **RS485 communication timeout time**

Address:	0xFD04	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	60.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:
0.0s to 60.0s
Description
Used to set the maximum time interval between the two consecutive successful RS485 communication.
When it is set to 0.0s, this parameter is invalid. It is generally set to an invalid value. This parameter can monitor communication status in a system with continuous communication.
When it is set to an effective value, if communication interval time between current communication and the next communication exceeds FD-04 (RS485 communication interruption detection time), the system reports a communication fault (E16.01).

FD-06 **Communication fault reset**

Address:	0xFD06	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value range:
0 to 1
Description
This parameter defines whether to reset the communication fault.
0: Automatic reset for RS485 communication faults is disabled.
1: Automatic reset for RS485 communication faults is enabled.

FD-08 **Last assigned station No.**

Address:	0xFD08	Effective mode:	/
Min.:	0	Unit:	/

Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

When the station allocation works, this value is the station number allocated this time. When the station allocation doesn' t work, the current value is used as the current station number.

FD-09 **CANopen/CANlink communication state**

Address:	0xFD09	Effective mode:	/
Min.:	0	Unit:	/
Max.:	999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

Ones: CANopen

0: Stop

1: Initialized

2: Pre-running

8: Running

Tens: CANlink

0: Stop

1: Initialized

2: Pre-running

8: Running

Description

Indicates the CANopen/CANlink communication state.

0: Disabled

The bus is in the stop state..

1: Initialized

The CANopen is in the initialized state.

2 (ones place): Pre-running

The CANopen is in the pre-running state.

8 (ones place): Running

The CANopen is in the running state.

0 (tens place): Stop

The CANlink is in the stop state.

1 (tens place): Initialized

The CANlink is in the initialized state.

2 (tens place): Pre-running

The CANlink is in the pre-running state.

8 (tens place): Running

The CANlink is in the running state.

This parameter is used to monitor the communication status. Read-only

FD-10 **Switchover between CANopen and CANlink**

Address:	0xFD0A	Effective mode:	/
Min.:	1	Unit:	/
Max.:	2	Data type:	UInt16

Default:	1	Change:	Unchangeable

Value range:

1: CANopen

2: CANlink

Description

Displays the CAN communication protocol.

Displays the set for the power supply unit. If the value is 1, CANopen communication or other CANopen network bridge is used. If the value is 2, CANlink communication is used.

FD-11 **CANopen402 enable**

Address:	0xFD0B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disable

1: Enable

Description

It is used to select the CANopen mode.

When it is set to 0, the common mode is used. When it is set to 1, the CIA402 mode is used.

FD-13 **CAN station number**

Address:	0xFD0D	Effective mode:	/
Min.:	1	Unit:	/
Max.:	127	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value range:

1 to 127

Description

Defines the CAN station number, including CANlink and CANopen.

On the same network, all station numbers must be different. Otherwise, communication fails.

FD-14 **Number of CAN frames received within a period**

Address:	0xFD0E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value range:

0 to 65535

Description

Number of CAN frames received every second.

Used to monitor bus load.

FD-19 **CAN communication disconnection coefficient.**

Address:	0xFD13	Effective mode:	/
Min.:	1	Unit:	/
Max.:	15	Data type:	UInt16

Default:	5	Change:	At stop

Value range:

1 to 15

Description

CAN communication disconnection coefficient.

FD-92 **Communication version**

Address:	0xFD5C	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00-655.35

Description

This parameter shows the communication software version of the AC drive.

4.15 FE: User-Defined Parameters

FE-00 **User-defined parameter 0**

Address:	0x2F00	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-01 **User-defined parameter 1**

Address:	0x2F01	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-02 **User-defined parameter 2**

Address:	0x2F02	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-03 **User-defined parameter 3**

Address:	0x2F03	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-04 **User-defined parameter 4**

Address:	0x2F04	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-05 **User-defined parameter 5**

Address:	0x2F05	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-06 **User-defined parameter 6**

Address:	0x2F06	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-07 **User-defined parameter 7**

Address:	0x2F07	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-08 **User-defined parameter 8**

Address:	0x2F08	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-09 **User-defined parameter 9**

Address:	0x2F09	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-10 **User-defined parameter 10**

Address:	0x2F0A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-11 **User-defined parameter 11**

Address:	0x2F0B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-12 **User-defined parameter 12**

Address:	0x2F0C	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-13 **User-defined parameter 13**

Address:	0x2F0D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-14 **User-defined parameter 14**

Address:	0x2F0E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-15 **User-defined parameter 15**

Address:	0x2F0F	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-16 **User-defined parameter 16**

Address:	0x2F10	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-17 **User-defined parameter 17**

Address:	0x2F11	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-18 **User-defined parameter 18**

Address:	0x2F12	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-19 **User-defined parameter 19**

Address:	0x2F13	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-20 **User-defined parameter 20**

Address:	0x2F14	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-21 **User-defined parameter 21**

Address:	0x2F15	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-22 **User-defined parameter 22**

Address:	0x2F16	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0
Description
Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-23 **User-defined parameter 23**

Address:	0x2F17	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:
0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-24 **User-defined parameter 24**

Address:	0x2F18	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-25 **User-defined parameter 25**

Address:	0x2F19	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-26 **User-defined parameter 26**

Address:	0x2F1A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-27 **User-defined parameter 27**

Address:	0x2F1B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-28 **User-defined parameter 28**

Address:	0x2F1C	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-29 **User-defined parameter 29**

Address:	0x2F1D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-30 **User-defined parameter 30**

Address:	0x2F1E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

FE-31 **User-defined parameter 31**

Address:	0x2F1F	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x0	Data type	UInt16
Default:	0x0	Change:	Real-time

Value range:

0x0 to 0x0

Description

Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.

4.16 FP: User Parameters

FP-00 **User password**

Address:	0x1F00	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 65535

Description

After the password is set, the password is required when the operating panel of the power supply unit is used to control the drive unit.

FP-01 **Parameters initialization**

Address:	0x1F01	Effective mode:	/
Min.:	0	Unit:	/
Max.:	503	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: No operation

1: Restore default settings 1

2: Clear records

4: Back up current user parameters

501: Restore user backup parameters

503: Restore default settings 2

Description

This parameter is used to set the action upon parameter initialization of the AC drive.

0: No operation

The AC drive does not perform any operation.

1: Restore default settings 1

Parameters of the AC drive are restored to factory settings except motor parameters, frequency reference decimal (F0-22), software version, fault records, cumulative running time (F7-09), cumulative power-on time (F7-12), cumulative power generation (F7-13), cumulative power consumption (F7-14), and drive unit heatsink temperature (F7-07).

2: Clear records

The error records, F7-09 (Accumulative running time), F7-12 (Accumulative power-on time), F7-13 (Accumulative power generation), and F7-14 (Accumulative power consumption) are cleared.

4: Back up current user parameters

The current parameter settings are backed up.

501: Restore user backup parameters

Parameters backed up by setting FP-01 to 4 are restored.

503: All the parameters are restored to factory settings (except Group FF parameters, FP-00, and FP-01).

FP-02 **Function parameter display**

Address:	0x1F02	Effective mode:	/
Min.:	0	Unit:	/

Max.:	1111	Data type:	UInt16
Default:	111	Change:	Real-time

Value range:

Ones: Group U

0: Not displayed

1: Displayed

Tens: Group A

0: Not displayed

1: Displayed

Hundreds: Group B

0: Not displayed

1: Displayed

Thousands: Group C

0: Not displayed

1: Displayed

Description

This parameter is used to determine whether the parameter groups U, A, B, an C are displayed on the operating panel by each bit.

FP-03 **Display of individualized parameters**

Address:	0x1F03	Effective mode:	/
Min.:	0	Unit:	/
Max.:	11	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

Ones: Display of user-defined parameter groups

0: Hide

1: Display

Tens: Display of user-modified parameter groups

0: Hide

1: Display

Description

This parameter is used to determine whether the user-customized parameter group and the user-modified parameter group are displayed on the operating panel.

FP-04 **Parameter modification function**

Address:	0x1F04	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Enable

1: Disable

Description

This parameter defines whether the parameters can be modified.

When it is set to 1, only Group FP parameters can be modified.

4.17 A0: Torque Control and Limit Parameters

A0-00 **Speed/Torque control mode**

Address:	0xA000	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Speed control

1: Torque control

Description

This parameter is used to switch the control mode of the AC drive in vector control mode.

0: Speed control

In this mode, a commanded speed is the target.

1: Torque control

In this mode, a commanded torque is the target.

A0-01 **Torque reference source**

Address:	0xA001	Effective mode:	/
Min.:	0	Unit:	/
Max.:	7	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Set by A0-03

1: AI1

2: AI2

3: AI3

4: Reserved

5: Communication setting

6: Min. (AI1, AI2)

7: Max. (AI1, AI2)

Description

Used to set the torque setting command. There are a total of seven torque setting modes.

0: Set by A0-03

The torque in the speed control mode is set by A0-03 (digital setting of torque upper limit in speed control).

1: AI1

The torque is input by current or voltage signal through the AI1. The torque is calculated according to the preset AI curve.

2: AI2

The torque is input by current or voltage signal through the AI2. The torque is calculated according to the preset AI curve.

3: AI3

The torque is input by current or voltage signal through the AI3. The torque is calculated according to the preset AI curve.

4: Reserved

5: Communication setting

The torque reference source in torque control is communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode is suitable for remote control or centralized control on multiple equipment.

6: 6: Min. (AI1, AI2)

The torque takes the smaller value calculated by AI1 and AI2 in the torque control mode.

7: 7: Max. (AI1, AI2)

The torque takes the lager value calculated by AI1 and AI2 in the torque control mode.

A0-03 **Torque digital setting**

Address:	0xA003	Effective mode:	/
Min.:	-200.0	Unit:	%
Max.:	200.0	Data type:	Int16
Default:	100.0	Change:	Real-time

Value range:

-200.0% to 200.0%

Description

This parameter defines the torque reference in the torque control mode. The torque reference is a relative value. The value 100.0% corresponds to the rated motor torque. Check U0-06 to obtain the motor output torque, and the value 100% corresponds to the rated motor torque. The setting range is 200.0% to +200.0%, indicating that the maximum torque of the drive is 2 x rated torque of the motor.

When the torque reference value is positive, the drive operates in the forward direction. When the torque reference value is negative, the drive operates in the reverse direction.

A0-04 **Torque filter time**

Address:	0xA004	Effective mode:	/
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.000	Change:	Real-time

Value range:

0.000s to 5.000s

Description

Used to set the torque filter time. This parameter can be adjusted according to the torque source.

A0-05 **Digital setting of speed limit**

Address:	0xA005	Effective mode:	/
Min.:	-120.0	Unit:	%
Max.:	120.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-120.0% to 120.0%

Description

This parameter defines the digital setting of speed limit. 100% corresponds to the maximum frequency (F0-10).

A0-07 **Torque acceleration time**

Address:	0xA007	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	1.00	Change:	Real-time

Value range:

0.00s to 650.00s

Description

Used to set the torque reference acceleration time.

A0-08 **Torque deceleration time**

Address:	0xA008	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	1.00	Change:	Real-time

Value range:

0.00s to 650.00s

Description

Used to set the torque reference deceleration time.

A0-09 **Speed limit reference source**

Address:	0xA009	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: A0-05

1: Frequency source

Description

Speed limit reference source

0: A0-05

1: Frequency source

A0-10 **Speed limit offset**

Address:	0xA00A	Effective mode:	/
Min.:	0.00	Unit:	/
Max.:	F0-10	Data type	UInt16
Default:	5.00	Change:	Real-time

Value range:

0.00 to F0-10

Description

If the actual speed exceeds the speed limit offset, the output torque will be limited.

A0-11 **Active mode of speed limit offset**

Address:	0xA00B	Effective mode:	/
Min.:	0	Unit:	/

Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Bidirectional offset

1: Unidirectional offset

Description

Active mode of speed limit offset

0: Bidirectional offset

The speed limit offset takes effect in the same direction as the speed limit and in the opposite direction.

1: Unidirectional offset

The speed limit offset takes effect in the opposite direction of the speed limit.

A0-12 **Frequency acceleration time**

Address:	0xA00C	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

Frequency acceleration time, effective in torque mode, refers to the time to rise to the speed limit when the load is smaller than the torque setting.

A0-13 **Frequency deceleration time**

Address:	0xA00D	Effective mode:	/
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	1.0	Change:	Real-time

Value range:

0.0s to 6500.0s

Description

Frequency deceleration time, effective in torque mode, refers to the time to rise to the speed limit when the load is smaller than the torque setting.

A0-14 **Torque mode switchover**

Address:	0xA00E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: No switchover

1: Switch to speed control mode upon stop.

2: Set the target torque to 0 upon stop.

Description

This parameter is used to switch the torque mode.
0: No switchover
1: Switch to speed mode upon stop
2: Target torque changes to 0 upon stop

4.18 A1 Virtual DI, and AI Used as DI

A1-00 **VDI1 function**

Address:	0xA100	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
0: No function
1: Forward run (FWD)
2: Reverse run (REV)
3: Three-wire control
4: Forward jog (FJOG)
5: Reverse jog (RJOG)
6: Function as the UP key
7: Function as the DOWN key
8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys
9: Fault reset (RESET)
10: External fault NO input
11: External fault NC input
12: User-defined fault 1
13: User-defined fault 2
14: Multi-reference terminal 1
15: Multi-reference terminal 2
16: Multi-reference terminal 3
17: Multi-reference terminal 4
18: Acceleration/deceleration selection terminal 1
19: Acceleration/deceleration selection terminal 2
20: Acceleration/Deceleration prohibition
21: Command source switchover terminal 1
22: Command source switchover terminal 2
23: Frequency reference switchover
24: Switchover between main frequency X and preset frequency

25: Switchover between auxiliary frequency X and preset frequency
26: Frequency modification function
27: Counter input
28: Counter reset
29: Length count input
30: Length reset
31: PID pause
32: PID integral pause
33: PID parameter switchover
34: Opposite to PID action direction
35: Torque control prohibition
36: Speed control/Torque control switchover
38: Flying start
39: Immediate DC braking
40: Deceleration DC braking
41: External stop terminal 1
42: External stop terminal 2
43: Running pause
44: Coast to stop
45: Emergency stop
46: Motor selection terminal
47: Clear current running time
48: Two-wire/Three-wire motion control switchover
49: PLC state reset
50: Wobble frequency pause
94: Brake feedback 1
95: Brake feedback 2

Description
VDI1 to VDI5 can be used as multi-functional DIs. The setting of functions 0 to 63 is similar to that of common DIs.
0: No function
The DI has no function.
1: Forward run (FWD)
Gives the forward running signal. In the case of two-wire mode 1 (F4-17 = 0), forward run applies. In the case of two-wire mode 2 (F4-17 = 1), the operation command applies.
2: Reverse run (REV)
Gives the reverse running signal. In the case of three-wire mode 1 (F4-17 = 2), reverse run applies. In the case of three-wire mode 2 (F4-17 = 3), the reverse running direction applies.
3: Three-wire operation control
The AC drive operation mode is three-wire control mode. To set the running command source to the terminal, set F4-17 (terminal command mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set the DI to function 3.
4: Forward jog (FJOG)
The operating mode of the AC drive is forward jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

5: Reverse jog (RJOG)

The operation mode of the AC drive is reverse jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

6: Function as the UP key

The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the UP key is released.

7: Terminal DOWN

The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the DOWN key is released.

8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys

When the main frequency is set through the operating panel and this function is selected, the frequency set by UP and DOWN key on the operating panel or by terminal functioning as the UP/DOWN key (6 or 7) can be cleared, and the frequency reference will be reset to the value of F0-08.

9: Fault reset (RESET)

The terminal is used to reset faults of the AC drive and reset upon detection of a rising edge on the DI signal. Remote fault reset is also supported.

10: External fault NO input

When the terminal is active, the AC drive reports E15.01 upon receiving an external active signal.

11: External fault NC input

When the terminal is active, the AC drive reports E15.02 upon receiving an external inactive signal.

12: User-defined fault 1

When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

13: User-defined fault 2

When E28.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

14: Multi-reference terminals 1

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

15: Multi-reference terminals 2

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

16: Multi-reference terminals 3

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

17: Multi-reference terminals 4

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

18: Acceleration/deceleration selection terminals 1

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

19: Acceleration/deceleration selection terminals 2

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

20: Acceleration/Deceleration inhibited

The terminal is used to maintain the current running frequency of the AC drive regardless of changes of the external input frequency (unless a stop command is received).

21: Command source switchover terminal 1

When the operation command is set through the terminal (F0-02 = 1), this function can implement switchover between terminal control and keypad control.

When the operation command is set through communication (F0-02 = 2), this function can implement switchover between communication control and keypad control.

22: Command source switchover terminal 2

The terminal is used for switchover between terminal control and communication control.

When the command is set through the terminal, activating the terminal switches the drive to the communication control mode.

When the command is set through communication, activating the terminal switches the drive to the terminal control mode.

23: Frequency reference switching

The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).

24: Switchover between frequency source X and preset frequency

The terminal is used to switch from the main frequency to the preset frequency (F0-08).

25: Switchover between auxiliary frequency source Y and preset frequency

The terminal is used to switch from the auxiliary frequency to the preset frequency (F0-08).

26: Frequency modification enable

When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.

27: Counter input

In the count process, a count pulse is input when the terminal is active.

28: Counter reset

In the count process, the counter status is cleared when the terminal is active.

29: Length count input

In the fixed length process, the length count is input when the terminal is active.

30: Length reset

In the fixed length process, the length is cleared when the terminal is active.

31: PID pause

PID is invalid temporarily. The AC drive maintains the current output frequency without supporting PID adjustment of frequency source.

32: PID integral pause

The integral adjustment function pauses when the terminal is active. However, the proportional and derivative adjustment functions are still valid.

33: PID parameter switchover

If PID parameters are switched by using the DI terminal (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.

34: PID action direction reversal

The PID action direction is reversed to the direction set by FA-03 (PID action direction).

35: Torque control disable

In torque control mode, the system switches to speed control when this terminal is active. The drive switches back to the torque control mode when the terminal becomes inactive.

36: Switchover between speed control and torque control

The terminal is used to switch between speed control and torque control.

If A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive.
If A0-00 (speed/torque control mode) is set to 1, the speed control mode is used when the terminal is active, and the torque control mode is used when the terminal is inactive.
38: Flying start
Flying start of the AC drive.
39: Immediate DC braking
The terminal is used to directly switch the AC drive to the DC braking state.
40: Deceleration DC braking
The terminal is used to make the AC drive decelerate to the start frequency of DC braking during stop (F6-11) and then enter the DC braking state.
41: External stop terminal 1
When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42: External stop terminal 2
The terminal is used to make the AC drive decelerate to stop in any control mode (operating panel, terminal, or communication control). In this case, the deceleration time is fixed to the value of F8-08 (deceleration time 4).
43: Running pause
When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44: Coast to stop
When the terminal is active, the AC drive stops output, and the motor coasts to stop under the action of mechanical inertia.
45: Emergency stop
When the system is in the emergency state, the AC drive decelerates according to F8-60 (terminal deceleration time for emergency stop). When the deceleration time for emergency stop is 0s in V/f mode, the AC drive decelerates according to the minimum unit time. The input terminal does not need to be in the closed state continuously. Even if it is closed only for a moment, an emergency stop will occur immediately.
Different from general deceleration time, the emergency stop input terminal is opened after the deceleration time for emergency stop expires. In this case, if the operation signal is still active, the drive will not restart. To restart the drive, disconnect the operation terminal and input the operation command again.
46: Motor selection
The terminal is used to select the motor. When this terminal is active, motor 2 is selected. When this terminal is inactive, motor 1 is selected.
47: Clear the current running time
The terminal is used to clear the current running time of the AC drive.
If the current running time is shorter than the set value (greater than 0) of F8-57 (Current running time threshold) and the terminal is active, the current running timing is cleared.
If the current running time is longer than the set value (greater than 0) of F8-53 and the terminal is active, and the current running time is not cleared.
48: Switchover between two-wire and three-wire control
The terminal is used to switch between two-wire and three-wire control.
If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active.

If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active.
If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active.
If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49: PLC state reset
The terminal is used to restore the AC drive to the initial state of the simple PLC.
50: Wobble pause
In the wobble process, when this terminal is active, the wobble function is paused (the AC drive outputs at the center frequency).
94: Brake feedback 1
Give the brake release feedback signal.
95: Brake feedback 2
Give the brake feedback signal.

A1-01 **VDI1 function selection**

Address:	0xA101	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
See A1–00.
Description
See A1–00.

A1-02 **VDI1 function selection**

Address:	0xA102	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
See A1–00.
Description
See A1–00.

A1-03 **VDI1 function selection**

Address:	0xA103	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
See A1–00.
Description
See A1–00.

A1-04 **VDI5 function**

Address:	0xA104	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

See A1–00.

Description

See A1–00.

A1-05 **VDI state setting source**

Address:	0xA105	Effective mode:	/
Min.:	0	Unit:	/
Max.:	22222	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

Ones: VDI1

0: Set by A1-06

1: DO state

2: DI state

Tens: VDI2

0: Set by A1-06

1: DO state

2: DI state

Hundreds: VDI3

0: Set by A1-06

1: DO state

2: DI state

Thousands: VDI4

0: Set by A1-06

1: DO state

2: DI state

Ten thousands: VDI5

0: Set by A1-06

1: DO state

2: DI state

Description

The VDI state can be set in three modes, which is selected in A1-05.

0: The VDI state is determined by the binary bit of A1-06.

When it is set to 1, the VDI state is determined by the state of the corresponding DO/RO. VDIx is uniquely bound to DOx/ROx (x is between 1 and 5).

When it is set to 2, the VDI state is determined by the state of the corresponding DI. VDIx is uniquely bound to DIx (x is between 1 and 5).

A1-06 **VDI state setting**

Address:	0xA106	Effective mode:	/

Min.:	0	Unit:	/
Max.:	11111	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

Ones: VDI1

0: Invalid

1: Valid

Tens: VDI2

0: Invalid

1: Valid

Hundreds: VDI3

0: Invalid

1: Valid

Thousands: VDI4

0: Invalid

1: Valid

Ten thousands: VDI5

0: Invalid

1: Valid

Description

The VDIx (x ranging from 1 to 5) state is set by the ones to ten thousands of this parameter.

0: Invalid

The corresponding VDI terminal output is invalid.

1: Valid

The corresponding VDI terminal output is valid.

A1-07 **AI1 function (used as DI)**

Address:	0xA107	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function
1: Forward run (FWD)
2: Reverse run (REV)
3: Three-wire control
4: Forward jog (FJOG)
5: Reverse jog (RJOG)
6: Function as the UP key
7: Function as the DOWN key
8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys
9: Fault reset (RESET)
10: External fault NO input
11: External fault NC input12: User-defined fault 1
13: User-defined fault 2
14: Multi-reference terminal 1
15: Multi-reference terminal 2
16: Multi-reference terminal 3
17: Multi-reference terminal 4
18: Acceleration/deceleration selection terminal 1
19: Acceleration/deceleration selection terminal 2
20: Acceleration/Deceleration prohibition
21: Command source switchover terminal 1
22: Command source switchover terminal 2
23: Frequency reference switchover
24: Switchover between main frequency X and preset frequency

25: Switchover between auxiliary frequency X and preset frequency26: Frequency modification function
27: Counter input
28: Counter reset
29: Length count input
30: Length reset
31: PID pause
32: PID integral pause
33: PID parameter switchover
34: Opposite to PID action direction
35: Torque control prohibition
36: Speed control/Torque control switchover
38: Flying start
39: Immediate DC braking
40: Deceleration DC braking
41: External stop terminal 1
42: External stop terminal 2
43: Running pause
44: Coast to stop
45: Emergency stop
46: Motor selection terminal
47: Clear current running time
48: Two-wire/Three-wire motion control switchover
49: PLC state reset
50: Wobble frequency pause
94: Brake feedback 1
95: Brake feedback 2

Description

VDI1 to VDI5 can be used as multi-functional DIs. The setting of functions 0 to 63 is similar to that of common DIs.

0: No function

The DI has no function.

1: Forward run (FWD)

Gives the forward running signal. In the case of two-wire mode 1 (F4-17 = 0), forward run applies. In the case of two-wire mode 2 (F4-17 = 1), the operation command applies.

2: Reverse run (REV)

Gives the reverse running signal. In the case of three-wire mode 1 (F4-17 = 2), reverse run applies. In the case of three-wire mode 2 (F4-17 = 3), the reverse running direction applies.

3: Three-wire operation control

The AC drive operation mode is three-wire control mode. To set the running command source to the terminal, set F4-17 (terminal command mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set the DI to function 3.

4: Forward jog (FJOG)

The operating mode of the AC drive is forward jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

5: Reverse jog (RJOG)

The operation mode of the AC drive is reverse jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

6: Function as the UP key

The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the UP key is released.

7: Terminal DOWN

The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the DOWN key is released.

8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys

When the main frequency is set through the operating panel and this function is selected, the frequency set by UP and DOWN key on the operating panel or by terminal functioning as the UP/DOWN key (6 or 7) can be cleared, and the frequency reference will be reset to the value of F0-08.

9: Fault reset (RESET)

The terminal is used to reset faults of the AC drive and reset upon detection of a rising edge on the DI signal. Remote fault reset is also supported.

10: External fault NO input

When the terminal is active, the AC drive reports E15.01 upon receiving an external active signal.

11: External fault NC input

When the terminal is active, the AC drive reports E15.02 upon receiving an external inactive signal.

12: User-defined fault 1

When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

13: User-defined fault 2

When E28.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

14: Multi-reference terminals 1

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

15: Multi-reference terminals 2

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

16: Multi-reference terminals 3

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

17: Multi-reference terminals 4

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

18: Acceleration/deceleration selection terminals 1

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

19: Acceleration/deceleration selection terminals 2

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

20: Acceleration/Deceleration inhibited

The terminal is used to maintain the current running frequency of the AC drive regardless of changes of the external input frequency (unless a stop command is received).

21: Command source switchover terminal 1

When the operation command is set through the terminal (F0-02 = 1), this function can implement switchover between terminal control and keypad control.

When the operation command is set through communication (F0-02 = 2), this function can implement switchover between communication control and keypad control.

22: Command source switchover terminal 2

The terminal is used for switchover between terminal control and communication control.

When the command is set through the terminal, activating the terminal switches the drive to the communication control mode.

When the command is set through communication, activating the terminal switches the drive to the terminal control mode.

23: Frequency reference switching

The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).

24: Switchover between frequency source X and preset frequency

The terminal is used to switch from the main frequency to the preset frequency (F0-08).

25: Switchover between auxiliary frequency source Y and preset frequency

The terminal is used to switch from the auxiliary frequency to the preset frequency (F0-08).

26: Frequency modification enable

When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.

27: Counter input

In the count process, a count pulse is input when the terminal is active.

28: Counter reset

In the count process, the counter status is cleared when the terminal is active.

29: Length count input

In the fixed length process, the length count is input when the terminal is active.

30: Length reset

In the fixed length process, the length is cleared when the terminal is active.

31: PID pause

PID is invalid temporarily. The AC drive maintains the current output frequency without supporting PID adjustment of frequency source.

32: PID integral pause

The integral adjustment function pauses when the terminal is active. However, the proportional and derivative adjustment functions are still valid.

33: PID parameter switchover

If PID parameters are switched by using the DI terminal (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.

34: PID action direction reversal

The PID action direction is reversed to the direction set by FA-03 (PID action direction).

35: Torque control disable

In torque control mode, the system switches to speed control when this terminal is active. The drive switches back to the torque control mode when the terminal becomes inactive.

36: Switchover between speed control and torque control

The terminal is used to switch between speed control and torque control.

If A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive.
If A0-00 (speed/torque control mode) is set to 1, the speed control mode is used when the terminal is active, and the torque control mode is used when the terminal is inactive.
38: Flying start
Flying start of the AC drive
39: Immediate DC braking
The terminal is used to directly switch the AC drive to the DC braking state.
40: Deceleration DC braking
The terminal is used to make the AC drive decelerate to the start frequency of DC braking during stop (F6-11) and then enter the DC braking state.
41: External stop terminal 1
When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42: External stop terminal 2
The terminal is used to make the AC drive decelerate to stop in any control mode (operating panel, terminal, or communication control). In this case, the deceleration time is fixed to the value of F8-08 (deceleration time 4).
43: Running pause
When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44: Coast to stop
When the terminal is active, the AC drive stops output, and the motor coasts to stop under the action of mechanical inertia.
45: Emergency stop
When the system is in the emergency state, the AC drive decelerates according to F8-60 (terminal deceleration time for emergency stop). When the deceleration time for emergency stop is 0s in V/f mode, the AC drive decelerates according to the minimum unit time. The input terminal does not need to be in the closed state continuously. Even if it is closed only for a moment, an emergency stop will occur immediately.
Different from general deceleration time, the emergency stop input terminal is opened after the deceleration time for emergency stop expires. In this case, if the operation signal is still active, the drive will not restart. To restart the drive, disconnect the operation terminal and input the operation command again.
46: Motor selection
The terminal is used to select the motor. When this terminal is active, motor 2 is selected. When this terminal is inactive, motor 1 is selected.
47: Clear the current running time
The terminal is used to clear the current running time of the AC drive.
If the current running time is shorter than the set value (greater than 0) of F8-57 (Current running time threshold) and the terminal is active, the current running timing is cleared.
If the current running time is longer than the set value (greater than 0) of F8-53 and the terminal is active, and the current running time is not cleared.
48: Switchover between two-wire and three-wire control
The terminal is used to switch between two-wire and three-wire control.
If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active.

If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active.
If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active.
If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49: PLC state reset

The terminal is used to restore the AC drive to the initial state of the simple PLC.
50: Wobble pause

In the wobble process, when this terminal is active, the wobble function is paused (the AC drive outputs at the center frequency).
94: Brake feedback 1

Give the brake release feedback signal
95: Brake feedback 2

Give the brake feedback signal

A1-08 **AI2 function (used as DI)**

Address:	0xA108	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Forward run (FWD)

2: Reverse run (REV)

3: Three-wire control

4: Forward jog (FJOG)

5: Reverse jog (RJOG)

6: Function as the UP key

7: Function as the DOWN key

8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys

9: Fault reset (RESET)

10: External fault NO input

11: External fault NC input

12: User-defined fault 1

13: User-defined fault 2

14: Multi-reference terminal 1

15: Multi-reference terminal 2

16: Multi-reference terminal 3

17: Multi-reference terminal 4

18: Acceleration/deceleration selection terminal 1

19: Acceleration/deceleration selection terminal 2

20: Acceleration/Deceleration prohibition

21: Command source switchover terminal 1

22: Command source switchover terminal 2

23: Frequency reference switchover

24: Switchover between main frequency X and preset frequency

25: Switchover between auxiliary frequency X and preset frequency26: Frequency modification function
27: Counter input
28: Counter reset
29: Length count input
30: Length reset
31: PID pause
32: PID integral pause
33: PID parameter switchover
34: Opposite to PID action direction
35: Torque control prohibition
36: Speed control/Torque control switchover
38: Flying start
39: Immediate DC braking
40: Deceleration DC braking
41: External stop terminal 1
42: External stop terminal 2
43: Running pause
44: Coast to stop
45: Emergency stop
46: Motor selection terminal
47: Clear current running time
48: Two-wire/Three-wire motion control switchover
49: PLC state reset
50: Wobble frequency pause
94: Brake feedback 1
95: Brake feedback 2

Description

VDI1 to VDI5 can be used as multi-functional DIs. The setting of functions 0 to 63 is similar to that of common DIs.

0: No function

The DI has no function.

1: Forward run (FWD)

Gives the forward running signal. In the case of two-wire mode 1 (F4-17 = 0), forward run applies. In the case of two-wire mode 2 (F4-17 = 1), the operation command applies.

2: Reverse run (REV)

Gives the reverse running signal. In the case of three-wire mode 1 (F4-17 = 2), reverse run applies. In the case of three-wire mode 2 (F4-17 = 3), the reverse running direction applies.

3: Three-wire operation control

The AC drive operation mode is three-wire control mode. To set the running command source to the terminal, set F4-17 (terminal command mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set the DI to function 3.

4: Forward jog (FJOG)

The operating mode of the AC drive is forward jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

5: Reverse jog (RJOG)

The operation mode of the AC drive is reverse jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

6: Function as the UP key

The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the UP key is released.

7: Terminal DOWN

The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the DOWN key is released.

8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys

When the main frequency is set through the operating panel and this function is selected, the frequency set by UP and DOWN key on the operating panel or by terminal functioning as the UP/DOWN key (6 or 7) can be cleared, and the frequency reference will be reset to the value of F0-08.

9: Fault reset (RESET)

The terminal is used to reset faults of the AC drive and reset upon detection of a rising edge on the DI signal. Remote fault reset is also supported.

10: External fault NO input

When the terminal is active, the AC drive reports E15.01 upon receiving an external active signal.

11: External fault NC input

When the terminal is active, the AC drive reports E15.02 upon receiving an external inactive signal.

12: User-defined fault 1

When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

13: User-defined fault 2

When E28.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

14: Multi-reference terminals 1

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

15: Multi-reference terminals 2

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

16: Multi-reference terminals 3

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

17: Multi-reference terminals 4

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

18: Acceleration/deceleration selection terminals 1

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

19: Acceleration/deceleration selection terminals 2

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

20: Acceleration/Deceleration inhibited

The terminal is used to maintain the current running frequency of the AC drive regardless of changes of the external input frequency (unless a stop command is received).

21: Command source switchover terminal 1

When the operation command is set through the terminal (F0-02 = 1), this function can implement switchover between terminal control and keypad control.

When the operation command is set through communication (F0-02 = 2), this function can implement switchover between communication control and keypad control.

22: Command source switchover terminal 2

The terminal is used for switchover between terminal control and communication control.

When the command is set through the terminal, activating the terminal switches the drive to the communication control mode.

When the command is set through communication, activating the terminal switches the drive to the terminal control mode.

23: Frequency reference switching

The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).

24: Switchover between frequency source X and preset frequency

The terminal is used to switch from the main frequency to the preset frequency (F0-08).

25: Switchover between auxiliary frequency source Y and preset frequency

The terminal is used to switch from the auxiliary frequency to the preset frequency (F0-08).

26: Frequency modification enable

When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.

27: Counter input

In the count process, a count pulse is input when the terminal is active.

28: Counter reset

In the count process, the counter status is cleared when the terminal is active.

29: Length count input

In the fixed length process, the length count is input when the terminal is active.

30: Length reset

In the fixed length process, the length is cleared when the terminal is active.

31: PID pause

PID is invalid temporarily. The AC drive maintains the current output frequency without supporting PID adjustment of frequency source.

32: PID integral pause

The integral adjustment function pauses when the terminal is active. However, the proportional and derivative adjustment functions are still valid.

33: PID parameter switchover

If PID parameters are switched by using the DI terminal (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.

34: PID action direction reversal

The PID action direction is reversed to the direction set by FA-03 (PID action direction).

35: Torque control disable

In torque control mode, the system switches to speed control when this terminal is active. The drive switches back to the torque control mode when the terminal becomes inactive.

36: Switchover between speed control and torque control

The terminal is used to switch between speed control and torque control.

If A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive.
If A0-00 (speed/torque control mode) is set to 1, the speed control mode is used when the terminal is active, and the torque control mode is used when the terminal is inactive.
38: Flying start
Flying start of the AC drive
39: Immediate DC braking
The terminal is used to directly switch the AC drive to the DC braking state.
40: Deceleration DC braking
The terminal is used to make the AC drive decelerate to the start frequency of DC braking during stop (F6-11) and then enter the DC braking state.
41: External stop terminal 1
When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42: External stop terminal 2
The terminal is used to make the AC drive decelerate to stop in any control mode (operating panel, terminal, or communication control). In this case, the deceleration time is fixed to the value of F8-08 (deceleration time 4).
43: Running pause
When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44: Coast to stop
When the terminal is active, the AC drive stops output, and the motor coasts to stop under the action of mechanical inertia.
45: Emergency stop
When the system is in the emergency state, the AC drive decelerates according to F8-60 (terminal deceleration time for emergency stop). When the deceleration time for emergency stop is 0s in V/f mode, the AC drive decelerates according to the minimum unit time. The input terminal does not need to be in the closed state continuously. Even if it is closed only for a moment, an emergency stop will occur immediately.
Different from general deceleration time, the emergency stop input terminal is opened after the deceleration time for emergency stop expires. In this case, if the operation signal is still active, the drive will not restart. To restart the drive, disconnect the operation terminal and input the operation command again.
46: Motor selection
The terminal is used to select the motor. When this terminal is active, motor 2 is selected. When this terminal is inactive, motor 1 is selected.
47: Clear the current running time
The terminal is used to clear the current running time of the AC drive.
If the current running time is shorter than the set value (greater than 0) of F8-57 (Current running time threshold) and the terminal is active, the current running timing is cleared.
If the current running time is longer than the set value (greater than 0) of F8-53 and the terminal is active, and the current running time is not cleared.
48: Switchover between two-wire and three-wire control
The terminal is used to switch between two-wire and three-wire control.
If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active.

If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active.
If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active.
If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49: PLC state reset

The terminal is used to restore the AC drive to the initial state of the simple PLC.
50: Wobble pause

In the wobble process, when this terminal is active, the wobble function is paused (the AC drive outputs at the center frequency).
94: Brake feedback 1

Give the brake release feedback signal
95: Brake feedback 2

Give the brake feedback signal

A1-09 **AI3 function (used as DI)**

Address:	0xA109	Effective mode:	/
Min.:	0	Unit:	/
Max.:	95	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: No function

1: Forward run (FWD)

2: Reverse run (REV)

3: Three-wire control

4: Forward jog (FJOG)

5: Reverse jog (RJOG)

6: Function as the UP key

7: Function as the DOWN key

8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys

9: Fault reset (RESET)

10: External fault NO input

11: External fault NC input

12: User-defined fault 1

13: User-defined fault 2

14: Multi-reference terminal 1

15: Multi-reference terminal 2

16: Multi-reference terminal 3

17: Multi-reference terminal 4

18: Acceleration/deceleration selection terminal 1

19: Acceleration/deceleration selection terminal 2

20: Acceleration/Deceleration prohibition

21: Command source switchover terminal 1

22: Command source switchover terminal 2

23: Frequency reference switchover24: Switchover between main frequency X and preset frequency

25: Switchover between auxiliary frequency X and preset frequency26: Frequency modification function
27: Counter input
28: Counter reset
29: Length count input
30: Length reset
31: PID pause
32: PID integral pause
33: PID parameter switchover
34: Opposite to PID action direction
35: Torque control prohibition
36: Speed control/Torque control switchover
38: Flying start
39: Immediate DC braking
40: Deceleration DC braking
41: External stop terminal 1
42: External stop terminal 2
43: Running pause
44: Coast to stop
45: Emergency stop
46: Motor selection terminal
47: Clear current running time
48: Two-wire/Three-wire motion control switchover
49: PLC state reset
50: Wobble frequency pause
94: Brake feedback 1
95: Brake feedback 2

Description

VDI1 to VDI5 can be used as multi-functional DIs. The setting of functions 0 to 63 is similar to that of common DIs.

0: No function

The DI has no function.

1: Forward run (FWD)

Gives the forward running signal. In the case of two-wire mode 1 (F4-17 = 0), forward run applies. In the case of two-wire mode 2 (F4-17 = 1), the operation command applies.

2: Reverse run (REV)

Gives the reverse running signal. In the case of three-wire mode 1 (F4-17 = 2), reverse run applies. In the case of three-wire mode 2 (F4-17 = 3), the reverse running direction applies.

3: Three-wire operation control

The AC drive operation mode is three-wire control mode. To set the running command source to the terminal, set F4-17 (terminal command mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set the DI to function 3.

4: Forward jog (FJOG)

The operating mode of the AC drive is forward jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

5: Reverse jog (RJOG)

The operation mode of the AC drive is reverse jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

6: Function as the UP key

The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the UP key is released.

7: Terminal DOWN

The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is kept pressed down. When this terminal is inactive, it works as if the DOWN key is released.

8: Clear information set by UP/DOWN keys on the operating panel or by terminals functioning as the UP/DOWN keys

When the main frequency is set through the operating panel and this function is selected, the frequency set by UP and DOWN key on the operating panel or by terminal functioning as the UP/DOWN key (6 or 7) can be cleared, and the frequency reference will be reset to the value of F0-08.

9: Fault reset (RESET)

The terminal is used to reset faults of the AC drive and reset upon detection of a rising edge on the DI signal. Remote fault reset is also supported.

10: External fault NO input

When the terminal is active, the AC drive reports E15.01 upon receiving an external active signal.

11: External fault NC input

When the terminal is active, the AC drive reports E15.02 upon receiving an external inactive signal.

12: User-defined fault 1

When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

13: User-defined fault 2

When E28.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

14: Multi-reference terminals 1

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

15: Multi-reference terminals 2

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

16: Multi-reference terminals 3

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

17: Multi-reference terminals 4

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four multi-reference terminals.

18: Acceleration/deceleration selection terminals 1

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

19: Acceleration/deceleration selection terminals 2

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

20: Acceleration/Deceleration inhibited

The terminal is used to maintain the current running frequency of the AC drive regardless of changes of the external input frequency (unless a stop command is received).

21: Command source switchover terminal 1

When the operation command is set through the terminal (F0-02 = 1), this function can implement switchover between terminal control and keypad control.

When the operation command is set through communication (F0-02 = 2), this function can implement switchover between communication control and keypad control.

22: Command source switchover terminal 2

The terminal is used for switchover between terminal control and communication control.

When the command is set through the terminal, activating the terminal switches the drive to the communication control mode.

When the command is set through communication, activating the terminal switches the drive to the terminal control mode.

23: Frequency reference switching

The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).

24: Switchover between frequency source X and preset frequency

The terminal is used to switch from the main frequency to the preset frequency (F0-08).

25: Switchover between auxiliary frequency source Y and preset frequency

The terminal is used to switch from the auxiliary frequency to the preset frequency (F0-08).

26: Frequency modification enable

When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.

27: Counter input

In the count process, a count pulse is input when the terminal is active.

28: Counter reset

In the count process, the counter status is cleared when the terminal is active.

29: Length count input

In the fixed length process, the length count is input when the terminal is active.

30: Length reset

In the fixed length process, the length is cleared when the terminal is active.

31: PID pause

PID is invalid temporarily. The AC drive maintains the current output frequency without supporting PID adjustment of frequency source.

32: PID integral pause

The integral adjustment function pauses when the terminal is active. However, the proportional and derivative adjustment functions are still valid.

33: PID parameter switchover

If PID parameters are switched by using the DI terminal (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.

34: PID action direction reversal

The PID action direction is reversed to the direction set by FA-03 (PID action direction).

35: Torque control disable

In torque control mode, the system switches to speed control when this terminal is active. The drive switches back to the torque control mode when the terminal becomes inactive.

36: Switchover between speed control and torque control

The terminal is used to switch between speed control and torque control.

If A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive.
If A0-00 (speed/torque control mode) is set to 1, the speed control mode is used when the terminal is active, and the torque control mode is used when the terminal is inactive.
38: Flying start
Flying start of the AC drive
39: Immediate DC braking
The terminal is used to directly switch the AC drive to the DC braking state.
40: Deceleration DC braking
The terminal is used to make the AC drive decelerate to the start frequency of DC braking during stop (F6-11) and then enter the DC braking state.
41: External stop terminal 1
When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42: External stop terminal 2
The terminal is used to make the AC drive decelerate to stop in any control mode (operating panel, terminal, or communication control). In this case, the deceleration time is fixed to the value of F8-08 (deceleration time 4).
43: Running pause
When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44: Coast to stop
When the terminal is active, the AC drive stops output, and the motor coasts to stop under the action of mechanical inertia.
45: Emergency stop
When the system is in the emergency state, the AC drive decelerates according to F8-60 (terminal deceleration time for emergency stop). When the deceleration time for emergency stop is 0s in V/f mode, the AC drive decelerates according to the minimum unit time. The input terminal does not need to be in the closed state continuously. Even if it is closed only for a moment, an emergency stop will occur immediately.
Different from general deceleration time, the emergency stop input terminal is opened after the deceleration time for emergency stop expires. In this case, if the operation signal is still active, the drive will not restart. To restart the drive, disconnect the operation terminal and input the operation command again.
46: Motor selection
The terminal is used to select the motor. When this terminal is active, motor 2 is selected. When this terminal is inactive, motor 1 is selected.
47: Clear the current running time
The terminal is used to clear the current running time of the AC drive.
If the current running time is shorter than the set value (greater than 0) of F8-57 (Current running time threshold) and the terminal is active, the current running timing is cleared.
If the current running time is longer than the set value (greater than 0) of F8-53 and the terminal is active, and the current running time is not cleared.
48: Switchover between two-wire and three-wire control
The terminal is used to switch between two-wire and three-wire control.
If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active.

If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active.
If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active.
If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49: PLC state reset
The terminal is used to restore the AC drive to the initial state of the simple PLC.
50: Wobble pause
In the wobble process, when this terminal is active, the wobble function is paused (the AC drive outputs at the center frequency).
94: Brake feedback 1
Give the brake release feedback signal
95: Brake feedback 2
Give the brake feedback signal

A1-10 **Active status of AI used as DI**

Address:	0xA10A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	111	Data type:	UInt16
Default:	0	Change:	At stop

Value range:
Ones: AI1
0: Active high
1: Active low
Tens: AI2
0: Active high
1: Active low
Hundreds: AI3
0: Active high
1: Active low
Description
The active mode for terminals AI1 to AI3 are set through the ones, tens, hundreds, thousands, and ten thousands place of this parameter.
0: Active high
The AI is active when the ones position of A1-10 is set to 0 and inactive when set to 1.
1: Active low
The AI is inactive when the ones position of A1-10 is set to 0 and active when set to 1.

4.19 A5: Control Optimization Parameters

A5-00 **Frequency upper limit for DPWM switchover**

Address:	0xA500	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	F0-10	Data type:	UInt16
Default:	12.00	Change:	Real-time

Value range:

0.00 Hz to F0-10

Description

The AC drive supports two PWM wave modulation modes, including CPWM and DPWM. When the running frequency is higher than the value of A5-00, the DPWM mode is used. When the running frequency is lower than the value of A5-00, the CPWM mode is used. The DPWM mode can improve the AC drive efficiency, whereas the CPWM mode can reduce the motor noise.

Increasing A5-00 to the maximum frequency will reduce the motor noise.

A5-01 **PWM modulation mode**

Address:	0xA501	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Asynchronous modulation

1: Synchronous modulation

2: Reserved

3: Reserved

Description

Synchronous modulation can be selected for scenarios with stable ratios of carrier frequency to modulated wave.

0: Asynchronous modulation

In this mode, the carrier frequency and signal wave frequency are not synchronized. Usually, the carrier frequency keeps unchanged. When the signal wave frequency changes, the carrier ratio will change accordingly.

1: Synchronous modulation

When the result of the carrier frequency divided by the running frequency is smaller than 10, output current oscillation or large current harmonic waves may occur. To address the problem, set this parameter to 1 (synchronous modulation).

A5-02 **Dead-zone compensation mode**

Address:	0xA502	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Disable

1: Enable

Description

A dead zone must be reserved for the switch signals of the upper and lower switching tubes on the bridge arm and the AC drive. Dead zone compensation can improve the current waveform of motor in low frequency operation.

0: Disable

Dead-zone compensation is disabled.

1: Enable

Dead-zone compensation is enabled.

A5-03 **Random PWM depth**

Address:	0xA503	Effective mode:	/
Min.:	0	Unit:	/
Max.:	10	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0 to 10

Description

If the motor noise is loud, setting A5-03 to a non-zero value can improve the motor noise. The higher the value, the better the effect. However, if the value is too high, the motor control may be affected. Therefore, set this parameter to 1 first during commissioning and then increase it by 1 each time as required.

A5-04 **Fast current limit**

Address:	0xA504	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

This function is used to minimize the possibility of overcurrent faults, ensuring normal operation of the AC drive.

It is recommended to disable this function in hoist applications such as cranes and enable this function in the V/f mode of asynchronous motors. It must be disabled for the applications where synchronous motors are used.

0: Disable fast current limit.

1: Enable fast current limit.

A5-05 **Sampling delay time**

Address:	0xA505	Effective mode:	/
Min.:	1	Unit:	/
Max.:	13	Data type:	UInt16
Default:	5	Change:	Real-time

Value range:

1 to 13

Description

This parameter defines the sampling delay time. It is recommended to keep the default settings.

A5-06 **Undervoltage threshold**

Address:	0xA506	Effective mode:	/
Min.:	150.0	Unit:	V
Max.:	455.0	Data type:	UInt16
Default:	350.0	Change:	Real-time

Value range:

150.0 V to 455.0 V

Description

When the bus voltage is lower than the value of A5-06, the AC drive reports E05.00 to E07.00, and E09.00.

A5-07 **SVC optimization**

Address:	0xA507	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: No optimization

1: Optimization mode 1

2: Optimization mode 2

Description

/

4.20 A6: AI Curve Settings

A6-00 **Minimum input of curve 4**

Address:	0xA600	Effective mode:	/
Min.:	-10.00	Unit:	V
Max.:	A6-02	Data type	Int16
Default:	0.00	Change:	Real-time

Value range:

-10.00 V to A6-02

Description

This parameter defines the x axis of the minimum input point on AI curve 4, that is, the minimum analog input voltage or current.

A6-01 **Percentage corresponding to minimum input of curve 4**

Address:	0xA601	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the y axis of the minimum input point on AI curve 4, that is, the setting value that the AI minimum input corresponds.

A6-02 **Input of curve 4 inflection point 1**

Address:	0xA602	Effective mode:	/
Min.:	A6-00	Unit:	V
Max.:	A6-04	Data type	Int16
Default:	3.00	Change:	Real-time

Value range:

A6-00 to A6-04

Description

Corresponds to the x axis of AI curve 4 inflection 1, that is, the analog input voltage (or maximum analog input current) at inflection 1.

A6-03 **Percentage corresponding to input of curve 4 inflection point 1**

Address:	0xA603	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	30.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

Corresponds to the y axis of AI curve 4 inflection 1, that is, the set value at inflection 1.

A6-04 **Input of curve 4 inflection point 2**

Address:	0xA604	Effective mode:	/
Min.:	A6-02	Unit:	V
Max.:	A6-06	Data type	Int16
Default:	6.00	Change:	Real-time

Value range:

A6-02 to A6-06

Description

This parameter defines the x axis of inflexion 2 on AI curve 4, that is, the analog input voltage or current at inflexion 2.

A6-05 **Percentage corresponding to curve 4 inflection point 2 input**

Address:	0xA605	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	60.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the y axis of inflexion 2 on AI curve 4, that is, the setting value at inflexion 2.

A6-06 **Maximum input of curve 4**

Address:	0xA606	Effective mode:	/
Min.:	A6-04	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	Real-time

Value range:

A6-04 to 10.00 V

Description

Corresponds to the x axis of AI curve 4 maximum input, that is, the maximum analog input voltage (or maximum analog input current).

A6-07 **Percentage corresponding to maximum input of curve 4**

Address:	0xA607	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the y axis of the maximum input point on AI curve 4, that is, the setting value that the AI maximum input corresponds.

A6-08 **Curve 5 minimum input**

Address:	0xA608	Effective mode:	/
Min.:	-10.00	Unit:	V
Max.:	A6-10	Data type	Int16
Default:	-10.00	Change:	Real-time

Value range:

-10.00 V to A6-10

Description

This parameter defines the x axis of the minimum input on AI curve 5, that is, the minimum analog input voltage or current.

A6-09 **Percentage corresponding to minimum input of curve 5**

Address:	0xA609	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	-100.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the y axis of the minimum input point on AI curve 5, that is, the setting value that the AI minimum input corresponds.

A6-10 **Input of curve 5 inflection point 1**

Address:	0xA60A	Effective mode:	/
Min.:	A6-08	Unit:	V
Max.:	A6-12	Data type	Int16
Default:	-3.00	Change:	Real-time

Value range:

A6-08 to A6-12

Description

Corresponds to the x axis of AI curve 5 inflection 1, that is, the analog input voltage (or maximum analog input current) at inflection 1.

A6-11 **Percentage corresponding to input of curve 5 inflection point 1**

Address:	0xA60B	Effective mode:	/

Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	-30.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

Corresponds to the y axis of AI curve 5 inflection 1, that is, the set value at inflection 1.

A6-12 **Input of curve 5 inflection point 2**

Address:	0xA60C	Effective mode:	/
Min.:	A6-10	Unit:	V
Max.:	A6-14	Data type	Int16
Default:	3.00	Change:	Real-time

Value range:

A6-10 to A6-14

Description

This parameter defines the x axis of inflexion 2 on AI curve 5, that is, the analog input voltage or current at inflexion 2.

A6-13 **Percentage corresponding to curve 5 inflection point 2 input**

Address:	0xA60D	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	30.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the y axis of inflexion 2 on AI curve 5, that is, the setting value at inflexion 2.

A6-14 **Curve 5 maximum input**

Address:	0xA60E	Effective mode:	/
Min.:	A6-12	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	Real-time

Value range:

A6-12 to 10.00 V

Description

This parameter defines the x axis of the maximum input point on AI curve 5, that is, the maximum analog input voltage or current.

A6-15 **Percentage corresponding to maximum input of curve 5**

Address:	0xA60F	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the y axis of the maximum input point on AI curve 5, that is, the setting value that the AI maximum input corresponds.

A6-16 **AI1 gain**

Address:	0xA610	Effective mode:	/
Min.:	-10.00	Unit:	/
Max.:	10.00	Data type:	Int16
Default:	1.00	Change:	Real-time

Value range:

-10.00 to 10.00

Description

This parameter defines the AI1 voltage correction gain.

A6-17 **AI1 offset**

Address:	0xA611	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the AI1 voltage offset coefficient.

A6-18 **AI2 gain**

Address:	0xA612	Effective mode:	/
Min.:	-10.00	Unit:	/
Max.:	10.00	Data type:	Int16
Default:	1.00	Change:	Real-time

Value range:

-10.00 to 10.00

Description

This parameter defines the AI2 voltage correction gain.

A6-19 **AI2 offset**

Address:	0xA613	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the AI2 voltage offset coefficient.

A6-20 **AI3 gain**

Address:	0xA614	Effective mode:	/

Min.:	-10.00	Unit:	/
Max.:	10.00	Data type:	Int16
Default:	1.00	Change:	Real-time

Value range:

-10.00 to 10.00

Description

This parameter defines the AI3 voltage correction gain.

A6-21 **AI3 offset**

Address:	0xA615	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

This parameter defines the AI3 voltage offset coefficient.

A6-24 **AI1 jump point**

Address:	0xA618	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:

-100.0% to 100.0%

Description

Used to set the jump point for the AI1 terminal.

When the value input to AI1 is within the specified range from (A6-24 minus A6-25) to (A6-24 plus A6-25), the input value will be set to the value of A6-24 until the value input exceeds the range.

For example, if the range is 40% to 60% and the value of A6–24 is 50%, when the value input to AI1 is 41%, the input value will be set to 50% until the value input exceeds the 40% to 60% range.

A6-25 **AI1 jump amplitude**

Address:	0xA619	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	Real-time

Value range:

0.0% to 100.0%

Description

Used to set the jump amplitude for the AI1 terminal.

A6-26 **Jump point of AI1 input corresponding setting**

Address:	0xA61A	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Used to set the jump point for the AI2 terminal.
When the external AI2 falls within the specified range (calculated as A6-26 minus A6-27 to A6-26 plus A6-27), the AI2 input will jump to the jump point set by A6-26 until the external AI2 exceeds the set range.
For example, if the set range is 40% to 60% and the external AI2 is 41%, the internally processed AI will jump to 50% until the external AI2 input falls outside the 40% to 60% range.

A6-27 **Jump amplitude of AI1 input corresponding setting**

Address:	0xA61B	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	Real-time

Value range:
0.0% to 100.0%
Description
Used to set the jump amplitude for the AI2 terminal.

A6-28 **Jump point set through AI3**

Address:	0xA61C	Effective mode:	/
Min.:	-100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	Real-time

Value range:
-100.0% to 100.0%
Description
Used to set the jump point for the AI3 terminal.
When the external AI3 falls within the specified range (calculated as A6-28 minus A6-29 to A6-28 plus A6-29), the AI3 input will jump to the jump point set by A6-24 until the external AI3 exceeds the set range.
For example, if the set range is 40% to 60% and the external AI3 is 41%, the internally processed AI will jump to 50% until the external AI3 input falls outside the 40% to 60% range.

A6-29 **Jump amplitude of AI1 input corresponding setting**

Address:	0xA61D	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	Real-time

Value range:
0.0% to 100.0%
Description
Used to set the jump amplitude for the AI3 terminal.

4.21 A9 Vector control supplementary parameters

A9-00 **Online auto-tuning of rotor time constant for asynchronous motor**

Address:	0xA900	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Online auto-tuning of rotor time for asynchronous motor can improve the accuracy of field orientation. The default value is recommended.

0: Disable online auto-tuning of rotor time constant for asynchronous motor

1: Enable online auto-tuning of rotor time constant for asynchronous motor

A9-04 **Maximum torque limit coefficient in the field-weakening range for asynchronous motors**

Address:	0xA904	Effective mode:	/
Min.:	30	Unit:	/
Max.:	150	Data type:	UInt16
Default:	80	Change:	Real-time

Value range:

30 to 150

Description

The default value is recommended.

A9-05 **Speed filter of asynchronous motor in SVC mode**

Address:	0xA905	Effective mode:	/
Min.:	5	Unit:	ms
Max.:	32	Data type:	UInt16
Default:	15	Change:	Real-time

Value range:

5 ms to 32 ms

Description

You can increase the value properly in scenarios where the speed fluctuates greatly. The default value is recommended.

A9-06 **Speed feedback handling in speed control of asynchronous motors in SVC mode**

Address:	0xA906	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: No operation

1: Minimum synchronization frequency limited based on load change

2: Fixed current output during low-speed operation

3: Fixed current output during low-speed operation

Description

The default value is recommended.

A9-07 **Magnetic field regulation bandwidth of asynchronous motor in SVC mode**

Address:	0xA907	Effective mode:	/
Min.:	0.0	Unit:	/
Max.:	8.0	Data type:	UInt16
Default:	2.0	Change:	Real-time

Value range:

0.0 to 8.0

Description

The default value is recommended.

A9-08 **Low-speed running current of asynchronous motor in SVC mode**

Address:	0xA908	Effective mode:	/
Min.:	30	Unit:	/
Max.:	170	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:

30 to 170

Description

The default value is recommended.

A9-09 **Switchover frequency for fixed current output of asynchronous motor in SVC mode**

Address:	0xA909	Effective mode:	/
Min.:	2.0	Unit:	Hz
Max.:	100.0	Data type:	UInt16
Default:	3.0	Change:	Real-time

Value range:

2.0 Hz to 100.0 Hz

Description

The default value is recommended.

A9-10 **Speed fluctuation suppression coefficient of asynchronous motor in SVC mode**

Address:	0xA90A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	6	Data type:	UInt16
Default:	3	Change:	Real-time

Value range:

0 to 6

Description

The default value is recommended.

A9-11 **Acceleration/Deceleration time of asynchronous motor in SVC mode**

Address:	0xA90B	Effective mode:	/
Min.:	0.1	Unit:	s

Max.:	3000.0	Data type:	UInt16
Default:	20.0	Change:	Real-time

Value range:

0.1s to 3000.0s

Description

The default value is recommended.

A9-12 **Quick auto-tuning of asynchronous motor stator resistance before startup**

Address:	0xA90C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Disable

1: Enable

Description

Used to enable quick auto-tuning of asynchronous motor stator resistance before startup. The default value is recommended.

A9-13 **Coefficient 1 of quick auto-tuning of stator resistance of the asynchronous motor.**

Address:	0xA90D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	10	Change:	At stop

Value range:

0 to 65535

Description

Coefficient 1 of quick auto-tuning of stator resistance of the asynchronous motor.

A9-14 **Quick auto-tuning of stator resistance coefficient 2 for asynchronous motors**

Address:	0xA90E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	10	Change:	At stop

Value range:

0 to 65535

Description

Coefficient 2 of quick auto-tuning of stator resistance of the asynchronous motor.

A9-15 **Synchronous motor energy-saving control**

Address:	0xA90F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0 to 1

Description

Enable synchronous motor energy-saving control.

A9-17 **Real-time angle of synchronous motor**

Address:	0xA911	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Synchronous motor real-time angle

A9-18 **Initial angle detection of synchronous motor**

Address:	0xA912	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Detected every time upon operation

1: Not detected

2: Detected upon initial power-on

Description

The initial position angle detection can be used to prevent reverse run during start, which may result in noise.

Set F2-25 to 0 in applications where the motor rotor position changes after stop and reverse run is inhibited upon start. In other applications, it can be set to 1 or 2.

0: Detect every time upon operation

Initial angle detection of synchronous motor is enabled every time upon detection. 1: Not detected

2: Detect upon initial operation after power-on

A9-20 **Field weakening mode selection**

Address:	0xA914	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	1	Change:	At stop

Value range:

0: Automatic mode

1: Synchronous motor adjustment mode

2: Synchronous motor hybrid mode

3: Disable

Description

The default value is recommended.

A9-21 **Field weakening gain of synchronous motor**

Address:	0xA915	Effective mode:	/

Min.:	0	Unit:	/
Max.:	50	Data type:	UInt16
Default:	5	Change:	Real-time

Value range:
0 to 50
Description
The default value is recommended.

A9-22 **Margin of upper limit of synchronous motor output voltage**

Address:	0xA916	Effective mode:	/
Min.:	0	Unit:	%
Max.:	50	Data type:	UInt16
Default:	5	Change:	Real-time

Value range:
0% to 50%
Description
The default value is recommended.

A9-23 **Maximum force adjustment gain of synchronous motor**

Address:	0xA917	Effective mode:	/
Min.:	20	Unit:	%
Max.:	300	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:
20% to 300%
Description
The default value is recommended.

A9-24 **Adjustment gain for calculated excitation current of synchronous motor**

Address:	0xA918	Effective mode:	/
Min.:	40	Unit:	%
Max.:	200	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:
40% to 200%
Description
The default value is recommended.

A9-25 **Integral gain for speed estimation of synchronous motor in SVC mode**

Address:	0xA919	Effective mode:	/
Min.:	5	Unit:	/
Max.:	1000	Data type:	UInt16
Default:	30	Change:	Real-time

Value range:
5 to 1000
Description
The default value is recommended.

A9-26 **Proportional gain for speed estimation of synchronous motor in SVC mode**

Address:	0xA91A	Effective mode:	/
Min.:	5	Unit:	/
Max.:	300	Data type:	UInt16
Default:	20	Change:	Real-time

Value range:

5 to 300

Description

The default value is recommended.

A9-27 **Estimated speed filter of synchronous motor in SVC mode**

Address:	0xA91B	Effective mode:	/
Min.:	10	Unit:	/
Max.:	2000	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:

10 to 2000

Description

The default value is recommended.

A9-28 **Minimum carrier frequency of synchronous motor in SVC mode**

Address:	0xA91C	Effective mode:	/
Min.:	0.8	Unit:	/
Max.:	F0-15	Data type	UInt16
Default:	2.0	Change:	Real-time

Value range:

0.8 to F0-15

Description

The default value is recommended.

A9-29 **Low-speed excitation current of synchronous motor in SVC mode**

Address:	0xA91D	Effective mode:	/
Min.:	0	Unit:	%
Max.:	80	Data type:	UInt16
Default:	30	Change:	Real-time

Value range:

0% to 80%

Description

The default value is recommended.

A9-40 **Low-speed closed-loop current function (used in PMVVC)**

Address:	0xA928	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disable

1: Enable

Description

Low-speed closed-loop current function (used in PMVVC)

The default value is recommended.

A9-41 **Closed-loop current at low speed (used in PMVVC)**

Address:	0xA929	Effective mode:	/
Min.:	30	Unit:	/
Max.:	200	Data type:	UInt16
Default:	50	Change:	At stop

Value range:

30 to 200

Description

Closed-loop current at low speed (used in PMVVC)

The default value is recommended.

A9-42 **Oscillation suppression damping coefficient (used in PMVVC)**

Address:	0xA92A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	500	Data type:	UInt16
Default:	100	Change:	Real-time

Value range:

0 to 500

Description

Oscillation suppression damping coefficient (used in PMVVC)

The default value is recommended.

A9-43 **Initial position compensation angle (used in PMVVC)**

Address:	0xA92B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0 to 5

Description

Initial position compensation angle (used in PMVVC)

The default value is recommended.

A9-45 **Synchronous motor low-speed handling**

Address:	0xA92D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value range:

0: Disable

1: Enable

Description

/

A9-46 **Low-speed handling switchover frequency of synchronous motor**

Address:	0xA92E	Effective mode:	/
Min.:	0.01	Unit:	Hz
Max.:	F0-10	Data type	UInt16
Default:	5.00	Change:	At stop

Value range:

0.01 to F0-10

Description

/

A9-47 **Low-speed handling current of synchronous motor**

Address:	0xA92F	Effective mode:	/
Min.:	10	Unit:	/
Max.:	200	Data type:	UInt16
Default:	100	Change:	At stop

Value range:

10 to 200

Description

/

A9-48 **Low-speed handling feedback suppression coefficient of synchronous motor**

Address:	0xA930	Effective mode:	/
Min.:	0	Unit:	/
Max.:	300	Data type:	UInt16
Default:	32	Change:	At stop

Value range:

0 to 300

Description

/

A9-51 **Advanced settings for parameter auto-tuning of asynchronous motor**

Address:	0xA933	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1111	Data type:	UInt16
Default:	111	Change:	At stop

Value range:

Ones: Rotor resistance and leakage inductance DC offset
0: Standard offset
1: Large offset
Tens: Auto-tuning algorithm of new rotor resistance and leakage inductance
0: Disable
1: Enable
Hundreds: New mutual inductance static auto-tuning algorithm
0: Disable
1: Enable
Thousands: Stator resistance auto-tuning algorithm
0: Current open loop
1: Current closed loop

Description

/

A9-52 **Feedback torque selection (displayed in U0-06)**

Address:	0xA934	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	1	Change:	Real-time

Value range:

0: The motoring torque direction is positive and the generating torque direction is negative.
1: The torque direction that is the same as the forward speed direction is positive, and the torque direction that is the same as the reverse speed direction is negative.

Description

/

4.22 B7 Brake control parameters

B7-00 **Target frequency limit**

Address:	0xB700	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	20.00	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:

0.00 Hz to 20.00 Hz

Description

The set frequency must be higher than or equal to the setpoint of this parameter. It does not conflict with the lower limit frequency specified in F0-14. The larger value between the two takes effect.

B7-01 **Brake release frequency (forward)**

Address:	0xB701	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	20.00	Data type:	UInt16

Default:	2.00	Change:	Real-time

Value range:

0.00 Hz to 20.00 Hz

Description

Used to set the output frequency during forward operation before the brake releases completely, namely, the minimum frequency at which the motor can have full torque.

B7-02 **Brake release frequency (reverse)**

Address:	0xB702	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	20.00	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:

0.00 Hz to 20.00 Hz

Description

Used to set the output frequency during reverse operation before the brake releases completely, namely, the minimum frequency at which the motor can have full torque.

B7-03 **Brake release torque (forward)**

Address:	0xB703	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	30.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

Indicates the percentage of the rated motor current/torque during forward operation. The drive output brake release command (output 1 activated, DO function 53) when the drive output value reaches the setpoint.

B7-04 **Brake release torque (reverse)**

Address:	0xB704	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	30.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

Indicates the percentage of the rated motor current/torque during reverse operation. The drive output brake release command (output 1 activated, DO function 53) when the drive output value reaches the setpoint.

B7-05 **Brake release time**

Address:	0xB705	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	5.00	Data type:	UInt16
Default:	0.50	Change:	Real-time

Value range:
0.00s to 5.00s
Description
Indicates the time from the moment the brake receives the brake release command to the moment the brake fully releases. The drive keeps outputting brake release frequency during this period.

B7-06 **Brake applying frequency (forward)**

Address:	0xB706	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	20.00	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:
0.00 Hz to 20.00 Hz
Description
When the output frequency of the drive falls below this value during deceleration after the foward run command is canceled, the drive outputs the brake apply command immediately.

B7-07 **Brake applying frequency (reverse)**

Address:	0xB707	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	20.00	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:
0.00 Hz to 20.00 Hz
Description
When the output frequency of the drive falls below this value during deceleration after the reverse run command is canceled, the drive outputs the brake apply command immediately.

B7-08 **Brake applying delay time**

Address:	0xB708	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	5.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 5.00s
Description
Defines the delay before brake apply command output, which means when conditions for applying the brake are met, the brake apply command will not be outputted unless the set delay elapses.

B7-09 **Brake applying time**

Address:	0xB709	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	5.00	Data type:	UInt16
Default:	0.50	Change:	Real-time

Value range:
0.00s to 5.00s

Description

Sets the time required for the mechanical brake from the start of applying to the end of applying. The AC drive keeps outputting the brake apply frequency throughout the whole process.

B7-10 **Excitation time at stop**

Address:	0xB70A	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	500.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:

0.00s to 500.00s

Description

Used to set the hold time of the excitation state after the AC drive stops. In the excitation hold stage, the AC drive provides zero speed output and keeps the excitation current. If the AC drive receives an operation command during this period, it can skip the pre-excitation stage and release the brake quickly.

B7-11 **Restart waiting time**

Address:	0xB70B	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	15.00	Data type:	UInt16
Default:	0.30	Change:	Real-time

Value range:

0.00s to 15.00s

Description

Used to set the delay time that the AC drive must wait before a restart every time it stops.

B7-12 **Startup direction**

Address:	0xB70C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:

0: Same as the running direction

1: Always forward

Description

Used to set the output torque direction of the AC drive within the brake release time.

B7-13 **Pre-torque source**

Address:	0xB70D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2	Data type:	UInt16
Default:	2	Change:	Real-time

Value range:

0: Digital setting

1: Pre-torque

2: Disable

Description

Used to set the pre-torque source.

0: Digital setting

The target torque before the output of the brake release frequency is set by B7-14 and B7-15.

1: Pre-torque

The target torque before the output of the brake release frequency is the output torque recorded before the last stop.

2: Disable

No torque before the output of the brake release frequency is output.

B7-14 **Pre-torque setting value (forward)**

Address:	0xB70E	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	30.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

Indicates the target torque before the output of the brake release frequency during forward running.

B7-15 **Pre-torque setting value (reverse)**

Address:	0xB70F	Effective mode:	/
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	30.0	Change:	Real-time

Value range:

0.0% to 200.0%

Description

Indicates the target torque before the output of the brake release frequency during reverse running.

B7-16 **Current acceleration/deceleration time**

Address:	0xB710	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	5.00	Data type:	UInt16
Default:	0.50	Change:	Real-time

Value range:

0.00s to 5.00s

Description

Used to set the acceleration/deceleration time in torque control.

B7-17 **Reverse running command**

Address:	0xB711	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Real-time

Value range:
0: Disable
1: Enable (applicable to FVC) The AC drive does not support FVC; therefore, the value 1 is invalid.
Description
Used to set whether reverse commands (or frequencies) are allowed during operation in the brake mode.
0: When it is set to 0, the reverse commands are not allowed during operation in the brake mode.
1: The value 1 is invalid.

B7-18 **Brake release timeout period**

Address:	0xB712	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	5.00	Data type:	UInt16
Default:	2.00	Change:	Real-time

Value range:
0.00s to 5.00s
Description
The drive reports the brake release fault E91.xx when the current/torque brake release conditions are still not met though the drive output frequency reaches the brake release frequency and the time defined by this parameter elapses.

B7-21 **Frequency exception detection cycle**

Address:	0xB715	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	1.00	Data type:	UInt16
Default:	0.50	Change:	Real-time

Value range:
0.00s to 1.00s
Description
When the operating frequency is opposite to the set frequency direction and such state lasts for the time defined by this parameter, frequency fault E37.00 can be reported.

B7-22 **Frequency following error**

Address:	0xB716	Effective mode:	/
Min.:	0	Unit:	%
Max.:	30	Data type:	UInt16
Default:	20	Change:	Real-time

Value range:
0% to 30%
Description
When the difference between the running frequency and the frequency reference is greater than the value of this parameter for a period longer than the time defined by B7-23, the AC drive reports a frequency following fault (E38.00).

B7-23 **Frequency following detection cycle**

Address:	0xB717	Effective mode:	/
Min.:	0.00	Unit:	s

Max.:	1.00	Data type:	UInt16
Default:	0.50	Change:	Real-time

Value range:
0.00s to 1.00s
Description
When the difference between the running frequency and the frequency reference is greater than the value of this parameter for a period longer than the time defined by B7-23, the AC drive reports a frequency following fault (E38.00).

B7-24 **Detection time for torque limit reach**

Address:	0xB718	Effective mode:	/
Min.:	0.00	Unit:	s
Max.:	5.00	Data type:	UInt16
Default:	0.00	Change:	Real-time

Value range:
0.00s to 5.00s
Description
When the torque reaches the limit and remains so for longer than the time defined by B7-24 (Torque limit reach detection cycle), the AC drive reports a torque limit fault (E36.00).

4.23 U0 General monitoring parameters

U0-00 **Operating frequency**

Address:	0x7000	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:
0.00 Hz to 655.35 Hz
Description
Indicates the running frequency (Hz) of the AC drive.

U0-01 **Frequency reference**

Address:	0x7001	Effective mode:	/
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:
0.00 Hz to 655.35 Hz
Description
Indicates the frequency reference (Hz) of the AC drive.

U0-02 **Bus voltage**

Address:	0x7002	Effective mode:	/
Min.:	0.0	Unit:	V

Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
0.0 V to 6553.5 V
Description
Indicates the bus voltage (V) of the AC drive.

U0-03 **Output voltage**

Address:	0x7003	Effective mode:	/
Min.:	0	Unit:	V
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 65535 V
Description
Indicates the output voltage (V) of the AC drive.

U0-04 **Output current**

Address:	0x7004	Effective mode:	/
Min.:	0.00	Unit:	A
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:
0.00 A to 655.35 A
Description
Indicates the output current (A) of the AC drive.

U0-05 **Output power**

Address:	0x7005	Effective mode:	/
Min.:	-3276.8	Unit:	kW
Max.:	3276.7	Data type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:
-3276.8 kW to 3276.7 kW
Description
Indicates the output power (kW) of the AC drive.

U0-06 **Output torque**

Address:	0x7006	Effective mode:	/
Min.:	-3276.8	Unit:	%
Max.:	3276.7	Data type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:
-3276.8% to 3276.7%
Description
Indicates the output torque (%) of the AC drive.

U0-07 **DI input state**

Address:	0x7007	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Used to display the DI terminal function input state of the AC drive.

bit0: DI1
bit1: DI2
bit2: DI3
bit3: DI4
bit4: DI5
bit5: DI6
bit6: DI7
bit7: DI8
bit8: VDI1
bit9: VDI2
bit10: VDI3
bit11: VDI4
bit12: VDI5
bit13: AI1-DI
bit14: AI2-DI
bit15: AI3-DI

U0-08 **RO/DO output state**

Address:	0x7008	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0x1F	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0x1F

Description

Used to display the DO/RO terminal output state of the AC drive.

Bit 0: DO1/RO1
Bit 1: DO2/RO2
Bit 2: DO3/RO3
Bit 3: DO4/RO4
Bit 4: DO5/RO5

U0-09 **AI1 voltage**

Address:	0x7009	Effective mode:	/
Min.:	-327.68	Unit:	V
Max.:	327.67	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value Range:

-327.68 V to 327.67 V

Description

Indicates the voltage (V) of the current AI1.

U0-10 **AI2 voltage**

Address:	0x700A	Effective mode:	/
Min.:	-327.68	Unit:	V
Max.:	327.67	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value Range:

-327.68 V to 327.67 V

Description

Indicates the voltage (V) of the current AI2.

U0-11 **AI3 voltage**

Address:	0x700B	Effective mode:	/
Min.:	-327.68	Unit:	V
Max.:	327.67	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value Range:

-327.68 V to 327.67 V

Description

Indicates the voltage (V) of the current AI3.

U0-12 **Counting value**

Address:	0x700C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

Displays the counting value in the counting function.

U0-13 **Length value**

Address:	0x700D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

Displays the length value in the fixed-length function.

U0-14 **Load speed display**

Address:	0x700E	Effective mode:	/
Min.:	0	Unit:	/

Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
If the AC drive is in the stop state, the load speed equals to the set frequency x load speed display coefficient (defined by F8-62).
If the AC drive is in the stop state, the load speed equals to the running frequency x load speed display coefficient (defined by F8-62).

U0-15 **PID reference**

Address:	0x700F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
PID reference = PID reference (percentage) x FA-04 (PID reference feedback range)

U0-16 **PID feedback**

Address:	0x7010	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
PID feedback = PID feedback (percentage) x FA-04 (PID reference feedback range)

U0-17 **PLC stage**

Address:	0x7011	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Displays current simple PLC stage, which supports 16 speeds.

U0-19 **Feedback speed**

Address:	0x7013	Effective mode:	/
Min.:	-327.68	Unit:	Hz
Max.:	327.67	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:
-327.68 Hz to 327.67 Hz

Description

It displays the feedback speed (Hz).

U0-20 **Remaining running time**

Address:	0x7014	Effective mode:	/
Min.:	0.0	Unit:	min
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:

0.0 min to 6553.5 min

Description

Displays the remaining running time during timed running.

U0-21 **AI1 gain and voltage after offset**

Address:	0x7015	Effective mode:	/
Min.:	-32.768	Unit:	V
Max.:	32.767	Data type:	Int16
Default:	0.000	Change:	Unchangeable

Value range:

-32.768 V to 32.767 V

Description

Displays the voltage (V) of AI1 after gain and offset.

U0-22 **AI2 gain and voltage after offset**

Address:	0x7016	Effective mode:	/
Min.:	-32.768	Unit:	V
Max.:	32.767	Data type:	Int16
Default:	0.000	Change:	Unchangeable

Value range:

-32.768 V to 32.767 V

Description

Displays the voltage (V) of AI2 after gain and offset.

U0-23 **AI3 gain and voltage after offset**

Address:	0x7017	Effective mode:	/
Min.:	-32.768	Unit:	V
Max.:	32.767	Data type:	Int16
Default:	0.000	Change:	Unchangeable

Value range:

-32.768 V to 32.767 V

Description

Displays the voltage (V) of AI3 after gain and offset.

U0-24 **Linear speed**

Address:	0x7018	Effective mode:	/
Min.:	0	Unit:	m/min

Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 m/min to 65535 m/min
Description
Display linear speed.

U0-25 **Current power-on time**

Address:	0x7019	Effective mode:	/
Min.:	0	Unit:	min
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 min to 65535 min
Description
Indicates the interval (min) from the current power-on time to present.

U0-26 **Current operating time**

Address:	0x701A	Effective mode:	/
Min.:	0.0	Unit:	min
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:
0.0 min to 6553.5 min
Description
Indicates the interval (min) from the current power-on time to present.

U0-28 **Communication setpoint**

Address:	0x701C	Effective mode:	/
Min.:	-327.68	Unit:	%
Max.:	327.67	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:
-327.68% to 327.67%
Description
Displays data written through the communication address 0x1000. 100.00% corresponds to the maximum frequency.

U0-30 **Display of main frequency X**

Address:	0x701E	Effective mode:	/
Min.:	-327.68	Unit:	Hz
Max.:	327.67	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:
-327.68 Hz to 327.67 Hz
Description
Displays the main frequency (Hz) of the AC drive.

U0-31 **Display of auxiliary frequency Y**

Address:	0x701F	Effective mode:	/
Min.:	-327.68	Unit:	Hz
Max.:	327.67	Data type:	Int16
Default:	0.00	Change:	Unchangeable

Value range:

-327.68 Hz to 327.67 Hz

Description

Indicates the auxiliary frequency (Hz) of the AC drive.

U0-33 **Synchronous motor rotor position**

Address:	0x7021	Effective mode:	/
Min.:	0.0	Unit:	°
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:

0.0°to 6553.5°

Description

Displays synchronous motor rotor position.

U0-35 **Target torque**

Address:	0x7023	Effective mode:	/
Min.:	-327.68	Unit:	%
Max.:	327.7	Data type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:

-327.68% to 327.67%

Description

When the AC drive is in the speed control mode, this parameter displays the current torque upper limit reference, which is a percentage of the rated motor torque.

When the AC drive is in the speed control mode, this parameter displays displays the current target torque, which is a percentage of the rated motor torque.

U0-37 **Power factor angle**

Address:	0x7025	Effective mode:	/
Min.:	-3276.8	Unit:	°
Max.:	3276.7	Data type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:

-3276.8° to 3276.7°

Description

This parameter indicates the current power factor angle.

U0-39 **Target voltage upon V/f separation**

Address:	0x7027	Effective mode:	/
Min.:	0	Unit:	V

Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 65535 V
Description
Displays the target output voltage in the V/f separation state.

U0-40 **Output voltage upon V/f separation**

Address:	0x7028	Effective mode:	/
Min.:	0	Unit:	V
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 65535 V
Description
Displays the actual output voltage in the V/f separation state.

U0-41 **DI input state display**

Address:	0x7029	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Displays the DI input state with a single LED. When all inputs are inactive, it displays five "-".

U0-42 **DO/RO output state display**

Address:	0x702A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Displays the DO input state with a single LED. When all inputs are inactive, it displays five "-".

U0-43 **DI function state display 1**

Address:	0x702B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description

Displays the DI function with a single LED. When the DI is assigned with the function and DI input is active, the corresponding LED is ON; when the DI inputs are inactive, the LEDs are OFF.
This parameter is applicable to DI function 1 to function 40.

U0-44 **DI function state display 2**

Address:	0x702C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Displays the DI function with a single LED. When the DI is assigned with the function and DI input is active, the corresponding LED is ON; when the DI inputs are inactive, the LEDs are OFF.
This parameter is applicable to DI function 41 to function 80.

U0-45 **Fault code**

Address:	0x702D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the fault code of the AC drive.

U0-46 **Fault subcode**

Address:	0x702E	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the fault subcode of the AC drive.

U0-47 **Drive unit temperature**

Address:	0x702F	Effective mode:	/
Min.:	-32768	Unit:	°C
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:
-32768°C to 32767°C
Description
Displays the temperature of the drive unit heatsink.

U0-48 **Voltage received by PTC channel 1**

Address:	0x7030	Effective mode:	/
Min.:	-32.768	Unit:	V
Max.:	32.767	Data type:	Int16
Default:	0.000	Change:	Unchangeable

Value range:

-32.768 V to 32.767 V

Description

Indicates the voltage (V) received from the power supply unit when AI1 is used for temperature sensor input.

U0-49 **Voltage received by PTC channel 2**

Address:	0x7031	Effective mode:	/
Min.:	-32.768	Unit:	V
Max.:	32.767	Data type:	Int16
Default:	0.000	Change:	Unchangeable

Value range:

-32.768 V to 32.767 V

Description

Indicates the voltage (V) received from the power supply unit when AI2 is used for temperature sensor input.

U0-50 **Voltage received by PTC channel 3**

Address:	0x7032	Effective mode:	/
Min.:	-32.768	Unit:	V
Max.:	32.767	Data type:	Int16
Default:	0.000	Change:	Unchangeable

Value range:

-32.768 V to 32.767 V

Description

Indicates the voltage (V) received from the power supply unit when AI3 is used for temperature sensor input.

U0-51 **PTC1 temperature**

Address:	0x7033	Effective mode:	/
Min.:	-32768	Unit:	°C
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32768°C to 32767°C

Description

Indicates the temperature (°C) calculated when AI1 is used for temperature sensor input.

U0-52 **PTC2 temperature**

Address:	0x7034	Effective mode:	/
Min.:	-32768	Unit:	°C

Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:
-32768°C to 32767°C
Description
Indicates the temperature (°C) calculated when AI2 is used for temperature sensor input.

U0-53 PTC3 temperature

Address:	0x7035	Effective mode:	/
Min.:	-32768	Unit:	°C
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:
-32768°C to 32767°C
Description
Indicates the temperature (°C) calculated when AI3 is used for temperature sensor input.

U0-54 Motor velocity:

Address:	0x7036	Effective mode:	/
Min.:	0	Unit:	RPM
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0rpm to 65535rpm
Description
Indicates the current motor speed (rpm).

U0-55 Automatically-allocated station number

Address:	0x7037	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the station number assigned automatically.

U0-56 Auto-tuned axis type

Address:	0x7038	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 3
Description

Indicates the axis type identified by the AC drive.
1: Single axis
2: Axis 1 of dual-axis drive unit
3: Axis 2 of dual-axis drive unit

U0-61 **AC drive operation status word 1**

Address:	0x703D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 5
Description
AC drive operation status word 1
1: Forward running
2: Reverse running
3: Stopped
4: Motor auto-tuning
5: Faulty

U0-64 **Special protocol status word**

Address:	0x7040	Effective mode:	/
Min.:	0	Unit:	/
Max.:	2047	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 2047
Description
AC drive operation status word 2
Bit 0 to Bit 1: Running status
Bit 2: Whether jog enabled
Bit 3 to Bit 4: Running direction state
Bit 5 to Bit 7: Reserved
Bit 8: Main frequency set by communication
Bit 9: Main frequency set by AI
Bit 10: Command source
Bit 11 to Bit 15: Reserved

U0-68 **AC drive operation status word 2**

Address:	0x7044	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
AC drive operation status word 2
Bit 0: Running status

Bit 1: Running direction (forward/reverse)
Bit 2: Whether a fault occurs
Bit 3: Whether output frequency reaches the frequency reference
Bit 4: Normal communication flag
Bit 5 to Bit 7: Reserved
Bits 8 to Bit 15: Fault codes

U0-78 **AC drive rated current**

Address:	0x704E	Effective mode:	/
Min.:	0.0	Unit:	A
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:
0.0 A to 6553.5 A
Description
Indicates the rated current (A) of the AC drive.

U0-79 **AC drive power**

Address:	0x704F	Effective mode:	/
Min.:	0.0	Unit:	kW
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value range:
0.0 kW to 6553.5 kW
Description
Indicates the rated power (kW) of the AC drive.

U0-81 **Local LED state**

Address:	0x7051	Effective mode:	/
Min.:	0	Unit:	/
Max.:	3	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 3
Description
Indicates the LED status of the drive unit. (0: OFF, 1: ON)
Bit 0: Running indicator
Bit 1: Fault indicator

U0-82 **Three-phase output phase A current**

Address:	0x7052	Effective mode:	/
Min.:	0.00	Unit:	A
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:
0.00 A to 655.35 A
Description
Single-phase output current A (A) of the AC drive

U0-83 **Three-phase output phase B current**

Address:	0x7053	Effective mode:	/
Min.:	0.00	Unit:	A
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00 A to 655.35 A

Description

Single-phase output current B (A) of the AC drive

U0-84 **Three-phase output phase C current**

Address:	0x7054	Effective mode:	/
Min.:	0.00	Unit:	A
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value range:

0.00 A to 655.35 A

Description

Single-phase output current C (A) of the AC drive

U0-88 **Alarm code**

Address:	0x7058	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the alarm code of the AC drive.

U0-89 **Alarm subcode**

Address:	0x7059	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the alarm subcode of the AC drive.

U0-90 **Percentage of preset fan speed**

Address:	0x705A	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the current speed of the fan.

U0-91 **PTC1 mode**

Address:	0x705B	Effective mode:	/
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 5

Description

Indicates the AI1 input type.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U0-92 **PTC2 mode**

Address:	0x705C	Effective mode:	/
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 5

Description

Indicates the AI2 input type.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U0-93 **PTC3 mode**

Address:	0x705D	Effective mode:	/
Min.:	0	Unit:	/
Max.:	5	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 5

Description

Indicates the AI3 input type.
0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC130 input

U0-95 **STO initialization flag**

Address:	0x705F	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 1
Description
Indicates the STO initialization flag.
0: Initialization failed
1: Initialization succeeded

U0-96 **STO status word monitoring**

Address:	0x7060	Effective mode:	/
Min.:	0	Unit:	/
Max.:	15	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 15
Description
It displays the monitored STO status word.
Bit 0: STO1 disconnection flag. 1: STO1 disconnected; 0: STO1 connected
Bit 1: STO2 disconnection flag. 1: STO2 disconnected; 0: STO2 connected
Bit 2: DO output flag (active when the DO is assigned with function 38) 1: DO output; 0: DO not output
Bit 3: Automatic reset of STO status 1: Automatic reset of STO status is active. 0: Automatic reset of STO status is inactive.

U0-97 **STO model**

Address:	0x7061	Effective mode:	/
Min.:	0	Unit:	/
Max.:	1	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 1
Description
Displays the STO model.
0: Non-STO model
1: STO model

U0-98 **STO AD sampling value**

Address:	0x7062	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AD value of the supply voltage of the STO circuit.

U0-99 **STO internal execution flag**

Address:	0x7063	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the execution flag of the internal detection program.

4.24 U3: 73xxH Address Communication Data Monitoring Parameters

U3-16 **Frequency set by communication**

Address:	0x7310	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the frequency set through communication. Range:
0 to 65535

U3-17 **Communication control command**

Address:	0x7311	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the control command written through communication.
0: Stop according to F6-10
1: Forward running
2: Reverse running
3: Forward jog
4: Reverse jog
5: Coast to stop
6: Decelerate to stop
7: Fault reset

U3-18 **Communication control DO/RO**

Address:	0x7312	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description
Indicates the control DO/RO value written through communication.
Bit 0: DO1/RO1
Bit 1: DO2/RO2
Bit 2: DO3/RO3
Bit 3: DO4/RO4
Bit 4: DO5/RO5

4.25 U5 I/O Data Monitoring Parameters

U5-00 **Power supply unit DI - hardware resource**

Address:	0x7500	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the DI resource of the power supply unit received by the AC drive.

U5-01 **Power supply unit - DO/RO hardware resource**

Address:	0x7501	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the DO/RO resource of the power supply unit received by the AC drive.

U5-02 **Power supply unit - AI hardware resource**

Address:	0x7502	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the AI resource of the power supply unit received by the AC drive.

U5-04 **Expansion card 1 - DI hardware resource**

Address:	0x7504	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the DI source of extension card 1 received by the AC drive.

U5-05 **Expansion card 1 - DO/RO hardware resource**

Address:	0x7505	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the DO/RO resource of extension card 1 received by the AC drive.

U5-06 **Expansion card 1 - AI hardware resource**

Address:	0x7506	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the AI resource of extension card 1 received by the AC drive.

U5-08 **Expansion card 2 - DI hardware resource**

Address:	0x7508	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the DI source of extension card 2 received by the AC drive.

U5-09 **Expansion card 2 - DO/RO hardware resource**

Address:	0x7509	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the DO/RO resource of extension card 2 received by the AC drive.

U5-10 **Expansion card 2 - AI hardware resource**

Address:	0x750A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the AI source of extension card 2 received by the AC drive.

U5-12 **Expansion card 3 - DI hardware resource**

Address:	0x750C	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the DI source of extension card 3 received by the AC drive.

U5-13 **Expansion card 3 - DO/RO hardware resource**

Address:	0x750D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the DO/RO resource of extension card 3 received by the AC drive.

U5-14 **Expansion card 3 - AI hardware resource**

Address:	0x750E	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the AI source of extension card 3 received by the AC drive.

U5-20 **Power supply unit - DI mapping relation**

Address:	0x7514	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type:	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Indicates the mapping relation between the AC drive and DI on the power supply unit.

U5-21 **Power supply unit - DO/RO mapping relation**

Address:	0x7515	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the mapping relation between the AC drive and DO/RO on the power supply unit.

U5-22 **Power supply unit - AI mapping**

Address:	0x7516	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Indicates the mapping relation between the AC drive and AI on the power supply unit.

U5-24 **Expansion card 1 - DI mapping relation**

Address:	0x7518	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:
0x0 to 0xFFFF
Description
Indicates the mapping relation between the AC drive and DI on expansion card 1.

U5-25 **Expansion card 1 - DO/RO mapping relation**

Address:	0x7519	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the mapping relation between the AC drive and DO/RO on expansion card 1.

U5-26 **Expansion card 1 - AI mapping relation**

Address:	0x751A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value range:

0x0 to 0xFFFF

Description

Indicates the mapping relation between the AC drive and AI on expansion card 1.

U5-28 **Expansion card 2 - DI mapping relation**

Address:	0x751C	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

/

U5-29 **Expansion card 2 - DO/RO mapping relation**

Address:	0x751D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the mapping relation between the AC drive and DO/RO on expansion card 2.

U5-30 **Expansion card 2 - AI mapping relation**

Address:	0x751E	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the mapping relation between the AC drive and AI on expansion card 2.

U5-32 **Expansion card 3 - DI mapping relation**

Address:	0x7520	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the mapping relation between the AC drive and DI on expansion card 3.

U5-33 **Expansion card 3 - DO/RO mapping relation**

Address:	0x7521	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the mapping relation between the AC drive and DO/RO on expansion card 3.

U5-34 **Expansion card 3 - AI mapping relation**

Address:	0x7522	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the mapping relation between the AC drive and AI on expansion card 3.

U5-40 **Power supply unit - DI data**

Address:	0x7528	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:

0x0 to 0xFFFF

Description

Indicates the DI triggering state of the power supply unit received by the AC drive.

U5-41 **Expansion card 1 - DI data**

Address:	0x7529	Effective mode:	/

Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the DI triggering state of extension card 1 received by the AC drive.

U5-42 **Expansion card 2 - DI data**

Address:	0x752A	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the DI triggering state of expansion card 2 received by the AC drive.

U5-43 **Expansion card 3 - DI data**

Address:	0x752B	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the DI triggering state of expansion card 3 received by the AC drive.

U5-45 **Drive unit DO/RO data**

Address:	0x752D	Effective mode:	/
Min.:	0x0	Unit:	/
Max.:	0xFFFF	Data type	UInt16
Default:	0x0	Change:	Unchangeable

Value Range:
0x0 to 0xFFFF
Description
Indicates the DO/RO data sent by the AC drive.

U5-50 **Power supply unit - AI1 function**

Address:	0x7532	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:
0 to 65535
Description

Indicates the AI1 function of the power supply unit received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U5-51 **Power supply unit - AI2 function**

Address:	0x7533	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AI2 function of the power supply unit received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U5-52 **Expansion card 1 - AI1 function**

Address:	0x7534	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AI1 function of expansion card 1 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U5-53 **Expansion card 1 - AI2 function**

Address:	0x7535	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AI2 function of expansion card 1 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U5-54 **Expansion card 2 - AI1 function**

Address:	0x7536	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AI1 function of expansion card 2 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC131 input

U5-55 **Expansion card 2 - AI2 function**

Address:	0x7537	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AI2 function of expansion card 2 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC131 input

U5-56 **Expansion card 3 - AI1 function**

Address:	0x7538	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AI1 function of expansion card 3 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC132 input

U5-57 Expansion card 3 - AI2 function

Address:	0x7539	Effective mode:	/
Min.:	0	Unit:	/
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value range:

0 to 65535

Description

Indicates the AI2 function of expansion card 3 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC132 input

U5-60 Power supply unit - AI1 voltage

Address:	0x753C	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI1 voltage of the power supply unit received by the AC drive.

U5-61 Power supply unit - AI2 voltage

Address:	0x753D	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI2 voltage of the power supply unit received by the AC drive.

U5-62 **Expansion card 1 - AI1 voltage**

Address:	0x753E	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI1 voltage of extension card 1 received by the AC drive.

U5-63 **Expansion card 1 - AI2 voltage**

Address:	0x753F	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI2 voltage of extension card 1 received by the AC drive.

U5-64 **Expansion card 2 - AI1 voltage**

Address:	0x7540	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI1 voltage of expansion card 2 received by the AC drive.

U5-65 **Expansion card 2 - AI2 voltage**

Address:	0x7541	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI2 voltage of expansion card 2 received by the AC drive.

U5-66 **Expansion card 3 - AI1 voltage**

Address:	0x7542	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI1 voltage of expansion card 3 received by the AC drive.

U5-67 **Expansion card 3 - AI2 voltage**

Address:	0x7543	Effective mode:	/
Min.:	-32767	Unit:	/
Max.:	32767	Data type:	Int16
Default:	0	Change:	Unchangeable

Value range:

-32767 to 32767

Description

Indicates the AI2 voltage of expansion card 3 received by the AC drive.

5 Commissioning Tools

5.1 LED Operating Panel

5.1.1 Operating Panel

The LED operating panel is used for viewing the running status, setting parameters, and viewing fault information. The following figure shows the operating panel.

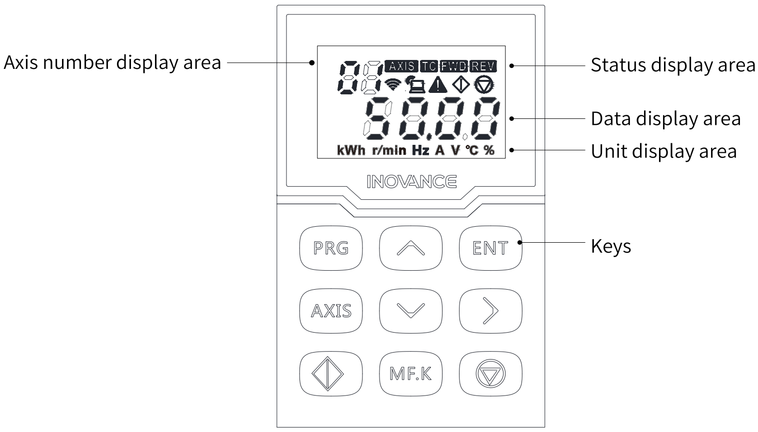
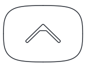
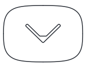
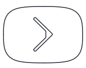
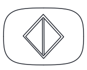
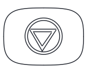


Figure 5-1 Operating panel

Key Descriptions

Table 5–1 Key Descriptions

Key	Name	Function
PRG	Programming key	Return to the previous interface; Enter level 1 menu.
ENT	OK key	Enter the next interface; Confirm the mode, parameter, and value.
AXIS	Axis switchover key	Used to switch between multiple axes. The power supply unit is selected by default.
	Increment key	Change (increase) parameter No. and settings.
	DOWN key	Change (decrease) parameter No. and settings.
	SHIFT key	Used to shift rightwards to select parameters to be displayed in cycle. Shifts the bit to modify to the right when setting the parameter number or value.
MF.K	Multi-function key	Switch functions according to the setting of F7-01.
	Operation key	Press this key to start the AC drive when the operating panel control mode is used.
	Stop/Reset	Stop the running state. When the AC drive is faulty, press this key to reset it.

Status indicator

The status indicators are on the drive unit.

Table 5–2 Description of indicators on the drive unit

Indicator Code	Indicator Name	Status
PWR (yellow)	Power supply indicator	Steady ON: powered on OFF: powered off
RUN (green)	Running state indicator	Steady ON: running OFF: stopped Blinking: operated by the operating panel of the power supply unit
ERR (red)	Alarm indicator	Steady ON: fault OFF: normal Blinking: alarm

Data display

- Axis number display area
  Two-digit LED display is used, with 0 indicating the power supply unit and 1 to 8 indicating the drive units.
- Status display area

Table 5–3 Status icons

Icon	Parameter Name	Function Description	Status
AXIS	Axis (AXIS)	Axis switchover key	/
TC	Torque control (TC)	Torque control mode	Steady ON: torque control mode Blinking: Auto-tuning
FWD	FWD	Forward running	/
REV	REV	Reverse running	/
	Wi-Fi	Wi-Fi connection mode	/
	Remote	Remote connection mode	Steady ON: terminal control as command source Blinking: communication control as command source
	Alarm	Alarm or fault	Steady ON: faulty Blinking: alarm
	Run	Running status	/
	Stop	Stop status	/

- Data display area
  The operating panel provides 5-digit LED display to indicate the frequency reference, output frequency, various monitoring data, and fault codes.

Table 5–4 LED display and actual data

LED Display	Actual Data	LED Display	Equivalent	LED Display	Equivalent	LED Display	Equivalent
0	0	8	8	H	H	U	U
1	1	9	9	c	c	y	y
2	2	A	A	L	L	T	T
3	3	b	B	n	n	u	u
4	4	C	C	N	N	-	/
5	5	d	D	o	o	/	/
6	6	E	E	P	P	/	/
7	7	F	F	r	r	/	/

Note

To avoid the confusion between the uppercase letters B and D and the numbers 8 and 0, the lower case letters b and d are adopted on the LEDs.

- Unit display area

Table 5–5 Unit description

Unit	Description
kWh	Energy unit
r/min	Speed unit
Hz	Frequency unit
A	Current unit
V	Voltage unit
°C	Temperature unit
%	Percentage

5.1.2 Parameters

Table 5–6 Parameters related to the operating panel

Parameter	Parameter Name	Default	Value Range	Descriptions
F7-01	MF.K key function	0	0: MF.K key disabled 1: Switchover between operating panel control and remote command control (terminal or communication) 2: Switchover between forward and reverse running 3: Forward jog 4: Reverse jog	The MF.K key is a multi-functional key. This parameter is used to set the function of the MF.K key. 0: MF.K key disabled The key has no function. 1: Switchover between operating panel control and remote command control (terminal or communication) If F0-02 is set to 0 (operating panel), pressing the MF.K key produces no effect. If F0-02 is set to 1 (terminal), pressing the MF.K key can implement switchover between terminal control and operating panel control. If F0-02 is set to 2 (communication), pressing the MF.K key can implement switchover between communication control and operating panel control. 2: Switchover between forward and reverse running You can change the direction of the frequency reference by using the MF.K key. This function is valid only when the command source is set to the operating panel. 3: Forward jog Pressing the MF.K key implements forward jogging (FJOG). This function is valid only when the command source is set to the operating panel or communication control and when you long press the key. 4: Reverse jog You can perform reverse JOG (FJOG) by using the MF.K key. This function is valid only when the command source is set to the operating panel or communication control and when you long press the key.
F7-02	STOP key function	1	0: Valid only under operating panel control 1: Valid in all operating modes	The STOP key on the operating panel is used for stop/ reset. This parameter is used for setting the function of this key. 0: Only valid under operating panel control This key is only valid under operating panel control. 1: Valid in all operating modes This key is valid in all operation modes.

Parameter	Parameter Name	Default	Value Range	Descriptions
F7-03	Parameter 1 displayed on LED operating panel during operation	0x1F	bit0: Running frequency (Hz) bit1: Frequency reference (Hz) bit2: Bus voltage (V) bit3: Output voltage (V) bit4: Output current (A) bit5: Output power (kW) bit6: Output torque (%) bit7: DI state bit8: DO status bit9: AI1 voltage (V) bit10: AI2 voltage (V) bit11: AI3 voltage (V) bit12: Count value bit13: Length value bit14: Load speed display bit15: PID reference	If a parameter needs to be displayed during operation, set its corresponding bit to 1. After converting this binary number to a hexadecimal number, set it in F7-03. For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H.
F7-04	Parameter 2 displayed on LED operating panel during operation	0	bit0: PID feedback bit1: PLC stage bit2: Reserved bit3: Running frequency 2 (Hz) bit4: Remaining running time bit5: Reserved bit6: Reserved bit7: Reserved bit8: Linear speed Bit 9: Current power-on time (min) Bit 10: Current running time (min) bit11: Reserved bit12: Communication setting value bit13: Reserved bit14: Main frequency X display bit15: Auxiliary frequency Y display	If a parameter needs to be displayed during running, set its corresponding bit to 1. After converting the binary number to a hexadecimal number, set F7-04 to the hexadecimal number. For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H.

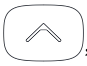
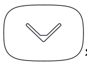
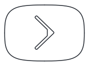
Parameter	Parameter Name	Default	Value Range	Descriptions
F7-05	Parameter displayed on the LED operating panel upon stop	0x33	bit0: Frequency reference (Hz) bit1: Bus voltage (V) bit2: DI state bit3: DO status bit4: AI1 voltage (V) bit5: AI2 voltage (V) bit6: AI3 voltage (V) bit7: Count value bit8: Length value bit9: PLC stage bit10: Load speed display bit11: PID reference bit12: Reserved	If a parameter needs to be displayed when the AC drive stops, set its corresponding bit to 1. After converting the binary number to a hexadecimal number, set it in F7-05. For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H.
FP-01	Parameters initialization	1	0: No operation 1: Restore default settings mode 1 2: Clear records 4: Back up current parameters 501: Restore user backup parameters 503: Restore to default settings mode 2	This parameter is used to set the action upon parameter initialization of the AC drive. 0: No operation The AC drive does not perform any operation. 1: Restore to default settings mode 1 Parameters of the AC drive are restored to factory settings except motor parameters, frequency reference decimal (F0-22), software version, fault records, cumulative running time (F7-09), cumulative power-on time (F7-12), cumulative power generation (F7-13), cumulative power consumption (F7-14), and drive unit heatsink temperature (F7–07). 2: Clear records The error records, F7-09 (Accumulative running time), F7-12 (Accumulative power-on time), F7-13 (Accumulative power generation), and F7-14 (Accumulative power consumption) are cleared. 4: Back up current user parameters The current user-set parameters are backed up. 501: Restore user parameters from backup Parameters backed up by setting FP-01 to 4 are restored. 503: All the parameters are restored to factory settings (except Group FF parameters, FP-00, and FP-01).

Parameter	Parameter Name	Default	Value Range	Descriptions
FP-02	Function parameter display	111	Ones position: Group U 0: Hidden 1: Displayed Tens position: Group A 0: Hidden 1: Displayed Hundreds position: Group B 0: Hidden 1: Displayed Thousands position: Group C 0: Hidden 1: Displayed	This parameter is used to determine whether the parameter groups U, A, B, an C are displayed on the operating panel by each bit.
FP-03	Display of individualized parameters	0	Ones position: User-defined parameter group 0: Hidden 1: Displayed Tens position: User-modified parameter group display 0: Hidden 1: Displayed	This parameter is used to determine whether the user-customized parameter group and the user-modified parameter group are displayed on the operating panel.

5.1.3 Parameter Settings

The operating panel provides three levels of menus for parameter settings. It consists of:

- Level-1 menu: parameter group
- Level-2 menu: parameters
- Level-3 menu: parameter values

After entering the menu, you can press , , and  to modify the blinking bit on the operating panel.

To change the value of F3-02 from 10.00 Hz to 15.00 Hz, perform settings according to the following figure.

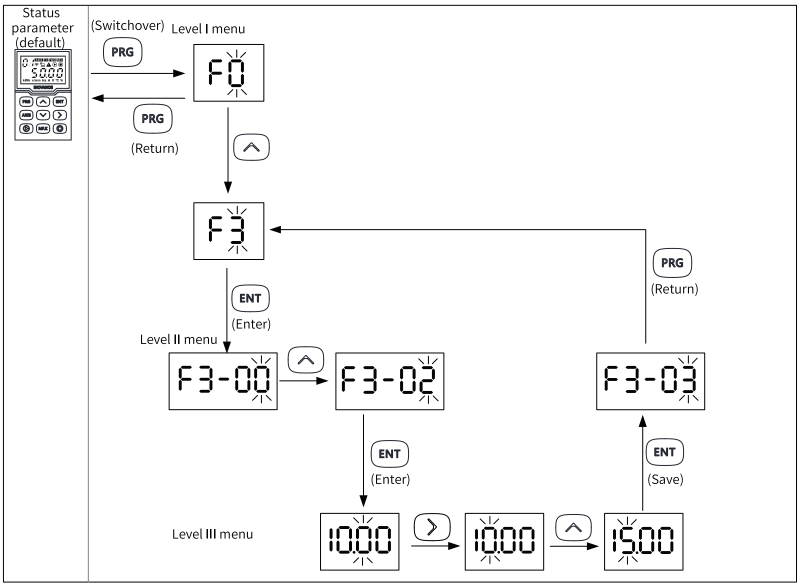


Figure 5-2 Modifying a parameter

You can return to Level-2 menu from Level-3 menu by pressing PRG or ENT. The difference between the two is as follows:

1. By pressing ENT, you will return to Level-2 menu after saving the set parameter, and move to the next parameter automatically.
2. After you press PRG, the system does not save the parameter setting, but directly returns to Level-2 menu and remains at the current parameter number.

If a parameter does not include a blinking digit in Level-3 menu, the parameter cannot be modified. This may be because:

1. The parameter is an unmodifiable parameter such as the product model, actual detection parameter, and running record parameter.
2. This parameter can be modified only after the AC drive stops.

5.1.4 Parameter Viewing

Set FP-03 to 11 to view all parameters through the operating panel. The operation procedure is shown in the following figure.

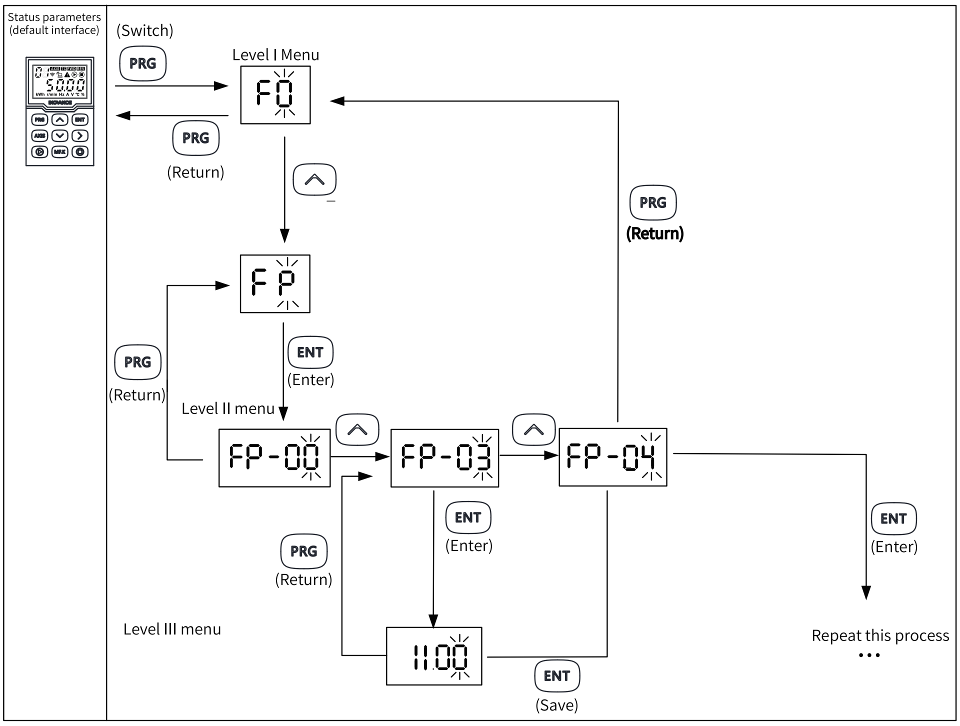


Figure 5-3 Parameter view example

The instructions for viewing status parameters are as follows:

- When the AC drive is running, you can press [>] to view status parameters. By default, the following status parameters are displayed: operating frequency, frequency reference, bus voltage, output voltage, and output current. To view more status parameters, see description of F7-03 and F7-04 in *"5.1.2 Parameters" on page 519*.
- When the AC drive stops, you can press [>] to view status parameters. The following status parameters are displayed by default: frequency reference, bus voltage, AI1 voltage, and AI2 voltage. To view more status parameters, see descriptions of F7-05 in *"5.1.2 Parameters" on page 519*.

5.1.5 Fault and Alarm Display

When the equipment fails, the fault indicator is steady on, and the equipment immediately stops outputting. The operating panel displays the fault code, as shown in the following figure. Find and remove the fault cause. Then, reset the fault.

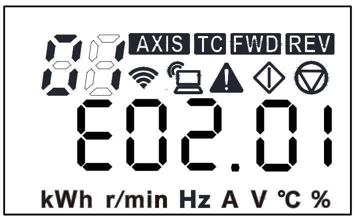


Figure 5-4 Fault code displayed on the operating panel

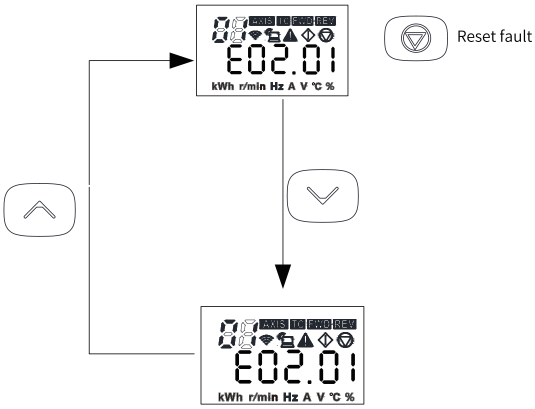
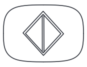
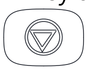


Figure 5-5 Viewing and resetting a fault

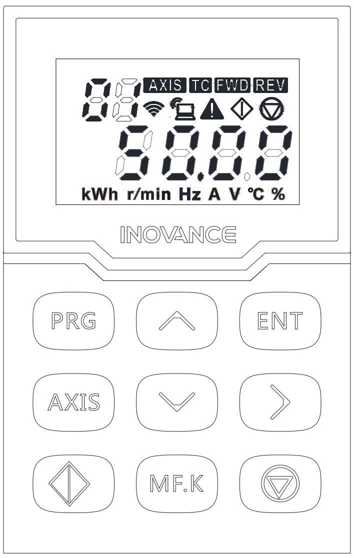
5.1.6 MF.K Multi-functional Key

5.1.7 Driving the Motor with the Operating Panel

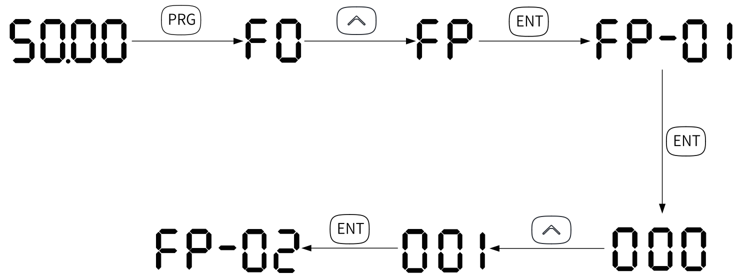
Press the  key on the operating panel to control the motor (forward and reverse jog) and press the  and  keys to start and stop the motor.

Procedure

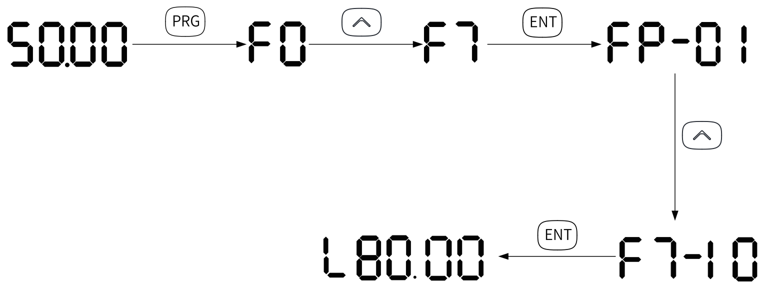
1. Check before power-on.
   Check the installation and wiring according to the installation guide. For detailed inspection, see the introduction of check operations before power-on in the *Installation Guide*.
2. Press the power switch to connect the power supply of the AC drive.
3. Check that 50.00 is displayed on the operating panel, which indicates successful power-on.



4. Set FP-01 to 001 and restore all parameters to default values. The operation example is shown in the following figure.



5. Check the values of F7-10/F7-11, which indicate the software version.

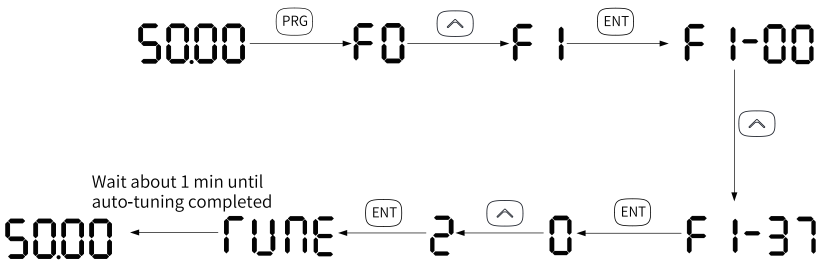


6. Set motor parameters in group F1 according to the motor nameplate.

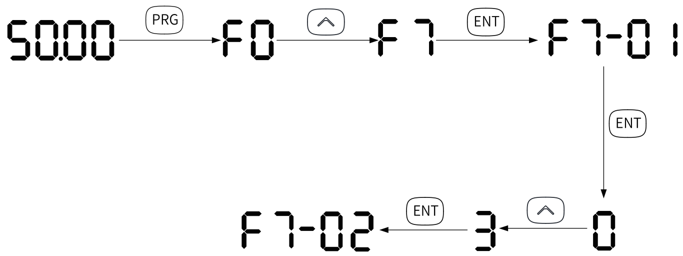
Table 5–7 Motor parameters

Param eter	Parameter Name	Default	Value Range	Descriptions	Value Range
F1-00	Motor type	0	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Synchronous motor	This parameter is used to set the motor type. 0: Common asynchronous motor A common asynchronous motor is suitable for applications with normal voltage but often full load. It is designed based on constant frequency and constant voltage. Therefore, it may not meet all the frequency and speed control requirements. 1: Variable frequency asynchronous motor A variable frequency motor can adjust its frequency and speed according to the load. When the voltage is low, the variable frequency motor can reduce the frequency for a reliable start. When the load is light, it can reduce the frequency, speed, and current to save electric energy. 2: Synchronous motor The synchronous motor supported by MD800 is a permanent magnet synchronous motor	0
F1-01	Rated motor power	Model dependent	0.1 kW to 1000.0 kW	The rated motor power indicates the axis output power of the motor working in rated conditions. Select a motor with a proper power rating on the premise that the motor can meet the requirements of mechanical load. Take the motor heat dissipation, allowable overload capacity, and starting capacity into account.	3.7 kW
F1-02	Rated motor voltage	Model dependent	1 V to 2000 V	The rated motor voltage indicates the voltage of the motor during normal operation, which usually refers to the line voltage.	380.0V
F1-03	Rated motor current	Model dependent	0.1 A to 6553.5 A	The rated motor current indicates the current of the motor during normal operation, which usually refers to the line current.	9.0A
F1-04	Rated motor frequency	Model dependent	0.01 Hz to 655.35 Hz	The rated motor frequency indicates the frequency of the power supply connected to the stator winding under the rated operation conditions of the motor.	50.00 Hz
F1-05	Rated motor speed	Model dependent	1 rpm to 65535 rpm	The rated motor speed indicates the speed (in the unit of rpm) of the rotor under the rated frequency operating conditions.	1460 rpm

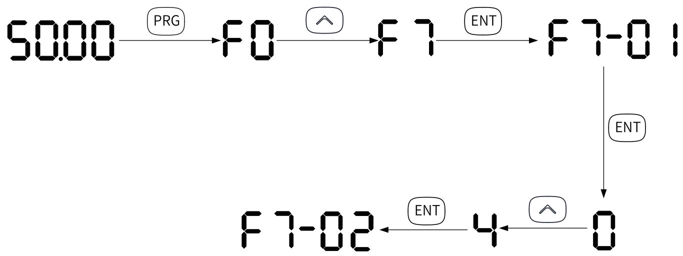
7. Set F1-37 to 2, and press ENTER to confirm. The operating panel displays . Press the **RUN** key on the operating panel for more than 3 s to start motor auto-tuning. During this process, the RUN indicator is on for a long time, the TC indicator flashes, and the AC drive energizes the motor. After about 1 minute, the panel displays 50.00, indicating that auto-tuning is complete.

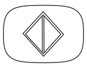
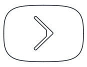


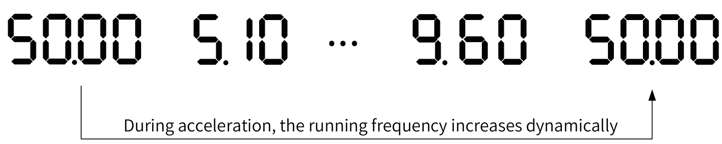
8. Set F7-01 to 3, and then press  to start forward jog of the motor.

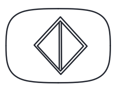


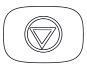
9. Set F7-01 to 4, and then press  to start reverse jog of the motor.



10. Press  to start the motor. The motor shaft starts to accelerate and rotate and the panel displays the current running frequency, as shown in the following figure. After the acceleration is completed, the displayed frequency is 50.00. Press  to switch the displayed running status parameters.





11. Press  to decelerate and stop the motor.

6 Function Applications

6.1 Drive Configuration

6.1.1 Operation Command Source Settings

6.1.1.1 Running Command Setting Source

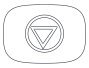
Operation commands are used to control start, stop, forward run, reverse run, and jog of the AC drive. There are three command sources: operating panel, terminal, and communication. You can select the required control mode in function parameter F0-02.

Parameter Code	Name	Default	Value Range	Descriptions
F0-02	Command source selection	0	0: Operating panel control 1: Terminal I/O control 2: Communication control	This parameter is used to select the input channel of the AC drive control commands, such as run, stop, forward run, reverse run, and jog operation. 0: Operating panel Operation commands are input using the keys on the operating panel, including (RUN key), (Stop/Reset key), and MF.K (Multi-function key). This mode is suitable for initial commissioning. 1: Terminal Operation commands are input using the DI of the AC drive. The DI can be assigned with different functions such as start/stop, forward/reverse run, jog, two-wire/three-wire mode, and multi-reference. This mode is suitable for most applications. 2: Communication control Control commands are input through remote communication. The AC drive can communicate with the host controller through RS485, CAN communication, or communication card. This mode is suitable for remote control or centralized control on multiple equipment.

6.1.1.2 Setting Operation Command Through the Operating Panel

Set F0-02 to 0 and use the (RUN key), (STOP/Reset key) keys on the operating panel to control the AC drive.

- Press (RUN key) to start the AC drive (The RUN indicator is on).

- When the AC drive is running, press  (STOP/Reset key) to stop the AC drive (the RUN indicator is off).

6.1.1.3 Setting Operation Commands Through Terminals

After setting F0-02 to 1, you can control the startup and stop of the AC drive through terminals.

F4-17 is used to set the terminal control mode. Four terminal control modes are available, including two-wire mode 1, two-wire mode 2, three-wire mode 1, and three-wire mode 2.

Parameter	Name	Default	Value Range	Descriptions
F4-17	Terminal command mode	0	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	This parameter defines the mode in which the AC drive is controlled by external terminals. 0: Two-wire mode 1 Two DI terminals are connected, one is used to control the forward run of the AC drive, and the other is used to control the reverse run of the AC drive. 1: Two-wire mode 2 Two DI terminals are connected, one is used to start/stop the AC drive, and the other is used to control the running direction. Three-wire mode 1 Three DI terminals are connected, one is used to start/stop the AC drive, and the other two are used to control the running direction. Three-wire mode 2 Three DI terminals are connected, one is used to start the AC drive, one is used to stop the AC drive, and the other is used to control the running direction.

The following takes terminals DI1, DI2 and DI3 from DI1 to DI8 as examples to describe these modes. Set F4-01, F4-03, and F4-05 to select the functions for DI1, DI2 and DI3.

Two-wire mode 1 (F4-17 = 0)

It is the most commonly used two-wire mode. In this mode, the forward/reverse rotation of the motor is determined by DI1 and DI2. Set the parameters as follows.

Parameter	Parameter Name	Setpoint	Function Description
F4-17	Terminal command mode	0	Two-wire mode 1
F4-00	DI1 hardware source	1	Power supply unit DI1
F4-01	DI1 function selection	1	Forward running (FWD)
F4-02	DI2 hardware source	2	Power supply unit DI2
F4-03	DI2 function selection	2	Reverse running (REV)

When SW1 is closed and SW2 is open, the motor rotates in the forward direction. When SW1 is open and SW2 is closed, the motor rotates in the reverse direction. When SW1 and SW2 are both open or closed, the motor stops. It is shown in the following figure.

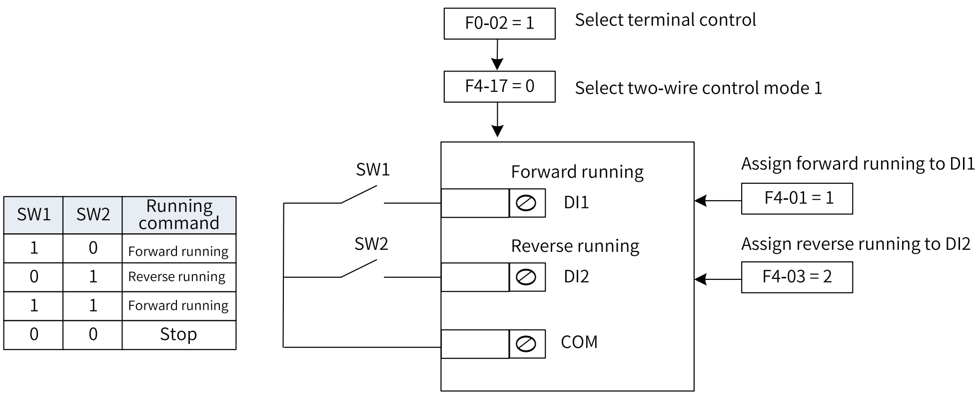


Figure 6-1 Wiring and parameter settings for two-wire mode 1

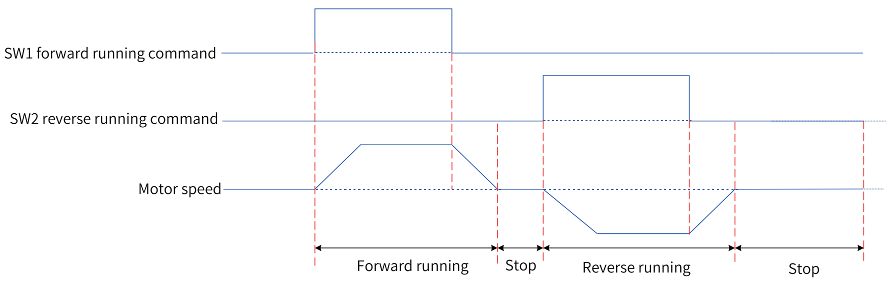


Figure 6-2 Two-wire mode 1 time sequence (normal)

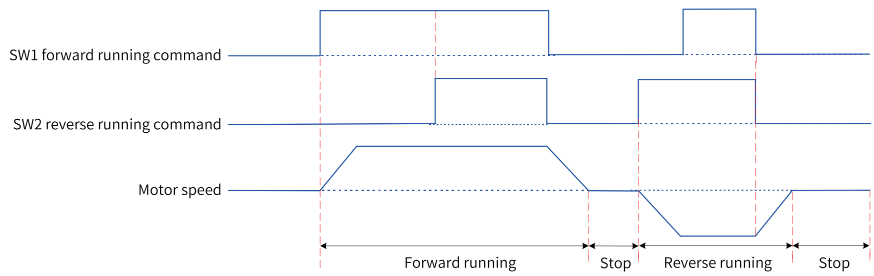


Figure 6-3 Two-wire mode 1 time sequence (abnormal)

Two-wire mode 2 (F4-17 = 1)

For example, DI1 is allocated with the operation command function, and DI2 is allocated with the forward and reverse running function. Set the parameters as follows.

Parameter	Parameter Name	Setpoint	Function Description
F4-17	Terminal command mode	1	Two-wire mode 2
F4-00	DI1 hardware source	1	Power supply unit DI1
F4-01	DI1 function selection	1	Forward running (FWD)
F4-02	DI2 hardware source	2	Power supply unit DI2
F4-03	DI2 function selection	2	Reverse running (REV)

When SW1 is closed, the motor starts to run. When SW2 is open, the motor runs in the forward direction. When SW2 is closed, the motor runs in the reverse direction. When SW1 is open, the motor does not run regardless of the status of SW2. See the following figure.

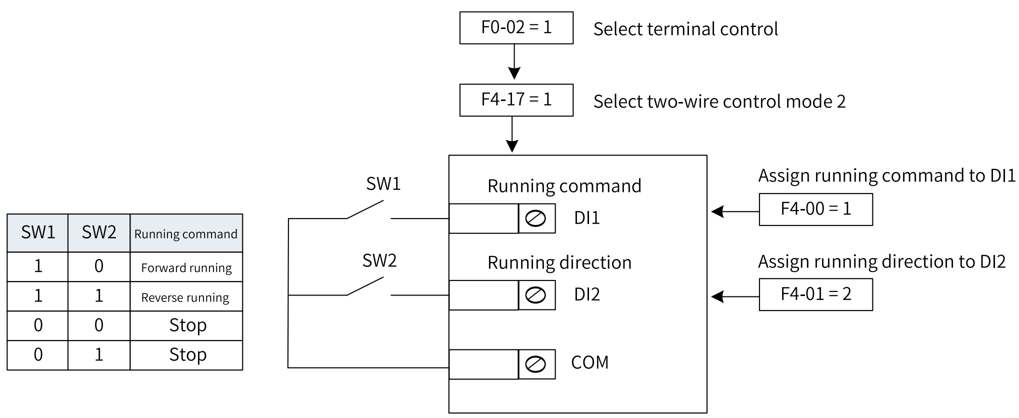


Figure 6-4 Wiring and parameter settings for two-wire 2

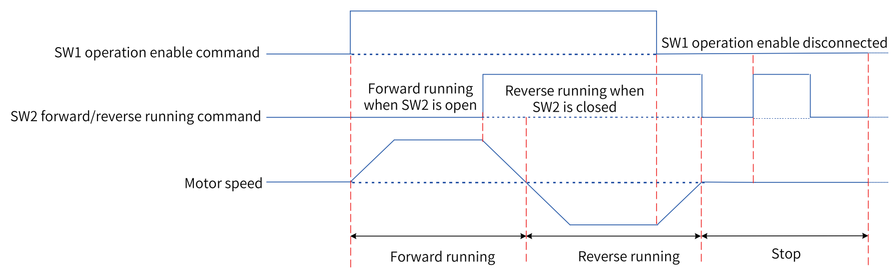


Figure 6-5 Two-wire mode 2 time sequence

Three-wire control mode 1 (F4-17 = 2)

For example, DI3 is allocated with the operation control function, DI1 is allocated with the forward running function, and DI2 is allocated with the reverse running function. In this mode, start and stop of the AC drive must be controlled by keys on the AC drive. Connect the start/stop key to the DI3, the forward run key to the DI1, and the reverse run key to the DI2. Set the parameters as follows.

Parameter	Parameter Name	Setpoint	Function description
F4-17	Terminal command mode	2	Three-wire mode 1
F4-00	DI1 hardware source	1	Power supply unit DI1
F4-01	DI1 function selection	1	Forward running (FWD)
F4-02	DI2 hardware source	2	Power supply unit DI2
F4-03	DI2 function selection	2	Reverse running (REV)
F4-04	DI3 hardware source	3	Power supply unit DI3
F4-05	DI3 function selection	3	Three-wire mode

SW3 is a normally closed (NC) button, whereas SW1 and SW2 are normally open (NO) buttons. When SW3 is closed, the AC drive rotates in forward direction after you press SW1 and in reverse direction after you press SW2. The AC drive stops at the moment when SW3 becomes open. SW3 must remain closed during normal start and running. A signal from SW1 or SW2 takes effect once SW1 or SW2 is closed.

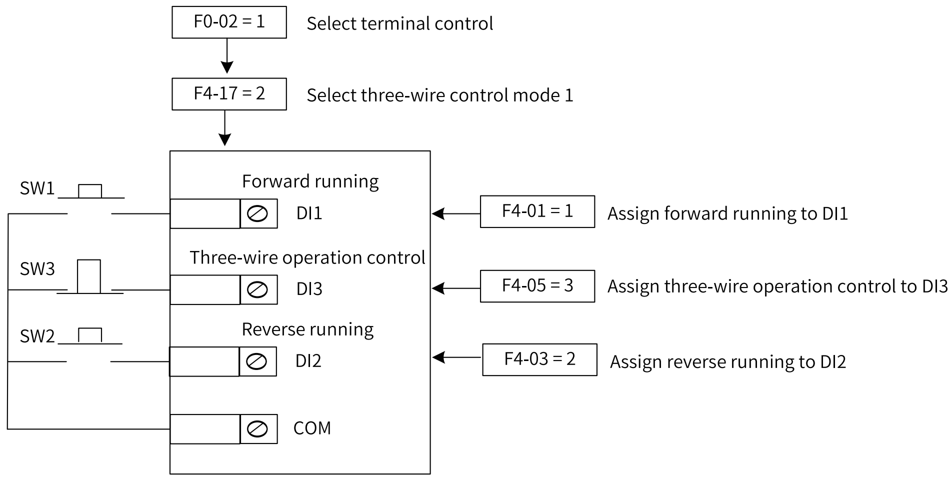


Figure 6-6 Wiring and parameter settings for three-wire mode 1

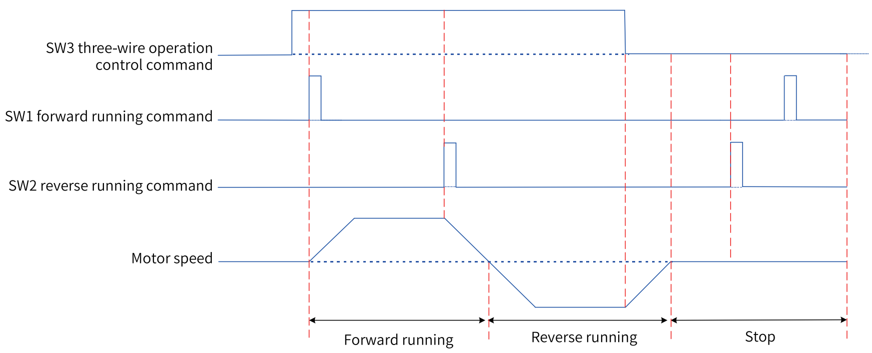


Figure 6-7 Three-wire mode 1 time sequence

Three-wire control mode 2 (F4-17 = 3)

For example, DI3 is allocated with the three-wire control function, DI1 is allocated with the operation function, and DI2 is allocated with the forward/reverse running function. Connect the start/stop key to the DI3, the running enabling key to the DI1, and the forward/reverse run key to the DI2. Set the parameters as follows.

Parameter	Parameter Name	Setpoint	Function description
F4-17	Terminal command mode	3	Three-wire mode 2
F4-00	DI1 hardware source	1	Power supply unit DI1
F4-01	DI1 function selection	1	Forward running (FWD)
F4-02	DI2 hardware source	2	Power supply unit DI2
F4-03	DI2 function selection	2	Reverse running (REV)
F4-04	DI3 hardware source	3	Power supply unit DI3
F4-05	DI3 function selection	3	Three-wire mode

When SW3 is closed, the drive starts to run after you press SW1. If SW2 is open, the drive rotates in the forward direction. If SW2 is closed, the drive rotates in the reverse direction. The drive stops immediately when SW3 becomes open. SW3 must remain closed during normal start and running. A signal from SW1 takes effect once SW1 is closed.

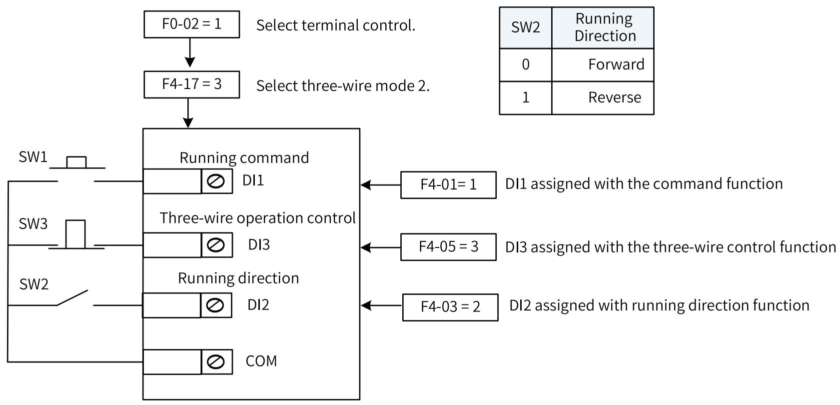


Figure 6-8 Wiring and parameter settings for three-wire mode 2

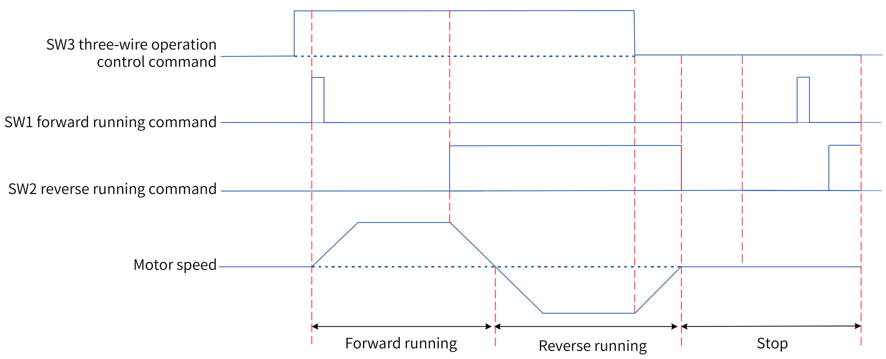


Figure 6-9 Three-wire mode 2 time sequence

6.1.1.4 Setting Operation Commands Through Communication

You can set F0-02 to 2 to select communication as the command source for controlling start/stop of the AC drive.

Supports five communication modes with the host controller: Modbus, CANopen, CANlink, PROFINET, EtherCAT. To enable the PROFINET and EtherCAT communication modes, the communication card needs to be installed.

Procedure	Parameter	Description	
Step 1: Select communication as the frequency reference.	F0-02	F0-02 = 2	
Step 2: Select the communication mode.	FD-10	CANopen/Modbus communication	FD-10 = 1
		CANlink communication	FD-10 = 2
		Communication card mode	FD-10 = 3
No setting is required for Modbus because it is always valid.			

Note

Fd-10 in step 2 is a read-only parameter of the drive unit. When Fd-10 of the power supply unit is set to 2, Fd-10 of the drive unit changes to 2 automatically. When Fd-10 of the power supply unit is set to 1 or 3, Fd-10 of the drive unit changes to 1.

6.1.2 Frequency Reference Source Settings

6.1.2.1 Frequency Reference Source Selection

The AC drive supports three frequency reference sources, including main frequency reference, auxiliary frequency reference, and main and auxiliary frequency superposition.

6.1.2.2 Selecting Source for Main Frequency Reference

There are nine main frequency reference sources in total, including digital setting (non-retentive at power failure), digital setting (retentive at power failure), AI1, AI2, AI3, multi-reference, simple PLC, PID, and communication setting. You can set F0-03 to a value ranging from 0 to 9 to define the source.

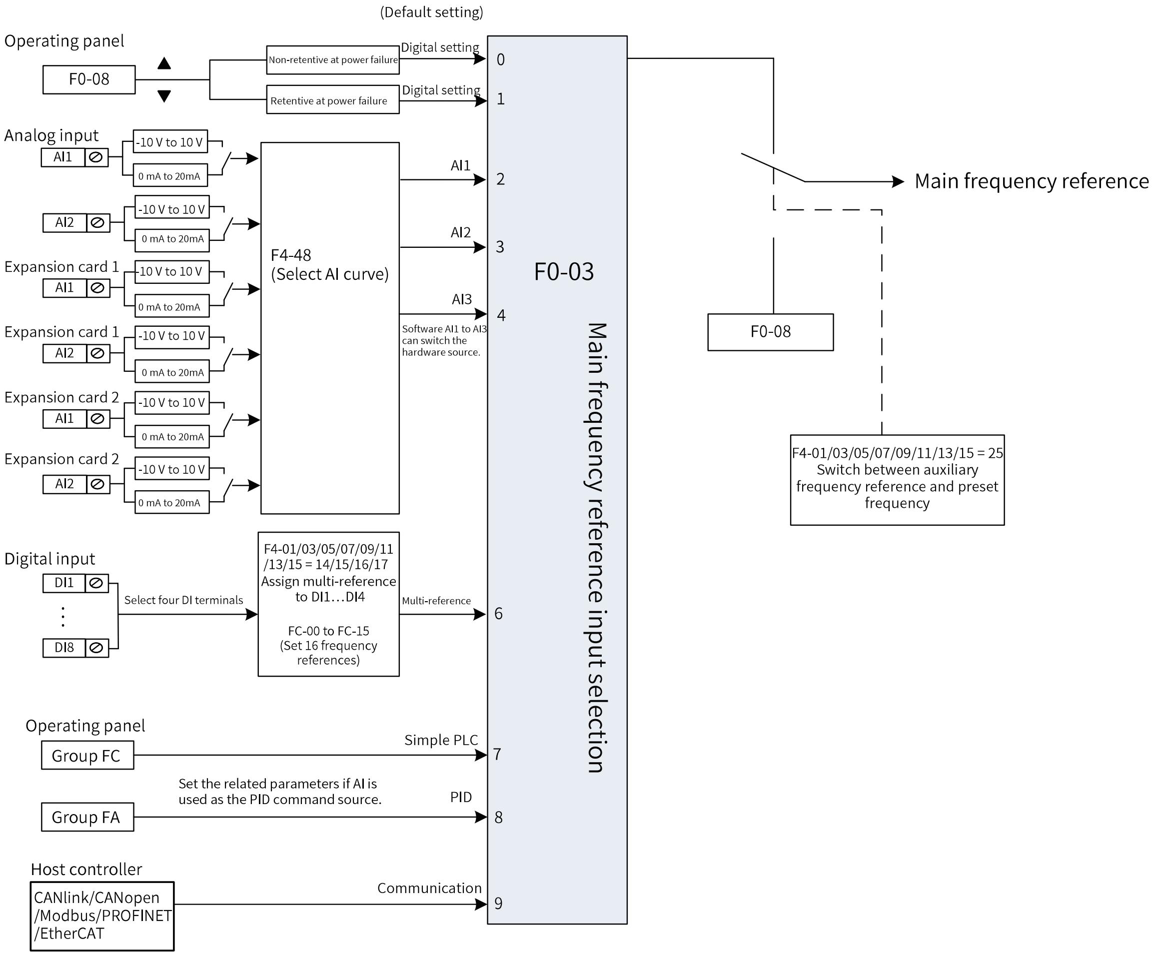
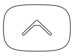
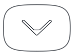
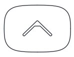
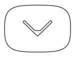
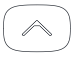


Figure 6-10 Main frequency source selection

Param.	Name	Value Range	Default
F0-03	Main frequency X source	0: Digital setting (F0-08, editable through UP/DOWN, non-retentive at power failure) 1: Digital setting (F0-08, editable through UP/DOWN, retentive at power failure) 2: AI1 3: AI2 4: AI3 5: Reserved 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting 10: Reserved	0

6.1.2.3 Setting the Main Frequency Through Operating Panel

There are two ways to set the main frequency by using the operating panel:

- F0-03 = 0 (non-retentive at power failure): After the drive power is cycled, the frequency reference is restored to the preset frequency (F0-08). F0-08 (preset frequency) can be adjusted by pressing the  or  key on the operating panel or by using the UP/DOWN terminals. However, in this mode, the adjusted frequency value is reset when the AC drive stops.
- F0-03 = 1 (retentive at power failure): When the AC drive is powered on again after stop or power failure, the preset frequency is restored to the value memorized at the moment of the last power failure. The preset frequency (F0-08) can be changed by the  and  keys on the operating panel or by terminal functioning as the UP and DOWN keys. When the AC drive stops, the changed frequency will be retained.
  Example: F0-08 (Preset frequency) is set to 40 Hz. Adjust the value of F0-08 to 45 Hz using the key  on the keypad. If F0-23 is set to 0 (non-retentive at stop), the frequency is restored to 40 Hz (value of F0-08) after the AC drive stops. If F0-23 is set to 1 (retentive at stop), the frequency is still 45 Hz after the AC drive stops.

Note

Distinguish this parameter from F0-23 (Retentive memory of digital setting frequency upon stop). F0-23 determines whether the frequency setting is retained or cleared after the AC drive stops. F0-23 is related only to the stop state of the AC drive, rather than power failure.

Here are some of the parameters:

Parameter	Name	Default	Value Range
F0-08	Preset frequency	50.00 Hz	0.00 Hz to maximum frequency (F0-10)
F0-10	Maximum frequency	50.00 Hz	50.00 Hz to 600.00 Hz

Parameter	Name	Default	Value Range
F0-23	Retention of digital frequency at stop	0	0: Non-retentive at stop 1: Retentive at stop

6.1.2.4 Setting Frequency Through AI

Three analog inputs can be configured for the drive unit: AI1, AI2, and AI3. You can select the AI source (F4-25, F4-27, and F4-29) to map the analog data of the power supply unit or expansion cards. Each power supply unit and I/O expansion card 1 and 2 is equipped with two AI terminals. The following table describes the characteristics of AI terminals of the power supply unit. The AI terminals of the I/O extension cards are similar.

Table 6–1 Characteristics of the AI termincals of the power supply unit

Terminal	Name	Type	Input Range	Input Impedance
AI1-GND	Control board AI 1	Voltage type	-10 VDC to 10 VDC	22 kΩ
AI2-GND	Control board AI 2	Current type	0 mA to 20 mA	500 Ω

When the main frequency is to be set through analog input, AI1, AI2, or AI3 can be selected. If F0-03 is set to 2, AI1 is used to set the main frequency. If F0-03 is set to 3, AI2 is used to set the main frequency. If F0-03 is set to 4, AI3 is used to set the main frequency reference.

As a frequency source, each AI terminal supports five types of AI curves. The AI curve defines the relationship between the analog input voltage (or current) and the corresponding set values.

Procedure	Parameter	Description
Step 1: Select the AI as the frequency reference source. Select the AI for setting the frequency reference based on terminal characteristics.	F0-03 (main frequency source X selection)	F0-03 = 2 AI1 is used.
		F0-03 = 3 AI2 is used.
		F0-03 = 4 AI3 is used.
Step 2: Select the AI hardware source. Select the AI hardware source and function.	F4-25, F4-27, F4-29	Used to select the analog input source. F4-25: Select the hardware source for AI1 F4-27: Select the hardware source for AI2 F4-29: Select the hardware source for AI3 Each power supply unit and I/O expansion card 1 and 2 is equipped with two AI terminals. The mapping between the parameter values and AI hardware sources is as follows: 1: Power supply unit AI1 2: Power supply unit AI2 101: AI1 on expansion card1 102: AI2 on expansion card1 201: AI1 on expansion card2 202: AI2 on expansion card2
	Set the following parameters on the power supply unit: A1-10, A1-11 A2-10, A2-11 A3-10, A3-11	Select the analog input function, which can be voltage input, current input, or temperature input (PT100/PT1000/KTY84/PTC-130). A1-10 and A1-11: Input selection for AI1 and AI2 of the power supply unit A2-10 and A2-11: Input selection for AI1 and AI2 of I/O expansion card 1 A3-10 and A3-11: Input selection for AI1 and AI2 of I/O expansion card 2 The mapping between the parameter valuesand input selections is as follows: 0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130

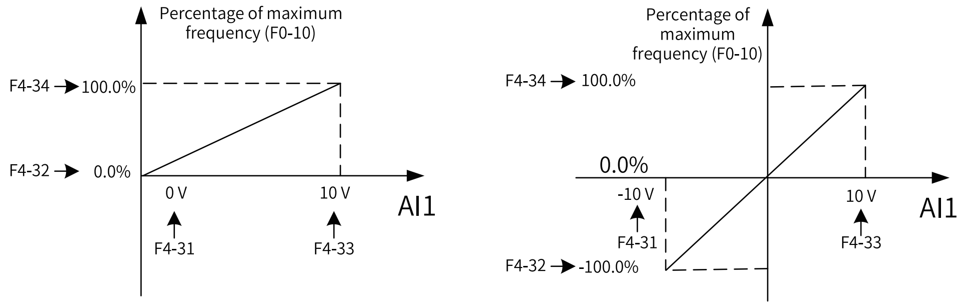
Procedure	Parameter	Description
Step 3: Select the AI curve for the AI. Select the AI curve and set the filter time.	F4-48	This parameter is used to select the AI curve. You can select any AI curve for an AI. The default value 0x321 of F4-48 is used. Select curve 1, curve 2, and curve 3 for AI1, AI2, and AI3, respectively.
	Set the following parameters on the power supply unit: A1-05, A1-06 A2-05, A2-06 A3-05, A3-06	Set the AI filter time A1-05 and A1-06: Filter time of AI1 and AI2 of the power supply unit A2-05 and A2-06: Filter time of AI1 and AI2 of I/O extension card 1 A3-05 and A3-06: Filter time of AI1 and AI2 of I/O extension card 2
(Step 4) Set the AI curve. Set the relationship between AI voltage/current inputs and the setpoints	F4-31 to F4-34	Curve 1 setting
	F4-35 to F4-38	Curve 2 setting
	F4-39 to F4-42	Curve 3 setting
	A6-00 to A6-07	Curve 4 setting
	A6-08 to A6-15	Curve 5 setting
	F4-49	This parameter is used to set the value when the AI value is lower than the minimum input. When the frequency is set through the AI, voltage/current input 100% corresponds to the maximum frequency F0-10.

AI curve setting methods

There are five types of AI curves in total. Curves 1, 2, and 3 are 2-point curves, with relevant parameters being F4-31 to F4-42. Curves 4 and 5 are 4-point curves, with related parameters in group A6.

- For the current-type AI curve, 1 mA current corresponds to 0.5 V voltage. That is, 20 mA corresponds to 10 V.
- When the analog input voltage exceeds the maximum value (F4-31), the maximum value is used as the analog voltage. When the analog input voltage is smaller than the minimum value (F4-33), the value set by F4-49 (Setting for AI less than minimum input) is used, that is, minimum input value or 0.0%.

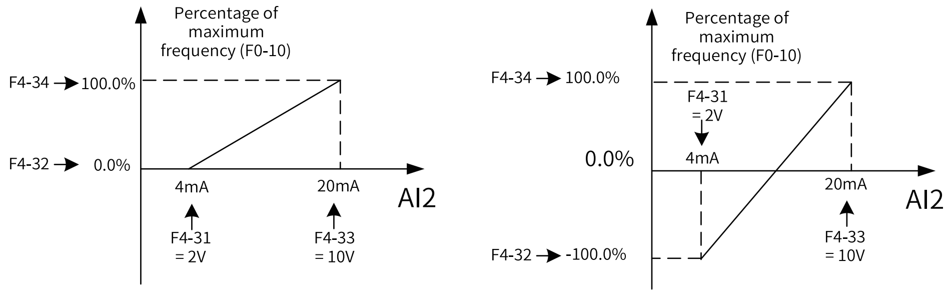
Take the setting of AI curve 1 as an example. The following figure shows the voltage-type AI curves and current-type AI curves. When the voltage-type curve is used, 4 mA to 20 mA typically corresponds to 0 Hz to 50 Hz or –50 Hz to +50 Hz. The related parameters include F4-31 to F4-34.



Setting when there are no negative frequency references

Setting when there are negative frequency references (default)

Figure 6-11 Voltage-type AI curves



Setting when there are no negative frequency references

Setting when there are negative frequency references

Figure 6-12 Current-type AI curves

Curves 2 and 3 are set in the same way as curve 1. F4-35 to F4-38 are used to set curve 2. F4-39 to F4-26 are used to set curve 3.

The function of curve 4 and curve 5 is similar to that of curve 1 to curve 3, but curve 1 to curve 3 are straight lines, and curve 4 and curve 5 are 4-point curves. The x axis in AI curves 4 and 5 represents the analog input voltage (or current), and the y axis represents the set value corresponding to the analog input, that is, the percentage relative to the maximum frequency (F0-10). The four points on curves 4 and 5 are the minimum input point, inflection point 1, inflection point 2, and maximum input point. A6-00 corresponds to the minimum input point on the x axis, that is, the minimum analog input voltage (or current).

When setting curve 4 and curve 5, the minimum input voltage, inflection point 1 voltage, inflection point 2 voltage, and maximum input voltage must be increased in ascending order. A6-00 to A6-07 are used to set curve 4. A6-08 to A6-15 are used to set curve 5.

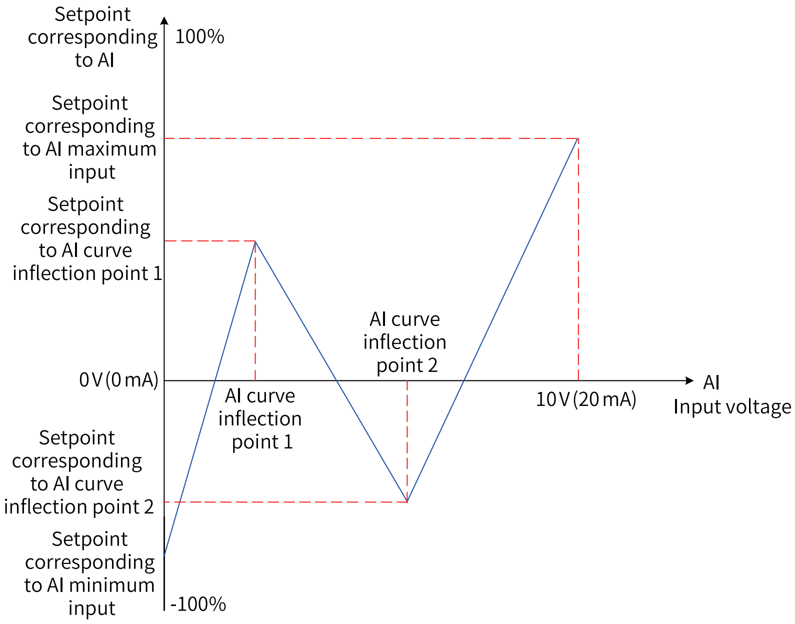


Figure 6-13 Schematic diagram for curve 4 and curve 5

Selecting AI Curve for AI Terminal

The ones and tens places of F4-48 are used to set the curve for AI1 and AI2, respectively. The two AIs can use any of the five curves.

The longer the AI input filter time, the stronger the anti-interference capability, but the slower the adjustment response. The shorter the filter time, the quicker the adjustment response, but the weaker the anti-interference capability. If the analog signal is prone to interference, increase the filter time to stabilize the detected analog signal. However, increasing the filter time will slow the response speed of analog detection. Set the filter time properly based on actual conditions.

Selecting AI Terminal as Frequency Reference Source

Each power supply unit and I/O expansion card 1 and 2 provide two AI terminals, which offer –10 V to +10 V voltage inputs or 0 mA to 20 mA current inputs. The following describes how to set the AI terminal as the main frequency reference source.

In this example, AI1 of the power supply unit is selected as the AI1 hardware source (F4–25 = 1), and curve 1 is selected (the ones place of F4-48 value is set to 1) for AI1. To make input voltage of 2 V to 10 V be mapped to frequency of 10 Hz to 40 Hz, set as follows.

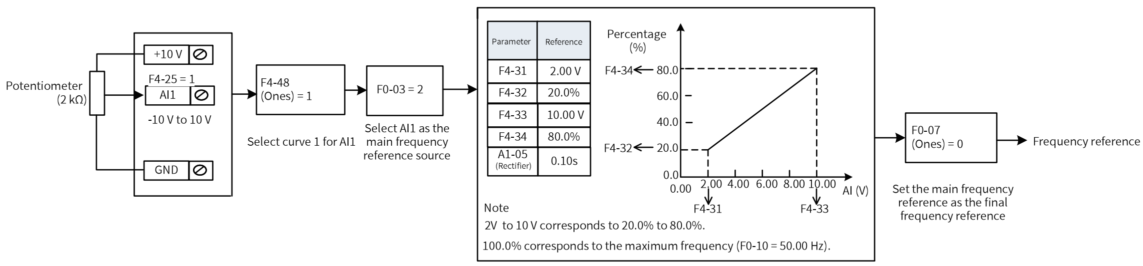


Figure 6-14 Parameter settings for voltage-type AI1 to be used as the main frequency reference source

In this example, AI2 of the power supply unit is selected as the AI2 hardware source (F4–27 = 2), and curve 2 is selected (the tens place of F4-48 is set to 2) for AI2. To make input current of 4 mA to 20 mA be mapped to frequency of 0 Hz to 50 Hz, set as follows.

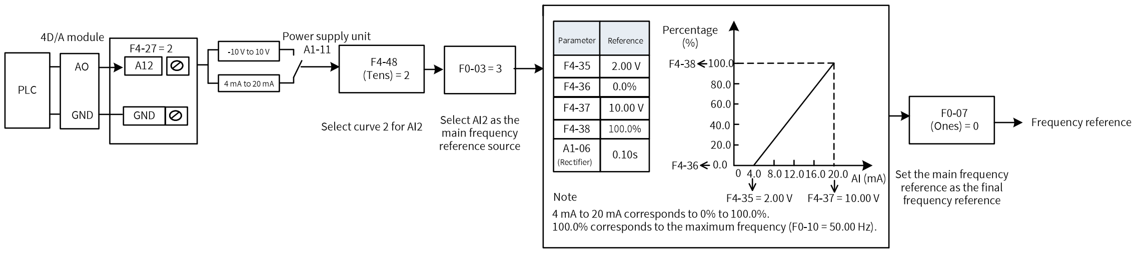


Figure 6-15 Parameter settings for current-type AI2 to be used as the main frequency reference source

6.1.2.5 Setting the Main Frequency by Multi-reference

When F0-03 is set to 6, multi-reference is selected as the main frequency reference source. This mode is suitable for applications where the operating frequency of the drive does not require continuous adjustment, and only several frequency values need to be used.

The drive supports up to 16 frequency references in multi-reference operation mode, which can be set through combinations of input signals from the four DI terminals. You can also use fewer than four DI terminals as the multi-reference source. In this case, missing digits are populated with 0.

The multi-reference frequencies are set through parameters in group FC, as listed in the following table.

Parameter	Name	Default	Value Range	Descriptions
FC-00	Multi-reference 0	0.00%	-100.0% to +100.0%	This parameter indicates the frequency reference of each speed. FC-00 to FC-15 correspond to 16 (from 0 to 15) frequency references. The frequency references are calculated as percentages corresponding to the maximum frequency. The value 100% corresponds to F0-10 (Maximum frequency). The AC drive provides four multi-reference terminals, which have 16 state combinations, corresponding to 16 frequency references. Application scenario of parameters in group FC: When simple PLC is used as the main frequency source, set parameters in group FC. In some industrial applications, the AC motor only needs to support the functions of start/stop, time- and segment-based speed regulation, and automatic forward and reverse run. In this case, using the simple PLC can provide the preceding control functions and a PLC is not required. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines. When the simple PLC is used as the main frequency source (F0-03=7), set parameters in group FC. The source of multi-reference 0 is selected by FC-51, and the other multi-references are set by other parameters.
FC-01	Multi-reference 1	0.00%	-100.0% to +100.0%	
FC-02	Multi-reference 2	0.00%	-100.0% to +100.0%	
FC-03	Multi-reference 3	0.00%	-100.0% to +100.0%	
FC-04	Multi-reference 4	0.00%	-100.0% to +100.0%	
FC-05	Multi-reference 5	0.00%	-100.0% to +100.0%	
FC-06	Multi-reference 6	0.00%	-100.0% to +100.0%	
FC-07	Multi-reference 7	0.00%	-100.0% to +100.0%	
FC-08	Multi-reference 8	0.00%	-100.0% to +100.0%	
FC-09	Multi-reference 9	0.00%	-100.0% to +100.0%	
FC-10	Multi-reference 10	0.00%	-100.0% to +100.0%	
FC-11	Multi-reference 11	0.00%	-100.0% to +100.0%	
FC-12	Multi-reference 12	0.00%	-100.0% to +100.0%	
FC-13	Multi-reference 13	0.00%	-100.0% to +100.0%	
FC-14	Multi-reference 14	0.00%	-100.0% to +100.0%	
FC-15	Multi-reference 15	0.00%	-100.0% to +100.0%	

Parameter	Name	Default	Value Range	Descriptions
FC-51	Multi-reference 0 source	0	0 to 6	Reference 0 can be selected through seven ways, including digital setting, analog input, PID, and preset frequency. 0: FC-00 The frequency of multi-reference 0 is set by FC-00. 1: AI1 The frequency reference of multi-reference 0 is set by AI1. 2: AI2 The frequency reference of multi-reference 0 is set by AI2. 3: AI3 The frequency reference of multi-reference 0 is set by AI3. 4: Reserved 5: PID The frequency reference of multi-reference 0 is set by PID. 6: F0-08 (Preset frequency), which can be modified by UP/ DOWN key The frequency of reference 0 is set by F0-08 (Preset frequency).

Table 6–2 Using multi-reference as the frequency reference source

Procedure	Parameter	Description	
Step 1: Select multi-reference as the frequency reference source.	F0-03	F0-03 = 6	
Step 2: Determine the number of multi-references.	/	A total of 16 multi-references are supported, which requires four DIs. The relationship between the number of multi-references and the number of DIs is as follows: 2 multi-references: One DI (K1) 3-4 multi-references: Two DIs (K1 and K2) 5-8 multi-references: Three DIs (K1, K2, and K3) 9-16 multi-references: Four DIs (K1, K2, K3, and K4)	
Step 3: Select the DI hardware source.	F4-00/02/04/06/ 08/10/12/14	Set an available external terminal as the DI hardware source.	
Step 4: Set the multi-speed function for DI terminals.	F4-01/03/05/07/ 09/11/13/15	Multi-reference terminal K1	Set the parameter to 14.
		Multi-reference terminal K2	Set the parameter to 15.
		Multi-reference terminal K3	Set the parameter to 16.
		Multi-reference terminal K4	Set the parameter to 17.

Procedure	Parameter	Description
Step 5: Set the frequency for each multi-reference.	FC-00 to FC-15	The frequency corresponding to each speed reference is set to a percentage value. 100% corresponds to the maximum frequency (F0-10).
	F0-10	If the frequency reference source is set multi-reference, the value 100% of FC-00 to FC-15 corresponds to the value of F0-10 (Maximum frequency).

The four multi-reference terminals provide 16 state combinations, corresponding to 16 reference values, as listed in the following table.

Table 6–3 Description of multi-reference function

K4	K3	K2	K1	Reference	Parameter
OFF	OFF	OFF	OFF	Multi-reference 0	FC-00
OFF	OFF	OFF	ON	Multi-reference 1	FC-01
OFF	OFF	ON	OFF	Multi-reference 2	FC-02
OFF	OFF	ON	ON	Multi-reference 3	FC-03
OFF	ON	OFF	OFF	Multi-reference 4	FC-04
OFF	ON	OFF	ON	Multi-reference 5	FC-05
OFF	ON	ON	OFF	Multi-reference 6	FC-06
OFF	ON	ON	ON	Multi-reference 7	FC-07
ON	OFF	OFF	OFF	Multi-reference 8	FC-08
ON	OFF	OFF	ON	Multi-reference 9	FC-09
ON	OFF	ON	OFF	Multi-reference 10	FC-10
ON	OFF	ON	ON	Multi-reference 11	FC-11
ON	ON	OFF	OFF	Multi-reference 12	FC-12
ON	ON	OFF	ON	Multi-reference 13	FC-13
ON	ON	ON	OFF	Multi-reference 14	FC-14
ON	ON	ON	ON	Multi-reference 15	FC-15

6.1.2.6 Setting Main Frequency Through Simple PLC

1: Set F0-03 to 7 to select simple PLC as the main frequency source.

2: Set parameters FC-00 to FC-15 and FC-18 to FC-49 to define the running time and acceleration/ deceleration time for each multi-speed reference.

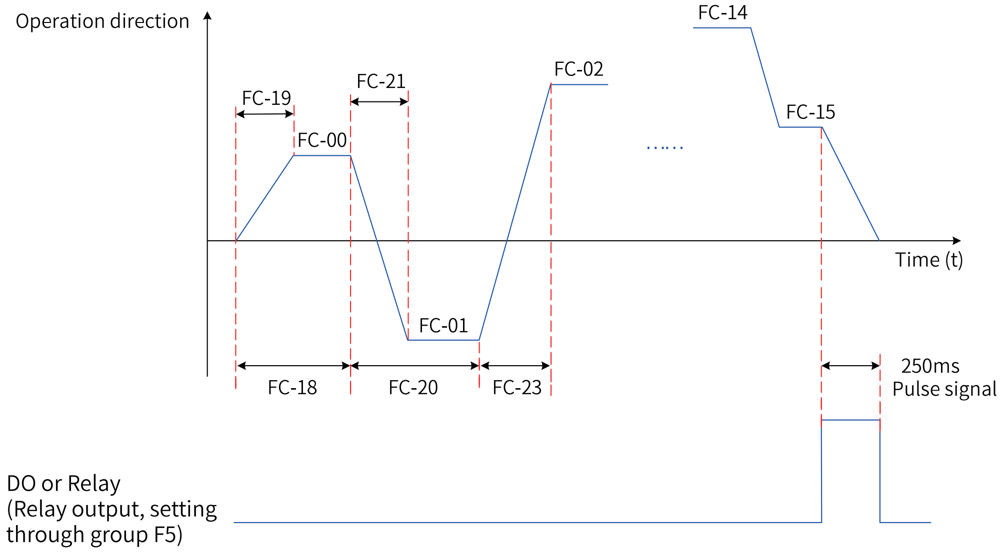


Figure 6-16 Use of simple PLC as the main frequency source

3: Set FC-16 to select the simple PLC running mode.

4: Set FC-17 to determine whether to retain the PLC running stage and running frequency upon a power failure or stop.

6.1.2.7 Setting Main Frequency Through PID

PID control is a common process control method, which calculates the proportion, integral, and differential of the difference between feedback signals and target signals of the controlled variable, and adjusts the output frequency of the AC drive accordingly. This method finally creates a closed-loop system to stabilize the controlled variable at the target value. The PID-controlled output is used as the running frequency. The PID control is generally used for field process closed-loop control, such as constant pressure closed-loop control and constant tension closed-loop control.

- Proportional gain Kp: When there is a deviation between the PID input and output, the PID regulator adjusts the output to reduce the deviation of the controlled variable. The deviation reduction speed depends on the proportionality coefficient Kp. A greater Kp value means faster deviation reduction but causes oscillation, especially in the case of long hysteresis. A smaller Kp value means lower probability of oscillation but leads to slow adjustment. (A proportional gain of 100.0 indicates that when the deviation between PID feedback and PID reference is 100.0%, the PID regulator regulates the output frequency reference at the amplitude of the maximum frequency.)
- Integral time Ti: Ti determines the integral regulation intensity of the PID regulator. The shorter the integral time is, the greater the regulation intensity will be. (When the deviation between PID feedback and PID reference is 100.0%, the integral regulator performs continuous regulation within the time. The regulation amount reaches the maximum frequency.)
- Differential time Td: Td determines the regulation intensity of the PID regulator on the deviation change. Longer differential time indicates greater adjustment intensity. (Differential time indicates the time within which the feedback change reaches 100.0%. The regulation amount reaches the maximum frequency.)

Instances

Step 1: Set F0-03 or F0-04 to 8 to select PID as the main frequency reference input source or auxiliary frequency input source.

Step 2: Set FA-00 to select a source of PID target reference. If FA-00 is set to 0, set FA-01 (digital setting of PID). The value 100% of this parameter corresponds to the maximum value of PID feedback.

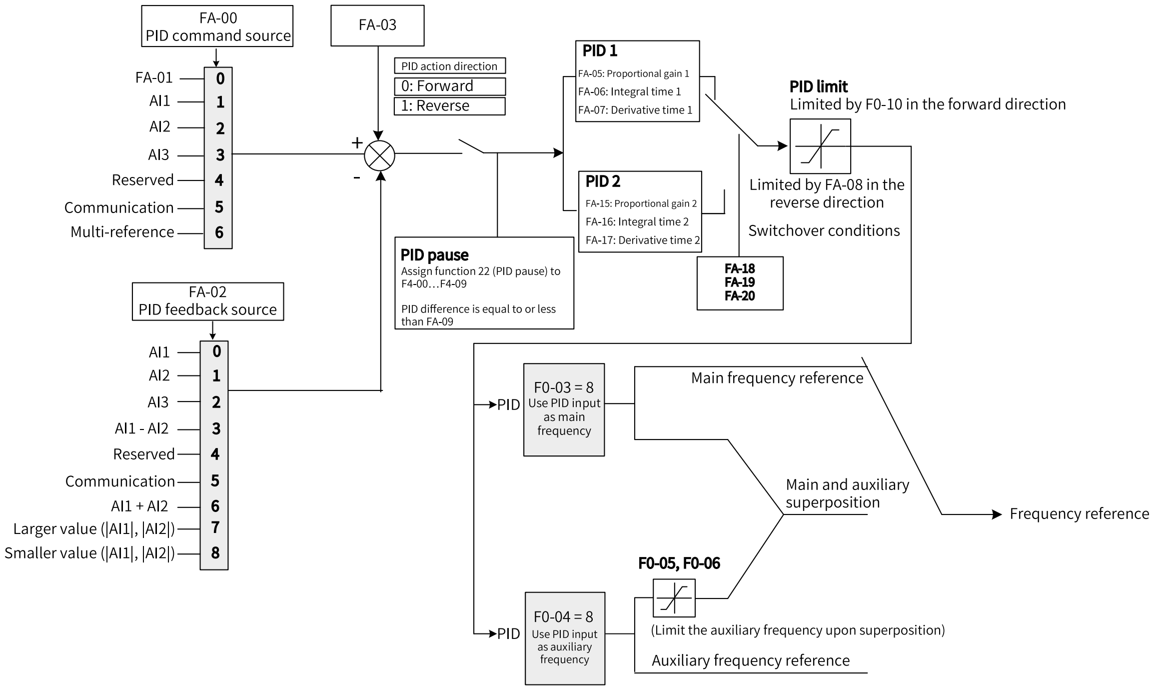


Figure 6-17 Principle of process PID control

Step 3: Set FA-02 to select a PID feedback source.

Step 4: Set FA-03 to select a PID action direction.

The following figure shows the logic of process PID control parameter configuration.

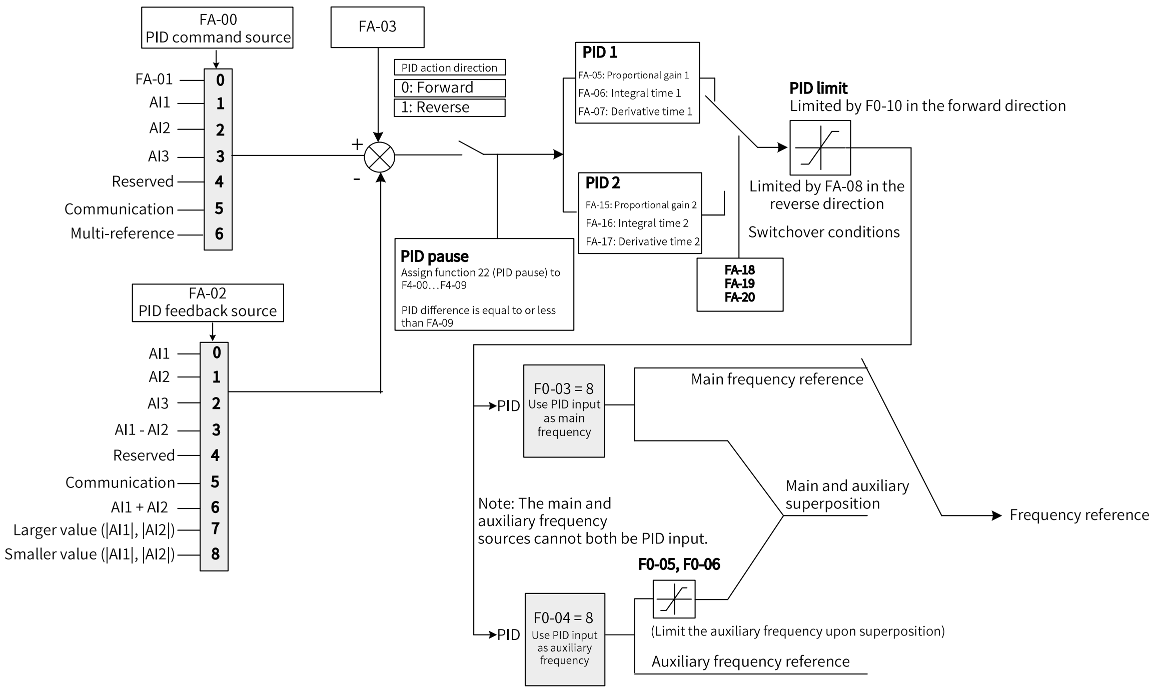


Figure 6-18 Parameter settings for process PID control

The upper and lower limits and range of the frequency output when the PID is used as the main frequency source are described as follows (for example, when the frequency source is only PID or main + PID).

The reverse cut-off frequency is 0 or reverse running is prohibited (any one of the following three situations).

① FA-08 = 0, F8-13 = 0; ② FA-08 = 0, F8-13 = 1; ③ FA-08 ≠ 0, F8-13 = 1

Output upper limit = Frequency upper limit

Output lower limit = Frequency lower limit

Output range = Frequency lower limit to frequency upper limit (F0-14 to F0-12)

When the reverse cut-off frequency is not 0 and reverse running is allowed (FA-08 ≠ 0, F8-13 = 0):

Output upper limit = +Frequency upper limit; Output lower limit = –Reverse cut-off frequency

Output range = negative output limit in reverse direction (—FA-08) to frequency upper limit (F0-12)

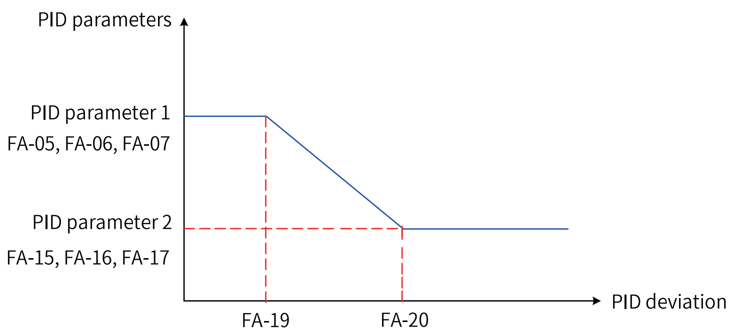


Figure 6-19 PID parameter switchover

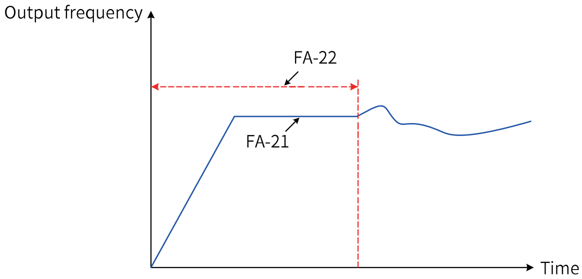


Figure 6-20 PID initial value function

6.1.2.8 Setting Main Frequency Through Communication

Set F0-02 to 2 to enable the communication control (The "Computer" indicator on the operating panel of the power supply unit blinks). In this mode, you can control the running of the AC drive, such as startup or stop, through communication.

The AC drive supports communication with the host controller through five communication protocols: Modbus, PROFIBUS-DP, CANopen, CANlink, PROFINET, and EtherCAT. Only one communication protocol is supported at a time. The EtherCAT and PROFINET communication cards are optional, which can be selected as required. If EtherCAT or PROFINET communication is used, the corresponding communication card must be installed. CANopen, CANlink, PROFINET, and EtherCAT need to be selected according to the value of FD-10 of the power supply unit. Modbus is always enabled.

Parameter	Name	Default	Value range
FD-10	Communication type	1	1: CANopen / Modbus 2: CANlink 3: Communication card mode

Application

Step 1: Set F0-03 to 9 to select communication as the main frequency source.

Step 2: Use the host controller to send a write command to the drive.

The following section describes how to set the main frequency through Modbus communication. To make the AC drive run in the reverse direction, the host controller sends the write command: 01 06 20 00 00 02 03 CB.

The following table describes the definition of each byte.

Byte	Description
01H (configurable)	AC drive address
06H	Write command
2000H	Communication address of the control command
02H (reverse run)	Control command
03CBH	CRC check

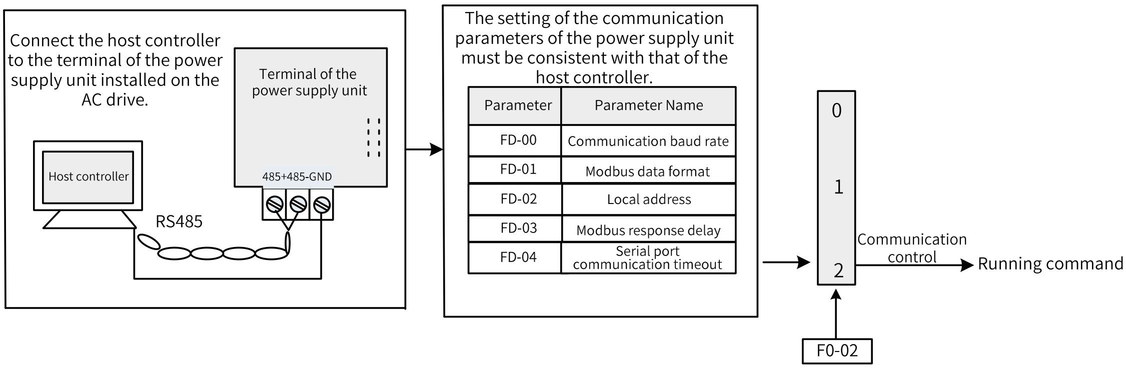


Figure 6-21 Parameter settings when communication is used as the main frequency source

Table 6–4 Relationship between master commands and slave responses

Command from the Master		Response from the Slave	
ADDR	01H	ADDR	01H
CMD	06H	CMD	06H
High-order bits of parameter address	20H	High-order bits of parameter address	20H
Low-order bit of parameter address	00H	Low-order bit of parameter address	00H
High-order bit of data content	00H	High-order bit of data content	00H
Low-order bit of data content	02H	Low-order bit of data content	02H
CRC high-order bit	03H	CRC high-order bit	03H
CRC low-order bit	CBH	CRC low-order Bit	CBH

The range of frequency reference set through communication is -10000 to +10000 (decimal), corresponding to -100.00% to +100.00%. -100.00% corresponds to the negative maximum frequency and +100.00% corresponds the maximum frequency. Assume that F0-10 (maximum frequency) is set to 50 Hz. If the frequency reference in the write command is 2710H, which is equivalent to 10000 in the decimal format, the actual written frequency reference is 50 Hz (50 x 100%).

6.1.2.9 Selecting the Auxiliary Frequency Source

A total of nine setting channels are available for the auxiliary frequency reference: digital setting (non-retentive at power failure), digital setting (retentive at power failure), AI1, AI2, AI3, multi-reference, simple PLC, PID, and communication setting. You can set F0-04 to a value ranging from 0 to 9 to define the source.

When the auxiliary frequency reference is used as a separate frequency reference source, it is set in the same way as the main frequency reference. The following figure shows the logic block diagram. The auxiliary frequency reference can also be used together with the main frequency reference for frequency setting. For details, see "Selecting Source of Main Frequency and Auxiliary Frequency Superposition".

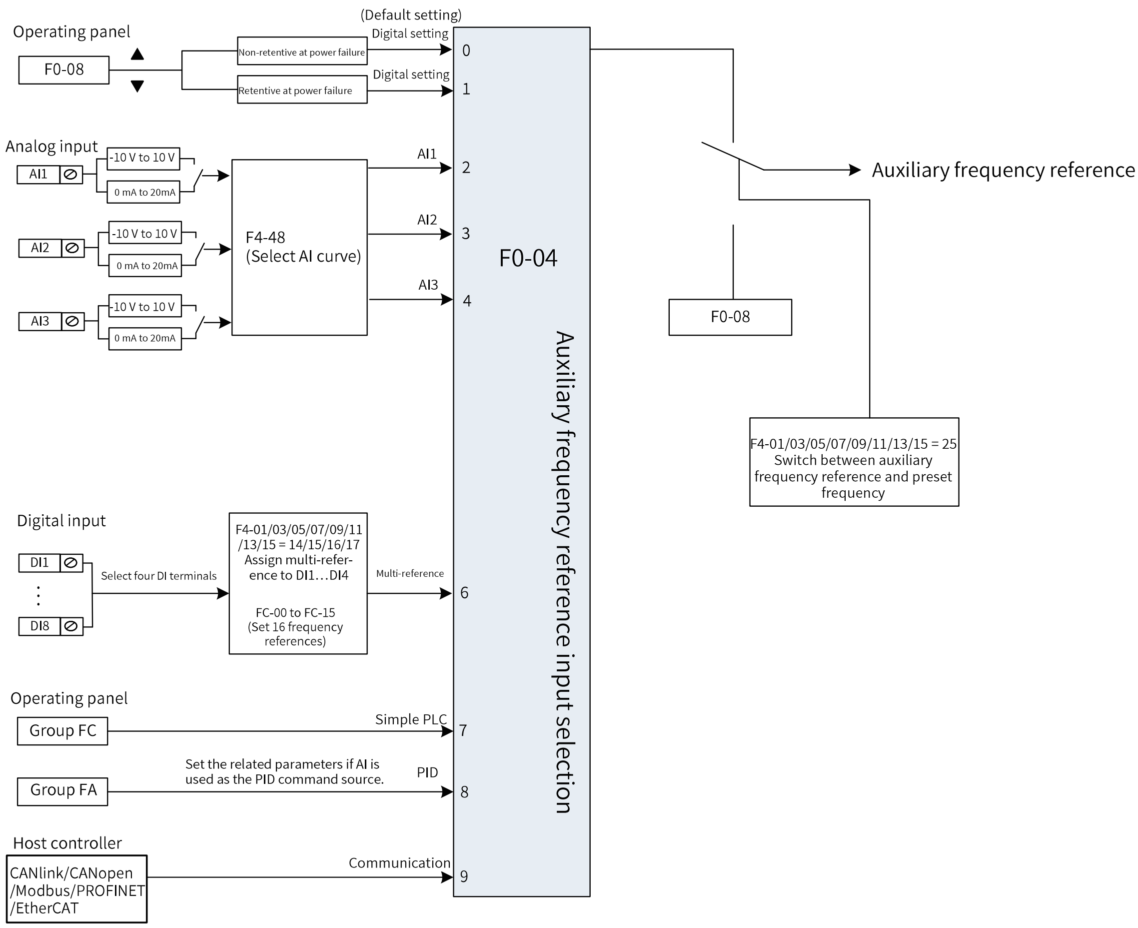


Figure 6-22 Auxiliary frequency reference source selection

Parameter	Name	Value Range	Default
F0-04	Auxiliary frequency Y source	0: Digital setting (F0-08, editable through UP/DOWN, non-retentive at power failure) 1: Digital setting (F0-08, editable through UP/DOWN, retentive at power failure) 2: AI1 3: AI2 4: AI3 5: Reserved 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting 10: Reserved	0

6.1.2.10 Selecting Source of Main Frequency and Auxiliary Frequency Superposition

The main and auxiliary frequency reference superposition means that the frequency is the set through superposition of the main and auxiliary frequency references. The relationship between the target frequency and the main and auxiliary frequencies is set in F0-07, which is described as follows.

Table 6–5 Relationship between target frequency and main and auxiliary frequencies

No.	Relationship Between Target Frequency and Main and Auxiliary Frequencies	
1	Main frequency	The main frequency is used as the target frequency.
2	Auxiliary frequency source	The auxiliary frequency is directly used as the target frequency.
3	Main and auxiliary frequency operation	Operations on the main and auxiliary frequency references: There are five types of main and auxiliary operations, including main frequency + auxiliary frequency, main frequency – auxiliary frequency, max. (main frequency, auxiliary frequency), min. (main frequency, auxiliary frequency), and main frequency x auxiliary frequency.
4	Frequency switchover	You can use the DI to select any of the preceding three frequency sources. In this case, allocate function 23 (frequency reference switchover) to the DI.

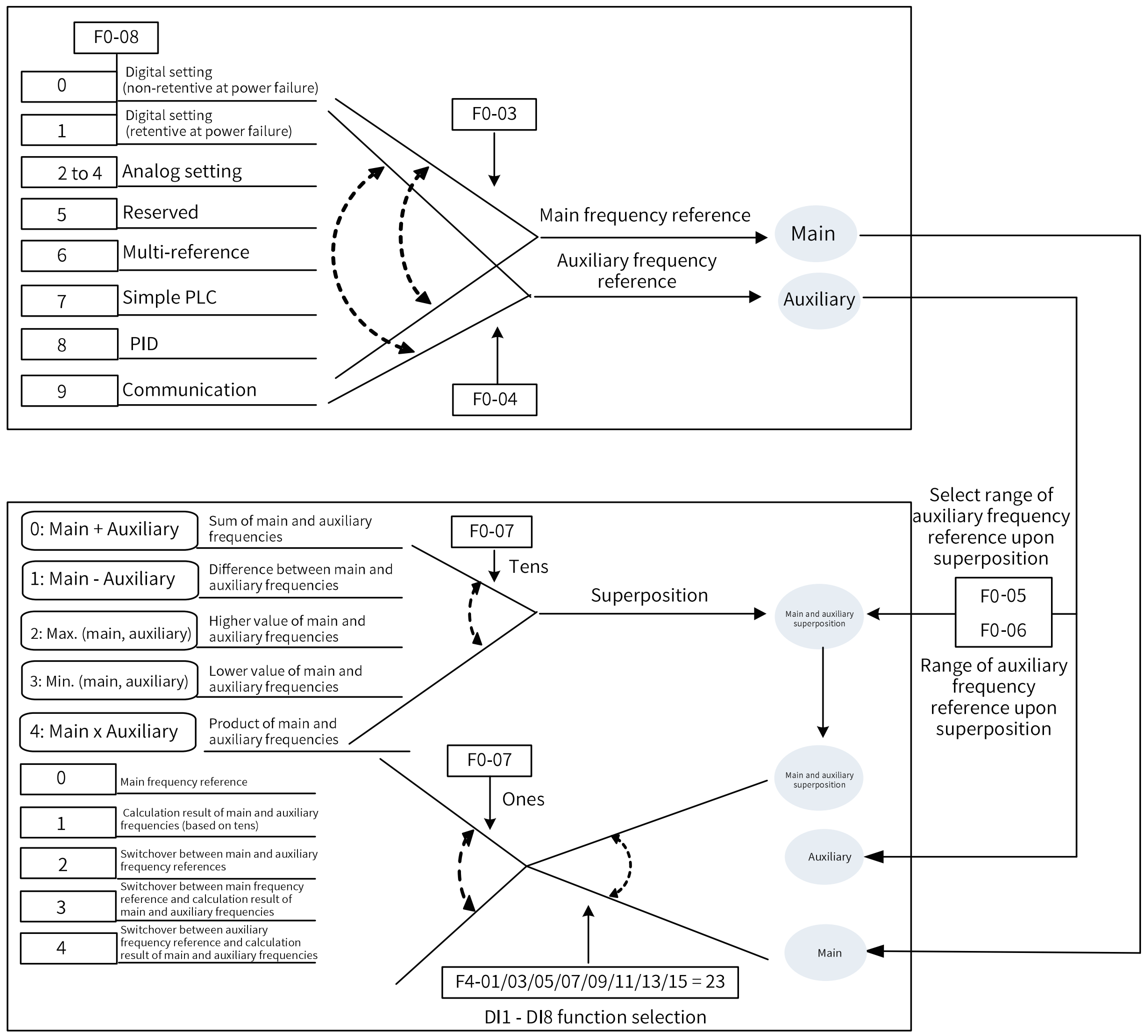


Figure 6-23 Main and auxiliary frequency superposition

Table 6–6 Main and auxiliary frequency superposition

Operation	Main Frequency Reference Source	Auxiliary Frequency Reference Source	Description
+	Digital setting	AI, pulse reference, multi-reference, simple PLC, or communication	1. UP/DOWN adjustment is invalid. 2. Output range: F0-08 + Auxiliary frequency reference.
	AI, pulse reference, multi-reference, simple PLC, or communication	Digital setting	1. Settings by UP/DOWN key are valid. 2. Output range: Main frequency reference + UP/DOWN.
	Digital setting	PID	1. UP/DOWN adjustment is invalid. 2. Output range: Main frequency reference + Auxiliary frequency reference.
	PID	Digital setting	1. UP/DOWN adjustment is invalid. 2. Digital setting is 0. Output range: main frequency reference.
	AI, multi-reference, simple PLC, or communication	PID	1. UP/DOWN adjustment is invalid. 2. Output range: Main frequency reference + Auxiliary frequency reference.
	PID	AI, pulse reference, multi-reference, simple PLC, or communication	1. UP/DOWN adjustment is invalid. 2. Output: auxiliary frequency reference.
-/x/Max/Min	Digital setting	Digital setting	1. Settings by UP/DOWN key are valid. 2. Output range: Main frequency reference + UP/DOWN adjustment, same as digital setting in single frequency source mode.

Operation	Main Frequency Reference Source	Auxiliary Frequency Reference Source	Description
Single frequency source	Any	Any	1. When digital setting is used, the value set by UP/DOWN key is inactive. The digital setting value is defined by F0-08. 2. Either the main frequency or auxiliary frequency can be set through PID. 3. Either the main frequency or auxiliary frequency can be set through the simple PLC. 4. When both the main and auxiliary frequency references are set by digit, the main frequency reference is active, the auxiliary frequency reference is inactive, and the value set by UP/DOWN key is active.
	Digital setting	/	1. Settings by UP/DOWN key are valid. 2. Output range: Main frequency reference + Value set by UP/DOWN key. 3. UP/DOWN adjustment range: (Frequency upper limit - Main frequency) to (Frequency lower limit - Main frequency) 4. The UP/DOWN key cannot reverse the frequency direction.
	PID	/	1. The frequency lower limit is invalid. 2. The PID output range is defined by the PID output frequency upper and lower limits. 3. When reverse rotation is prohibited and the lower limit of PID output is a negative value, the lower limit of PID output is 0.
	Others		/

Parameter	Name	Default	Value Range
F0-05	Base value of range of auxiliary frequency Y upon superposition	0	0: Relative to max. frequency 1: Relative to main frequency reference
F0-06	Range of auxiliary frequency Y upon superposition	100%	0% to 150%

These two parameters are only valid in the main frequency + auxiliary frequency operation to limit the range of the auxiliary frequency.

Parameter	Name	Default	Value Range
F0-27	Main frequency coefficient	10.00%	0.00% to 100.00%
F0-28	Auxiliary frequency coefficient	10.00%	0.00% to 100.00%

These two parameters are only used in the main frequency x auxiliary frequency operation. Assume that the main frequency is Frq1 and the auxiliary frequency is Frq2.

Frq = (Frq1 x F0-27) x (Frq2 x F0-28)

6.1.2.11 Frequency Reference Limit

Frequency upper limit: limits the highest frequency, if the motor is not allowed to run above a certain frequency.

Frequency lower limit: Defines the minimum running frequency of the motor.

Maximum frequency: Defines the maximum output frequency.

Frequency upper limit source: Defines the source of the frequency upper limit.

Frequency upper limit offset: Defines the offset of the frequency upper limit. This parameter is valid only when the frequency upper limit source is set to the AI.

Parameter	Name	Default	Value Range
F0-10	Maximum frequency	50.00 Hz	50.00 Hz to 600.00 Hz
F0-11	Frequency upper limit source	0	0: frequency upper limit (F0-12) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication setting 6: Multi-reference
F0-12	Frequency upper limit	50.00 Hz	F0-14 (frequency lower limit) to F0-10 (maximum frequency)
F0-13	Frequency upper limit offset	0.00 Hz	0.00 Hz to maximum frequency (F0-10)
F0-14	Frequency lower limit	0.00 Hz	0.00 Hz to F0-12 (frequency upper limit)

6.1.2.12 Running Mode When Frequency Is Below Lower Limit

Frequency lower limit indicates the minimum frequency at which the motor is allowed to run.

If the frequency reference of the AC drive is lower than the frequency lower limit (F0-14), you need to set F8-15 to further specify the corresponding action of the AC drive, Four actions are supported: run at frequency lower limit, stop, run at zero speed, and coast to stop.

- 0: Run at frequency lower limit
  If the set frequency is below the frequency lower limit, the AC drive will run at the frequency lower limit.
- 1: Stop
  If the set frequency is below the frequency lower limit, the AC drive stops.
- 2: Run at zero speed
  If the set frequency is below the frequency lower limit, the AC drive runs at zero speed.

Parameter	Name	Default	Value Range	Descriptions
F8-15	Running mode when frequency is below the frequency lower limit	0	0: Frequency lower limit 1: Stop 2: Run at zero speed	Used to set the AC drive status when the set frequency is below the frequency lower limit. 0: Frequency lower limit If the set frequency is below the frequency lower limit, the AC drive will run at the frequency lower limit. 1: Stop If the set frequency is below the frequency lower limit, the AC drive stops. 2: Run at zero speed If the set frequency is below the frequency lower limit, the AC drive runs at zero speed.

6.1.3 Startup/Stop Modes

6.1.3.1 Startup mode

The drive supports three starting mode: direct start, flying start, and pre-excited start. Set F6-00 to select the start mode of the drive.

Direct Start

The direct start mode (F6-00 = 0) applies to most of loads.

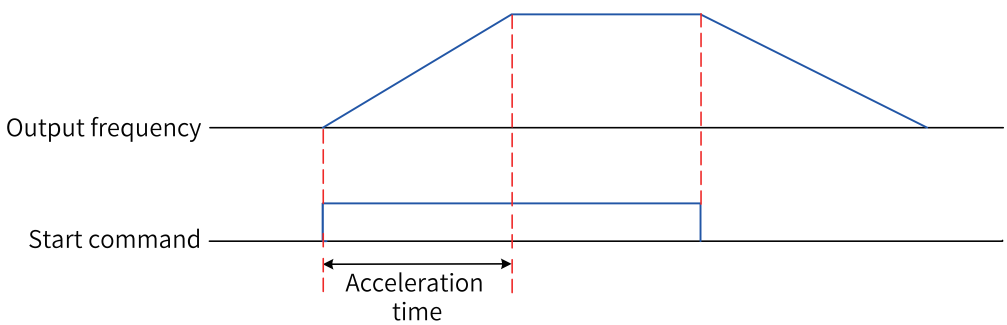


Figure 6-24 Direct start time sequence

The setting of starting frequency before start applies to lifting loads, such as elevators and cranes.

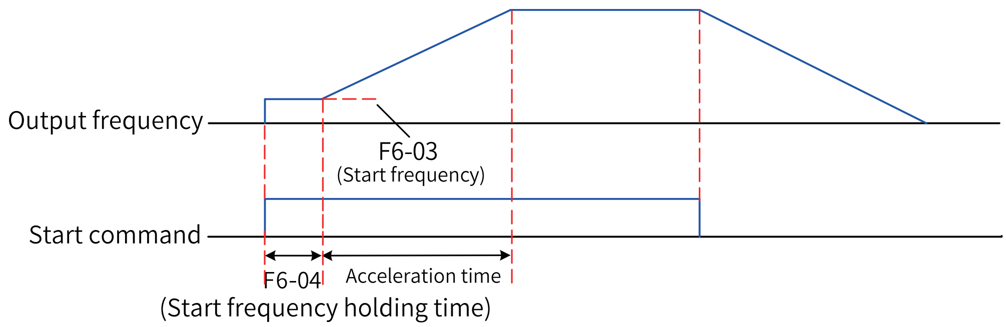


Figure 6-25 Time sequence for start with the starting frequency set

The setting of DC braking time at startup before start applies to applications where the motor may rotate at start.

If the DC braking time at startup is set to 0, the drive starts operating at the starting frequency. If the startup DC braking time is not 0, the AC drive performs DC braking first and starts to run at the startup frequency. This mode is applicable to small-inertia loads and applications where the motor may rotate at start.

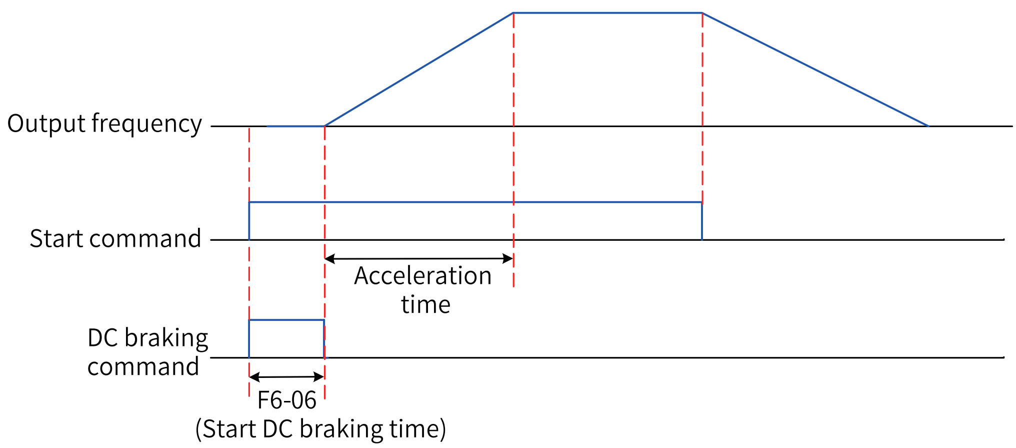


Figure 6-26 Time sequence for start with DC braking

Start with DC braking is suitable for driving loads such as elevators and lifting machines. Start with startup frequency is suitable for driving equipment that requires starting torque, such as cement mixers. The following figure describes the frequency curve during start.

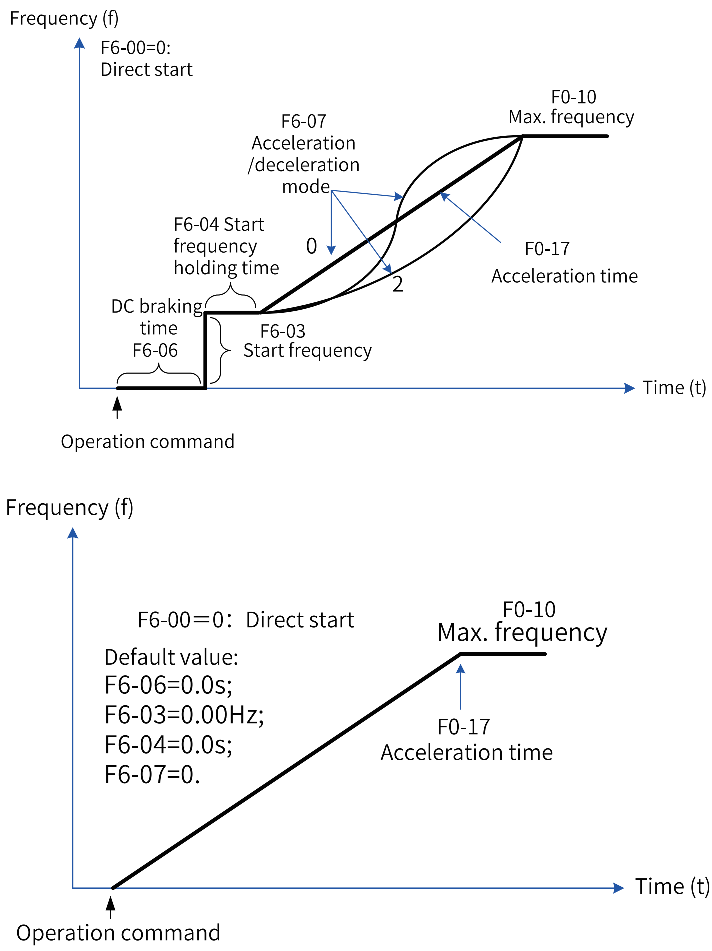


Figure 6-27 Direct start

Flying Start

Setting F6-00 to 1 activates flying start, which means the drive judges the motor speed and direction first, and then starts at the motor frequency detected. This mode applies to asynchronous motors only. This mode is applicable to applications where the drive is used to drive large-inertia machinery loads.

If the load motor is still rotating due to inertia when the drive needs a restart, using flying start can prevent overcurrent upon start. This mode is valid only in the vector control mode. The following figure describes the frequency curve during start.

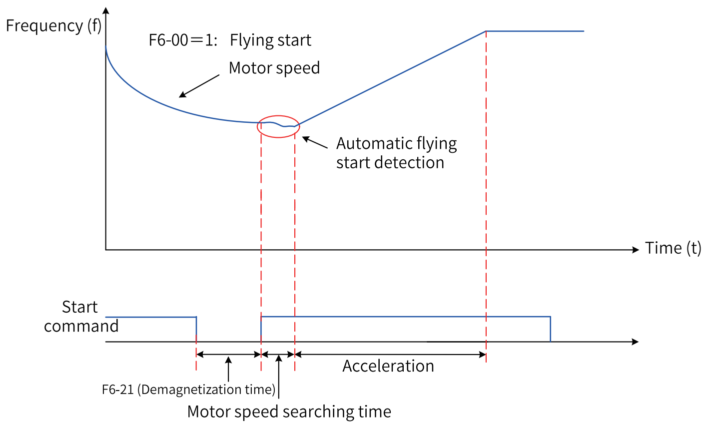


Figure 6-28 Flying start

Vector Pre-excitation Start of Asynchronous Motor

The pre-excited start (F6-00 = 2) applies to the SVC modes of asynchronous motors. In this mode, the motor is pre-excited before start to improve the responsiveness and reduce the starting current. The sequence diagram is the same as that for start with DC braking. The recommended pre-excitation current is 1.5 x no-load current (F1-10), with the maximum value not larger than the rated current of the motor. If the pre-excitsation current is the same as the no-load current (F1-10), the optimal pre-excitation time is 3 x rotor time constant. The rotor time constant equals mutual inductance (F1-09) + leakage inductance (F1-08) ÷ rotor resistance (F1-07). The unit of mutual inductance and leakage inductance is L and the unit of the resistor is Ω. If the pre-excitation current is higher than the no-load current, reduce the pre-excitation time proportionally. If the pre-excitation current is lower than the no-load current, increase the pre-excitation time proportionally.

6.1.3.2 Stop Mode

Two stop modes are available to the AC drive: decelerate to stop and coast to stop. You can set F6-10 to select a stop mode as required.

Parameter	Name	Default	Value Range	Descriptions
F6-10	Stop Mode	0	0: Decelerate to stop 1: Coast to stop	This parameter is used to select the stop mode of the AC drive. 0: Decelerate to stop After the stop command becomes active, the AC drive decreases the output frequency based on the deceleration time, and stops when the frequency is reduced to 0. 1: Coast to stop After the stop command becomes active, the drive stops output immediately and the motor coasts to stop based on the mechanical inertia.
F6-11	DC braking/Position lock start frequency for stop	0.00 Hz	0.00 Hz to maximum frequency (F0-10)	During decelerating to stop, the drive starts DC braking when the operating frequency drops below the value of F6-11.

Parameter	Name	Default	Value Range	Descriptions
F6-12	DC braking waiting time for stop	0.0s	0.0s to 100.0s	When the operating frequency decreases to the start frequency of DC braking for stop, the drive stops output temporarily and then starts DC braking. This prevents faults such as overcurrent caused by DC braking at a high speed.
F6-13	F6-13 (DC injection braking 2 level)	50%	0% to 100%	The higher the DC braking current, the stronger the braking force. The value 100.0% corresponds to the rated current of the motor. The default upper limit of the DC braking current for stop is 80% of the rated drive current, which can be set by F6-34. The maximum upper limit of the DC braking current for stop is 135% of the rated drive current.
F6-14	Stop DC braking active time	0.5s	0.0s to 100.0s	This parameter specifies the holding time of DC braking. If it is set to 0, DC braking is disabled.

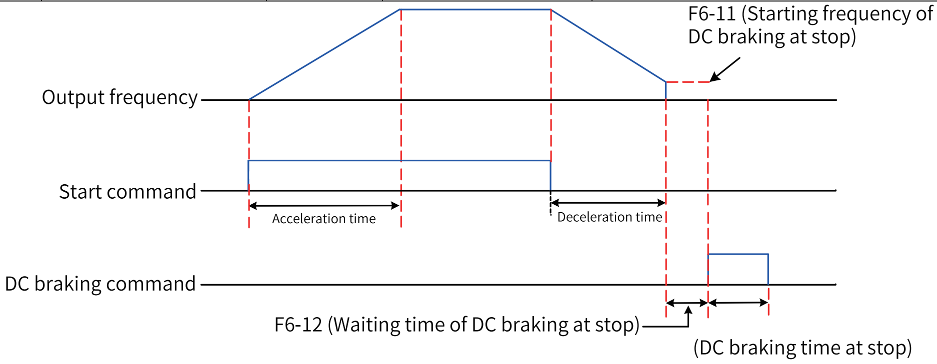


Figure 6-29 Time sequence of DC braking at stop

Decelerate to stop

When F6-10 is set to 0, the AC drive decelerates to stop. After the stop command is input, the drive decreases the output frequency based on the deceleration time and stops when the frequency declines to 0.

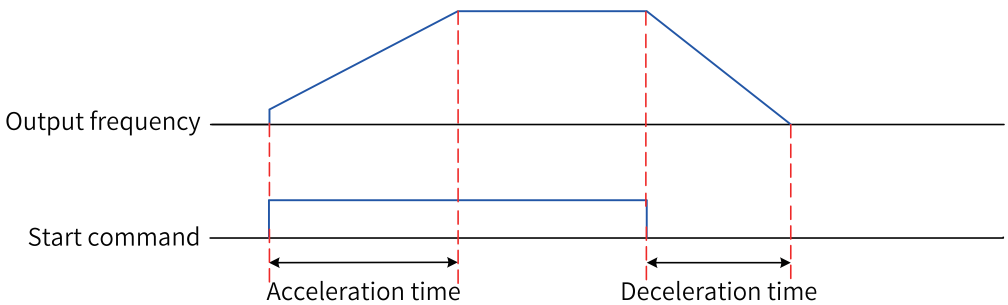


Figure 6-30 Sequence diagram for decelerate-to-stop

Coast to stop

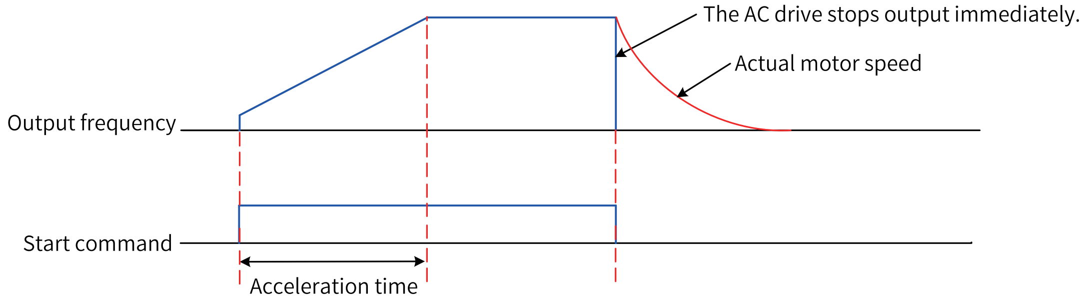


Figure 6-31 Sequence diagram for coast-to-stop

6.1.3.3 Acceleration/Deceleration Time Setting

The acceleration time indicates the time required for the AC drive to accelerate from 0 Hz to F0-25 (base frequency for acceleration/deceleration time). The deceleration time indicates the time required for the AC drive to decelerate from F0-25 (base frequency for acceleration/deceleration time) to 0 Hz.

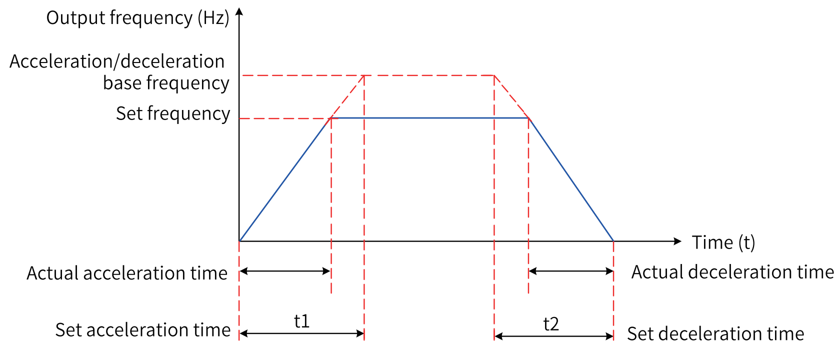


Figure 6-32 Acceleration/Deceleration time

The AC drive provides four groups of acceleration/deceleration time, which can be selected by using the DI assigned with functions 18 and 19. The acceleration/deceleration time is defined by the following parameters:

Group 1: F0-17, F0-18

Group 2: F8-03, F8-04

Group 3: F8-05, F8-06

Group 4: F8-07, F8-08

Instances

The following example uses DI6 and DI7 as the input switchover terminals to describe how to set the acceleration/deceleration time.

1. Set F4-10 or F4-11 and F4-12 or F4-13 to select DI6 and DI7 for switchover.

Parameter	Parameter Name	Setting	Function description
F4-10	DI6 hardware source	1	1: DI1 of the rectifier unit
F4-11	DI6 function selection	18	Acceleration/Deceleration selection terminal 1
F4-12	DI7 hardware source	2	2: DI2 of the rectifier unit
F4-13	DI7 function selection	19	Acceleration/Deceleration selection terminal 2

2. Set the corresponding acceleration/deceleration time through parameters.

DI8 State	DI7 State	Acceleration/Deceleration Time
OFF	OFF	Group 1: F0-17, F0-18 (Acceleration time 1)
OFF	ON	Group 2: F8-03, F8-04 (Acceleration time 2. For details, see F0-17 and F0-18.)
ON	OFF	Group 3: F8-05, F8-06 (Acceleration time 3. For details, see F0-17 and F0-18.)
ON	ON	Group 4: F8-07, F8-08 (Acceleration time 4. For details, see F0-17 and F0-18.)

3. Set F0-19 (acceleration/deceleration time unit). Note that when this parameter is modified, the decimal places of the four groups of acceleration/deceleration time will change, and the corresponding acceleration/deceleration time will also change.
4. Set F6-07 (acceleration/deceleration mode) to select the frequency change mode during the start and stop process of the AC drive.

- 0: Linear acceleration/deceleration The output frequency increases or decreases linearly.
- 1: S-curve acceleration/deceleration The output frequency increases or decreases following the S-curve in real time when the target frequency changes. Details must be set through F6-26 and F6-27. This mode is applicable to scenarios requiring supreme riding comfort and real-time response. Set F6-26 (Time proportion of S-curve acceleration start segment) and F6-27 (Time proportion of S-curve acceleration end segment). The following condition must be met: F6-26 + F6-27 ⩽ 100.0%
- 2: Four-segment S-curve acceleration/deceleration. On the basis of S-curve acceleration/deceleration, change to S-curve acceleration/deceleration start and end segments. Set parameter F6-26 (Time proportion of S-curve acceleration start segment), F6-27 (Time proportion of S-curve acceleration end segment), F6-28 (Time proportion of S-curve deceleration start segment), and F6-29 (Time proportion of S-curve deceleration end segment). In addition, the following condition must be met: F6-26 + F6-27 ⩽ 100.0% and F6-28 + F6-29 ⩽ 100.0%.

6.2 Motor Configuration

6.2.1 Asynchronous Motor Parameter Auto-Tuning

Motor auto-tuning is the process by which the AC drive obtains the parameters of the controlled motor.

The following auto-tuning methods are available for asynchronous motors: static auto-tuning on some parameters of asynchronous motors, dynamic auto-tuning on all parameters of asynchronous motors, and static auto-tuning on all parameters of asynchronous motors.

Parameter	Name	Default	Value Range	Descriptions
F1-37	Parameter auto-tuning selection	0	0: No operation	Parameters are not tuned.
			1: Static partial auto-tuning for asynchronous motor	This mode is applicable to scenarios where the motor cannot be disconnected from loads and dynamic auto-tuning is not feasible. In this mode, some motor parameters are auto-tuned, including F1-06 (Stator resistance of asynchronous motor), F1-07 (Rotor resistance of asynchronous motor), and F1-08 (Leakage inductance of asynchronous motor).
			2: Dynamic complete auto-tuning for asynchronous motor	This mode is applicable to scenarios where the motor can be easily disconnected from the application system. In this mode, the motor rotates during auto-tuning. In this mode, all motor parameters are auto-tuned, including F1-06 (Stator resistance of asynchronous motor), F1-07 (Rotor resistance of asynchronous motor), F1-08 (Leakage inductance of asynchronous motor), F1-09 (Mutual inductance of asynchronous motor), and F1-10 (No-load current of asynchronous motor).
			3: Static complete auto-tuning for asynchronous motor	This mode is applicable to scenarios where the motor cannot be disconnected from the load and dynamic complete auto-tuning is not feasible. The motor does not rotate during auto-tuning. In this mode, all motor parameters are auto-tuned, including F1-06 (Stator resistance of asynchronous motor), F1-07 (Rotor resistance of asynchronous motor), F1-08 (Leakage inductance of asynchronous motor), F1-09 (Mutual inductance of asynchronous motor), and F1-10 (No-load current of asynchronous motor).

The following table describes differences among these auto-tuning modes.

Table 6–7 Motor auto-tuning method

Auto-tuning mode	Application scenario	Auto-tuning effect
1: Static partial auto-tuning for asynchronous motor	Applicable to cases where the motor cannot be disconnected from the load and dynamic auto-tuning is not allowed	Normal
2: Dynamic complete auto-tuning for asynchronous motor	Applies to working conditions where the motor can be easily disconnected from the load.	Optimal
3: Static complete auto-tuning for asynchronous motor	Applies to working conditions where the motor cannot be disconnected from the load and dynamic complete auto-tuning is not allowed.	Good

Except for the preceding three motor auto-tuning modes, the motor parameters can also be manually input.

In motor auto-tuning, you can send operation commands or set F0-02 to 0 through the operating panel of the power supply unit or the LCD operating panel, or set F0-02 to 1 through DI. You can also start motor auto-tuning through communication and set F0-02 to 2.

To perform auto-tuning through communication, write the value of F1-37 and then write operation commands.

Instances

- Static partial auto-tuning for asynchronous motor

Table 6–8 Static partial auto-tuning for asynchronous motor

Method	Description
Step 1	Power on the AC drive, and then set F0-02 = 0 to select the operating panel as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 1 (static partial auto-tuning for asynchronous motor), and press ENTER. The following information is displayed on the keypad: 
Step 4	Press the RUN key on the operating panel or on the SOP20. The motor does not rotate but gets energized. The RUN indicator becomes ON. After the preceding display disappears and the operating panel returns to the normal parameter display state, it indicates that motor auto-tuning has been completed. The values of F1-06 to F1-08 will be computed by the AC drive automatically.

- 3: Static complete auto-tuning for asynchronous motor
  If the motor has a constant output or is used for high-precision applications, disconnect the motor from the load before implementing dynamic complete auto-tuning to achieve the best auto-tuning effect.

Table 6–9 3: Static complete auto-tuning for asynchronous motor

Method	Description
Step 1	Power on the AC drive, and then set F0-02 = 0 to select the operating panel as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 2 to select dynamic complete auto-tuning of the asynchronous motor. Press ENTER on the keypad. The following information is displayed on the keypad: 
Step 4	Press the RUN key on the operating panel or on the SOP20. The AC drive drives motor to accelerate/decelerate and run in forward/reverse direction. The RUN indicates becomes ON and auto-tuning lasts for a period. After the preceding display disappears and the operating panel returns to the normal parameter display state, it indicates that motor auto-tuning has been completed. Parameters F1-06 to F1-10 are auto-tuned.

- Static complete auto-tuning for asynchronous motors
  If the motor cannot be disconnected from the load, perform with-load complete auto-tuning, namely, static complete auto-tuning.

Table 6–10 Static complete auto-tuning for asynchronous motors

Method	Description
Step 1	Power on the AC drive, and then set F0-02 = 0 to select the operating panel as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 3 (Static complete auto-tuning of asynchronous motor). Press ENTER on the operating panel. The following information is displayed on the operating panel: 
Step 4	Press RUN on SOP20 or the operating panel of the power supply unit to energize the motor. In this case, the motor does not rotate, but the operation indicator turns on. After the preceding display disappears and the operating panel returns to the normal parameter display state, it indicates that motor auto-tuning has been completed. The values of F1-06 to F1-10 will be computed by the AC drive automatically.

6.2.2 Synchronous Motor Parameter Auto-Tuning

Motor auto-tuning is the process by which the AC drive obtains the parameters of the controlled motor.

Auto-tuning modes of the synchronous motor include no-load partial auto-tuning (back EMF excluded), dynamic no-load auto-tuning, and static complete auto-tuning.

Parameter	Name	Default	Value Range	Descriptions
F1-37	Parameter auto-tuning selection	0	0: No operation	Parameters are not tuned.
			11: No-load partial auto-tuning for synchronous motor (excluding back EMF)	This mode is applicable to scenarios where the motor cannot be disconnected from the load. The motor may rotate for several revolutions slowly during auto-tuning. Auto-tuned motor parameters include F1-06 (Motor stator resistance), F1-17 (Synchronous motor d-axis inductance), and F1-18 (Synchronous motor q-axis inductance).
			12: Dynamic no-load auto-tuning for synchronous motor	This mode is applicable to scenarios where the motor can be disconnected from the load. In this mode, the motor rotates during auto-tuning. The following motor parameters are tuned in the FVC mode. F1-06 (Motor stator resistance), F1-17 (D-axis inductance of synchronous motor), F1-18 (Q-axis inductance of synchronous motor), F1-19 (Synchronous motor back EMF), F1-30 (Encoder phase sequence), and F1-31 (Encoder mounting angle). F1-30 and F1-31 are not tuned in other control modes.
			13: Static complete auto-tuning for synchronous motor	This mode is applicable to scenarios where the motor cannot be disconnected from the load and dynamic complete auto-tuning is not feasible. The motor does not rotate during auto-tuning. Auto-tuned motor parameters include F1-06 (Motor stator resistance), F1-17 (Synchronous motor d-axis inductance), and F1-18 (Synchronous motor q-axis inductance). Encoder parameters are not tuned.

The following table describes differences among these auto-tuning modes.

Table 6–11 Motor auto-tuning method

Auto-tuning mode	Application scenario	Auto-tuning effect
11: No-load partial auto-tuning for synchronous motor (excluding back EMF)	Applicable to cases where the motor cannot be disconnected from the load and dynamic auto-tuning is not allowed After auto-tuning is completed, you need to manually set the back EMF (SVC, PMVVC),	Good
12: Dynamic no-load auto-tuning for synchronous motor	Applies to working conditions where the motor can be easily disconnected from the load.	Optimal
13: Static complete auto-tuning for synchronous motor	Applicable to occasions where the motor cannot be disconnected from the load easily and motor rotation is not allowed. After auto-tuning is completed, you need to manually set the back EMF (SVC, PMVVC),	Normal

Except for the preceding three motor auto-tuning modes, the motor parameters can also be manually input.

In motor auto-tuning, you can send operation commands or set F0-02 to 0 through the operating panel of the power supply unit or the LCD operating panel, or set F0-02 to 1 through DI. You can also start motor auto-tuning through communication and set F0-02 to 2.

To perform auto-tuning through communication, write the value of F1-37 and then write operation commands.

Instances

- No-load partial auto-tuning for synchronous motor (excluding back EMF)

Table 6–12 No-load partial auto-tuning for synchronous motor (excluding back EMF)

Method	Description
Step 1	Power on the AC drive, and then set F0-02 = 0 to select the operating panel as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 11 (static partial auto-tuning for synchronous motor), and press ENTER. The following information is displayed on the keypad: 
Step 4	Press RUN on SOP20 or the operating panel of the power supply unit to energize the motor. In this case, the operation indicator turns on and the tuning indicator blinks. After the preceding display disappears and the operating panel returns to the normal parameter display state, it indicates that motor auto-tuning has been completed. The values of F1-06, F1-17, and F1-18 will be computed by the AC drive automatically. F1-19 needs to be set manually.

- No-load auto-tuning for synchronous motor
  If the motor features constant output or high accuracy is required, perform dynamic complete auto-tuning after disconnecting the motor from the load for optimal auto-tuning effect.

Table 6–13 No-load auto-tuning for synchronous motor

Method	Description
Step 1	Power on the AC drive, and then set F0-02 = 0 to select the operating panel as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 12 to select dynamic auto-tuning of the synchronous motor. Press ENTER on the keypad. The following information is displayed on the keypad: 
Step 4	Press RUN on SOP20 or the operating panel of the power supply unit to energize the motor. In this case, the operation indicator turns on and the tuning indicator blinks. After the preceding display disappears and the operating panel returns to the normal parameter display state, it indicates that motor auto-tuning has been completed. The values of F1-06, F1-17, F1-18, and F1-19 will be computed by the AC drive automatically.

- Static complete auto-tuning for synchronous motor
  The mode applies when motor rotation is not allowed.

Table 6–14 Static complete auto-tuning for synchronous motor

Method	Description
Step 1	Power on the AC drive, and then set F0-02 = 0 to select the operating panel as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 13 (complete static auto-tuning of synchronous motor), and press ENTER on the operating panel. The following information is displayed. 
Step 4	Press RUN on SOP20 or the operating panel of the power supply unit to energize the motor. In this case, the operation indicator turns on and the tuning indicator blinks. After the preceding display disappears and the operating panel returns to the normal parameter display state, it indicates that motor auto-tuning has been completed. The values of F1-06, F1-17, and F1-18 will be computed by the AC drive automatically. F1-19 needs to be set manually.

6.3 Control Terminal

6.3.1 Digital Input (DI) Terminals

6.3.1.1 Sources of DI Terminals

With no digital input, the inverter unit needs to map to the rectifier unit or expansion card. Therefore, you need to set the digital input sources when the inverter unit uses digital input.

The digital input terminal source is displayed as follows when you modify related parameters on the operating panel.

Panel display	Description
	Ten thousands position, thousands position: IO Hundreds position: Serial number 0 indicates the rectifier unit, 1 indicates expansion card 1, 2 indicates expansion card 2, and so on. Tens position, ones position: Hardware terminal

Example:

Parameter	Panel display	Description
F4-00		DI1 of the inverter unit maps to DI3 of the rectifier unit.
F4-02		DI2 of the inverter unit maps to DIO4 of the rectifier unit. When the inverter unit uses DIO1 to DIO4 of the rectifier unit as the DI hardware sources, set this parameter to Io005 to Io008 directly.
F4-08		DI5 of the inverter unit maps to DI8 of expansion card 1.

The following table describes the parameters related to the inverter unit.

Table 6–15 Parameters related to the inverter unit

Parameter	Parameter Name	Default	Value Range	Descriptions
F4-00	DI1 hardware source	0	No selection 1: DI1 of the rectifier unit 2: DI2 of the rectifier unit 3: DI3 of the rectifier unit 4: DI4 of the rectifier unit 5: DIO1 of the rectifier unit 6: DIO2 of the rectifier unit 7: DIO3 of the rectifier unit 8: DIO4 of the rectifier unit 101: DI1 on expansion card 1 102: DI2 on expansion card 1 103: DI3 on expansion card 1 104: DI4 on expansion card 1 105: DI5 on expansion card 1 106: DI6 on expansion card 1 107: DI7 on expansion card 1 108: DI8 on expansion card 1 201: DI1 on expansion card 2 202: DI2 on expansion card 2 203: DI3 on expansion card 2 204: DI4 on expansion card 2 205: DI5 on expansion card 2 206: DI6 on expansion card 2 207: DI7 on expansion card 2 208: DI8 on expansion card 2	Used to select the input terminal hardware source. Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner). Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).
F4-02	DI2 hardware source	0		
F4-04	DI3 hardware source	0		
F4-06	DI4 hardware source	0		
F4-08	DI5 hardware source	0		
F4-10	DI6 hardware source	0		
F4-12	DI7 hardware source	0		
F4-14	DI8 hardware source	0		

The value range of the parameters in the preceding table changes automatically.

1. If expansion cards 1 and 2 are not connected, non-existent hardware resources are skipped automatically when parameters are set on the local operating panel, and a write failure will be reported when the parameters are set to non-existent hardware resources at the background or by using an external operating panel.
   For example, if expansion card 1 is not connected, the value of F4-00 (DI1 hardware source) will jump directly from 008 to 201 when you press the UP key.
2. For the same inverter unit, the values of the parameters in the preceding table cannot be duplicate (that is, different DIs cannot use the same hardware source). If a hardware source has been selected, it is skipped automatically when other parameters are set on the local operating panel, and a write failure is reported when this hardware source is assigned to other parameters at the background or by using an external operating panel.

For example, if F4-00 (DI1 hardware source) is set to 002, pressing the UP key will automatically skip 002 to 003 when you set F4-02 (DI2 hardware source).

3. If one device in a device group selects a DIO of the rectifier unit as the input terminal (DI) source, the DO terminals of all devices in the group cannot select this DIO as the hardware source. If a DIO has been selected as the hardware source of a DI, this DIO is automatically skipped when you set hardware resources for DOs on the local operating panel, and a write failure occurs when this DIO is selected as the hardware source of a DO at the background or by using an external operating panel. Similarly, if one device in a device group selects a DIO of the rectifier unit as the output terminal (DO/RO) source, the DI terminals of all devices in the group cannot select this DIO as the hardware source. If a DIO has been selected as the hardware source of a DO, this DIO is automatically skipped when you set hardware resources for DIs on the local operating panel, and a write failure occurs when this DIO is selected as the hardware source of a DI at the background or by using an external operating panel.

   For example:

   If F4-00 (DI1 hardware source) is set to 005, pressing the UP key will automatically skip 001 to 002 when you set F5-02 (DO2/RO2 hardware source).

   If F5-00 (DO1/RO1 hardware source) is set to 001, pressing the UP key will automatically skip 005 to 006 when you set F4-00 (DI1 hardware source).

6.3.1.2 Functions of DI Terminals

The AC drive is equipped with eight multi-function DI terminals, each of which can be assigned with a DI function. Note that the functions of the eight DIs of the same device cannot be duplicate.

Table 6–16 Parameters related to digital input

Parameter	Name	Default	Value Range	Descriptions
F4-01	DI1 function selection	1	0 to 95	For details about DI1 terminal function selection, see *“Table 6–17 Descriptions of DI functions” on page 571*。
F4-03	DI2 function selection	4		
F4-05	DI3 function selection	9		
F4-07	DI4 function selection	14		
F4-09	DI5 function selection	15		
F4-11	DI6 function selection	0		
F4-13	DI7 function selection	0		
F4-15	DI8 function selection	0		
F4-19	DI1 delay time	0.0s	0.0s to 3600.0s	Indicates the delay of the AC drive when the DI state changes. It is only available for DI1, DI2, and DI3 currently.
F4-20	DI2 delay	0.0s	0.0s to 3600.0s	
F4-21	DI2 delay	0.0s	0.0s to 3600.0s	

Parameter	Name	Default	Value Range	Descriptions
F4-22	DI active status setting 1	00000	0: Active high 1: Active low Ones: DI1 active status setting Tens: DI2 active mode Hundreds: DI3 active mode Thousands: DI4 active mode Ten thousands: DI5 active mode	The ones to ten thousands places of this parameter are used to the active status of DI1 to DI5. 0: Active high DI1 to DI5 are active when connected to COM and inactive when disconnected from COM. 1: Active low DI1 to DI5 are inactive when connected to COM and active when disconnected from COM.
F4-23	DI active mode selection 2	00000	0: Active high 1: Active low Ones: DI6 active status setting Tens: DI7 active status setting Hundreds: DI8 active status setting Thousands place: Reserved Ten thousands place: Reserved	The ones to ten thousands places of this parameter are used to the active status of DI6 to DI8. 0: Active high DI6 to DI8 are active when connected to COM and inactive when disconnected from COM. 1: Active low DI6 to DI8 are inactive when connected to COM and active when disconnected from COM.

Table 6–17 Descriptions of DI functions

Setpoint	Function	Description
0	Invalid	No function is assigned to the DI.
1	Forward running (FWD)	Gives the forward running signal. In the case of two-wire mode 1 (F4-17 = 0), forward run applies. In the case of two-wire mode 2 (F4-17 = 1), the operation command applies.
2	Reverse running (REV)	Gives the reverse running signal. In the case of three-wire mode 1 (F4-17 = 2), reverse run applies. In the case of three-wire mode 2 (F4-17 = 3), the reverse running direction applies.
3	Three-wire mode	The DI is used to set the three-wire mode for the AC drive. To set the running command source to the terminal, set F4-17 (terminal command mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set the DI to function 3.
4	Forward jog (FJOG)	The terminal is used to set the AC drive to jog forwardly. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.
5	Reverse jog (RJOG)	The terminal is used to set the AC drive to jog reversely. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.

Setpoint	Function	Description
6	Function as the UP key	The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if is kept pressed down. When this terminal is inactive, it works as if is released.
7	Terminal DOWN	The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if is kept pressed down. When this terminal is inactive, it works as if is released.
8	Clear data set by UP/ DOWN key or by terminal functioning as UP/DOWN key	When the main frequency is set through the operating panel and this function is selected, the frequency set by or key on the operating panel or by terminal functioning as the UP/DOWN key (6 or 7) can be cleared, and the frequency reference will be reset to the value of F0-08.
9	Fault reset (RESET)	The terminal is used to reset faults of the AC drive and reset upon detection of a rising edge on the DI signal. Remote fault reset is also supported.
10	External fault normally open (NO) input	When the terminal is active, the AC drive reports E15.01 upon receiving an external signal.
11	NC input of external fault	When the terminal is active, the AC drive reports E15.02 upon receiving an external signal.
12	User-defined fault 1	The AC drive reports E27.00, and acts according to the value of F9-51 (Fault protection action selection).
13	User-defined fault 2	The AC drive reports E28.00, and acts according to the value of F9-51 (Fault protection action selection).
14	Multi-reference terminal 1	The setting of 16 multi-references or 16 other references can be implemented through combinations of 16 states of these four terminals.
15	Multi-reference terminal 2	
16	Multi-reference terminal 3	
17	Multi-reference terminal 4	
18	Acceleration/Deceleration selection terminal 1	Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.
19	Acceleration/Deceleration selection terminal 2	
20	Acceleration/Deceleration inhibited	The drive runs at the current operating frequency without being affected by external input frequency except that a stop command is received.
21	Command source switchover terminal 1	When the operation command is set through the terminal (F0-02 = 1), this function can implement switchover between terminal control and keypad control. When the operation command is set through communication (F0-02 = 2), this function can implement switchover between communication control and keypad control.
22	Command source switchover terminal 2	The terminal is used for switchover between terminal control and communication control. If terminal control is used, the system switches to communication control when the terminal is active. If communication control is used, the system switches to terminal control when the terminal is active.
23	Frequency source switchover	The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).

Setpoint	Function	Description
24	Switchover between main frequency source X and preset frequency	The terminal is used to switch the main frequency to the preset frequency (F0-08).
25	Switchover between auxiliary frequency source Y and preset frequency	The terminal is used to switch the auxiliary frequency to the preset frequency (F0-08).
26	Frequency modification enable	When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.
27	Counter input	In the count process, the number of pulses is counted when the terminal is active.
28	Counter reset	In the count process, the counter status is cleared when the terminal is active.
29	Length count input	In the fixed length process, the length count is input when the terminal is active.
30	Length reset	In the fixed length process, the length is cleared when the terminal is active.
31	PID pause	PID is invalid temporarily. The AC drive maintains the current frequency output without supporting PID adjustment of frequency source.
32	PID integral pause	After this function is active, the integral adjustment function pauses. However, the proportional and derivative adjustment functions are still valid.
33	PID parameter switchover	If PID parameters are switched by using the DI (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.
34	Opposite to PID action direction	The terminal is used to reverse the PID action direction defined by FA-03 (PID action direction).
35	Torque control prohibited	In torque control mode, the drive switches to speed control when this terminal is active. The drive switches back to the torque control mode when the terminal becomes inactive.
36	Speed control/Torque control switchover	The terminal is used to enable the drive to switch between the speed control mode and the torque control mode. If A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive. If A0-00 (speed/torque control mode) is set to 1, the speed control mode is used when the terminal is active, and the torque control mode is used when the terminal is inactive.
38	Start speed tracking	Flying start of drive
39	Immediate DC braking	The terminal is used to switch the drive to the DC braking state.
40	Decelerate to DC braking	The drive decelerates to the start frequency of DC braking for stop (F6-11) and then enters the DC braking state.
41	External stop terminal 1	When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42	External stop terminal 2	The drive decelerates to stop in any control mode (operating panel, terminal, or communication). In this case, the deceleration time is fixed to the value of F8-08 (deceleration time 4).
43	Pause	When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44	Coast to stop	The AC drive stops and the motor coasts to stop.

Setpoint	Function	Description
45	Emergency stop	When the system is in the emergency state, the drive decelerates according to F8-60 (Deceleration time for emergency stop) or according to the minimum unit time when the deceleration time for emergency stop is 0s in the V/f control mode. The input terminal does not need to be in the closed state continuously. Even if it is closed only for a moment, an emergency stop will occur immediately. Different from general deceleration time, the emergency stop input terminal is opened after the deceleration time for emergency stop expires. In this case, if the operation signal is still active, the drive will not restart. To restart the drive, disconnect the operation terminal and input the operation command again.
46	Motor selection terminal 1	The function is used to select a motor. When this terminal is active, motor 2 is selected. When this terminal is inactive, motor 1 is selected.
47	Clear current running time	The terminal is used to clear the current running time of the drive. If the current running time is shorter than the set value (greater than 0) of F8-57 (Current running time threshold) and the terminal is active, the current running timing is cleared. If the current running time is longer than the set value (greater than 0) of F8-53 and the terminal is active, and the current running time is not cleared.
48	Two-wire/Three-wire mode switchover	The terminal is used to switch the drive between the two-wire control mode and the three-wire control mode. If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active. If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active. If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active. If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49	PLC state reset	The terminal is used to restore the AC drive to the initial state of the simple PLC.
50	Wobble frequency pause	In the wobble process, when this terminal is active, the wobble function is paused and the AC drive outputs at the center frequency.
94	Brake contactor feedback 1	Give the brake release feedback signal
95	Brake contactor feedback 2	Give the brake feedback signal

6.3.2 Digital Output (DO) Terminals

6.3.2.1 Sources of DO Terminals

With no digital output, the inverter unit needs to map to the rectifier unit or expansion card. Therefore, you need to set the digital output sources when the inverter unit uses digital output (DO/RO).

The DO terminal source is displayed in a way similar to that shown in *"6.3.1.1 Sources of DI Terminals" on page 567* when you modify related parameters on the operating panel. There are some differences in the selection of DIOs of the power supply unit, which are described as follows.

Parameter	Display	Description
F5-00		DO/RO1 of the inverter unit maps to DIO1 of the rectifier unit.
F5-02		DO/RO2 of the inverter unit maps to Relay RO1 of the rectifier unit.

Table 6–18 Related parameters

Parameter	Parameter Name	Default	Value Range	Descriptions
F5-00	DO1/RO1 hardware source	0	No selection 1: DIO1 of the rectifier unit 2: DIO2 of the rectifier unit 3: DIO3 of the rectifier unit 4: DIO4 of the rectifier unit 5: RO1 of the rectifier unit 101: DO1/RO1 on expansion card 1 102: DO2/RO2 on expansion card 1 103: DO3/RO3 on expansion card 1 104: DO4/RO4 on expansion card 1 105: DO5/RO5 on expansion card 1 106: DO6/RO6 on expansion card 1 107: DO7/RO7 on expansion card 1 108: DO8/RO8 on expansion card 1 201: DO1/RO1 on expansion card 2 202: DO2/RO2 on expansion card 2 203: DO3/RO3 on expansion card 2 204: DO4/RO4 on expansion card 2 205: DO5/RO5 on expansion card 2 206: DO6/RO6 on expansion card 2 207: DO7/RO7 on expansion card 2 208: DO8/RO8 on expansion card 2	Used to select the output terminal hardware source. DIO refers to the digital input or output, DO refers to the digital output, and RO refers to the relay output. Expansion card 1 refers to the card installed to the position 1 of the AC drive (upper left corner). Expansion card 2 refers to the card installed to the position 2 of the AC drive (lower left corner).
F5-02	DO2/RO2 hardware source	0		
F5-04	DO3/RO3 hardware source	0		
F5-06	DO4/RO4 hardware source	0		
F5-08	DO5/RO5 hardware source	0		

The value range of the parameters in the preceding table changes automatically. For details, see *"6.3.1.1 Sources of DI Terminals" on page 567*。

6.3.2.2 Functions of DO Terminals

The AC drive is equipped with five multi-function digital output terminals as standard. The DO/RO terminals can be used to indicate the working status and alarms of the AC drive. Parameters F5-01 to F5-09 are used to define the functions of the DO/RO terminals. You can set 40 kinds of functions to fulfill specific automatic control requirements.

Table 6–19 Related parameters

Parameter	Parameter Name	Default	Value Range	Descriptions
F5-01	DO1/RO1 function selection	3	0 to 53	For details about DI terminal function selection, see "Table 6–20 Description of functions of DO terminals" on page 576。
F5-03	DO2/RO2 output function	15		
F5-05	DO3/RO3 output function	0		
F5-07	DO4/RO4 output function	0		
F5-09	DO5/RO5 output function	0		
F5-10	DO1/RO1 output delay	0.0s	0.0s to 3600.0s	This parameter defines the delay of the DO/RO terminal state change.
F5-11	DO2/RO2 output delay	0.0s	0.0s to 3600.0s	
F5-12	DO3/RO3 output delay	0.0s	0.0s to 3600.0s	
F5-13	DO4/RO4 output delay	0.0s	0.0s to 3600.0s	
F5-14	DO5/RO5 output delay	0.0s	0.0s to 3600.0s	
F5-15	DO/RO valid state selection	00000	0: Positive logic 1: Negative logic Ones position: DO1/RO1 Tens position: DO2/RO2 Hundreds: DO3/RO3 Thousands: DO4/RO4 Ten thousands position: DO5/RO5	0: Positive logic (equivalent to a NO contact) Valid status: The DO is internally connected to the COM terminal. Invalid status: The DO is disconnected from the COM terminal. 1: Negative logic (equivalent to a NC contact) Valid status: The DO is disconnected from the COM terminal. Invalid status: The DO is internally connected to the COM terminal.

Table 6–20 Description of functions of DO terminals

Setpoint	Function	Description
0	No function	The terminal has no function.
1	AC drive running	When the drive is operating and outputs frequency (can be zero), the terminal outputs an active signal.
2	Ready for running	The terminal outputs an active signal when the drive is in the normal state after power-on.
3	Fault output (stop at fault)	When the AC drive coasts to stop or decelerates to stop upon a fault, the DO terminal outputs an "active" signal after the AC drive stops completely.
4	Fault output 2	When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO terminal outputs an "active" signal after the AC drive stops completely.
5	Fault output 3	When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO terminal outputs an "active" signal.
6	Error output (outputted directly upon fault or warning)	An "active" signal will be outputted when a fault or warning occurs.
7	Motor overload pre-alarm	The drive determines whether the motor load exceeds the overload pre-alarm threshold according to the overload pre-alarm coefficient (F9-02) before triggering protection. When the overload pre-alarm threshold is exceeded, the terminal outputs an active signal.

Setpoint	Function	Description
8	Drive overload pre-alarm	The terminal outputs an active signal 10s before AC drive overload protection applies.
9	Motor overheat warning	The terminal outputs an active signal when the motor temperature reaches the value of F9-58, F9-60, or F9-62 (motor overtemperature warning threshold).
10	AC drive load loss output	The terminal outputs an active signal when load loss occurs.
11	Undervoltage state output	The terminal outputs an active signal when the drive is in the undervoltage state.
12	Output current overlimit	When the output current of the drive is greater than F8-40 (Output overcurrent threshold) for longer time set by F8-41 (Software overcurrent detection delay), the DO outputs an active signal.
13	Frequency-level detection FDT1 output	When the running frequency exceeds the frequency detection value, the DO/RO outputs an active signal. When the running frequency falls below the result of the frequency detection value minus the FDT hysteresis, the DO/RO stops outputting the active signal. For details, see the description of F8-22 and F8-23.
14	Frequency-level detection FDT2 output	When the running frequency exceeds the frequency detection value, the DO/RO outputs an active signal. When the running frequency falls below the result of the frequency detection value minus the FDT hysteresis, the DO/RO stops outputting the active signal. For details, see the description of F8-24 and F8-25.
15	Frequency reach	When the operating frequency of the drive is within a certain range (target frequency ± F8-26), the DO/RO outputs an active signal.
16	Frequency 1 reached	When the operation frequency of the drive is within the detection range of F8-27 (any arrived frequency detection value 1), the DO/RO outputs an valid signal. The frequency detection range is as follows: (F8-27–F8-28) to (F8-27+F8-28).
17	Frequency 2 reached	When the operation frequency of the drive is within the detection range of F8-30 (any arrived frequency detection value 2), the DO/RO outputs an valid signal. The frequency detection range is as follows: (F8-30–F8-31) to (F8-30+F8-31).
18	Frequency upper limit reached	The terminal outputs an active signal when the operating frequency reaches the frequency upper limit (F0-12).
19	Frequency lower limit reached (output available at stop)	The terminal outputs an active signal when the operating frequency reaches the lower limit (F0-14). The terminal still outputs the active signal when the drive is in the stop state.
20	Frequency lower limit reached (no output at stop)	When F8-15 (Running mode when frequency reference < frequency lower limit) is set to 1 (stop), the terminal outputs an inactive signal no matter whether the operating frequency reaches the lower limit. When F8-14 is set to 0 (run at the lower limit frequency) or 2 (run at zero speed) and the running frequency reaches the lower limit, the terminal outputs an active signal.
21	Timed duration reached	When the timing function set by F8-46 is enabled and the operating time reaches the set timing duration, the terminal outputs an active signal. The timing duration is defined by F8-47 and F8-48.
22	Cumulative power-on time reached	The terminal outputs an active signal when the cumulative power-on time of the AC drive (F7-12) equals to or is high than the time defined by F8-19.
23	Cumulative running time reached	When the cumulative operating time of the drive equals to or is high than the time defined by F8-20, the terminal outputs an active signal.
24	Current operating time reached	When the current operating time of the drive equals to or is high than the time defined by F8-58 (Current running time reach), the terminal outputs an active signal.

Setpoint	Function	Description
25	Zero current state	When the output current of the drive is within the zero-current range for a time exceeding F8-39 (delay time for detecting zero-current), the DO/RO outputs an valid signal. Zero current detection range = 0 to F8-38 x F1-03
26	Current 1 reached	When the output current of the drive is within the detection range of F8-42 (any arrived current 1), the DO/RO outputs an active signal. The current detection range is (F8-42–F8-43) x F1-03 (rated motor current) to (F8-42 +F8-43) x F1-03.
27	Current 2 reached	When the output current of the drive is within the detection range of F8-44 (any arrived current 2), the DO/RO outputs an active signal. The current detection range is (F8-44–F8-45) x F1-03 (rated motor current) to (F8-44 +F8-45) x F1-03.
28	AC drive overtemperature threshold reached	The terminal outputs an active signal when F7-07 (drive unit heatsink temperature) reaches the value of F8-51 (AC drive overtemperature threshold reached).
29	Counting value reference reached	The terminal outputs an active signal when the counting value reaches the setpoint of FB-08.
30	Designated count value reached	The terminal outputs an active signal when the counting value reaches the setpoint of FB-09.
31	Length reached	The terminal outputs an active signal when the actual length detected equals to or is higher than the length defined by FB-05.
32	Frequency limit reached	An "active" signal will be outputted when the set frequency exceeds the frequency upper limit or lower limit and the drive output frequency reaches the frequency upper limit or lower limit.
33	Torque limited	The terminal outputs an active signal when the output torque reaches the torque limit in the speed control mode.
34	AI1 input limit exceeded	If the value of AI1 input is larger than the value of F8-49 (AI1 input protection lower limit) or lower than the value of F8-50 (AI1 input protection upper limit), the terminal outputs an active signal.
35	AI1>AI2	The terminal outputs an active signal when the value of AI1 is greater than that of AI2.
36	PLC cycle completed	When the simple PLC completes one cycle, the terminal outputs a pulse signal with the width of 250 ms.
37	Communication	The active or inactive state of the terminal is controlled by the setpoint of communication address 0x2001 or 0x7312.
38	STO-EDM	The DO terminal outputs an active signal when STO is triggered.
40	Operating at zero speed (no output at stop)	The terminal outputs an active signal when the AC drive is running and its output frequency is 0. When the AC drive is in the stop state, the signal is inactive.
41	Zero-speed running 2 (having output at stop)	The terminal outputs an active signal when the AC drive is running and its output frequency is 0. The signal is still active when the AC drive stops.
43	Reverse running	The terminal outputs an active signal when the drive is operating in the reverse direction.
44	Reserved (process 1)	/
45	Reserved (process 2)	/
46	Reserved (process 3)	/
47	Reserved (process 4)	/
48	Reserved (process 5)	/
49	Reserved (process 6)	/
50	Reserved (process 7)	/
53	Brake output	Brake output

6.3.3 Virtual Digital Input (VDI)

VDI terminals have the same functions as digital input (DI) terminals. They can be used for multi-functional digital inputs.

There are three VDI sources:

- A1-06: The VDI is set by writing values to A1-06. This mode applies to communication scenarios, where physical DIs are not used. The relationship between A1-06 and VDIs are as follows: The ones to ten thousands places of A1-06 correspond to VDI1 to VDI5, respectively.
- DO/ RO state: There are five DO/ROs. DO/RO1 to DO/RO5 correspond to VDI1 to VDI5, respectively.
- DI state: DO1 to DO5 correspond to VDI1 to VDI5, respectively.

The following examples show how to use VDIs:

Example 1: When A1-05 (VDI state setting mode) is set to 00001 (determined by DO/RO), the following function needs to be implemented: The AC drive reports an alarm and stops when AI1 input exceeds the upper limit or lower limit. Do as follows.

Method	Parameter Setting
1	Set the VDI1 function to "User-defined fault 1" (A1-00 = 12).
2	Set the DO/RO1 function to "AI input limit exceeded" (F5-01 = 34).
3	Set the VDI1 state setting mode to the DO (A1-05 = 00001).

After the preceding steps, when the AI1 input exceeds the upper or lower limit, DO/RO1 outputs an ON signal. In this case, VDI1 becomes active and the AC drive receives user-defined fault 1 through VDI1. Then the AC drive reports E27.00 and stops.

Example 2: In a communication scenario, implement emergency stop through the VDI without using the physical DI.

Method	Parameter Setting
1	Set the VDI1 function to "Emergency stop" (A1-00 = 45).
2	Set the VDI1 state to be determined by parameters (A1-05 = 00000).
3	Modify the ones place of A1-06 through communication.

After the preceding steps, set the ones place of A1-06 to 1 to implement the emergency stop function.

Table 6–21 Related parameters

Parameter	Name	Default	Value Range	Descriptions
A1-00	VDI1 function	0	0 to 95	VDI1 to VDI5 can be used as multi-functional DIs. The setting of functions 0 to 95 is similar to that of common Dis. For details, see *"6.3.1.2 Functions of DI Terminals" on page 570*。
A1-01	VDI2 function	0	0 to 95	
A1-02	VDI3 function	0	0 to 95	
A1-03	VDI4 function	0	0 to 95	
A1-04	VDI5 function selection	0	0 to 95	
A1-05	VDI state setting source	00000	0: A1-06 1: DO state 2: DI state Ones: VDI1 Tens: VDI2 Hundreds: VDI3 Thousands: VDI4 Ten thousands: VDI5	The VDI state can be set in three modes, which is specified by A1-05. 0: The VDI state is determined by the binary bit of A1-06. 1: The VDI state is determined by the state of the corresponding DO/RO. VDIx is uniquely bound to DOx/ROx (x is between 1 and 5). 2: The VDI state is determined by the state (active or inactive) of the corresponding DI. VDI1 to VDI5 are bound to DI1 to DI5, respectively.
A1-06	VDI state setting	00000	0: Disabled 1: Enable Ones: VDI1 Tens: VDI2 Hundreds: VDI3 Thousands: VDI4 Ten thousands: VDI5	The VDIx (x ranges from 1 to 5) state is set by the ones to ten thousands places of this parameter. 0: Invalid The corresponding VDI terminal output is invalid. 1: Valid The corresponding VDI terminal output is valid.

6.3.4 Analog or Temperature Input (AI)

6.3.4.1 Sources of Analog or Temperature Input Terminals

With no analog or temperature input, the AC drive needs to map to analog or temperature inputs of the power supply unit or expansion card. Therefore, you need to set the analog or temperature input sources when the drive unit uses analog inputs or temperature sensors.

The analog or temperature input source is displayed as follows when you modify related parameters on the operating panel

Panel display	Description
	Ten thousands position, thousands position: IO Hundreds position: Serial number 0 indicates the power supply unit, 1 indicates expansion card 1, 2 indicates expansion card 2, and so on. Tens position, ones position: Hardware terminal

Example:

Parameter Code	Panel display	Description
F4-25		AI1 of the drive unit maps to analog or temperature input AI1 of the power supply unit.
F4-27		AI2 of the drive unit maps to analog or temperature input AI2 of expansion card 1.

Table 6–22 Related parameters

Parameter	Name	Default	Value Range	Descriptions
F4-25	AI1 hardware source	0	No selection 1: AI1 of the power supply unit 2: AI2 of the power supply unit 101: AI1 on expansion card 102: AI2 on expansion card 201: AI1 on expansion card 202: AI2 on expansion card	Used to select the analog/temperature input source.
F4-27	AI2 hardware source	0		
F4-29	AI3 hardware source	0		

The value range of the parameters in the preceding table changes automatically. For details, see *"6.3.1.1 Sources of DI Terminals" on page 567*。

6.3.4.2 Functions of Analog or Temperature Input Terminals

You can configure three analog inputs for the rectifier unit and map the analog data of the rectifier unit or expansion cards through the analog or temperature input source selection parameter. Analog data values and analog functions (voltage, current, or temperature) are received through the internal bus.

You can set the filter time and analog input functions of the two analog inputs of the rectifier unit and the external expansion card.

Table 6–23 Parameters of the rectifier unit (A1 - I/O expansion card of the rectifier unit)

Parameter	Name	Default	Value Range	Descriptions
A1-05	Filter time of AI1 for rectifier unit	0.1s	0.00s to 10.00s	This parameter defines the AI input filter time of the rectifier unit, which is 0.1s by default. It is set based on the response requirements and field signal interference. Decrease this filter time if fast response is required, and increase it if field interference is strong.
A1-06	Filter time of AI2 for rectifier unit	0.1s	0.00s to 10.00s	
A1-10	Function of AI1 for rectifier unit	0	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input	This parameter selects the AI input function for the rectifier unit.
A1-11	Function of AI2 for rectifier unit	0		

Table 6–24 Parameters of the rectifier unit (A2 - I/O expansion card 1)

Parameter	Name	Default	Value Range	Descriptions
A2-05	Filter time of AI1 for expansion card 1	0.1s	0.00s to 10.00s	This parameter defines the AI input filter time of the rectifier unit, which is 0.1s by default. It is set based on the response requirements and field signal interference. Decrease this filter time if fast response is required, and increase it if field interference is strong.
A2-06	Filter time of AI2 for expansion card 1	0.1s	0.00s to 10.00s	
A2-10	Function of AI1 for expansion card 1	0	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input	This parameter selects the AI input function for expansion card 1.
A2-11	Function of AI2 for expansion card 1	0		

Table 6–25 Parameters of the rectifier unit (A3- I/O expansion card 2)

Parameter	Name	Default	Value Range	Descriptions
A3-05	Filter time of AI1 for expansion card 2	0.1s	0.00s to 10.00s	This parameter defines the AI input filter time of the rectifier unit, which is 0.1s by default. It is set based on the response requirements and field signal interference. Decrease this filter time if fast response is required, and increase it if field interference is strong.
A3-06	Filter time of AI2 for expansion card 2	0.1s	0.00s to 10.00s	
A3-10	Function of AI1 for expansion card 2	0	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input	This parameter selects the AI input function for expansion card 2.
A3-11	Function of AI2 for expansion card 2	0		

Note the following:

- When the inverter unit requires analog voltage inputs, set the rectifier unit parameters (parameters in the preceding tables) related to the hardware source defined by F4-25, F4-27, or F4-29 to 0 (voltage input).
- When the inverter unit requires analog current inputs, set the rectifier unit parameters (parameters in the preceding tables) related to the hardware source defined by F4-25, F4-27, or F4-29 to 1 (current input).
- When the inverter unit requires temperature sensors, set the rectifier unit parameters (parameters in the preceding tables) related to the hardware source defined by F4-25, F4-27, or F4-29 to 2/3/4/5 (temperature sensor input, the value varies according to the sensor type).
- The rectifier unit can monitor the voltage values received by itself, expansion card 1, and expansion card 2 through U2-12, U2-13, U3-12, and U3-13.
- The inverter unit can monitor the AI voltage values through U0-09, U0-10, and U0-11, monitor temperature values measured by the PT/KTY temperature sensor through U0-51, U0-52, and U0-53, and monitor the AI input function through U0-91, U0-92, and U0-93.

6.3.4.3 Functions of AI Terminals

When an AI is used as an DI, the AI state is high level if the input voltage of the AI is higher than 7 V and is low level if the input voltage of the AI is lower than 3 V. The AI is in hysteresis state if the input voltage ranges from 3 V and 7 V. Relationship between AI input voltages and DI states

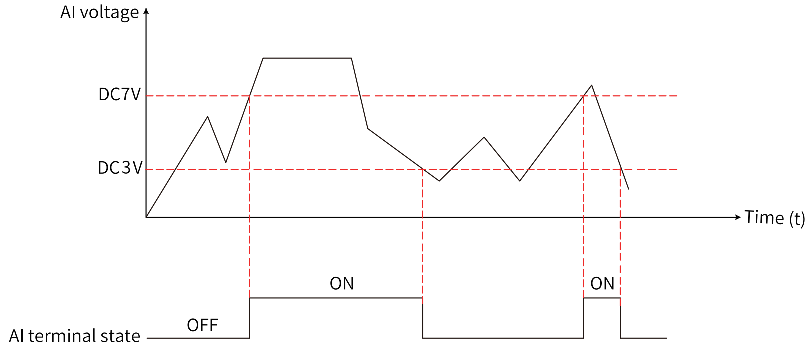


Figure 6-33 Relationship between AI input voltages and DI states

Table 6–26 Related parameters

Parameter	Name	Default	Value Range	Descriptions
A1-07	AI1 function (used as DI)	0	0 to 95	When the AI is used as the DI, assignment of functions 0 to 95 to the AI is the same as that to the common DI.
A1-08	AI2 function (used as DI)	0	0 to 95	
A1-09	AI3 function (used as DI)	0	0 to 95	
A1-10	Active status of AI used as DI	000	0: Active high 1: Active low Ones place: AI1 Tens place: AI2 Hundreds place: AI3	The active mode for terminals AI1 to AI3 are set through the ones, tens, hundreds, thousands, and ten thousands place of this parameter. 0: Active high When the AI is active high, the AI is active if the corresponding bit of A1-10 is set to 0, and inactive if the corresponding bit of A1-10 is set to 1. 1: Active low When the AI is active low, the AI is inactive if the corresponding digit of A1-10 is set to 0, and active if the corresponding digit of A1-10 is set to 1.

6.4 Control Performance

6.4.1 V/f Curve Setting

Table 6–27 Straight-line, multi-point, and square V/f curve reference parameters

Parameter	Name	Default	Value Range	Descriptions
F3-00	V/f curve setting	0	0: Straight-line V/f curve 1: Multi-point V/f curve 2: Square V/f curve 3: V/f curve (1.2th power) 4: V/ f curve (1.4th power) 5: Reserved	V/f curve setting. Used to set different V/f curves according to different applications. 0: Linear V/f curve The output voltage changes linearly with the output frequency when the frequency is lower than the rated frequency. This curve applies to general mechanical transmission applications such as acceleration of high-inertia fans, punch presses, centrifuges, and water pumps. 1: Multi-point V/f curve The frequency ranges from 0.00 Hz to the rated motor frequency. The range of the voltage point is 0.0% to 100.0%, which corresponds to 0 V to the rated motor voltage. Set the multi-point V/f curve based on load characteristics of the motor. Observe this formula during settings: F3-03 ≤ F3-05 ≤ F3-07 2: Square V/f curve The output voltage and output frequency change according to the 2-power curve at frequencies lower than the rated frequency. This curve applies to light loads and loads with slight changes, such as fans and water pumps. 3: V/f curve (1.2th power) The output voltage and output frequency change according to the 1.2-power curve at frequencies lower than the rated frequency. 4: V/f curve (1.4th power) The output voltage and output frequency change according to the 1.4-power curve at frequencies lower than the rated frequency.

Parameter	Name	Default	Value Range	Descriptions
F3-00	V/f curve setting	0	6: V/ f curve (1.6th power) 7: Reserved 8: V/ f curve (1.8th power) 9: Reserved 10: V/f complete separation mode 11: V/f partially separated	6: V/f curve (1.6th power) The output voltage and output frequency change according to the 1.6-power curve at frequencies lower than the rated frequency. 8: V/ f curve (1.8th power) The output voltage and output frequency change according to the 1.8-power curve at frequencies lower than the rated frequency. 10: V/f complete separation mode The output frequency and output voltage of the drive are independent of each other. The output frequency is determined by the frequency source, and the output voltage is determined by the V/f separation voltage source. This curve applies to torque motor control applications. 11: V/f semi-separation mode In this mode, the voltage and frequency are proportional, which can be set through the voltage source. The relationship between the voltage and frequency is also related to the rated voltage and rated frequency of the first group of the motor. If the voltage source input is X (0 to 100%), the relationship between the voltage and frequency is as follows: V/f = 2 x X x (Rated motor voltage) ÷ (Rated motor frequency)
F3-01	Torque boost	Model dependent	0.0% to 30.0% 0.0%: Automatic torque boost	The torque boost function is generally applicable to low-frequency operations of the drive. The output torque of the AC drive in the V/f control mode is proportional to the frequency. During operation at low frequencies, the motor torque is low when the motor runs at a low speed. In this case, you can set this parameter to increase the output voltage of the drive to improve the output torque. Note that the torque boost value must be set properly. Otherwise, overload protection will be triggered.
F3-02	Cut-off frequency of torque boost	50.00 Hz	0.00 Hz to 655.35 Hz	When the operating frequency reaches the cutoff frequency of torque boost, the torque boost function is disabled.
F3-03	Multi-point V/f frequency point 1	0.00 Hz	0.00 Hz to F3-05	Indicates the frequency point 1 set by multi-point V/f curve.
F3-04	Multi-point V/f voltage point 1	0.0%	0.0% to 100.0%	Indicates the voltage point 1 set by multi-point V/f curve.
F3-05	Multi-point V/f frequency point 2	0.00 Hz	F3-03 to F3-07	Indicates the frequency point 2 set by multi-point V/f curve.
F3-06	Multi-point V/f voltage point 2	0.0%	0.0% to 100.0%	Indicates the voltage point 2 set by multi-point V/f curve.
F3-07	Multi-point V/f frequency point 3	0.00 Hz	F3-05 to Rated motor frequency (F1-04)	Indicates the frequency point 3 set by multi-point V/f curve.
F3-08	Multi-point V/f voltage point 3	0.0%	0.0% to 100.0%	Indicates the voltage point 3 set by multi-point V/f curve.

Straight-line V/f curve

The following figure shows the general constant-torque straight-line V/f curve.

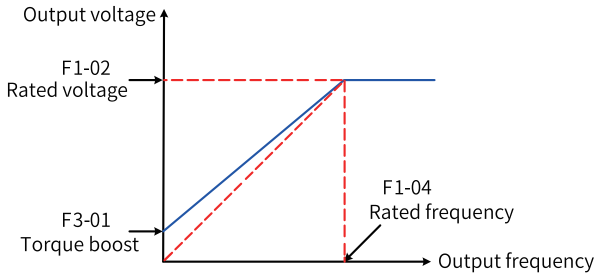


Figure 6-34 General constant-torque linear V/f curve

The output voltage and output frequency change linearly at frequencies lower than the rated frequency. It is applicable to general mechanical transmission applications such as acceleration of high-inertia fans, punch presses, centrifuges, and water pumps.

Multi-point V/f curve

User-defined multi-point V/f curve

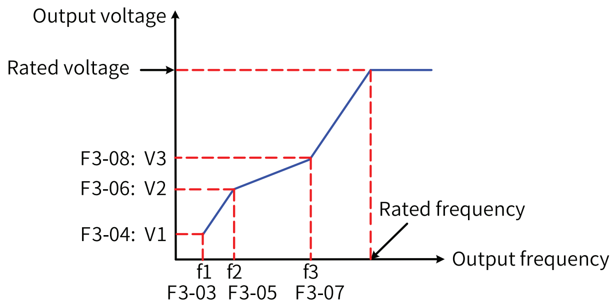


Figure 6-35 User-defined multi-point V/f curve

The multi-point V/f curve is defined by F3-03 to F3-08. The range of the frequency point is 0.00 Hz to the rated frequency of the motor. The range of the voltage point is 0.0% to 100%, corresponding to 0 V to the rated voltage of the motor. Set the multi-point V/f curve based on motor load characteristics. Ensure the following setting: F3-03 ⩽ F3-05 ⩽ F3-07. To ensure correct setting, the drive limits F3-03, F3-05 and F3-07. Set F3-07 first, then F3-05 and finally F3-03.

Square V/f curve

Variable-torque square V/f curve

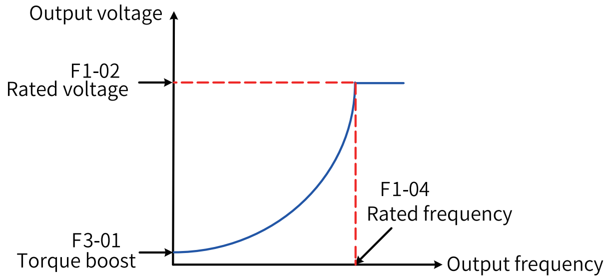


Figure 6-36 Variable-torque square V/f curve

The output voltage and output frequency change according to 2-power curve at frequencies lower than the rated frequency. It is applicable to light loads and loads with slight changes, such as fans and water pumps.

Table 6–28 V/f separation curve parameters

Parameter	Name	Default	Value Range	Descriptions
F3-13	Voltage source for V/f separation	0	0: Digital setting (F3-14) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Multi-reference 6: Simple PLC 7: PID 8: Communication setting	Defines the target voltage reference source in case of separated V/f. 0: Digital setting (F3-14) The V/f separated voltage is set by F3-14. 1: AI1 The V/f separated voltage is input with the current or voltage signal through the AI1 terminal. The frequency is calculated according to the set AI curve. 2: AI2 The V/f separated voltage is input with the current or voltage signal through the AI2 terminal. The frequency is calculated according to the set AI curve. 3: AI3 The V/f separated voltage is input with the current or voltage signal through the AI3 terminal. The frequency is calculated according to the set AI curve. The AC drive has two AI terminals by default, and the AI3 terminal needs to be provided through the I/O expansion card. 5: Multi-reference In the multi-reference mode, combinations of different DI terminal states correspond to different setting values. The four multi-reference terminals can be grouped in different ways to indicate 16 states, which correspond to 16 frequency references (percentage x maximum frequency) in group FC. 6: Simple PLC The V/f separated voltage is set by simple PLC. For details, see the function description of simple PLC. 7: PID The V/f separated voltage is set by PID. For details, see the PID function description. 8: Communication setting The frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode is suitable for remote control or centralized control on multiple equipment.
F3-14	Voltage digital setting for V/f separation	0V	0 V to rated motor voltage (F1-02)	The setting range is 0 V to the rated voltage.
F3-15	Voltage acceleration time for separated V/f	0.0s	0.0s to 1000.0s	Indicates the time required for the output voltage to rise from 0 to the rated motor voltage.

Parameter	Name	Default	Value Range	Descriptions
F3-16	Voltage deceleration time for separated V/f	0.0s	0.0s to 1000.0s	Indicates the time required for the output voltage to decline from the rated motor voltage to 0.
F3-17	Stop mode for separated V/f	0	0: Frequency and voltage declined to 0 separately 1: Frequency declined after voltage declined to 0	This parameter defines the stop mode for V/f separation. Use stop mode 1 for applications requiring energy discharge upon stop with load. 0: Frequency and voltage decline to 0 independently. The frequency/voltage declines to 0 independently based on respective deceleration time. 1: Frequency declined to 0 after voltage declined to 0 1: The voltage declines to 0 based on the deceleration time. Then the frequency declines to 0 based on the deceleration time.

Voltage acceleration time indicates time needed to rise from 0 to rated motor voltage. See t1 in the figure.

Voltage deceleration time indicates time needed to decline from rated motor voltage to 0. See t2 in the figure.

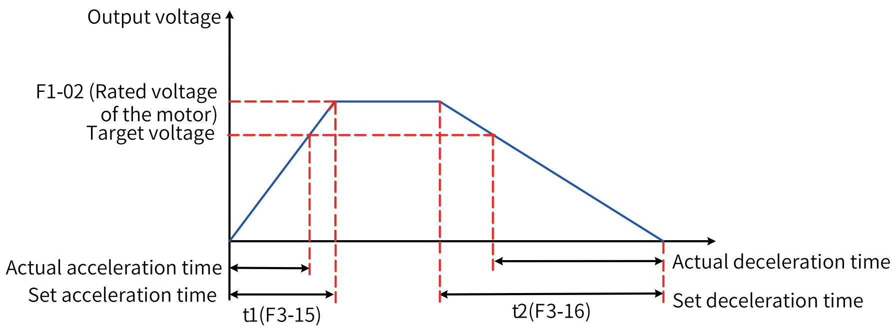


Figure 6-37 Diagram for separated V/f

6.4.2 Output Current (Torque) Limit

During acceleration, operation at constant speed, or deceleration, if the current exceeds the overcurrent stall action current (default: 150%, indicating 1.5 times the rated AC drive current), the overcurrent stall prevention function is activated. In this case, the output frequency decreases until the current drops below the overcurrent stall action current. Then, the output frequency increases to the target frequency. Therefore, the acceleration time is prolonged. If the actual acceleration time cannot meet your requirement, increase the value of overcurrent stall action current (F3-18) accordingly.

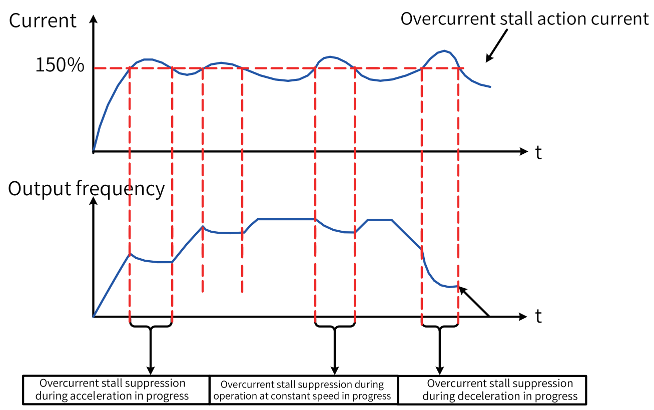


Figure 6-38 Overcurrent stall action

Table 6–29 Related parameter list

Parameter	Parameter Name	Default	Value Range	Descriptions
F3-18	V/f current limit level	150%	50% to 180%	When the motor current reaches this value, the AC drive starts overcurrent stall function. The default value is 150%, corresponding to 1.5 times the rated current of the AC drive.
F3-19	V/f current limit selection	1	0: Enable 1: Enable	This parameter defines whether to enable V/f overcurrent stall suppression 0: Disable Disable V/f current limit selection 1: Enable Enable V/f current limit selection
F3-20	V/f current limit gain	20	0 to 100	When the current exceeds the action current of overcurrent stall, the overcurrent stall function is enabled and output frequency decreases. After the current falls below the overcurrent stall threshold, the output frequency increases to the target frequency again, which prolongs the actual acceleration time automatically. The higher the setpoint, the better the suppression effect.
F3-21	Compensation coefficient of V/f speed multiplying current limit	50	50 to 180	This parameter defines the compensation coefficient of V/f speed multiplying overcurrent stall action current, which can be used to adjust the overcurrent suppression current threshold in the field-weakening range.

In the high frequency area, the motor drive current is small. At the same stall current, the motor speed drops faster when the motor runs below the rated frequency than when the motor runs above the rated frequency. To improve motor running characteristic, you can lower down the stall action current when the motor runs above the rated frequency. The method improves acceleration performance and prevents the motor from stall in the application where high running frequency and several times the field weakening are required and load inertia is large, such as centrifuges.

Overcurrent stall action current when the frequency is above the rated frequency = (fs÷ fn) x k x LimitCur fs: running frequency; fn: rated motor frequency; k: compensation factor of speed multiplying current limit level (F3-21); LimitCur: current limit level (F3-18)

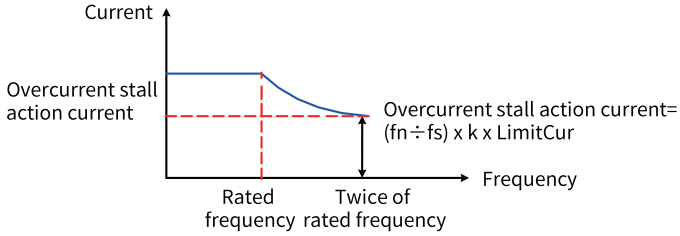


Figure 6-39 Overvoltage stall prevention at high frequency

Note

For high-power motors with carrier frequency below 2 kHz, lower the overcurrent stall action current. Otherwise, the pulse-by-pulse current limit function is enabled before the overcurrent stall prevention function as ripple current increases, resulting in insufficient torque output.

6.4.3 Overvoltage stall suppression

When the bus voltage rises above the value of F3-22 (overvoltage stall action voltage), the motor enters the generating state (motor speed > output frequency). In this case, the overvoltage stall function is activated, which adjusts the output frequency and extends the deceleration time to prevent trip. If the actual deceleration time cannot satisfy the requirement, increase the over-excitation gain.

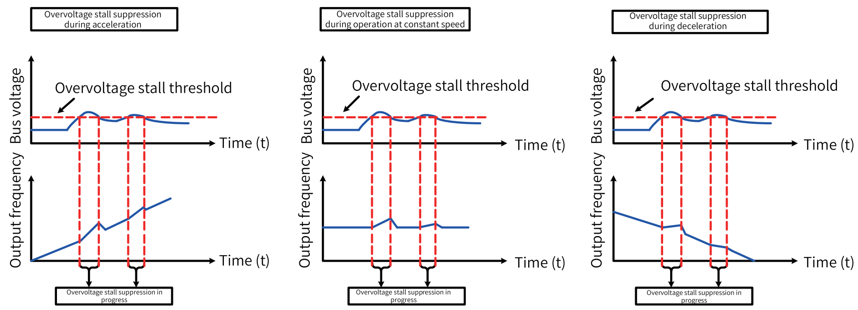


Figure 6-40 Overvoltage stall suppression action

Param.	Name	Default	Value Range	Descriptions
F3-22	V/f voltage limit level	770.0V	200.0 V to 2000.0 V	When the bus voltage reaches this value, the AC drive starts the overvoltage stall protection.
F3-23	V/f voltage limit selection	1	0: Disable 1: Enable	This parameter defines whether to enable V/f overvoltage stall suppression. 0: Disable Disable V/f overvoltage stall suppression 1: Enable Enable V/f overvoltage stall suppression

Param.	Name	Default	Value Range	Descriptions
F3-24	V/f frequency gain for voltage limit	30	0 to 100	Increasing F3-24 improves the control accuracy on the bus voltage, but leads to fluctuation of the output frequency. If the output frequency fluctuates greatly, reduce F3-24 appropriately.
F3-25	V/f voltage gain for voltage limit	30	0 to 100	This parameter suppresses the bus voltage. Increasing the setpoint can reduce the overshoot of the bus voltage.
F3-26	Frequency rise threshold for overvoltage stall suppression	5	0 to 50	The running frequency may increase during overvoltage stall suppression. This parameter limits the increase of the running frequency.
F3-10	V/f over-excitation gain	64	0 to 200	The higher the over-excitation gain is, the better the suppression effect is. When a braking resistor, braking unit, or energy feedback unit is used, set this parameter to 0. Otherwise, overcurrent may occur during operation.
F3-11	V/f oscillation suppression gain	Model dependent	0 to 100	The higher the oscillation gain, the better the suppression effect.

Note

Observe the following requirements when using the braking resistor or energy feedback unit.

- Set F3–10 (Overexcitation gain) to 0. Failure to comply may lead to overcurrent during operation.
- Set F3–23 (Overvoltage stall selection) to 0. Failure to comply may prolong the deceleration time.

6.4.4 Speed Loop

F2-00 to F2-05 are speed loop PI parameters. If the operating frequency is lower than F2-02 (Switchover frequency 1), PI parameters are F2-00 and F2-01. If the operating frequency is higher than F2-05 (Switchover frequency 2), PI parameters are F2-03 and F2-04. If the operating frequency is between F2-02 and F2-05, PI parameters are obtained from linear switchover between two groups of PI parameters, as shown below.

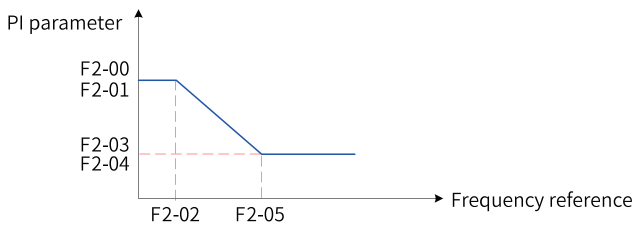


Figure 6-41 Speed loop PI parameters

By setting the proportional gain and integral time of the speed regulator, you can adjust the dynamic response to speed changes in the vector control mode.

To achieve a faster system response, increase the proportional gain or reduce the integral time. However, too large proportional gain or too small integral time may cause system oscillation.

If the default setting cannot meet the requirements, make proper adjustment. Increase the proportional gain first to ensure that the system does not oscillate, and then reduce the integral time to ensure that the system has quick response and small overshoot.

Note

Improper PI parameter settings may lead to a high speed overshoot. In addition, overvoltage may occur when overshoot drops.

Increasing F2-07 improves motor stability but weakens dynamic responsiveness. Decreasing F2-07 weakens motor stability but improves dynamic responsiveness. Note that setting F2-07 to an excessively low value may cause motor oscillation. The default value of F2-07 applies to most of applications.

Parameter	Name	Default	Value Range	Descriptions
F2-00	Low-speed speed loop Kp	30	1–200	This is the PID control parameter Kp for the speed loop, which affects the response to the motor speed. A larger Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller Kp value indicates lower adjustment sensitivity and adjustment intensity. The low-speed speed loop Kp is used at the low speed.
F2-01	Low-speed speed loop Ti	0.500s	0.001s to 10.000s	The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The low-speed speed loop Ti is used at the low speed.
F2-02	Switchover frequency 1	5.00 Hz	0.00 to F2-05	The speed loop PI parameters are divided into low-speed and high-speed groups. If the running frequency is lower than F2-02 (Switchover frequency 1), the speed loop PI adjustment parameters are F2-00 and F2-01. If the running frequency is higher than F2-05 (Switchover frequency 2), the speed loop PI adjustment parameters are F2-03 and F3-04. If the running frequency is between switchover frequency 1 and switchover frequency 2, the speed loop PI parameters are obtained from the linear switchover between the two groups of PI parameters. The parameter value must be lower than F2-05 (switching frequency 2).
F2-03	High-speed speed loop Kp	20	1–200	This is the PID control parameter Kp for the speed loop, which affects the response to the motor speed. A larger Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller Kp value indicates lower adjustment sensitivity and adjustment intensity. The high-speed speed loop Kp is used at the high speed.

Parameter	Name	Default	Value Range	Descriptions
F2-04	High-speed speed loop Ti	1.00s	0.01s to 10.00s	The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The low-speed speed loop Ti is used at the low speed.
F2-05	Switchover frequency 2	10.00 Hz	F2-02 to F0-10	The speed loop PI parameters are divided into low-speed and high-speed groups. If the running frequency is lower than F2-02 (Switchover frequency 1), the speed loop PI adjustment parameters are F2-00 and F2-01. If the running frequency is higher than F2-05 (Switchover frequency 2), the speed loop PI adjustment parameters are F2-03 and F3-04. If the running frequency is between switchover frequency 1 and switchover frequency 2, the speed loop PI parameters are obtained from the linear switchover between the two groups of PI parameters. The parameter value must be lower than F2-05 (switching frequency 2).
F2-07	Speed feedback filter time	0.004s	0.000s to 0.100s	In the SVC mode (F0-01=0), the speed loop feedback filter time is effective. By adjusting this parameter, the stability of motor is improved, and the speed loop feedback filter time increases, which can improve the stability of motor and weaken the dynamic response. When the speed loop feedback filter time is reduced, the dynamic response is strengthened. Note that an excessively low value will lead to motor oscillation. The default value of this parameter applies to most of applications.

6.4.5 Vector Control Slip Adjustment

In vector control mode (F0-01 = 0), this parameter is used to adjust the speed stability accuracy of the motor. For example, when the running frequency of the motor is lower than the output frequency of the AC drive, you can increase the value of this parameter.

Adjustment of this parameter is not required normally.

Parameter	Name	Default	Value Range	Descriptions
F2-06	VC slip compensation adjustment	100%	50% to 200%	In the SVC mode, this parameter is used to adjust the speed stability accuracy of the motor. For example, when the running frequency of the motor is lower than the output frequency of the AC drive, you can increase the value of this parameter.

6.4.6 Vector Control Over-excitation

For high-inertia loads, over-excitation gain in the vector control mode can speed up the motor deceleration. A larger over-excitation gain means better effect. However, over-excitation gain increases the output current of the AC drive.

Parameter	Parameter Name	Default	Value Range	Descriptions
F2-08	VC deceleration over-excitation gain	64	0 to 200	The strength of the over-excitation function when the deceleration over-excitation function is active under the vector control mode. Trigger condition of the over-excitation: When the energy generated during deceleration is too large, switch on the over-excitation to partially consume the energy generated. The higher the over-excitation gain, the better the suppression effect will be.

6.4.7 Torque Upper Limit

The torque upper limit is set as follows in vector control (SVC).

Parameter	Name	Default	Value Range	Descriptions
F2-09	Torque upper limit source in speed control mode (motoring)	0	0: Digital setting (F2-10) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication setting 6: MIN (AI1, AI2) 7: MAX (AI1, AI2)	The motor is in the motoring state when the actual running direction of the motor is the same as the torque direction. The motor is in the generating state when the actual running direction of the motor is opposite to the torque direction. This parameter is used to set torque upper limit in speed control mode (motoring). The details are as follows: 0: Digital setting (F2-10) The torque upper limit in the speed control mode is set by F2-10 (setting of torque upper limit in speed control). 1: AI1 The torque upper limit in speed control is defined by the current or voltage signal inputted through AI1. The corresponding frequency value is calculated according to the set AI curve. 2: AI2 The torque upper limit in speed control is defined by the current or voltage signal inputted through AI2. The corresponding frequency value is calculated according to the set AI curve. 3: AI3 The torque upper limit in speed control is defined by the current or voltage signal inputted through AI3. The corresponding frequency value is calculated according to the set AI curve. 5: Communication The frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode is suitable for remote control or centralized control on multiple equipment. 6: MIN (AI1, AI2) The torque upper limit in the speed control mode is the smaller value between AI1 and AI2 inputs. 7: MAX (AI1, AI2) The torque upper limit in the speed control mode is the larger value between AI1 and AI2 inputs.
F2-10	Digital setting of torque limit in speed control (motoring)	150.0%	0.0% to 200.0%	The torque upper limit in the motoring state takes the rated current of the motor as the base.

Parameter	Name	Default	Value Range	Descriptions
F2-11	Torque upper limit source in speed control mode (generating)	0	0: Digital setting (F2-10) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication setting 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Digital setting (F2-12)	The motor is in the motoring state when the actual running direction of the motor is the same as the torque direction. The motor is in the generating state when the actual running direction of the motor is opposite to the torque direction. This parameter is used to set torque upper limit in speed control mode (generating). The details are as follows: 0: Digital setting (F2-10) The torque upper limit in the speed control mode is set by F2-10 (setting of torque upper limit in speed control). 1: AI1 The torque upper limit in speed control is defined by the current or voltage signal inputted through AI1. The corresponding frequency value is calculated according to the set AI curve. 2: AI2 The torque upper limit in speed control is defined by the current or voltage signal inputted through AI2. The corresponding frequency value is calculated according to the set AI curve. 3: AI3 The torque upper limit in speed control is defined by the current or voltage signal inputted through AI3. The corresponding frequency value is calculated according to the set AI curve. 5: Communication The frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode is suitable for remote control or centralized control on multiple equipment. 6: MIN (AI1, AI2) The torque upper limit in the speed control mode is the smaller value between AI1 and AI2 inputs. 7: MAX (AI1, AI2) The torque upper limit in the speed control mode is the larger value between AI1 and AI2 inputs. 8: Digital setting (F2-12) The torque upper limit in the speed control mode is set by F2-12 (setting of torque upper limit in speed control).
F2-12	Digital setting of torque upper limit in speed control (generating)	150.0%	0.0% to 200.0%	The torque upper limit in the generating state takes the rated current of the motor as the base.

In the speed control mode, there are eight modes to set the torque upper limit. In the motoring state, the torque upper limit source is defined by F2-09; in the generating state, the torque upper limit source is defined by F2-11.

In the speed control mode, if F2-11 is set to a value ranging from 1 to 8, the torque upper limit differs in the motoring state and in the generating state. In the motoring state, the full range of the torque upper limit is defined by F2-10. In the generating state, the full range of the torque upper limit is defined by F2-12, as shown in the following figure.

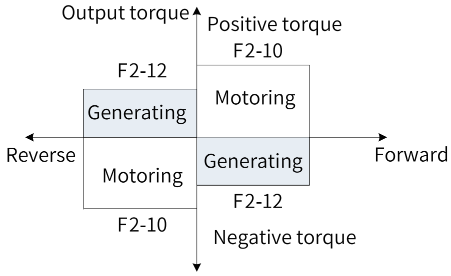


Figure 6-42 Torque upper limit in the speed control mode

Param.	Name	Default	Value Range	Descriptions
F2-53	Generating power limit	0	0: Disable 1: Enable	Enabling bit of generating power limit 0: Disable Disable generating power limit selection 1: Enable Enable generating power limit selection
F2-54	Generating power limit threshold	Model dependent	0.0% to 200.0%	Used to set the generating power limit, which can limit the generating power according to actual applications.

In scenarios where braking resistors are not used for cam load, quick acceleration/deceleration, and sudden unloading, enabling generating power limit can effectively reduce bus voltage overshoot during motor braking, so as to prevent overvoltage. F2-54 is a percentage of the generating power to the rated motor power. If overvoltage still occurs after you set F2-53 to 1 (Enable), decrease the value of F2-54.

6.4.8 Torque Control

Parameter	Name	Default	Value Range	Descriptions
A0-00	Speed/Torque control mode	0	0: Speed control 1: Torque control	This parameter is used to switch the control mode of the AC drive in SVC mode. 0: Speed control Speed control mode. In this mode, a commanded speed is the target. 1: Torque control Torque control mode. In this mode, a commanded torque is the target.

Parameter	Name	Default	Value Range	Descriptions
A0-01	Torque reference source	0	0: Digital setting (A0-03) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication (1000H) 6: MIN (AI1, AI2) 7: MAX (AI1, AI2)	Used to set the torque setting command. There are a total of seven torque setting modes. 0: Digital setting (A0-03) The torque in the speed control mode is set by A0-03 (digital setting of torque upper limit in speed control). 1: AI1 The torque is input by current or voltage signal through the AI1. The torque is calculated according to the preset AI curve. 2: AI2 The torque is input by current or voltage signal through the AI2. The torque is calculated according to the preset AI curve. 3: AI3 The torque is input by current or voltage signal through the AI3. The torque is calculated according to the preset AI curve. 4: Reserved 5: Communication (1000H) The torque reference source in torque control is communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to communicate with the host controller. This mode is suitable for remote control or centralized control on multiple equipment. 6: MIN (AI1, AI2) The torque takes the smaller value calculated by AI1 and AI2 in the torque control mode. 7: MAX (AI1, AI2) The torque takes the lager value calculated by AI1 and AI2 in the torque control mode.

Parameter	Name	Default	Value Range	Descriptions
A0-03	Torque digital setting	100.0%	-200.0% to +200.0%	This parameter defines the torque reference in the torque control mode. The torque reference is a relative value. The value 100.0% corresponds to the rated motor torque. Check U0-06 to obtain the motor output torque, and the value 100% corresponds to the rated motor torque. The setting range is -200.0% to +200.0%, indicating that the maximum torque of the drive is 2 x rated torque of the motor. When the torque reference value is positive, the drive operates in the forward direction. When the torque reference value is negative, the drive operates in the reverse direction.
A0-04	Torque filter time	0.000s	0.000s to 5.000s	Used to set the torque filter time. This parameter can be adjusted according to the torque source.
A0-05	Digital setting of speed limit	0.0%	-120.0% to +120.0%	This parameter defines the digital setting of speed limit. 100% corresponds to the maximum frequency (F0-10).
A0-07	Torque acceleration time	1.00s	0.00s to 650.00s	This parameter defines the torque reference acceleration time.
A0-08	Torque deceleration time	1.00s	0.00s to 650.00s	This parameter defines the torque reference deceleration time.
A0-09	Speed limit reference source	0	0: A0-05 1: Frequency source	Speed limit reference source 0: Set by A0-05 1: Frequency source
A0-10	Speed limit offset	5.00	0 to F0-10 (Maximum frequency)	The parameter defines the speed limit offset. If the actual speed exceeds the limit by a value greater than the speed limit offset, the output torque will be limited.
A0-11	Active mode of speed limit offset	1	0: Bi-directional offset active 1: Uni-directional offset active	Active mode of speed limit offset 0: Bi-directional offset active The speed limit offset takes effect in the same direction as the speed limit and in the opposite direction. 1: Uni-directional offset active The speed limit offset takes effect in the opposite direction as the speed limit.
A0-12	Frequency acceleration time	1.0s	0.0s to 6500.0s	Frequency acceleration time, effective in torque mode, refers to the time to rise to the speed limit when the load is smaller than the torque setting.

Parameter	Name	Default	Value Range	Descriptions
A0-13	Frequency deceleration time	1.0s	0.0s to 6500.0s	Frequency deceleration time, effective in torque mode, refers to the time to rise to the speed limit when the load is smaller than the torque setting.
A0-14	Torque mode switchover	1	0: Not switched 1: Switched to speed mode at stop 2: Target torque changed to 0 at stop	This parameter is used to switch the torque mode. 0: Not switched 1: Switch to speed mode at stop 2: The target torque is 0 at stop.

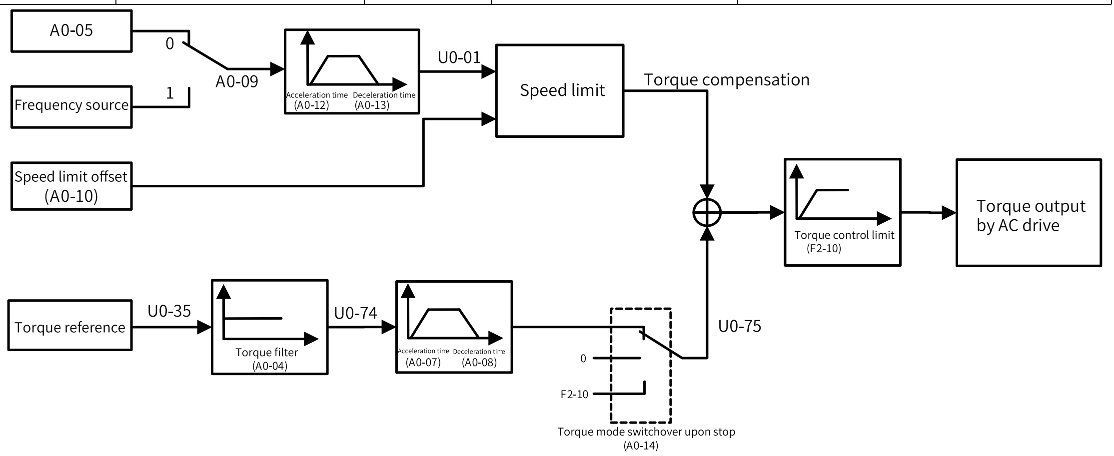


Figure 6-43 Torque control system

1. Select the speed/torque control mode (A0-00).
   The speed/torque control mode is set by A0-00.

   The multi-function DI supports two torque control-related functions: torque control inhibited (function 35), speed control/torque control switchover (function 36). The two DI functions need to be used together with A0-00 to implement speed control/torque control switchover.

   If the speed control/torque control switchover function (function 36) is invalid, the control mode is determined by A0-00. If the function 46 is valid, the control mode is reverse to the value of A0-00.

   When function 29 (torque control inhibited) is valid, the drive always runs in the speed control mode.

2. Set the torque reference in the torque control mode (A0-01, A0-03).
   A0-01 is used to set the torque reference source. Eight torque reference sources are available.

   The torque reference is a relative value. The value 100.0% corresponds to the rated torque of the motor. View the motor output torque through U0-06. The setting range is -200.0% to +200.0%, indicating that the maximum torque of the drive is 2 x rated torque of the motor.

3. Set the frequency upper limit in the torque control mode (A0-05, A0-09, A0-10, A0-11).
   In the torque control mode, the frequency upper limit can be defined by A0-05 or the frequency source, depending on the setting of A0-09.

4. The acceleration/deceleration time of the frequency upper limit is set in A0-12 (acceleration)/A0-13 (deceleration).

In the torque control mode, if the load torque is lower than the output torque of the motor, the motor speed keeps increasing. Therefore, the motor speed (that is, the frequency upper limit) must be restricted to prevent accidents such as runaway.

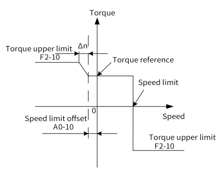
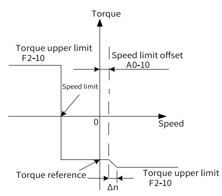
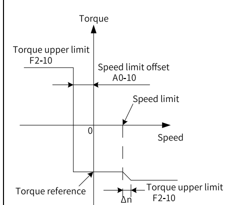
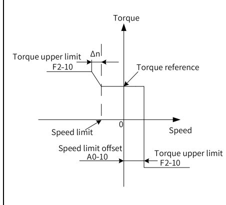
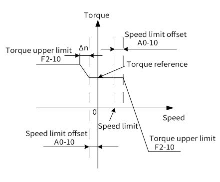
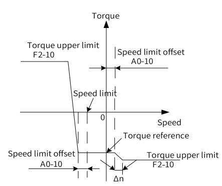
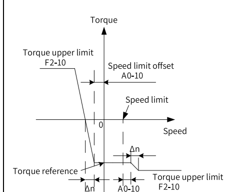
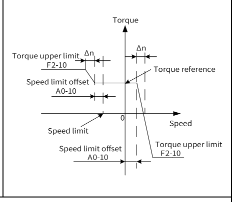
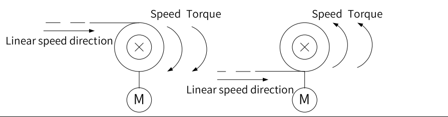
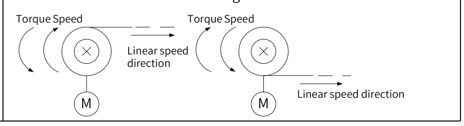
5. Set the torque acceleration/deceleration time in the torque control mode (A0-07, A0-08).

   In the torque control mode, the difference between the motor output torque and the load torque determines the speed change rate of the motor and load. Therefore, the motor speed may change quickly, resulting in loud noise or high mechanical stress. Proper acceleration/deceleration time helps smooth changes in the motor speed. The acceleration/deceleration time in torque control represents the time needed for the torque to increase from 0 to A0-03.

   In the torque control mode, the acceleration/deceleration time is not required for start with small torque. For applications requiring quick torque response, set the acceleration/deceleration time to 0.00s.

   For example, two AC drives are connected to drive the same load. To balance the load distribution, set one AC drive as the master and select the speed control mode. Set the other one as the slave and select the torque control mode. The slave receives the output torque of the master as the torque command and follows the master rapidly. In this case, the acceleration/deceleration time of the slave in the torque control mode is set to 0.00s.

Table 6–30 Speed limit/speed limit offset

Items	Operating Condition			
Operation Command	Forward running	Forward run	Forward run	Forward run
Torque Reference Direction	+	/	/	+
Speed Limit Direction	+	/	+	/
Normal Running Direction	Forward run	Reverse run	Forward run	Reverse run
Uni-directional Speed Limit Offset A0-11 = 1				
Bi-directional Speed Limit Offset A0-11 = 0				
Application example	Winding machine 		Unwinding machine 	

6.4.9 Current Loop

Current loop PI parameters for vector control are divided into low-speed and high-speed groups. These parameters can be automatically obtained through complete auto-tuning of the asynchronous motor and generally do not need to be modified.

The current loop integral regulator does not use the integral time as the dimension. Instead, set the integral gain directly. A large current loop PI gain may result in oscillation of the entire control loop. In the case of severe current oscillation or torque fluctuation, manually reduce the PI proportional gain or integral gain.

Parameter	Parameter Name	Default	Value Range	Descriptions
F2-13	Current loop Kp adjustment at low speed	1.0	0.1 to 10.0	Adjusts the proportional gain of current loop at low speed. The higher the value of Kp, the faster the current response. It is recommended to use the default value. When the current oscillates at low speed or the torque fluctuates greatly, decrease the value of this parameter.
F2-14	Current loop Ki adjustment at low speed	1.0	0.1 to 10.0	Adjusts the integral gain of current loop at low speed. The higher the value of Ki, the faster the current response. It is recommended to use the default value. When the current oscillates at low speed or the torque fluctuates greatly, decrease the value of this parameter.
F2-15	Current loop Kp adjustment at high speed	1.0	0.1 to 10.0	Adjusts the proportional gain of current loop at high speed. The higher the value of Kp, the faster the current response. It is recommended to use the default value. When the current oscillates at high speed or the torque fluctuates greatly, decrease the value of this parameter.
F2-16	Current loop Ki adjustment at high speed	1.0	0.1 to 10.0	Adjusts the integral gain of current loop at high speed. The higher the value of Ki, the faster the current response. It is recommended to use the default value. When the current oscillates at high speed or the torque fluctuates greatly, decrease the value of this parameter.

6.4.10 Improvement of Filed Weakening Performance

Parameter	Parameter Name	Default	Value Range	Descriptions
F2-21	Maximum output voltage coefficient	100	100 to 110	This parameter indicates the boost capacity of the maximum voltage of the AC drive. Increasing F2-21 improves the maximum load-carrying capacity in motor field weakening area but may increase the motor current ripple and lead to motor overtemperature. On the contrary, decreasing F2-21 reduces motor current ripple and alleviates the motor overtemperature condition, but the maximum load-carrying capacity in motor field weakening area can be weakened. The default value applies to most of application.

6.4.11 Auxiliary Control

Parameter	Name	Default	Value Range	Descriptions
A5-00	Frequency upper limit for DPWM switchover	12.00 Hz	0 to F0-10 (Maximum frequency)	The AC drive supports two PWM wave modulation modes, including CPWM and DPWM. When the running frequency is higher than the value of A5-00, the DPWM mode is used. When the running frequency is lower than the value of A5-00, the CPWM mode is used. The DPWM mode can improve the AC drive efficiency, whereas the CPWM mode can reduce the motor noise. Increasing A5-00 to the maximum frequency will reduce the motor noise.
A5-01	PWM modulation mode	0	0: Asynchronous modulation 1: Synchronous modulation 2: Reserved 3: Reserved	Synchronous modulation can be selected for scenarios with stable ratios of carrier frequency to modulated wave. 0: Asynchronous modulation In this mode, the carrier frequency and signal wave frequency are modulated asynchronously. The carrier frequency usually remains unchanged. The carrier ratio changes with the signal wave frequency. 1: Synchronous modulation When the result of the carrier frequency divided by the running frequency is smaller than 10, output current oscillation or large current harmonic waves may occur. To address the problem, set this parameter to 1 (synchronous modulation).
A5-03	Random PWM depth	0	0 to 10	If the motor noise is loud, setting A5-03 to a non-zero value can improve the motor noise. The higher the value, the better the effect. However, if the value is too high, the motor control may be affected. Therefore, set this parameter to 1 first during commissioning and then increase it by 1 each time as required.

6.4.12 Synchronous Motor PMVVC

Parameter	Parameter Name	Value Range	Default	Descriptions
F0-01	Motor 1 control mode	0: SVC 2: V/f control 5: PMVVC control	2	This parameter is used to set the motor control mode based on the application scenario and motor type. 0: Sensorless vector control (SVC) It is an open-loop vector control mode, which is applicable to high-performance control applications. In this case, one AC drive can drive only one motor. This mode applies to such loads as machine tools, centrifuges, wire drawing machines, and injection molding machines. 2: V/f control (speed open loop control) This mode is applicable to scenarios without high requirements on load control performance, such as fans and pumps. The V/f control mode is the only choice if one AC drive needs to drive multiple motors. 5: PMVVC (open-loop speed control of synchronous motor) This mode is used for loads such as fans and water pumps that do not require high accuracy. It applies to the scenario that the motor type is synchronous.
F1-24	Number of motor pole pairs	0 to 65535	0	Number of motor pole pairs
F3-01	Torque boost	0.0%: Automatic torque boost 0.1% to 30.0%	Model dependent	The torque boost function is generally applicable to low-frequency operations of the drive. The output torque of the AC drive in the V/f control mode is proportional to the frequency. During operation at low frequencies, the motor torque is low when the motor runs at a low speed. In this case, you can set this parameter to increase the output voltage of the drive to improve the output torque. Note that the torque boost value must be set properly. Otherwise, overload protection will be triggered.

Parameter	Parameter Name	Value Range	Default	Descriptions
A9-40	Low-speed closed-loop current function (used in PMVVC)	0: Disable 1: Enabled	0	Low-speed closed-loop current function (used in PMVVC) The default value is recommended.
A9-41	Closed-loop current at low speed (used in PMVVC)	30% to 200% (rated motor current as the base)	50%	Closed-loop current at low speed (used in PMVVC) The default value is recommended.
A9-42	Oscillation suppression damping coefficient (used in PMVVC)	0 to 500	100%	Oscillation suppression damping coefficient (used in PMVVC) The default value is recommended.
A9-43	Initial position compensation angle (used in PMVVC)	0 to 5	0	Initial position compensation angle (used in PMVVC) The default value is recommended.

6.4.13 Wobble Function

With the wobble function, the output frequency of the AC drive wobbles up and down around the frequency reference (F0-07). This function is applicable to industries such as textile and chemical fiber, and reciprocating motion, and winding/unwinding applications.

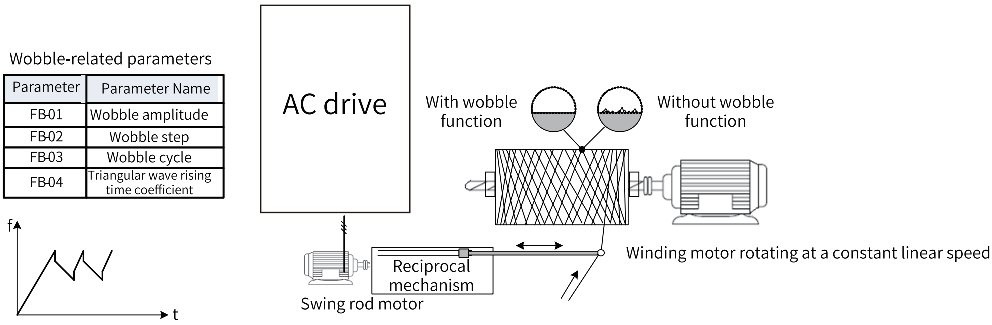


Figure 6-44 Application scenario of the wobble function

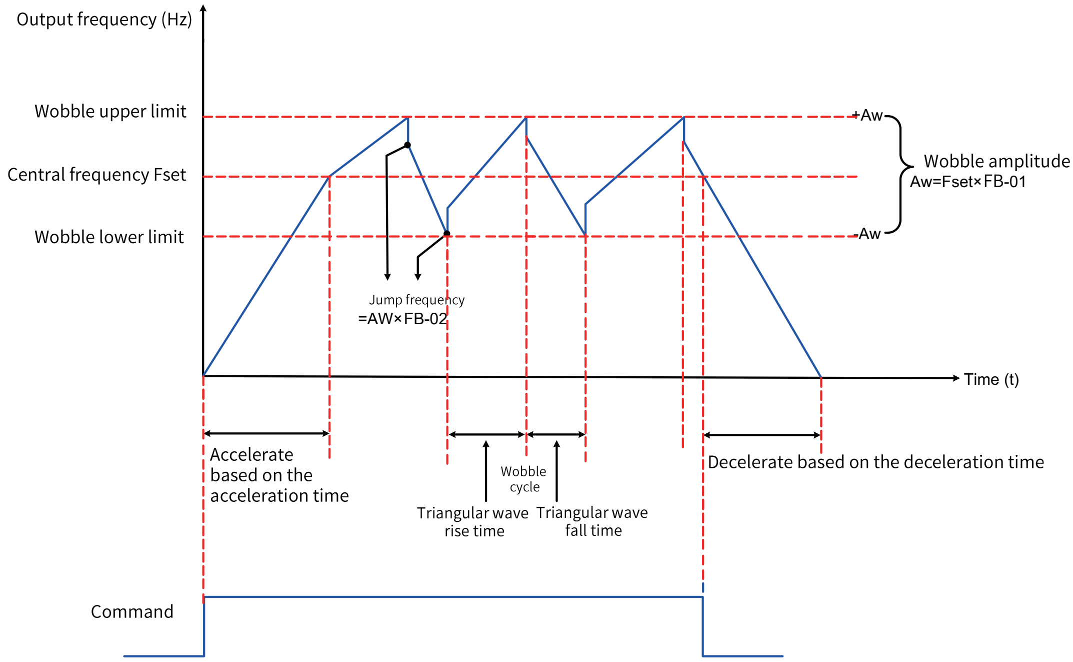


Figure 6-45 Working principle of the wobble function

Table 6–31 Related parameter list

Parameter	Name	Default	Value Range	Descriptions
FB-00	Wobble setting mode	0	0: Relative to the center frequency 1: Relative to the maximum frequency	0: Relative to the center frequency (F0-07, frequency source superposition selection). This mode is a variable wobble system, in which the wobble amplitude changes with the center frequency. 1: Relative to the maximum frequency (F0-10). This mode is a fixed wobble system, in which the wobble amplitude is fixed.
FB-01	Wobble amplitude	0.0%	0.0% to 100.0%	When FB-01 is set to 0, the wobble function is disabled.
FB-02	Jump frequency amplitude	0.0%	0.0% to 50.0%	This parameter defines the wobble amplitude and jump frequency amplitude. The wobble frequency is limited by the frequency upper limit and frequency lower limit.
FB-03	Wobble cycle	10.0s	0.1s to 3000.0s	This parameter defines the time of a complete wobble cycle.
FB-04	Triangular wave rising time of wobble frequency	50.0%	0.1% to 100.0%	This parameter indicates the percentage of triangular wave rising time to FB-03 (wobble cycle).

1. Wobble calculation

When FB-00 is set to 0 (relative to the center frequency), wobble frequency (AW) = F0-07 (frequency source superposition selection) x FB-01 (wobble amplitude).

When FB-00 is set to 1 (relative to the maximum frequency), wobble frequency (AW) = F0-10 (maximum frequency) x FB-01 (wobble amplitude).

2. Jump frequency calculation

During wobble, jump frequency = wobble frequency (AW) x FB-02 (jump frequency amplitude).

When FB-00 is set to 0 (relative to the center frequency), the jump frequency is a variable.

When FB-00 is set to 1 (relative to the maximum frequency), the jump frequency is a fixed value.

3. Calculation of the triangular wave rise/fall time

Triangular wave rise time (unit: s) = FB-03 (wobble cycle) x FB-04 (triangular wave rise time coefficient)

Triangular wave fall time (unit: s) = FB-03 (wobble cycle) x (1 – FB-04 (triangular wave rise time coefficient))

(Wobble cycle = Triangular wave rise time + Triangular wave fall time)

6.4.14 Fixed Length Control Function

The AC drive supports fixed length control. Length pulses can be sampled by a DI terminal assigned with function 29 (length count input).

Parameter	Name	Default	Value Range	Descriptions
FB-05	Length reference	1000 m	0 m to 65535 m	This parameter specifies the length value to be controlled in fixed length control mode.
FB-06	Actual length	0 m	0 m to 65535 m	The actual length is a monitored value. Actual length (FB-06) = Number of pulses sampled by terminal ÷ Number of pulses per meter (FB-07).
FB-07	Number of pulses per meter	100.0	0.1 to 6553.5	This parameter indicates the number of pulses outputted per meter. The length pulse is collected by DI5, which must be assigned with the length count input function (F0-04 = 29).

In the following figure, the actual length is the monitored value. Actual length (FB-06) = Number of pulses sampled by DI ÷ Number of pulses per meter (FB-07) When the actual length (FB-06) exceeds the length reference (FB-05), the relay or DO allocated with function 31 (Length reached) outputs an active signal. During fixed length control, length reset can be implemented by a multi-function DI with function 30 assigned. For details, see the following figure.

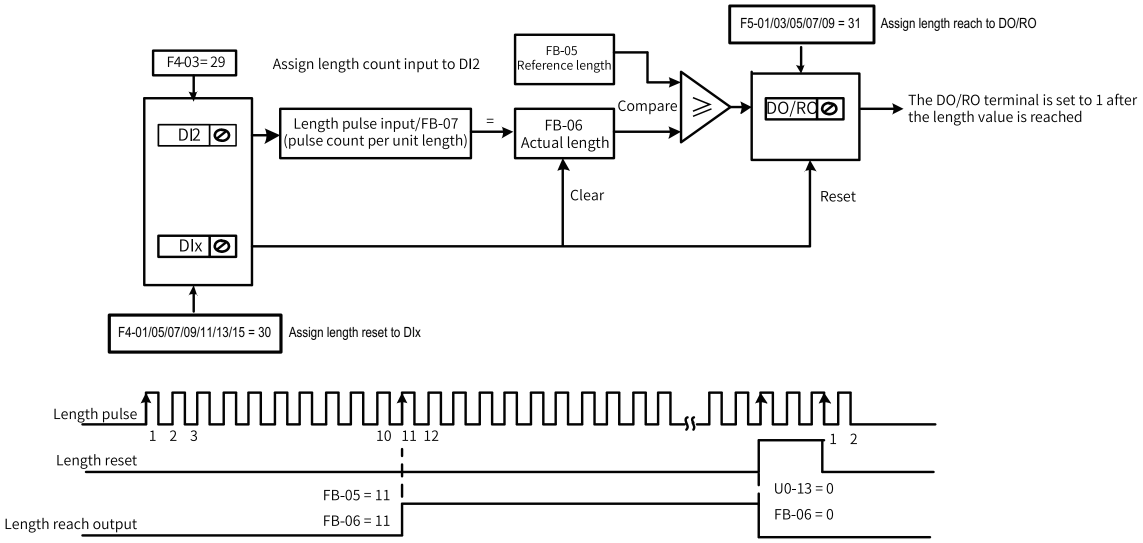


Figure 6-46 Fixed length control

Parameter	Name	Value range	Function description
F4-03	DI2 function selection	29	Length count input
F4-01, F4-05, F4-07, F4-09, F4-11, F4-13, and F4-15 (any one)	DI1 to DI8 function selection (any one)	30	Length reset
F5-01, F5-03, F5-05, F5-07, and F5-09 (any one)	DO/RO terminal function selection (any one)	31	Length reached

Under the fixed length control mode, the length can be calculated only through the number of pulses because the direction cannot be identified. An automatic stop system can be built by connecting the T/A-T/B signal output by the relay allocated with function "Length reached" to the stop input terminal of the AC drive.

6.4.15 Counting Function

The DI allocated with function 27 (counter input) is used to collect the count value.

Parameter	Name	Default	Value Range	Descriptions
FB-08	Count value reference	1000	1 to 65535	When DO is allocated with function 29 (the count value reaches the counting value reference FB-08), the DO terminal outputs an active signal.
FB-09	Designated count value	1000	1 to 65535	When DO is allocated with function 30 (the count value reaches the designated counting value FB-09), the DO terminal outputs an active signal. FB-09 must be lower than or equal to FB-08 (counting value reference).

In the following figure, the DI allocated with function 27 (counter input) is used to collect the count value. When the count value reaches the value of FB-08, the DO outputs an active signal indicating that the count value reference has reached. When the count value reaches FB-09, the DO outputs an active signal indicating that the designated count value has reached.

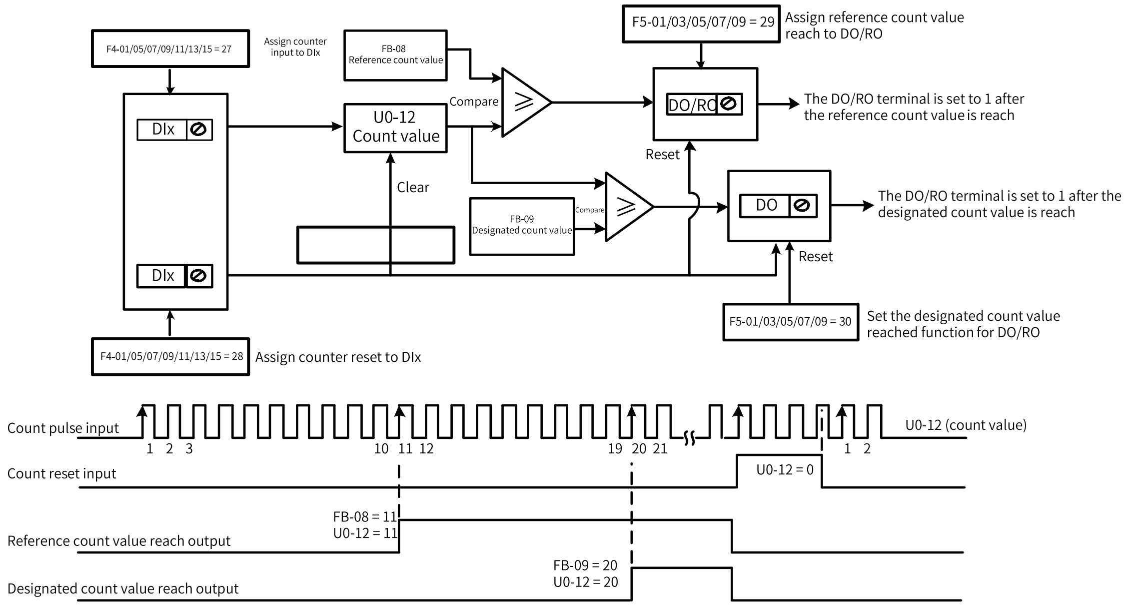


Figure 6-47 Schematic diagram of the counting function

Parameter	Name	Value range	Function description
F4-01, F4-05, F4-07, F4-09, F4-11, F4-13, and F4-15 (any one)	DI1 to DI8 function selection (any one)	27	Counter input
F4-01, F4-05, F4-07, F4-09, F4-11, F4-13, and F4-15 (any one)	DI1 to DI8 function selection (any one)	28	Count reset
F5-01, F5-03, F5-05, F5-07, and F5-09 (any one)	DO/RO terminal function selection (any one)	29	Counting value reference reached
F5-01, F5-03, F5-05, F5-07, and F5-09 (any one)	DO/RO terminal function selection (any one)	30	Designated count value reached

- One DO/RO terminal can be assigned with either the "count value reference reach" function or the "designated count value reach" function.
- The counter keeps counting when the AC drive is running or stops until the count value reference is reached.
- The count value is retentive at a power failure.
- When the count value reach signal of the DO/RO is fed to the AC drive stop input terminal, the AC drive stops automatically.

6.4.16 PID Adjustment Methods

This section describes general rules for PID parameter adjustment, which can be used as reference for adjusting closed-loop control PID parameters (FA-05 to FA-07, and FA-15 to FA-17) and speed loop PI parameters (F2-00 to F2-04).

1. In the case of slow response, increase Kp.

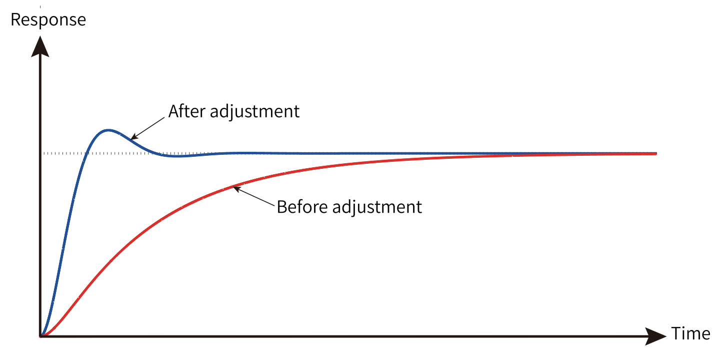


Figure 6-48 Response-time trend after increasing Kp

2. In case of frequent vibration, reduce Kp

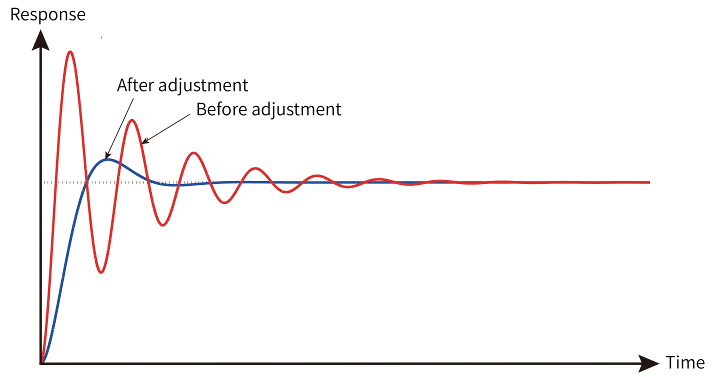


Figure 6-49 Response-time trend after decreasing Kp

3. In the case of large overshoot and slow fluctuation, increase Ti.

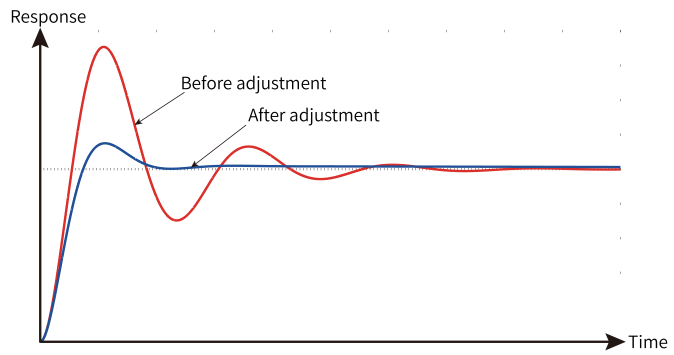


Figure 6-50 Response-time trend after increasing Ti

4. In the case of large static difference and slow response at load fluctuation, increase Kp or decrease Ti.

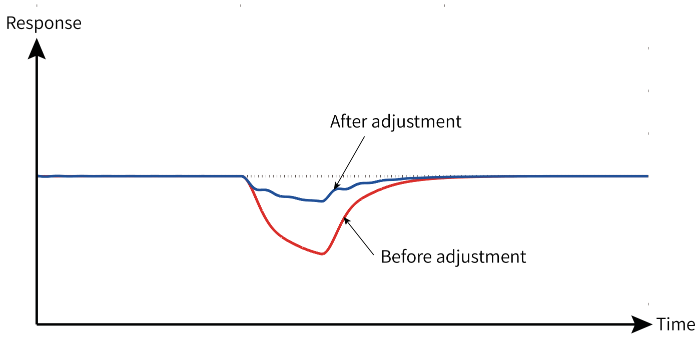


Figure 6-51 Response-time trend after increasing Kp at load fluctuation

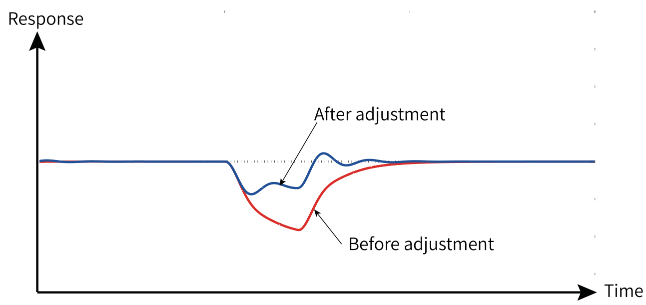


Figure 6-52 Response-time trend after decreasing Ti at load fluctuation

5. If the derivative time Td is set properly, the system stability can be improved. Note that if the derivative time Td is too long, interference and vibration may be caused.

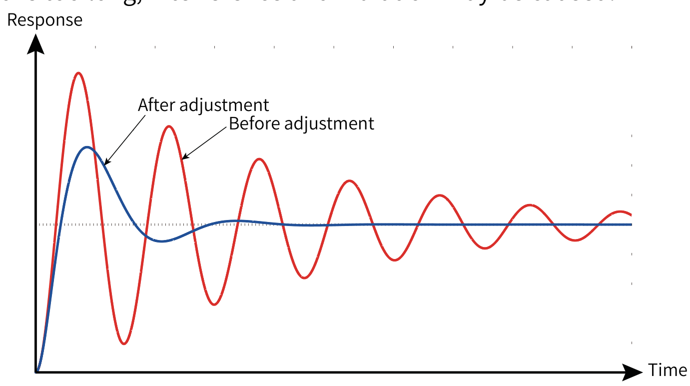


Figure 6-53 Response-time trend after setting the Td

6.5 Application Control

6.5.1 Jog

In some applications, the AC drive needs to run at a low speed temporarily to facilitate equipment testing. In this case, jogging applies. If jogging is adopted, F6-00 must be set to 0 (direct start) and F6-10 must be set to 0 (decelerate to stop). The following figure shows the relationship between output frequency and acceleration/deceleration time in jog running mode.

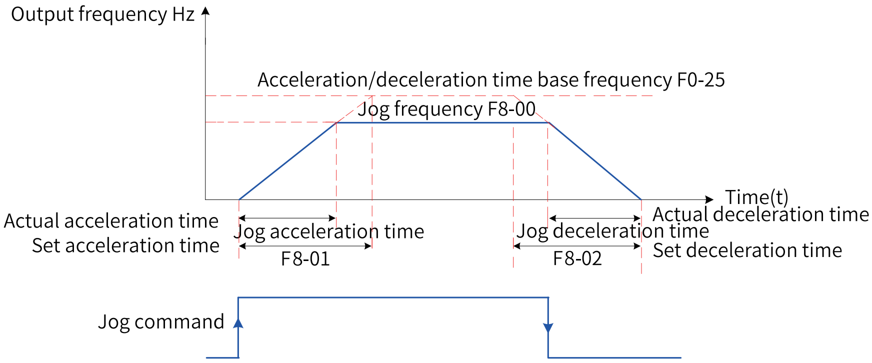


Figure 6-54 Jogging

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F0-02	Command source selection	0	0: Operating panel control 1: Terminal I/O control 2: Communication control	This parameter is used to select the input channel of the AC drive control commands, such as run, stop, forward run, reverse run, and jog operation. 0: Operating panel control Operation commands are input using the keys on the operating panel, external operating panel, and software commands. This mode is suitable for initial commissioning. 1: Terminal I/O control Operation commands are input using the DI of the AC drive. The DI can be assigned with different functions such as start/stop, forward/reverse run, jog, two-wire/ three-wire mode, and multi-reference. This mode is suitable for most applications. 2: Communication control Control commands are input through remote communication. The AC drive can communicate with the host controller through RS485, CAN communication, or communication card. This mode is suitable for remote control or centralized control on multiple equipment.
F0-25	Acceleration/ deceleration time base frequency	0	0: Max. frequency (F0-10) 1: Frequency reference 2:100 Hz	Defines the base frequency for acceleration/deceleration time. 0: Max. frequency (F0-10) 1: Frequency reference 2:100 Hz

Parameter	Name	Default	Value Range	Descriptions
F7-01	MF.K key function	0	0: MF.K key disabled 1: Switchover between operating panel control and remote control (terminal or communication) 2: Switchover between forward and reverse running 3: Forward jog 4: Reverse jog	The MF.K key is a multi-functional key. This parameter is used to set the function of the MF.K key. 0: MF.K key disabled The MF.K key is invalid. 1: Switchover between operating panel control and remote command control (terminal or communication) If F0-02 is set to 0 (operating panel), pressing the MF.K key produces no effect. If F0-02 is set to 1 (terminal), pressing the MF.K key can implement switchover between terminal control and operating panel control. If F0-02 is set to 2 (communication), pressing the MF.K key can implement switchover between communication control and operating panel control. 2: Switchover between forward and reverse running You can change the direction of the frequency reference by using the MF.K key. This function is valid only when the command source is set to the operating panel. 3: Forward jog Pressing the MF.K key implements forward jogging (FJOG). This function is valid only when the command source is set to the operating panel or communication control and when you long press the key,. 4: Reverse jog You can perform reverse JOG (RJOG) by using the MF.K key. This function is valid only when the command source is set to the operating panel or communication control and when you long press the key,.
F8-00	Jog frequency	2.00 Hz	0 to F0-10 (Maximum frequency)	Indicates the running frequency of the AC drive in the jog mode.
F8-01	Acceleration time of jogging	20.0s	0.0s to 6500.0s	Indicates the acceleration time of the AC drive in the jogging mode.
F8-02	Jog deceleration time	20.0s	0.0s to 6500.0s	Indicates the deceleration time of the AC drive in the jog mode.

Parameter	Name	Default	Value Range	Descriptions
F8-14	Reverse running	0	0: Reverse running allowed 1: Reverse running inhibited	This parameter determines whether reverse running control is allowed. 0: Reverse running allowed 1: Reverse running allowed When F8-14 is set to 1, the motor runs at zero frequency after a reverse run command is sent to the AC drive.
F8-37	Jog with priority	0	0: Disabled 1: Enabled	This parameter defines whether to set the highest priority to jogging. 0: Disabled The jog command is not enabled during operation. 1: Enabled If F8-37 is set to 1 and any of F4-00 to F4-09 to is set to 4 (forward jog) or 5 (reverse jog) becomes active, the AC drive enters jog status immediately.

Instances

The following section introduces how to set parameters related to jogging when the operating panel is used as the jogging command source.

Table 6–32 Parameter settings for jogging set by operation panel

Method	Forward Jogging	Reverse Jogging
1	Set F7-01 to 3 to select forward jogging for the MF.K key.	Set F7-01 to 4 to select reverse jogging for the MF.K key. Set F8-14 to 0 to allow reverse running.
2	Set F0-02 to 0 to select the operating panel as the command source.	Set F0-02 to 0 to select the keypad as the command source.
3	Set F8-00 (jog frequency), F8-01 (jog acceleration time), and F8-02 (jog deceleration time) properly.	Set F8-00 (jog frequency), F8-01 (jog acceleration time), and F8-02 (jog deceleration time) properly.
4	In stop status, press down the key. The drive starts to jog in forward direction. After you release the MF.K key, the AC drive decelerates to stop.	In stop status, press down the key. The drive starts to jog in reverse direction. After you release the MF.K key, the AC drive decelerates to stop.

6.5.2 Frequency Detection

6.5.2.1 Multi-reference

In multi-reference mode, combinations of different DI terminal states correspond to different set frequencies.

Table 6–33 Using multi-reference as the frequency reference source

Step	Parameter	Description
Step 1: Select multi-reference as the frequency reference source.	F0-03	F0-03 = 6
Step 2: Determine the number of multi-references.	/	A total of 16 multi-references are supported, which requires four DIs. The relationship between the number of multi-references and the number of DIs is as follows: 2 multi-references: One DI (K1) 3-4 multi-references: Two DIs (K1 and K2) 5-8 multi-references: Three DIs (K1, K2, and K3) 9-16 multi-references: Four DIs (K1, K2, K3, and K4)
Step 3: Select the DI hardware source.	F4-00/02/04/06/08/10/12/14	Set an available external terminal as the DI hardware source.
Step 4: Set the multi-speed function for DI terminals.	F4-01/03/05/07/09/11/13/15	Multi-reference terminal K1: Set to 14.
		Multi-reference terminal K2: Set to 15.
		Multi-reference terminal K3: Set to 16.
		Multi-reference terminal K4: Set to 17.
Step 5: Set the frequency for each multi-reference.[Note]	FC-00 to FC-15	The frequency corresponding to each speed reference is set to a percentage value. 100% corresponds to the maximum frequency (F0-10).
	F0-10	If the frequency reference source is set multi-reference, the value 100% of FC-00 to FC-15 corresponds to the value of F0-10 (Maximum frequency).

[Note] The four multi-reference terminals provide 16 state combinations, corresponding to 16 reference values, as listed in the following table.

Table 6–34 State combinations of the four multi-reference terminals

K4	K3	K2	K1	Reference	Percentage Relative to Maximum Frequency
OFF	OFF	OFF	OFF	Multi-reference 0	FC-00
OFF	OFF	OFF	ON	Multi-reference 1	FC-01
OFF	OFF	ON	OFF	Multi-reference 2	FC-02
OFF	OFF	ON	ON	Multi-reference 3	FC-03
OFF	ON	OFF	OFF	Multi-reference 4	FC-04
OFF	ON	OFF	ON	Multi-reference 5	FC-05
OFF	ON	ON	OFF	Multi-reference 6	FC-06
OFF	ON	ON	ON	Multi-reference 7	FC-07
ON	OFF	OFF	OFF	Multi-reference 8	FC-08
ON	OFF	OFF	ON	Multi-reference 9	FC-09
ON	OFF	ON	OFF	Multi-reference 10	FC-10
ON	OFF	ON	ON	Multi-reference 11	FC-11
ON	ON	OFF	OFF	Multi-reference 12	FC-12

K4	K3	K2	K1	Reference	Percentage Relative to Maximum Frequency
ON	ON	OFF	ON	Multi-reference 13	FC-13
ON	ON	ON	OFF	Multi-reference 14	FC-14
ON	ON	ON	ON	Multi-reference 15	FC-15

6.5.2.2 Frequency Detection (FDT)

This function sets the detection value of the output frequency as well as the hysteresis value upon output cancellation. The hysteresis value is valid only during deceleration. Hysteresis does not occur in detection during acceleration. The following figure shows the frequency detection function.

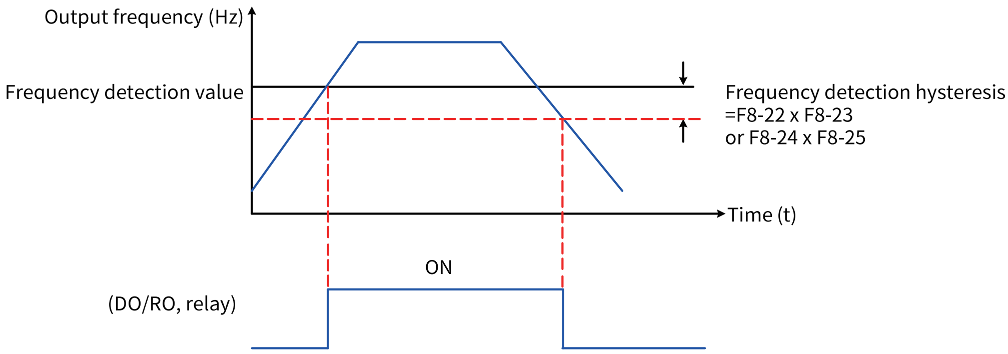


Figure 6-55 Parameters related to frequency detection

Table 6–35 Parameters related to frequency detection

Parameter	Name	Default	Value range	Descriptions
F8-22	Frequency detection value 1 (FDT1)	50.00 Hz	0 to F0-10 (Maximum frequency)	When the DO function is 13 and the running frequency is higher than the frequency detection value (FDT1), the DO outputs an active signal. When the running frequency is lower than the result of the frequency detection value (FDT1) minus the frequency detection hysteresis (FDT1), the DO outputs an inactive signal. The valid range is from 0.00 Hz to F0-10 (maximum frequency).
F8-23	Frequency detection hysteresis 1 (FDT1)	2.5 Hz	0.00 Hz to F8-22	When the running frequency is higher than F8-22, the DO terminal outputs an active signal. When the running frequency is lower than a specific value (F8-22 - F8-23), the DO terminal outputs an inactive signal.

Parameter	Name	Default	Value range	Descriptions
F8-24	Frequency detection value 2 (FDT2)	50.00 Hz	0 to F0-10 (Maximum frequency)	When the DO function is 14 and the operating frequency is higher than the frequency detection value (FDT2), the DO outputs an active signal. When the operating frequency is lower than the result of the frequency detection value (FDT2) minus the frequency detection hysteresis (FDT2), the DO outputs an inactive signal. The valid range is from 0.00 Hz to F0-10 (maximum frequency).
F8-25	Frequency detection hysteresis 2 (FDT2)	2.5 Hz	0.00 Hz to F8-24	When the running frequency is higher than F8-24, the DO terminal outputs an active signal. When the running frequency is lower than a specific value (F8-24 - F8-25), the DO terminal outputs an inactive signal.

6.5.2.3 Vibration suppression

The jump frequency enables the AC drive to avoid mechanical resonance points of the load. The AC drive supports two jump frequencies. If both of them are set to 0, the jump frequency function is disabled.

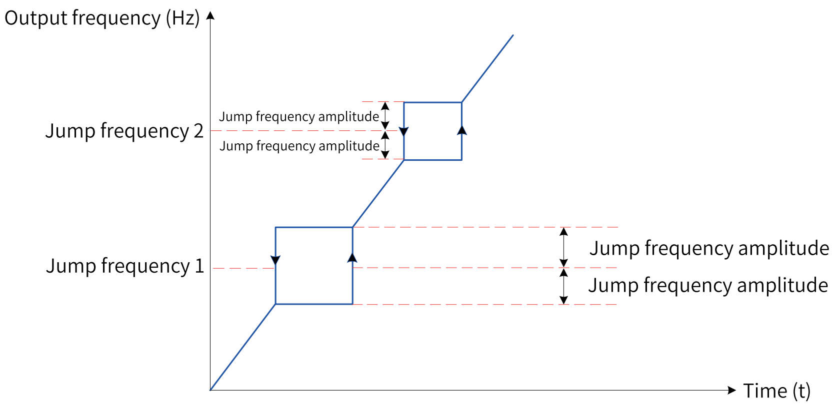


Figure 6-56 Jump frequency

In the preceding figure, when running frequency accelerates to the value that is close to jump frequency during acceleration, the AC drive runs for a period at current frequency reference and then jumps over jump frequency. The jump width is twice of F8-11.

When the running frequency decelerates to the value close to the jump frequency during deceleration, the AC drive runs for a period at the current running frequency and then jumps over the jump frequency. The jump amplitude is twice the value of F8-11 (jump frequency amplitude).

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-09	Jump frequency 1	0.00 Hz	0.00 to F0-10 (Maximum frequency)	The jump frequency enables the AC drive to avoid mechanical resonance points of the load. This parameter defines the first jump frequency. If it is set to 0, the first jump frequency function is disabled.
F8-10	Jump frequency 2	0.00 Hz	0.00 to F0-10 (Maximum frequency)	The jump frequency enables the AC drive to avoid mechanical resonance points of the load. This parameter defines the second jump frequency. If it is set to 0, the second jump frequency function is disabled.
F8-11	Jump frequency amplitude	0.00 Hz	0.00 Hz to 5.00 Hz	When the running frequency approaches the jump frequency during acceleration, the AC drive runs at the current frequency for a period and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude). When the running frequency approaches the jump frequency during deceleration, the AC drive runs at the current frequency for a period and then skips over the jump frequency. The jump range is twice the value of F8-11.
F8-12	Jump frequency state during acceleration/ deceleration	0	0: Disable 1: Enable	Used to set the jump frequency function during acceleration/deceleration. 0: Disable The jump frequency function is disabled during acceleration and deceleration. 1: Enable The jump frequency function is enabled during acceleration/deceleration

6.5.2.4 Reverse Running Inhibition

F8-14 is used to set whether reverse running inhibition is enabled, as shown in the following figure.

F0-09 defines the running direction of the motor. You can change the rotation direction of the motor by modifying this parameter without changing the motor wiring. Modifying this parameter is equivalent to exchanging any two of the motor's U, V, W wires.

Note

After the parameter is initialized, the original rotation direction of the motor is resumed. Exercise cautions when using this function if motor rotation direction change is prohibited after system commissioning is complete.

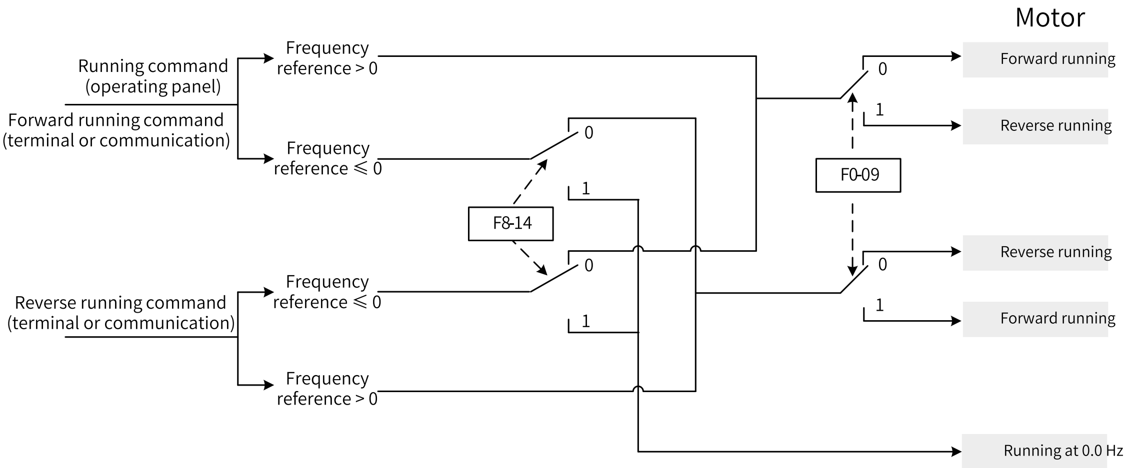


Figure 6-57 Reverse running inhibition

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-14	Reverse running	0	0: Reverse running allowed 1: Reverse running disallowed	This parameter determines whether reverse running control is allowed. 0: Reverse running allowed 1: Reverse running disallowed When F8-14 is set to 1, the motor runs at zero frequency after a reverse run command is sent to the AC drive.
F0-09	Running direction	0	0: Run in the default direction 1: Opposite to the default direction	You can change the rotation direction of the motor by modifying this parameter without changing the motor wiring. Modifying this parameter is equivalent to exchanging any two of the motor's U, V, W wires.

6.5.2.5 Detection Frequency Amplitude

F8-26 defines the detection frequency amplitude. The following figure shows the time sequence diagram of the frequency detection range.

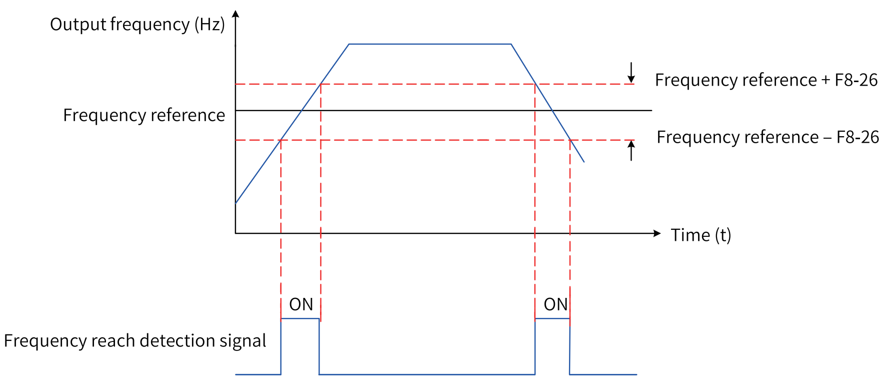


Figure 6-58 Time sequence of the frequency detection range

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-26	Frequency detection range	2.50 Hz	0.00 Hz to 655.35 Hz	The DO terminal outputs an active signal when the running frequency of the AC drive is in the specific range (Frequency reference ± F8-26) and the DO function is set to 15 (frequency reached).

6.5.2.6 Acceleration/Deceleration Time Switchover Frequency

This function enables selection of different acceleration/deceleration time based on the running frequency during running of the AC drive.

The following figure shows the schematic diagram of acceleration/deceleration time switchover. During acceleration, if the running frequency is lower than the value of F8-35, acceleration time 2 is selected. If the running frequency is higher than the value of F8-35, acceleration time 1 is selected. During deceleration, if the running frequency is higher than the value of F8-36, deceleration time 1 is selected. If the running frequency is lower than the value of F8-36, deceleration time 2 is selected.

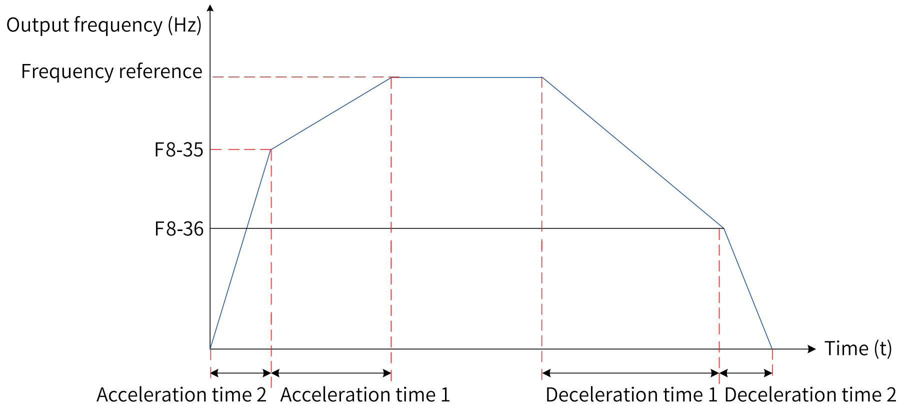


Figure 6-59 Acceleration/Deceleration time switchover

This function is active only when motor 1 is selected (F0-24 = 0) and the DI terminal is not allocated with function 18 (acceleration/deceleration time selection terminal 1) or 19 (acceleration/deceleration time selection terminal 2).

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-35	Frequency for switchover between acceleration time 1 and acceleration time 2	0.00 Hz	0 to F0-10 (Maximum frequency)	This function is used to switch the acceleration/deceleration time based on the running frequency range when the AC drive is running. This function is value when the DI is not allocated with function 16 (acceleration/deceleration time selection terminal 1) or 17 (acceleration/ deceleration time selection terminal 2). The valid range is from 0.00 Hz to F0-10 (maximum frequency).
F8-36	Frequency for switchover between deceleration time 1 and deceleration time 2	0.00 Hz	0 to F0-10 (Maximum frequency)	

6.5.2.7 Detection Frequency

When the running frequency of the AC drive is within the frequency detection range (F8-30 - F8-31 x F0-10 to F8-30 + F8-31 x F0-10, or F8-32 - F8-33 x F0-10 to F8-32 + F8-33 x F0-10), the DO/RO outputs an active signal.

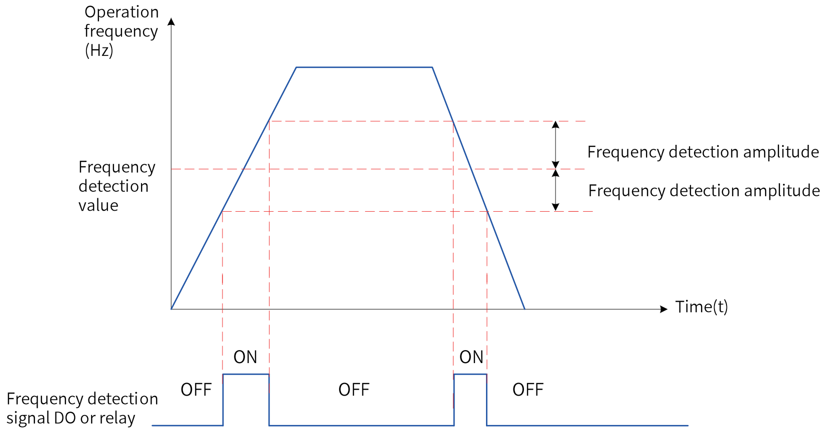


Figure 6-60 Detection frequency

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-27	Detection frequency 1	50.00 Hz	0 to F0-10 (Maximum frequency)	When the DO function is set to 16 and the running frequency of the AC drive is within the frequency detection range, the DO outputs an active signal. The valid range is from 0.00 Hz to F0-10 (maximum frequency).
F8-28	Range of detection frequency 1	2.50 Hz	0.00 to F8-28	The frequency detection range is F8-27 (Frequency detection value 1) ± F8-28 (Frequency detection frequency 1).
F8-29	Detection mode when running frequency reaches detection frequency 1	0	0: Detected at any time 1: Not detected during acceleration and deceleration	Set DO function 16: Frequency 1 output detection mode. 0: Detected at any time The DO function 16 outputs at any time when the frequency meets the detection condition. 1: Not detected during acceleration and deceleration The DO function 16 does not output during acceleration and deceleration even if the detection condition is met.
F8-30	Detection frequency 2	50.00 Hz	0 to F0-10 (Maximum frequency)	When the DO function is set to 17 and the running frequency of the AC drive is within the frequency detection range, the DO outputs an active signal. The valid range is from 0.00 Hz to F0-10 (maximum frequency).

Parameter	Name	Default	Value Range	Descriptions
F8-31	Range of detection frequency 2	2.50 Hz	0.00 to F8-30	The frequency detection range is F8-30 (Frequency detection value 2) ± F8-31 (Frequency detection frequency 2).
F8-32	Detection mode when running frequency reaches detection frequency 2	0	0: Detected at any time 1: Not detected during acceleration and deceleration	Set DO function 17: Frequency 2 output detection mode. 0: Detected at any time The DO function 17 outputs at any time when the frequency meets the detection condition. 1: Not detected during acceleration and deceleration The DO function 17 does not output during acceleration and deceleration even if the detection condition is met.

6.5.3 Current Detection

6.5.3.1 Zero Current Detection

The DO outputs an active signal when the output current of the AC drive remains at or below the zero current detection level (F8-38) for a period greater than the value of F8-39 (zero current detection delay time).

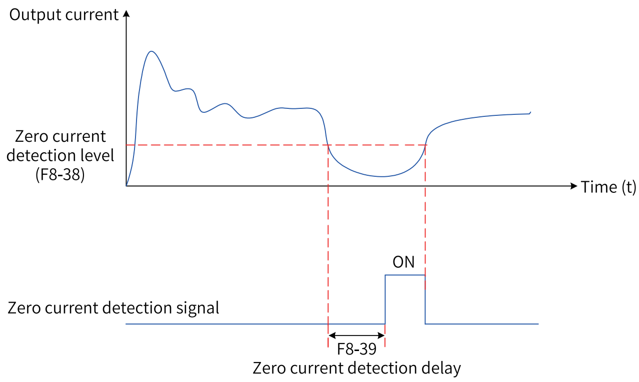


Figure 6-61 Zero current detection

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-38	Zero current detection level	5.0%	0.0% to 300.0%	When the DO function is set to 25 (zero current status) and the output current of the AC drive is lower than or equal to F8-38 (zero current detection value) for a period longer than F8-39 (zero current detection delay), the DO outputs an active signal.
F8-39	Zero current detection delay	0.10s	0.01s to 600.00s	

6.5.3.2 Output Overcurrent Threshold

When the output current of the AC drive remains above the output current overlimit threshold (F8-40) for a period longer than the value of F8-41 (output current overlimit detection delay), the DO outputs an active signal.

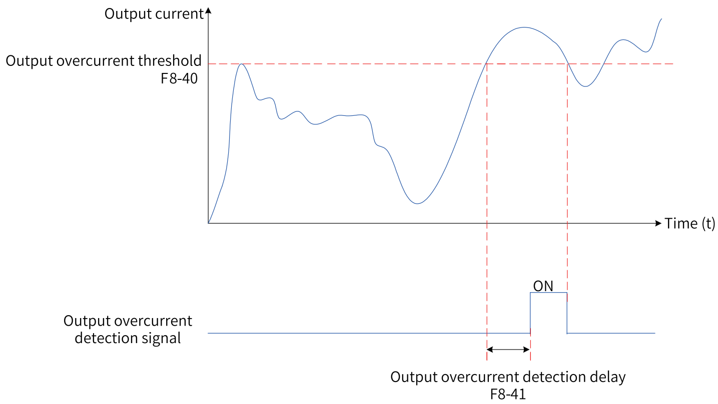


Figure 6-62 Output current overlimit threshold

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-40	Output overcurrent threshold	200.0%	0.0% to 300.0%	12: Output current limit exceeded When the output current of the AC drive is greater than F8-40 (output overcurrent threshold) multiplied by F1-03 (rated motor current) for a time exceeding F8-41 (Output overcurrent detection delay), the DO outputs an active signal.
F8-41	Software overcurrent detection delay	0.00s	0.00s to 600.00s	

6.5.3.3 Detection Current

When the output current of the AC drive is within the range from (Detection current - Detection current amplitude) x Rated motor current to (Detection current + Detection current amplitude) x Rated motor current, the DO outputs an active signal.

The AC drive provides two groups of detection current and current detection widths, as shown below.

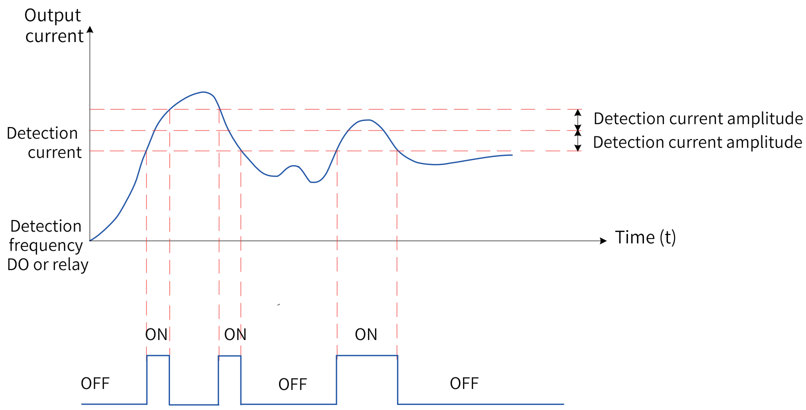


Figure 6-63 Detection current time sequence

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-42	Detection current 1	100.0%	0.0% to 300.0%	When the DO function is 26 and the output current of the drive is in the range of [F8-42 (Detection level of current 1)±F8-43 (Detection width of current 1)] x F1-03 (Rated motor current), the DO terminal outputs an active signal.
F8-43	Detection current amplitude 1	0.0%	0.0% to 300.0%	When the DO function is 26 and the output current of the drive is in the range of [F8-42 (Detection level of current 1)±F8-43 (Detection width of current 1)] x F1-03 (Rated motor current), the DO terminal outputs an active signal.
F8-44	Detection current 2	100.0%	0.0% to 300.0%	When the output current of the AC drive is in the range of F8-44 (Detection current 2)±F8-45 (Detection width of current 2) x F1-03 (Rated motor current), the DO outputs an active signal.
F8-45	Detection current amplitude 2	0.0%	0.0% to 300.0%	When the output current of the AC drive is in the range of F8-44 (Detection current 2)±F8-45 (Detection width of current 2) x F1-03 (Rated motor current), the DO outputs an active signal.

6.5.4 Dead Zone Time of Forward/Reverse Run Switchover

This function is used to specify the transition period when the output is 0 Hz during forward/reverse run switchover of the AC drive. The transition period is called dead zone time of forward/reverse run switchover, which can be set through F8-13.

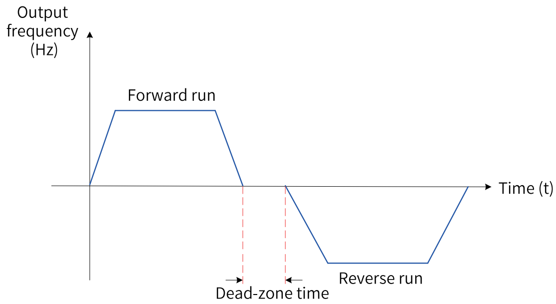


Figure 6-64 Dead zone time of forward/reverse run switchover

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-13	Dead zone time of forward/reverse run switchover	0.0s	0.0s to 3000.0s	This parameter defines the transition time at 0 Hz output during switchover between forward running and reverse running.

6.5.5 Timing Function

The timer starts from 0 upon startup of the AC drive. When the timing duration (F8-48) expires, the AC drive automatically stops, and the DO outputs an active signal. The remaining timing duration can be viewed through U0-20.

- The DO terminal outputs the active signal when the accumulative power-on time (F7-12) of the AC drive exceeds the accumulative power-on time threshold (F8-19).
- The DO outputs the active signal when the accumulative running time (F7-09) of the AC drive exceeds the accumulative running time threshold (F8-20).

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-19	Cumulative power-on time threshold	0h	0 hour to 65000 hours	Used to set the accumulative power-on time threshold of the AC drive. When F7-12 (Accumulative power-on time threshold) exceeds F8-19 (Accumulative power-on time threshold), the DO terminal outputs an active signal.
F8-20	Cumulative running time threshold	0h	0 hour to 65000 hours	Used to set the accumulative running time threshold of the AC drive. When F7-09 (Accumulative running time) exceeds F8-20 (Accumulative running time threshold), the DO terminal outputs an active signal.

Parameter	Name	Default	Value Range	Descriptions
F8-46	Timing function	0	0: Disabled 1: Enable	When the DO function is set to 21 (timing duration reached), F8-46 is set to 1, and the current running time of the AC drive reaches the set timing duration, the DO outputs an active signal. The timing duration is defined by F8-47 and F8-48.
F8-47	Timing operation time setting source	0	0: F8-48 1: AI1 2: AI2	Set timing operation source. When this parameter is set to 0, the timing operation time is set by F8-48. When this parameter is set 1, the timing operation time is equal to the result of AI1 voltage ÷ 10 V x F8-48. 100% of the analog input range corresponds to the value of F8-48. When this parameter is set 2, the timing operation time is equal to the result of AI2 voltage ÷ 10 V x F8-48. 100% of the analog input range corresponds to the value of F8-48.
F8-48	Timing operation time	0.0 min	0.0 min to 6500.0 min	The timing duration is set by F8-47 and F8-48.

6.5.6 AI1 Voltage Upper/Lower Limit

Parameter	Name	Default	Value Range	Descriptions
F8-49	Lower limit of AI1 input voltage protection value	3.10V	0.00 V to F8-50	When the DO function is set to 34 and the AI1 input is higher than F8-49 (AI1 input voltage lower limit) or lower than F8-50 (AI1 input voltage higher limit), the DO terminal outputs an "AI1 input limit exceeded" active signal to indicate whether the AI1 input voltage is in the setting range.
F8-50	Upper limit threshold of AI1 input voltage protection value	6.80V	F8-49 to 11.00 V	

6.5.7 Module Temperature

Parameter	Name	Default	Value Range	Descriptions
F8-51	AC drive overtemperature threshold reached	75°C	0°C to 100°C	When the DO function is set to 28 (AC drive overtemperature threshold reached) and the temperature of the drive unit heatsink reaches the value of F8-51, the DO outputs an active signal.
F7-07	Drive unit heatsink temperature	0°C	-20.0°C to +120.0°C	Displays the temperature of the drive unit heatsink.

6.5.8 Fan Control

Parameter	Name	Default	Value Range	Descriptions
F8-52	Cooling fan control	0	0: Working (forward running) when the AC drive is running 1: Working continuously (forward running) 2: Working continuously (forward/reverse running) 3: Working (forward/ reverse running) when AC drive is running	Single-axis drive unit and axis 1 of dual-axis drive unit: When this parameter is set to 0, the fan works when the AC drive is running. When the AC drive stops, the fan works when the heatsink temperature higher than 40°C and stops when the heatsink temperature lower than 40°C. When it is set to 1, the fan keeps forward running after power-on. When it is set to 2, the fan keeps forward/ reverse running after power-on. After power-on, the fan keeps forward running for 600s and reverse running for 200s, and then repeats this running cycle. When it is set to 3, the fan keeps forward/ reverse running after power-on. When the AC drive is in operation, the fan keeps forward running for 600s and reverse running for 200s, and then repeats this running cycle. When the AC drive stops, the fan keeps forward running for 600s and reverse running for 200s, and then repeats this running cycle if heatsink temperature is above 40°C. If heatsink temperature is below 40°C, the fan stops Axis 2 of dual-axis drive unit: F8-52 is not editable. The default value is 0, that is, the fan keeps forward running when Axis 2 of the dual-axis drive unit is running.

6.5.9 Brake Control

6.5.9.1 Function Overview

The brake control function is used to control the brake based on the frequency and current when the AC drive starts and stops to prevent accidents such as rollback and improve system safety.

6.5.9.2 Parameters

Parameter	Name	Default	Value Range	Descriptions
B7-00	Target frequency limit	2.00 Hz	0.00 Hz to 20.00 Hz	The set frequency must be higher than or equal to the setpoint of this parameter. It does not conflict with the lower limit frequency specified in F0-14. The larger value between the two takes effect.
B7-01	Brake release frequency (forward)	2.00 Hz	0.00 Hz to 20.00 Hz	Used to set the output frequency during forward operation before the brake releases completely, namely, the minimum frequency at which the motor can have full torque.
B7-02	Brake release frequency (reverse)	2.00 Hz	0.00 Hz to 20.00 Hz	Used to set the output frequency during reverse operation before the brake releases completely, namely, the minimum frequency at which the motor can have full torque.
B7-03	Brake release torque (forward)	30.0%	0.0% to 200.0%	Indicates the percentage of the rated motor current/torque during forward operation. The drive output brake release command (output 1 activated, DO function 53) when the drive output value reaches the setpoint.
B7-04	Brake release torque (reverse)	30.0%	0.0% to 200.0%	Indicates the percentage of the rated motor current/torque during reverse operation. The drive output brake release command (output 1 activated, DO function 53) when the drive output value reaches the setpoint.
B7-05	Brake release time	0.50s	0.00s to 5.00s	Indicates the time from the moment the brake receives the brake release command to the moment the brake fully releases. The drive keeps outputting brake release frequency during this period.
B7-06	Brake applying frequency (forward)	2.00 Hz	0.00 Hz to 20.00 Hz	When the output frequency of the drive falls below this value during deceleration after the foward run command is canceled, the drive outputs the brake apply command immediately.
B7-07	Brake applying frequency (reverse)	2.00 Hz	0.00 Hz to 20.00 Hz	When the output frequency of the drive falls below this value during deceleration after the reverse run command is canceled, the drive outputs the brake apply command immediately.
B7-08	Brake applying delay time	0.00s	0.00s to 5.00s	Defines the delay before brake apply command output, which means when conditions for applying the brake are met, the brake apply command will not be outputted unless the set delay elapses.
B7-09	Brake applying time	0.50s	0.00s to 5.00s	Sets the time required for the mechanical brake from the start of applying to the end of applying. The AC drive keeps outputting the brake apply frequency throughout the whole process.
B7-10	Excitation time at stop	0.00s	0.00s to 500.00s	Used to set the hold time of the excitation state after the AC drive stops. In the excitation hold stage, the AC drive provides zero speed output and keeps the excitation current. If the AC drive receives an operation command during this period, it can skip the pre-excitation stage and release the brake quickly.

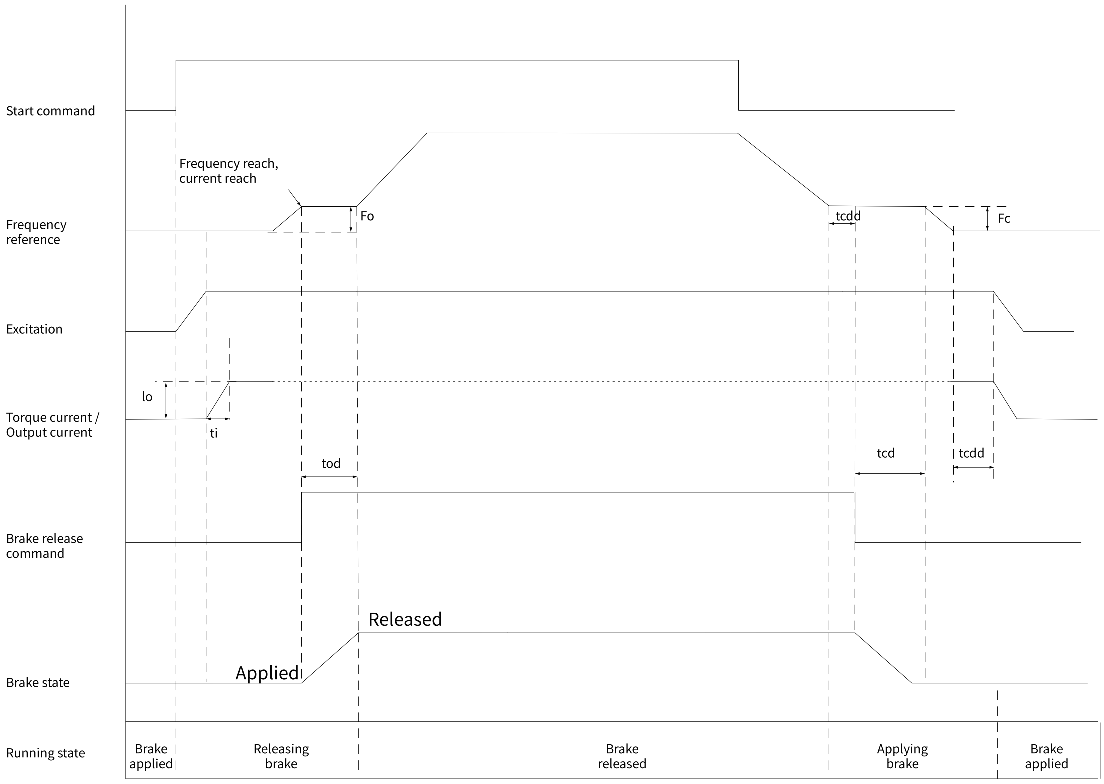
Parameter	Name	Default	Value Range	Descriptions
B7-11	Restart waiting time	0.30s	0.00s to 15.00s	Used to set the delay time that the AC drive must wait before a restart every time it stops.
B7-12	Startup direction	0	0: Same as the running direction 1: Always forward	Used to set the output torque direction of the AC drive within the brake release time.
B7-13	Pre-torque source	2	0: Digital setting 1: Pre-torque 2: Disable	Used to set the pre-torque source. 0: Digital setting (B7-14, B7-15) The target torque before the output of the brake release frequency is set by B7-14 and B7-15. 1: Pre-torque memory The target torque before the output of the brake release frequency is the output torque recorded before the last stop. 2: Disable No torque before the output of the brake release frequency is output.
B7-14	Pre-torque setting value (forward)	30.0%	0.0% to 200.0%	Indicates the target torque before the output of the brake release frequency during forward running.
B7-15	Pre-torque setting value (reverse)	30.0%	0.0% to 200.0%	Indicates the target torque before the output of the brake release frequency during reverse running.
B7-16	Current acceleration/ deceleration time	0.50s	0.00s to 5.00s	Used to set the acceleration/deceleration time in torque control.
B7-17	Reverse running command	0	0: Disable 1: Enable (applicable to FVC) The AC drive does not support FVC; therefore, the value 1 is invalid.	Used to set whether reverse commands (or frequencies) are allowed during operation in the brake mode. 0: Disable When it is set to 0, the reverse commands are not allowed during operation in the brake mode. 1: Enable (applicable to FVC) The AC drive does not support FVC; therefore, the value 1 is invalid.
B7-18	Brake release timeout period	2.00s	0.00s to 5.00s	The drive reports the brake release fault E91.xx when the current/torque brake release conditions are still not met though the drive output frequency reaches the brake release frequency and the time defined by this parameter elapses.
B7-21	Frequency exception detection cycle	0.50s	0.00s to 1.00s	When the operating frequency is opposite to the set frequency direction and such state lasts for the time defined by this parameter, frequency fault E37.00 can be reported.
B7-22	Frequency following error	20%	0% to 30%	When the difference between the running frequency and the frequency reference is greater than the value of this parameter for a period longer than the time defined by B7-23, the AC drive reports a frequency following fault (E38.00).

Parameter	Name	Default	Value Range	Descriptions
B7-23	Frequency following detection cycle	0.50s	0.00s to 1.00s	When the difference between the running frequency and the frequency reference is greater than the value of this parameter for a period longer than the time defined by B7-23, the AC drive reports a frequency following fault (E38.00).
B7-24	Detection time for torque limit reach	0.00s	0.00s to 5.00s	When the torque reaches the limit and remains so for longer than the time defined by B7-24 (Torque limit reach detection cycle), the AC drive reports a torque limit fault (E36.00).

6.5.9.3 Implementation Methods

To enable the brake control function, you can assign an output terminal with function 53 by setting the corresponding parameter in group F5.

Brake Control Timing



Fo: Brake release frequency (B7-01, B7-02)
Io: Brake release current/torque (B7-03, B7-04)
tod: Brake release time (B7-05)
ti: Current acceleration/deceleration time (B7-16)

Fc: Brake applying frequency (B7-06, B7-07)
tcdd: Brake applying delay (B7-08)
tcd: Brake applying time (B7-09)
tcdd: Braking excitation time (B7-10)

Timing Chart Description

1. Brake applied (waiting stage)
   At this stage, the AC drive waits for the running signal. It enters the brake releasing stage when the start command becomes active.
2. Releasing brake

This stage mainly consists of five parts: pre-excitation, torque acceleration, startup, brake release determination, and brake release time.

- Pre-excitation
  The AC drive performs pre-excitation according to F6-05 (Pre-excitation current) and F6-06 (Pre-excitation time). It enters the torque acceleration phase (which applies to the asynchronous motor in SVC mode) after excitation is completed.
- Torque acceleration
  The AC drive starts torque acceleration after pre-excitation. Its output torque accelerates from 0 to the target torque (the maximum value is the torque upper limit, valid in SVC mode).
- Startup
  After torque acceleration is completed, the AC drive accelerates from 0 until its running frequency reaches the brake release frequency (B7-01 or B7-02).
- Brake release determination
  After the running frequency reaches the brake release frequency, the AC drive needs to determine whether to release the brake.

  It compares the detected values with preset values to determine whether the brake release conditions are satisfied. If yes, it generates a brake release command. If not, it waits for brake release until the time defined by B7-18 (Brake release timeout time) elapses. In this case, the E91 brake release timeout fault is reported.

  The brake release conditions are as follows:

  - Running frequency ⩾ Brake release frequency;
  - Actual current ⩾ Brake release current (V/f);
  - Actual torque ⩾ Brake release torque (in SVC mode).
- Brake release time
  After outputting the brake release command, the AC drive keeps running with the brake release frequency and the brake release current for the time period defined by B7-05 (Brake release time).

3. Brake released
   After the brake release time is over, the AC drive enters the running stage. At this time, it accelerates from the brake release frequency to the target frequency. During the running process, the target frequency can be changed to allow the AC drive to accelerate, decelerate, or run at a constant speed. When the running signal becomes inactive, the AC drive starts deceleration.
4. Applying brake
   This stage mainly consists of the following parts: deceleration and delay, brake applying time, frequency off, and torque off.

- Deceleration and delay
  During the deceleration phase, the AC drive decelerates from the current running frequency to the brake applying frequency defined by B7-06 or B7-07. Then it maintains the frequency and current output for the delay time defined by B7-08 (Brake applying delay).
- Brake applying time

After the brake applying delay, the AC drive outputs the brake applying command and enters the brake applying holding phase. The AC drive outputs the brake frequency and the current and torque that match the load to prevent rollback during braking.

- Frequency off
  After the brake applying time is over, the AC drive enters the braking deceleration waiting phase. The output frequency decreases from the brake applying frequency to 0.
- Torque off
  If the pre-torque function (B7-13) is enabled, the torque decreases to 0 after the frequency becomes 0.

5. Brake applied
   The AC drive enters the flux holding stage after the brake applying stage is over. At this time, the AC drive performs excitation according to the pre-excitation current defined by F6-05 for the time period defined by B7-10. During this process, the IGBT is not turned off, ensuring that the AC drive can quickly respond to a command and restart. You can set B7-10 to 0 to disable the flux holding function.

   After the flux holding stage, the AC drive stops running and waits for restart.

Note

- The brake release and brake applying frequency of the drive and the brake release current cannot be set to low values to prevent the shorting stator braking mode upon brake release or applying.
- In vertical applications, the braking resistor must be installed, and B7-12 (start direction) must be set to 1 (forward run).
- When the brake control is effective, the startup protection function (F8-21) is forcibly enabled, and the overcurrent suppression function (F3-19) and overvoltage suppression function (F3-22) are forcibly disabled.

6.6 Faults and Protection

6.6.1 Startup Protection

Set F8-21 (F8-21 = 1) to enable the startup protection of the AC drive. This helps to avoid unexpected motor running at power-on or fault reset.

Startup protection can be used in the following scenarios:

- If the running command is valid when the AC drive is powered on (for example, an input terminal is ON before power-on), the AC drive does not respond to the command. The AC drive responds only after the running command is canceled and becomes valid again.
- If the running command is valid when the AC drive fault is reset, the AC drive does not respond to the running command. The startup protection can be disabled only after the running command is canceled.

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-21	Protection upon start	0	0: Disabled 1: Enabled	The AC drive is equipped with startup protection to prevent the motor from responding to commands upon unexpected power-on or fault reset.

6.6.2 Undervoltage and Fast Current Limit Protection

When the bus voltage is lower than the value of A5-06, the AC drive reports a fault.

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
A5-04	Fast current limit	1	0: Disable 1: Enable	This function is used to minimize the possibility of overcurrent faults, ensuring normal operation of the AC drive. It is recommended to disable this function in hoist applications such as cranes and enable this function in the V/f mode of asynchronous motors. It must be disabled for the applications where synchronous motors are used. 0: Disable Disable fast current limit. 1: Enable Enable fast current limit.
A5-06	Undervoltage threshold	Three-phase 400 V: 350.0 V Single-phase 200 V: 200.0 V	150.0 V to 455.0 V	If the bus voltage is lower than the value of A5-06 when the AC drive is running, the AC drive reports E09.00.

6.6.3 Output Phase Loss Protection

Parameter	Name	Default	Value Range	Descriptions
F9-06	Output phase loss detection before startup	0	0: Disabled 1: Enabled	It takes about several seconds to detect output phase loss during running. For low-frequency running applications or applications where risks exist during startup, this function enables quick detection of output phase loss during startup. However, it is not suitable for applications that have strict requirements on startup time. 0: Disabled Disable output phase loss detection before start 1: Enabled Enable output phase loss detection before start
F9-48	Fault protection action selection 1	10050	Ones position: E11 0: Coast to stop 1: Decelerate to stop 2: Restart 4: Alarm 5: Cancel Tens position: Reserved 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Hundreds position: E13 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Thousands position: E14 0: Coast to stop Ten thousands position: E15 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.

6.6.4 Overtemperature Protection

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F9-57	Motor overtemperature protection threshold 1	110°C	0°C to 200°C	When AI1 is assigned with the temperature sensor input function and the motor temperature exceeds the value of F9-57 (Motor overheat protection threshold 1), the AC drive reports a motor overtemperature fault (E45.00) and acts as defined by F9-48.
F9-58	Motor overheat warning threshold 1	90°C	0°C to 200°C	When AI1 is assigned with the temperature sensor input function and the motor temperature exceeds the value of F9-60 (Motor overtemperature pre-alarm threshold 1), the DO terminal assigned with function 9 (Motor overtemperature) outputs an active signal.
F9-59	Motor overtemperature protection threshold 2	110°C	0°C to 200°C	When AI2 is allocated with the temperature sensor input function and the motor temperature exceeds the value of F9-59 (Motor overheat protection threshold 2), the AC drive reports a motor overheat fault (E45.00) and acts as selected by F9-48.
F9-60	Motor overtemperature pre-alarm threshold 2	90°C	0°C to 200°C	When AI2 is allocated with the temperature sensor input function and the motor temperature exceeds the value of F9-60 (Motor overheat pre-waring threshold 2), the DO terminal allocated with function 9 (Motor overheat) outputs an active signal.
F9-61	Motor overtemperature protection threshold 3	110°C	0°C to 200°C	When AI3 is assigned with the temperature sensor input function and the motor temperature exceeds the value of F9-61 (Motor overheat protection threshold 3), the drive reports a motor overtemperature fault (E45.00) and acts as defined by F9-48.
F9-62	Motor overheat warning threshold 3	90°C	0°C to 200°C	When AI3 is allocated with the temperature sensor input function and the motor temperature exceeds the value of F9-62 (Motor overheat pre-waring threshold 3), the DO terminal allocated with function 9 (Motor overheat) outputs an active signal.

6.6.5 Overload protection

To protect different load motors, set the motor overload protection gain based on the overload capacity of the motor. The motor overload protection curve is an inverse time lag curve, as shown in the following figure.

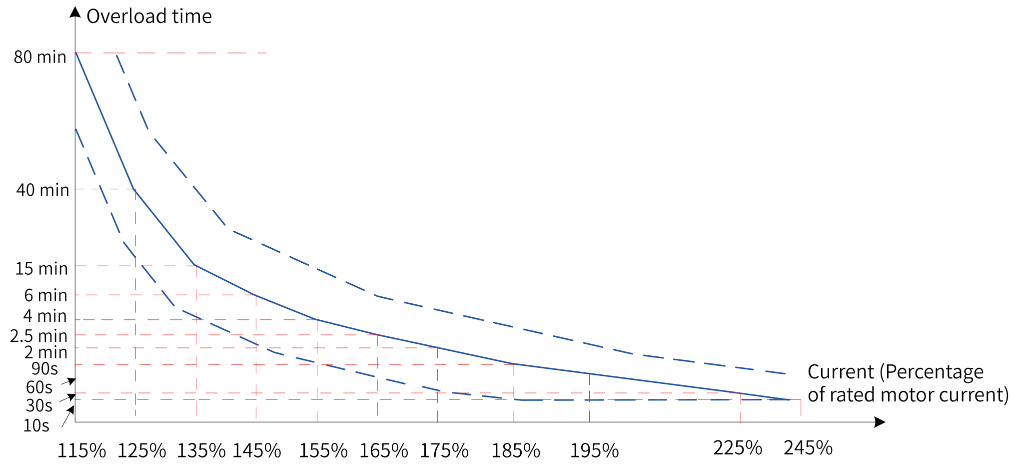


Figure 6-65 Inverse time-lag curve of protection

When the running current reaches 1.75 times the rated motor current and the motor runs at this level for 2 minutes, or when the running current reaches 1.15 times the rated motor current and the motor runs at this level for 80 minutes, the AC drive reports a motor overload alarm (E11.00).

1. Example 1

   If the rated motor current is 100 A, when the motor running current reaches 125 A (125% of 100 A) and the motor runs at 125 A for 40 minutes, the AC drive reports E11.00 (motor overload).

Note

The maximum overload time is 80 minutes and the minimum overload time is 10 seconds.

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2. Example 2

   The AC drive reports a motor overload error after the motor runs for 2 minutes at 150% of the rated motor current. As shown by the overload curve, 150% (I) of the rated motor current is between 145% (I1) and 155% (I2) of the rated motor current. The overload error reporting time for 145% of the rated motor current is 6 minutes (T1), and that for 155% of the rated motor current is 4 minutes (T2). Therefore, the overload error reporting time for 150% of the rated motor current in default settings can be calculated. The calculation formula is as follows:

   "T = T1 + (T2 - T1) x (I – I1)÷(I2 –I1) = 4 + (6 - 4) x (150% – 145%)÷ (155% –145%) = 5 (min)"

   Therefore, if the overload fault needs to be reported when the motor runs at 150% of the rated motor current for 2 minutes, set the motor overload protection gain F9-01 to 0.4 (F9-01 = 2/5).

Caution

Note: Set F9-01 properly based on the actual overload capacity. If the value of F9-01 is set too high, the motor may be damaged because the motor overheats but the AC drive does not report the alarm timely.

When the motor overload detection level reaches the value of F9-02 (motor overload warning coefficient), the DO or fault relay outputs the motor overload warning signal. The value of F9-02 is the percentage of the time duration during which the motor runs continuously at a certain overload point without reporting the overload fault.

On the condition that the motor overload protection gain is set to 1.00 and motor overload warning coefficient is set to 80%, when the motor running current reaches 145% of the rated motor current and the motor runs at this level for 4.8 min (80% x 6), the DO or fault relay outputs the motor overload warning signal.

The motor overload warning function is used to send a warning signal to the control system via the DO before the motor overload protection applies. The overload pre-warning coefficient is used to determine the degree of pre-warning before the motor overload protection. A larger value indicates later sending of the pre-warning signal. When the cumulative output current of the AC drive exceeds the product of multiplying the overload time (Y value of motor overload protection inverse time lag curve) and F9-02 (motor overload warning coefficient), the DO outputs an active motor overload warning signal. When F9-02 is set to 100% and the warning advance value is 0, the motor overload warning and the motor overload protection are triggered simultaneously.

Related parameters

Parameter	Name	Default	Value Range	Descriptions
F9-00	AC drive overload suppression	0	0: Disabled 1: Enabled	This parameter specifies whether to enable the motor overload protection function. The AC drive determines whether the motor is overloaded according to the inverse time lag curve. When the motor overload is detected, the AC drive will report an overload fault. 0: Disabled The motor overload protection function is disabled. If this parameter is set to 0, you are advised to install a thermal relay before the motor for protection. 1: Enable The motor overload protection function is enabled.
F9-01	Motor overload protection gain	1.00	0.20 to 10.00	The motor overload protection gain is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting an overload fault. It is used to adjust the actual overload fault report time of the AC drive when motor overload occurs.
F9-02	Motor overload warning coefficient	80%	50% to 100%	The motor overload warning coefficient is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting overload warning. A warning signal is sent to the control system through the DO before motor overload protection. This signal is used to determine how long in advance to send the warning signal before the motor overload protection applies. The larger the coefficient is, the later the warning signal is sent. When the cumulative output current of the AC drive exceeds the product of multiplying the overload time (Y value of motor overload protection inverse time lag curve) and F9-02 (motor overload warning coefficient), the DO outputs a motor overload warning signal.

6.6.6 Load Loss Protection

Set the ten thousands position of F9-51 to enable load loss detection. When the output current of the AC drive falls below F9-68 (Load loss detection level) for longer than the value of F9-69 (Load loss detection time), the AC drive performs load loss protection action.

Parameter	Name	Default	Value Range	Descriptions
F9-51	Fault protection action selection 4	51111	/	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.
F9-68	Load loss detection level	10.0%	0.0% to 100.0%	When the output current of the AC drive falls below F9-68 (Load loss detection level) for a period longer than the time set by F9-69 (Load loss detection time), the AC drive performs load loss protection action (selected through F9-49). Once the load recovers during protection, the drive will restore to run at the set frequency.
F9-69	Load loss detection time	1.0s	0.1–60.0s	

6.6.7 Protection Against Excessive Speed Deviation

The excessive speed error detection function is valid when the SVC mode is selected for the AC drive (F0-01 = 1).

When the detected motor speed is different from the frequency reference and the difference is larger than the value of F9-73 (Detection level of speed error) for longer than the time set by F9-74 (Detection time of speed error), the AC drive reports the excessive speed deviation fault (E42.00) and acts as selected by F9-50 (Fault protection action selection).

If F9-73 (Detection level of speed error) is set to 0.0% or F9-74 (Detection time of speed error) is set to 0.0s, the excessive speed error detection function is s disabled.

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F9-73	Detection level for excessive speed deviation	20.0%	0.0% to 50.0%	When the detected motor speed is different from the frequency reference and the difference is larger than the value of F9-73 (Detection level for excessive speed deviation) for longer than the time set by F9-74 (Detection time for excessive speed deviation), the AC drive reports the excessive speed deviation fault (E42.00) and acts as selected by F9-50 (Fault protection action selection). If F9-74 is set to 0.0s, the excessive speed deviation detection is disabled. The excessive speed deviation detection function is active only when the SVC mode (F0-01 = 1) is selected for the AC drive.
F9-74	Detection time for excessive speed deviation	5.0s	0.0s to 60.0s	

6.6.8 Power Dip Ride-Through

The power dip ride-through function enables the system to run continuously in the event of momentary power failure. When an instantaneous power failure occurs, the AC drive keeps the motor in the power generation state to keep the bus voltage at a value around the threshold for enabling power dip ride-through. This prevents the AC drive from stopping due to undervoltage, as shown in the following figure.

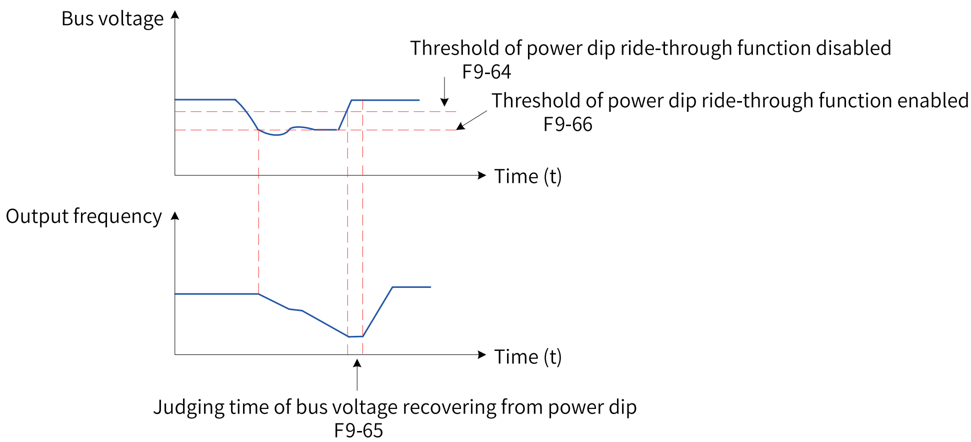


Figure 6-66 Power dip ride-through

In the "bus voltage constant control" mode, when the power grid recovers from the failure, the AC drive restores the output frequency to the target output frequency based on the acceleration time. In the "decelerate to stop" mode, when the power grid recovers from the failure, the AC drive decelerates to 0 Hz and stops, and will start only after receiving a start command.

Related parameters

Parameter	Name	Default	Value Range	Descriptions
F9-63	Power dip ride-through action	0	0: Disabled 1: Deceleration (Bus voltage constant control) 2: Decelerate to stop	The function enables the AC drive to keep running upon an instantaneous power failure. When an instantaneous power failure occurs, the AC drive keeps the motor in the power generation state to keep the bus voltage at a value around the threshold for enabling power dip ride-through. This prevents the AC drive from stopping due to undervoltage. 0: Inactive The power dip ride-through function is disabled. 1: Deceleration (Bus voltage constant control) When a power failure occurs, the bus voltage is retained at a value around the threshold for enabling power dip ride-through. In this mode, when the power grid recovers from the failure, the AC drive restores the output frequency to the target output frequency based on the acceleration time. 2: Decelerate to stop When a power failure occurs, the AC drive decelerates to stop. In this mode, when the power grid recovers from the failure, the AC drive decelerates to 0 Hz and stops, and will start only after receiving a start command. "Bus voltage constant control" is applicable to large-inertia applications such as fan, water pump and centrifuge. "Decelerate to stop" is applicable to the textile industry.
F9-64	Threshold for recovery from power dip ride-through	8.5%	8.0% to 10.0%	This parameter defines the voltage threshold for disabling power dip ride-through. 100% corresponds to 540 V. This value is slightly lower than the bus voltage before a power failure. Upon power failure, the bus voltage is maintained at about F9-66 (Threshold for enabling power dip ride-through). When the power supply recovers, the bus voltage rises from F9-66 (Threshold for enabling power dip ride-through) to F9-64 (Threshold for disabling power dip ride-through). During this period, the output frequency of the drive keeps decreasing until the bus voltage reaches F9-64 (Threshold for recovering from power dip ride-through).

Parameter	Name	Default	Value Range	Descriptions
F9-65	Time threshold for voltage recovery from power dip ride-through	0.5s	0.0s to 100.0s	Used to set the time required for the bus voltage to rise from F9-64 (Threshold for disabling power dip ride-through) to the voltage before power failure.
F9-66	Threshold for enabling power dip ride-through	80%	60% to 100%	This parameter defines the bus voltage level upon a power failure. When power failure occurs, the bus voltage is retained at a value around F9-66 (Threshold for enabling power dip ride-through).
F9-75	Power dip ride-through gain	40	0 to 100	This parameter is valid only when F9-63 (power dip ride-through function) is set to 1 (bus voltage constant control). If undervoltage is likely to occur during power dip ride-through, increase the power dip ride-through gain and the power dip ride-through integral coefficient.
F9-76	Power dip ride-through integral	30	0 to 100	
F9-77	Deceleration time of power dip ride-through	20.0s	0.0s to 300.0s	This parameter is valid only when F9-63 (power dip ride-through function) is set to 2 (decelerate to stop). When the bus voltage is lower than the value of F9-66, the AC drive decelerates to stop. The deceleration time is determined by this parameter instead of F0-18.

6.6.9 Fault Reset

AC drive hardware fault (E01), EEPROM fault (E21), short-circuit to ground fault (E23), and STO-BUFFER fault (E47.05) cannot be reset automatically or manually. They can only be reset after power down. Fault protection action is implemented after fault auto reset times is reached.

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F9-09	Fault auto reset times	0	0 to 20	Used to set the automatic fault reset times of the drive. If the number of reset times exceed the value of this parameter, the AC drive remains in the faulty state.
F9-10	DO action during automatic fault reset	0	0: Not act 1: The DO acts.	Used to determine whether the fault output of the DO takes effect during the automatic fault reset. 0: Not act The fault output function of the DO does not take effect during the automatic fault reset of the AC drive. 1: The DO acts. The fault output function of the DO takes effect during the automatic fault reset of the AC drive. The fault output function of the DO is defined by setting DO function to 3.
F9-11	Time for automatic reset upon fault	1.0s	0.1s to 100.0s	This parameter sets the waiting time between fault alarm and fault auto reset.

Note

The undervoltage fault (E09.00) will be reset automatically when the bus voltage is recovered. Its reset times is not included in the auto fault reset times.

6.6.10 Protective Action Against Fault

Faults are divided into four levels, corresponding to four protective actions depending on severity from high to low: coast-to-stop, decelerate-to-stop, alarm, and fault cancellation.

When alarm is selected as the fault protection action, the operating panel displays Axx.xx, such as "A16.02".

When "fault cancellation" is selected as the protective action against fault, no prompt will be displayed when a fault occurs. Select this option only when necessary.

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F9-47	Protection action section 0 upon fault	500	Ones position: E2/E3/E4 0: Coast to stop Tens position: E5/E6/E7 0: Coast to stop Hundreds position: Reserved 5: Cancel Thousands position: E9 0: Coast to stop Ten thousands position: E10 0: Coast to stop	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.
F9-48	Fault protection action selection 1	10050	Ones position: E11 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Tens position: Reserved 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Hundreds position: E13 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Thousands position: E14 0: Coast to stop Ten thousands position: E15 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.

Parameter	Name	Default	Value Range	Descriptions
F9-49	Fault protection action selection 2	50050	Ones position: E16 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Tens position: Reserved 5: Cancel Hundreds position: Reserved 0: Coast to stop Thousands position: E19 0: Coast to stop 4: Alarm 5: Cancel Ten thousands position: Reserved 5: Cancel	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.
F9-50	Fault protection action selection 3	15000	Ones position: E21 0: Coast to stop Tens position: E22 0: Coast to stop Hundreds position: E23 0: Coast to stop 5: Cancel Thousands position: Reserved 5: Cancel Ten thousands position: E25 2: Decelerate to stop 5: Cancel	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.

Parameter	Name	Default	Value Range	Descriptions
F9-51	Fault protection action selection 4	51111	Ones position: E26 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Tens position: E27 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Hundreds position: E28 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Thousands position: E29 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Ten thousands position: E30 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.

Parameter	Name	Default	Value Range	Descriptions
F9-52	Fault protection action selection 5	551	Ones position: E31 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Tens position: Reserved 5: Cancel Hundreds position: Reserved 5: Cancel Thousands position: E42 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Ten thousands position: E43 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.
F9-53	Fault protection action selection 6	5500	Ones position: E45 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Cancel Tens position: Reserved 5: Cancel Hundreds position: Reserved 5: Cancel Thousands position: Reserved 5: Cancel Ten thousands position: E80 0: Coast to stop 1: Decelerate to stop 5: Cancel	The protective actions are set through the ones, tens, hundreds, thousands, and ten thousands places of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The drive continues to run. 5: Cancel The fault is ignored.

Parameter	Name	Default	Value Range	Descriptions
F9-54	Frequency for continuing to run upon fault	1	0: Current running frequency 1: Frequency reference 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon abnormality	This parameter is used to select the frequency at which the AC drive continues operation upon a fault. If this parameter is set to 1, the drive displays Axx and continues to run at the frequency defined by F9-54.
F9-55	Backup frequency reference upon error	100.0%	0.0% to 100.0%	This parameter defines the backup frequency of the drive upon a fault. If a fault occurs during the operation of the drive and the fault protection action is set to "Operating at backup frequency" (F9-54 = 4), the drive displays Axx and continues operation at the backup frequency.

6.6.11 Short-circuit to Ground Detection

Parameter	Name	Default	Value Range	Descriptions
F9-07	Detection of software short circuit to ground	1	0: Disable 1: Detection before power-on	Used to enable or disable the short-circuit to ground detection function. 0: Disable Software short circuit to ground is not detected. 1: Detection before power-on Software short circuit to ground is detected at power-on.

6.7 STO Safety Function

6.7.1 Standards Compliance

- European directives
  - Low Voltage Directive 2014/35/EU, EN 61800-5-1 standard
  - EMC Directive 2014/30/EU, EN 61800-3 standard
  - Machinery Directive 2006/42/EC (functional safety)
- Safety standards

Table 6–36 Safety standard

Items	Standards compliance
Safety of machinery	ISO 13849-1: 2015 IEC 60204-1: 2016
Functional safety	IEC 61508: 2010, parts 1-7 IEC 62061: 2015 IEC 61800-5-2: 2016
Electromagnetic compatibility (EMC)	IEC 61326-3-1

- Safety features

Table 6–37 Safety features

Items	Standard	Performance Indicator
Safety integrity level (SIL)	IEC 61508 IEC 62061	SIL3 SILCL3
Probability of Failure Per Hour (PFH)	IEC 62061 IEC 61508	PFH = 1.94 x 10^{-9}[1/h] PFH = 1.10 x 10^{-9}[1/h]
Performance level (PL)	ISO 13849-1	PL e (Cat 3)
Mean time to dangerous failure (MTTFd)	ISO 13849-1	MTTFd: Height
Diagnostic coverage (DC)	ISO 13849-1	DCave: Medium
Stop category	IEC 60204-1	Stop category 0
Mission time	IEC 61508	5 year
Hardware fault tolerance	IEC 61508	1
Systematic capability	IEC 61508	3
Application mode	IEC 61508	High demand mode
Response Time	/	20 ms

6.7.2 Specifications

- Electrical safety complies with IEC 61800-5-1:2016 overvoltage category II standards.
- Environmental test requirements comply with IEC 61800-5-1:2016 standards.
- The AC drive complies with the EMC standards: IEC 61800-3:2017, IEC 61326-3-1, and IEC 61800-5-2.

Table 6–38 Environment and operation requirements

Items	Description
Ambient/Storage temperature	0°C to 55°C/-20°C to +70°C
Ambient/Storage humidity	20% to 95% RH, non-condensing
Vibration	*"Table 6–39 Vibration" on page 653*
IP rating/Pollution degree (PD)	IP20 PD2: free of corrosive or explosive gases; free of exposure to water, oil or chemicals; free of dust, salts or iron dust
Altitude	Not higher than 3000 m
Cooling method	Dry clean air (natural convection)
Others	No static electricity, no strong electromagnetic field, no magnetic field, no radioactivity

Table 6–39 Vibration

Items	Test Condition
Test reference	See IEC 60068-2-6 4.6
Condition	EUT is powered on and works normally.
Motion mode	Sinusoidal
Vibration amplitude/Acceleration	/
10 Hz ⩽ f ⩽ 57 Hz	0.075 mm amplitude
57 Hz < f ⩽ 150 Hz	1 g
Vibration duration	10 times on each of the three mutually perpendicular axes
Axis	X, Y, Z
Installation	According to the manufacturer's specifications

6.7.3 Parameters

Parameter	Parameter Name	Value Range	Default	Description
F7-06	STO software version	0.0 to 6553.5	0.0	Indicates the STO software version of the AC drive.
F8-65	Detection time threshold for STO inconsistency fault	12 ms to 1000 ms	50 ms	Detection time threshold for STO inconsistency fault
F8-66	STO display mode selection	0: Display STO as a status 1: Display STO as a fault	0	0: STO is displayed as a status without associated fault code. No fault output is generated; only the STO function output is active. 1: STO is displayed as a fault with fault code E47.00 being present. The fault is output and the panel still displays STO.
F9-13	Reset mode upon STO fault	0: Manual reset 1: Automatic reset	1	Used to determine whether the STO fault is automatically reset after it is triggered and then recovered. 0: Manual reset After STO is triggered and then recovered, manual reset is needed. 1: Automatic reset The STO fault is automatically reset after it is triggered and then recovered.
U0-95	STO initialization flag	0 to 1	0	Indicates the STO initialization flag. 0: Initialization failed 1: Initialization passed

Parameter	Parameter Name	Value Range	Default	Description
U0-96	STO status word monitoring	0 to 15	0	It displays the monitored STO status word. Bit 0: STO1 disconnection flag. 1: STO1 disconnected 0: STO1 connected Bit 1: STO2 disconnection flag. 1: STO2 disconnected 0: STO2 connected Bit 2: DO output flag (active when the DO is assigned with function 38) 1: DO output 0: DO not output Bit 3: Automatic reset of STO status 1: Automatic reset active 0: Automatic reset inactive
U0-97	STO model	0 to 1	0	Displays the STO model. 0: Not STO model 1: STO model
U0-98	STO AD sampling value	0 to 65535	0	Indicates the AD value of the supply voltage of the STO circuit.
U0-99	STO internal execution flag	0 to 65535	0	Indicates the execution flag of the internal detection program.

6.7.4 Installation

Note

Design and operation personnel must be trained to understand the requirements and principles for the design and operation.

Before use, configure the two independent inputs STO1/STO2 as two-channel inputs for the STO function.

For devices with the STO function, if the STO function is not required, STO1/STO2 can be connected to 24V at the same time to ensure normal operation of the devices.

6.7.5 Terminals and Connection

Terminal layout and assignment

The STO function is integrated in the drive unit, and its terminal arrangement and definitions are as follows.

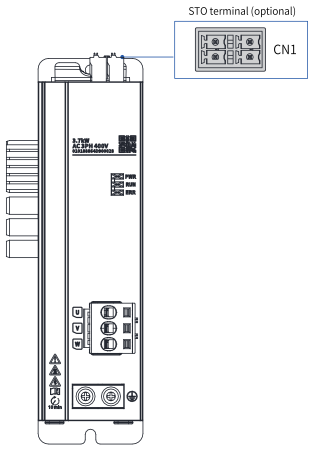
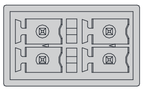


Figure 6-67 STO terminal arrangement of the drive unit (single-axis)

Table 6–40 STO terminal (optional) description of the drive unit (single-axis)

Appearance	Terminal Identification	Name	Performance Indicator
STO2 2GND  STO1 1GND	STO1	Power supply+ of STO channel 1	24 V input power supply
	1GND	Power supply- of STO channel 1	
	STO2	Power supply+ of STO channel 2	
	2GND	Power supply- of STO channel 2	

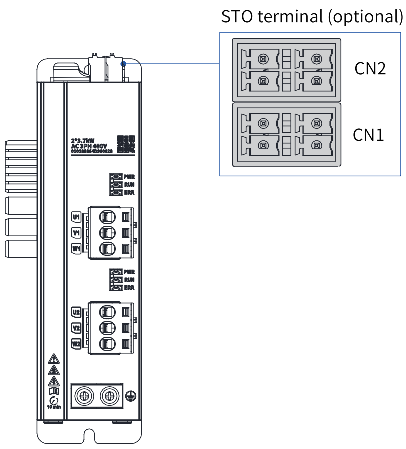
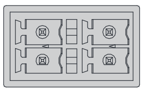


Figure 6-68 STO terminal arrangement of the drive unit (dual-axis)

Table 6–41 STO terminal (optional) description of the drive unit (dual-axis)

Appearance	Terminal Identification	Name	Performance Indicator
STO2 2GND  STO1 1GND	STO1	Power supply+ of STO channel 1	24 V (±10%) voltage input
	1GND	Power supply- of STO channel 1	
	STO2	Power supply+ of STO channel 2	
	2GND	Power supply- of STO channel 2	

Electrical specifications and connection of the input circuit

- Specifications

Table 6–42 Specifications

Signal	Input state	Description
STO1	"1" or "H"	The AC drive works normally.
	"0" or "L"	The STO function is enabled.
STO2	"1" or "H"	The AC drive works normally.
	"0" or "L"	The STO function is enabled.

- Electrical characteristics

Table 6–43 Electrical characteristics of safety input signals

Items	Characteristics	Description
Voltage range	24 VDC (±15%)	/
Input current	4 mA (Typ.)	Value of each channel
Standards of logic levels	"0" < 3 V, "1" > 15 V	/
Digital input impedance	5.78 kΩ	/

- Connection example

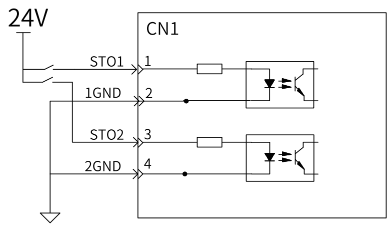


Figure 6-69 Connection example

EMC Requirements

1. To avoid short circuit between two adjacent conductors, shielded cables can be used with shield connected to the protective ground, or flat cables can be used with a grounding wire inserted between every two signal conductors.
2. Double-shield or single-shield twisted pair cables are recommended.
3. Fix and ground the cable protective cover using a piece of conductive metal.

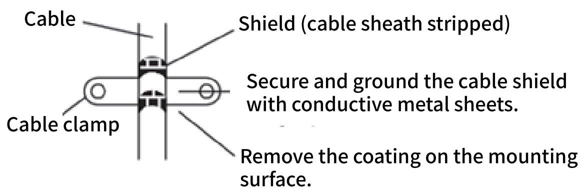


Figure 6-70 Cable clamp

4. The maximum cable length allowed between the AC drive and safety switch is 30 m.

6.7.6 Commissioning, Operation, and Maintenance Requirements

Basic Requirements

- Technicians must be trained to understand the requirements and principles of safety-related system design and commissioning.
- Operation and maintenance personnel must be trained on the requirements and principles of designing and operating safety-related systems.
- Operation personnel must be trained to understand the requirements and principles for the design and operation of safety-related systems.
- If any safety-related circuit on the control board does not work, which is irreparable, the control board must be replaced.

Commissioning Checklist

IEC 61508, EN IEC 62061 and EN ISO 13849 require the equipment to pass acceptance tests to verify the operation of safety functions. Acceptance testing must be performed at the following stages:

- at initial start-up of the safety function
- After any changes related to safety functions (wiring, assembly, settings, or other related operations)
- after any maintenance work related to the safety function.

Acceptance testing of safety functions must be performed by personnel with safety function expertise and must be documented and signed by the testers. Technicians and operation/maintenance/repair personnel must be trained to understand the requirements and principles for the design and operation of safety-related systems.

The signed copy of the acceptance test report must be kept on record. The report shall include documentations of start-up activities and test results, fault report reference and troubleshooting. Any new acceptance tests that are performed due to changes or maintenance shall be recorded.

Table 6–44 Acceptance test checklist

Method	Action	Result
1	Ensure that the AC drive can run and stop freely during commissioning.	☐
2	Stop the AC drive (if running), turn off the input power, and isolate the AC drive from the power cable through a disconnecter.	☐
3	Check the STO circuit connections based on the circuit diagram.	☐
4	Check that the shield of the STO input cable is grounded to the drive frame.	☐

Method	Action	Result
5	Turn off the disconnecter and connect the power supply.	☐
	When the motor stops, test the STO 1 channel signal: Set STO1 and STO2 to H. Issue an AC drive stop command (if running) and wait for the motor shaft to stop. Enable the STO function by disconnecting (low state or open circuit) the STO 1 channel input signal and issue a start command for the AC drive. Make sure the motor stays still and the AC drive display shows "STO".	☐
	The STO1 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	☐
	When the motor stops, test the STO 2 channel signal: Set STO1 and STO2 to H. Issue an AC drive stop command (if running) and wait for the motor shaft to stop. Enable the STO function by disconnecting (low state or open circuit) the STO 2 channel input signal and issue a start command for the AC drive. Make sure the motor stays still and the AC drive display shows "E47.02".	☐
	The STO2 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	☐
6	When the motor is running, test the STO 1 channel signal: Set STO1 and STO2 to H. Start the AC drive and check that the motor runs normally. Enable the STO function by disconnecting (low state or open circuit) the STO 1 channel input signal. Make sure the motor stops, reset the fault and try to start the AC drive. Make sure the motor stays still and the AC drive display shows "E47.02".	☐
	The STO1 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	☐
	When the motor is running, test the STO 2 channel signal: Set STO1 and STO2 to H. Start the AC drive and check that the motor runs normally. Enable the STO function by disconnecting (low state or open circuit) the STO 2 channel input signal. Ensure that the motor stops and the drive trips. Reset the fault and try to start the AC drive. Make sure the motor stays still and the AC drive display shows "E47.02".	☐
	The STO2 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	☐
7	Document and sign the acceptance test report which verifies that the safety function is safe and acceptable for operation.	☐

Special Requirements

To achieve SIL 3 performance level E (Cat3), the AC drive must be powered off every 3 months and powered on again for startup diagnosis.

6.7.7 Safety Function and Monitoring

Safety Function

Safety torque off (STO) is a safety function that complies with IEC 61800-5-2:2016. This product is integrated with the STO function. The STO function disables the power semiconductor control signal at the drive output end to prevent the AC drive from generating torque at the motor shaft end. The STO function blocks the output of PWM signals to the power layer of the AC drive through external redundant hardware terminals STO1 and STO2, thus preventing the movement of the motor. These two + 24VDC signals must be active to enable normal operation of the AC drive. If either or both of them are at low level simultaneously, the PWM signal will be blocked in the next 20 ms.

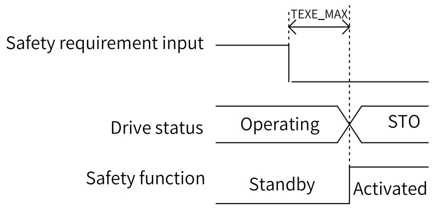


Figure 6-71 Safety function

Table 6–45 STO function

STO1 input	STO2 Input	PWM signal
H	H	Normal
L	H	Inhibited
H	L	Inhibited
L	L	Inhibited

Table 6–46 STO description

Items	Description
Definitions	Cuts off the power of the motor.
Description	If the AC drive is running, the torque is cut off and the AC drive coasts to stop when the STO function is activated.
Safety state	Used to disable the PWM gating signal of the AC drive.
Operation mode	High demand or continuous mode

Safety Functions Example

Direct stop with stop category 0 and STO

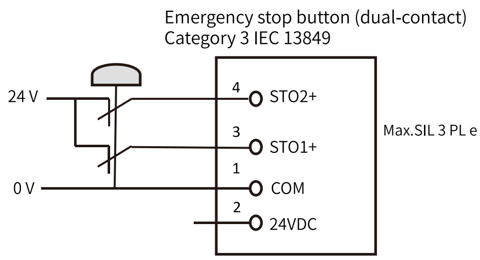


Figure 6-72 Application example of safety function

Safety Function Monitoring

The LED display displays the selected mode, status, and fault code of the AC drive, as listed in the table below.

Table 6–47 Fault codes related to the STO function

Fault Code	Status	Description
0	This fault is reported when the hardware detects that both STO signals are disconnected and F8-66 (STO mode selection) is 1.	STO1 and STO2 signals are disconnected simultaneously.
E47.02	This fault is reported when either STO1 or STO2 is disconnected for longer time than F8-65 (detection time threshold for inconsistent STO status).	STO1 or STO2 signal is disconnected.
E47.03	This fault is reported when the supply voltage of the STO circuit is out of the specified voltage range for a time period over a certain threshold.	Undervoltage or overvoltage occurs on the STO circuit.
E47.04	This fault is reported when the STO circuit hardware pins are abnormal.	The STO circuit input subsystem is abnormal.
E47.05	This fault is reported when the STO circuit hardware pins are abnormal.	The STO buffer chip is abnormal.

Exiting the STO State

F9-13 can be set to select the safe state exiting mode when the AC drive enters the safety state through the STO function.

- When F9-13 is set to 0, the manual reset mode is used (default state).
  When all the following conditions are met at the same time, the safety state can be cleared and the AC drive resumes normal operation.

  1. The input state of STO must be "high" for both channels.
  2. The AC drive is manually reset to clear the STO state.

- When F9-13 is set to 1, the automatic reset mode is used.
  When the following condition is met, the safety state can be cleared and the AC drive resumes normal operation.

  The input state of STO must be "high" for both channels.

Caution

Before exiting the STO state, ensure that the system enters the safety preparation state for operation resumption.

6.7.8 Troubleshooting

See the following table for the causes and solutions of faults. If the problem cannot be solved through the solutions in the following table, contact the agent or Inovance for technical support.

Table 6–48 Fault causes and solutions

Fault Code	Cause	Solution
0	STO1 and STO2 signals are disconnected simultaneously.	Check the wiring of STO1 and STO2.
E47.02	STO1 and STO2 signals are disconnected separately.	Check the wiring of STO1 and STO2.
E47.03	Undervoltage or overvoltage occurs on the STO circuit.	If the fault is constantly reported and cannot reset, the STO module is damaged. Ask for technical support.
E47.04	The STO circuit input subsystem is abnormal.	If the fault is constantly reported and cannot reset, the STO module is damaged. Ask for technical support.
E47.05	The STO buffer chip is abnormal.	If the fault is constantly reported and cannot reset, the STO module is damaged. Ask for technical support.

6.7.9 Precautions

This section describes the information that is required before starting operation. Before operations, read the following safety precautions, risk assessment information, and restriction information, and use the security features after you have properly understood all the information.

Safety Measures

Carefully read and observe the following important precautions when using safety functions:

- The STO function is not a substitute for the emergency stop (E-stop) function. If no other measures are taken and the power supply cannot be cut off in case of emergency, the high voltage parts of motors and AC drives are still charged, which may brings the risk of electric shock or other risks caused by electricity. Therefore, the maintenance of electrical parts of the AC drives or motors can only be implemented after the AC drive system is isolated from the main power supply.
- Depending on the standards and requirements for a particular application, it may be possible to use STO as an integral part of an E-stop system. However, its main purpose is for use in a dedicated safety control arrangement whose purpose is to prevent any hazard from occurring, without the use of an E-stop.
- An E-stop is often provided in a machine to allow for unexpected situations where an operator sees a hazard and can take action to prevent an accident.
- The design requirement for an E-stop differs from that of a safety interlock. Generally, the E-stop is required to be independent from any complex or "intelligent" control. It may use purely electromechanical devices to either disconnect the power or initiate a controlled rapid stop using other means such as dynamic or regenerative braking.

Note

When using a permanent-magnet motor, reluctance motor, or non-salient induction motor, there is a small possibility that a fault in the drive power stage could result in a momentary alignment torque in the motor, even if the STO function has been correctly activated. The drive system can produce an alignment torque which maximally rotates the motor shaft by up to 180° electrical, for a permanent magnet motor, or 90° electrical, for a non-salient pole induction motor or reluctance motor. This possible failure mode must be allowed for in the machine design.

The motor could rotate by a maximum 360°÷ p (where p is the number of poles).

Caution

The design of safety-related systems requires specialist knowledge. To ensure that a complete control system is safe， it is necessary for the whole system to be designed according to recognized safety principles. The use of individual sub-systems such as drives with Safe Torque Off functions, which are intended for safety-related applications, does not in itself ensure that the complete system is safe.

- In case of emergency stop, the STO function can be used to stop the AC drive. In normal operating mode, it is recommended not to use the STO function to stop the AC drive. If the STO function is used to stop a running AC drive, the AC drive will gradually stop. If this is unacceptable, the system should use a correct mode to stop the AC drive rather than stopping the STO function.

The above safety precautions are the application guidance of STO function, and also the design guidance of safety systems of mechanical control.

Note

It is the responsibility of the designer of the end product or application to ensure safety and compliance with relevant regulations.

Risk Assessment

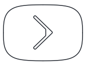
- When the STO function is used, a risk assessment of the drive system must be carried out in advance to ensure compliance with the standard safety integrity level.
- Even when the STO function is in use, there may be some residual risks. Therefore, safety must always be given consideration during risk assessment.
- The motor will rotate when external forces (such as gravity on the vertical axis) are applied during use of the STO function. Provide a separate mechanical brake to secure the motor.
- If the drive fails, the motor can work within 180°, ensuring safety even in dangerous situations.
- The number of revolutions and movement distance for each type of motor are listed below.
  - Maximum revolution of the rotating motor: 1/6 (rotation angle of motor shaft)
  - Maximum revolution of the traction motor: 1/20 (rotation angle of motor shaft)
  - Maximum distance of the linear servo motor: 30 mm

6.8 Monitoring

The monitoring function enables you to view the drive state in the LED on the operating panel. You can view monitoring parameters in the following two ways.

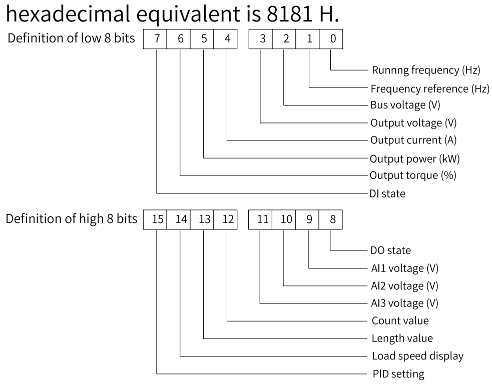
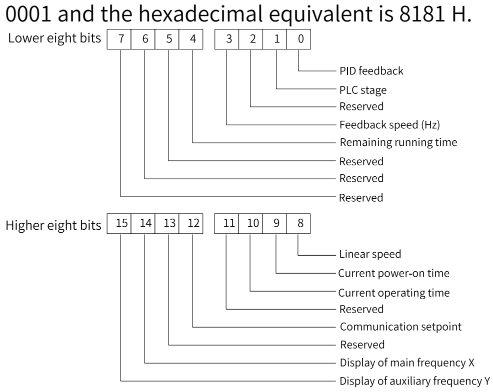
1. In the stop or operation state, you can use the key to switch every bit of F7-03, F7-04, and F7-05 to view multiple status parameters.
   In the operation state, 32 operating status parameters are available. F7-03 (Parameter 1 displayed on LED operating panel during operation) and F7-04 (Parameter 2 displayed on LED operating panel during operation) determine whether to display the parameter corresponding to each binary bit. In the stop state, 13 stop status parameters are available. Each binary bit of F7-05 (Parameter displayed at stop) determines whether the corresponding parameter is displayed.

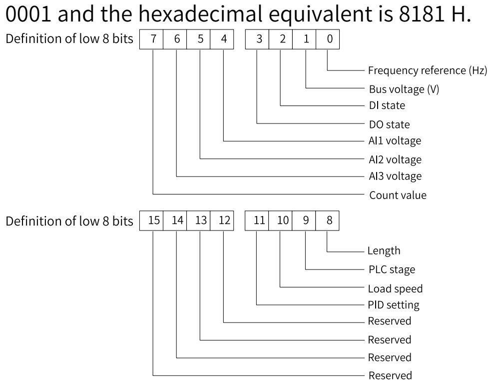
For example, to view the operating parameters on the operating panel, such as the running frequency, bus voltage, output voltage, output current, output power, and PID reference, perform the following operations.

Each bit of F7-03 (Parameter 1 displayed on led operating panel during operation) corresponds to one parameter. Set the corresponding bit to 1. Convert the binary value to a hexadecimal value and set F7-03 to this hexadecimal value. For details about the conversion, see the following table. You can use the key  to switch every bit of F7-03 to view related parameters.

Other monitoring parameters are viewed in the same way as F7-03. The corresponding relationship between the monitoring parameters and every bit of F7-03, F7-04, and F7-05 is as follows.

Table 6–49 Corresponding relationship between the monitoring parameters and every bit of F7-03, F7-04, and F7-05

Parameter	Name	Default	Value Range	Descriptions
F7-03	Parameter 1 displayed on LED operating panel during operation	0x1F	0x0000 to 0xFFFF	If a parameter needs to be displayed during operation, set its corresponding bit to 1. After converting this binary number to a hexadecimal number, set it in F7-03. For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H. 
F7-04	Parameter 2 displayed on LED operating panel during operation	0	0x0000 to 0xFFFF	If a parameter needs to be displayed during running, set its corresponding bit to 1. After converting the binary number to a hexadecimal number, set F7-04 to the hexadecimal number. For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H. 

Parameter	Name	Default	Value Range	Descriptions
F7-05	Parameter displayed on the LED operating panel upon stop	0x33	0x0000 to 0xFFFF	If a parameter needs to be displayed when the AC drive stops, set its corresponding bit to 1. After converting the binary number to a hexadecimal number, set it in F7-05. For example, to display bit 0, 7, 8, and 15, the corresponding binary number is 1000 0001 1000 0001 and the hexadecimal equivalent is 8181 H. 

Note

When the AC drive is powered off and on again, the parameters that are selected before power-off are displayed.

The monitoring parameters corresponding to each bit of F7-03, F7-04, and F7-05 do not completely correspond to all the monitoring parameters in group U0. If the parameter to be monitored cannot be found by F7-03, F7-04, and F7-05, search it in group U0 through the key by using method 2.

To convert a binary number into a hexadecimal equivalent, do as follows:

From right to left, every four binary digits correspond to one hexadecimal digit. If the highest hexadecimal digit has less than four binary digits, add 0 at the left. Then, convert each group of four binary digits to one decimal digit. 0000 to 1111 correspond to 0 to 15 in decimal and 0 to F in hexadecimal. Convert the decimal number into a hexadecimal equivalent according to the corresponding relationship between decimal and hexadecimal numbers. See the following table for details.

For example, the binary number is 011 1101 1111 1001. After adding 0 to the highest place, the binary number changes to 0011 1101 1111 1001. According to the preceding table, the hexadecimal equivalent is 3DF9.

Table 6–50 Converting a binary number into the hexadecimal equivalent

Binary	Decimal	Hexadecimal
1111	15	F
1110	14	E
1101	13	D
1100	12	C
1011	11	B
1010	10	A
1001	9	9
1000	8	8
111	7	7
110	6	6

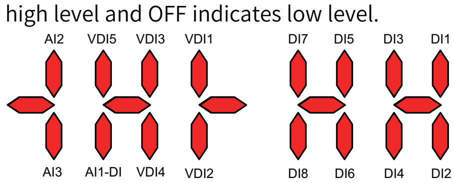
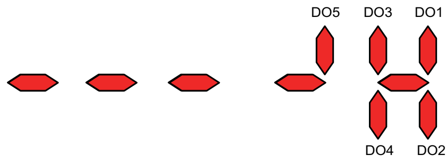
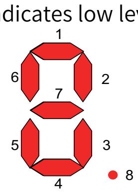
Binary	Decimal	Hexadecimal
101	5	5
100	4	4
11	3	3
10	2	2
1	1	1
0	0	0

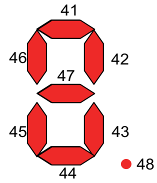
2. Use the keypad to enter group U0 and view the monitoring parameters. *"Table 6–51 Monitoring parameters in group U0" on page 666*The monitoring parameters are only readable.

Table 6–51 Monitoring parameters in group U0

Parameter	Name	Minimum Unit	Value Range	Descriptions
U0-00	Running frequency (Hz)	0.01 Hz	0.00 Hz to Target frequency	It displays the absolute value of the AC drive operating frequency.
U0-01	Frequency reference (Hz)	0.01 Hz	0.00 Hz to Target frequency	It displays the absolute value of the AC drive frequency reference.
U0-02	Bus voltage (V)	0.1V	0.0 V to 3000.0 V	It displays the AC drive bus voltage.
U0-03	Output voltage (V)	1V	0 V to 1140 V	It displays the output current of the AC drive in the running state.
U0-04	Output current (A)	0.01A	0.00 A to 655.35 A	It displays the output current of the AC drive in the running state.
U0-05	Output power (kW)	0.1 kW	0.0 kW to 3276.7 kW	It displays the output power of the drive during operation.
U0-06	Output torque (%)	0.10%	-200.0% to +200.0%	It displays the output torque of the drive during operation. This percentage takes the rated motor torque as the basis.
U0-07	DI input state	1	/	Used to display the DI terminal function input state of the AC drive. Bit 0: DI1 Bit 1: DI2 Bit 2: DI3 Bit 3: DI4 Bit 4: DI5 Bit 5: DI6 Bit 6: DI7 Bit 7: DI8 Bit 8: VDI1 Bit 9: VDI2 Bit 10: VDI3 Bit 11: VDI4 Bit 12: VDI5 Bit 13: AI1-DI Bit 14: AI2-DI Bit 15: AI3-DI

Parameter	Name	Minimum Unit	Value Range	Descriptions
U0-08	RO/DO output state	1	/	Used to display the DO/RO terminal output state of the AC drive. bit0: DO1/RO1 bit1: DO2/RO2 bit2: DO3/RO3 bit3: DO4/RO4 bit4: DO5/RO5
U0-09	AI1 voltage (V)	0.01V	-10.00 V to +10.00 V	Indicates the voltage (V) of the current AI1.
U0-10	AI2 voltage (V)	0.01V	-10.00 V to +10.00 V	Indicates the voltage (V) of the current AI2.
U0-11	AI3 voltage (V)	0.01V	-10.00 V to +10.00 V	Indicates the voltage (V) of the current AI3.
U0-12	Counting value	1	1 to 65535	It displays the value in the counting function.
U0-13	Length value	1	1 to 65535	It displays the value in the fixed length function.
U0-14	Load speed display	Defined by F8-63	0 to Rated motor speed	It displays the load speed.
U0-15	PID reference	1	0 to 65535	PID reference = PID reference (percentage) x FA-04 (PID reference feedback range)
U0-16	PID feedback	1	0 to 65535	PID feedback = PID feedback (percentage) x FA-04 (PID reference feedback range)
U0-17	PLC stage	1	0 to 15	A total of 16 multi-references are available.
U0-19	Feedback speed (Hz)	0.01 Hz	0.00 Hz to maximum frequency	/
U0-20	Remaining running time	0.1 min	0.0 min to 6500.0 min	Displays the remaining running time during timed running.
U0-21	AI1 gain and voltage after offset	0.01V	-10.00 V to 10.00 V	Displays the voltage (V) of AI1 after gain and offset.
U0-22	AI2 gain and voltage after offset	0.01V	-10.00 V to 10.00 V	Displays the voltage (V) of AI2 after gain and offset.
U0-23	AI3 gain and voltage after offset	0.01V	-10.00 V to 10.00 V	Displays the voltage (V) of AI3 after gain and offset.
U0-24	Linear speed	1 m/min	0 m/min to 65535 m/min	
U0-25	Current power-on time	1 min	0 min to 65000 min	Indicates the interval (min) from the current power-on time to present.
U0-26	Current operating time	0.1 min	0.0 min to 6500.0 min	Indicates the interval (min) from the current power-on time to present.
U0-28	Communication setpoint	0.01%	-100.00% to 100.00%	Displays data written through the communication address 0x1000. The setpoint of address 0x1000 determines the base of this percentage.
U0-30	Display of main frequency X	0.01 Hz	0.00 Hz to 500.00 Hz	Displays the main frequency (Hz) of the AC drive.
U0-31	Display of auxiliary frequency Y	0.01 Hz	0.00 Hz to 500.00 Hz	Indicates the auxiliary frequency (Hz) of the AC drive.

Parameter	Name	Minimum Unit	Value Range	Descriptions
U0-33	Synchronous motor rotor position	0.19°	0.0°to 359.9°	/
U0-35	Target torque	0.10%	-200.0% to 200.0%	It displays the upper limit of current torque. The parameter value takes the rated motor torque as the base.
U0-37	Power factor angle	0.1°	0.0°to 6553.5°	It displays the current power factor angle.
U0-39	Target voltage upon V/f separation	1V	0 V to Target voltage	Displays the target output voltage in the V/f separation state.
U0-40	Output voltage upon V/f separation	1V	0 V to Output voltage	Displays the actual output voltage in the V/f separation state.
U0-41	DI input state display	1	0 to 65535	Displays the DI terminal state. ON indicates high level and OFF indicates low level. 
U0-42	DO/RO output state display	1	0 to 65535	Displays the DO/RO terminal state. ON indicates high level and OFF indicates low level. 
U0-43	DI function state display 1	1	0 to 65535	It displays whether DI terminals set for functions 1 to 40 are active. From right to left, the five LEDs on the operating panel respectively stand for functions 1 to 8, 9 to 16, 17 to 24, 25 to 32 and 33 to 40. Each LED can be used for selection among eight functions. The LED is defined as below: Displays the DI function. ON indicates high level and OFF indicates low level. 

Parameter	Name	Minimum Unit	Value Range	Descriptions
U0-44	DI function state display 2	1	0 to 65535	It displays whether DI terminals set for functions 41 to 59 are active. The keypad has five LEDs, which represent functions 41 to 48, 49 to 56, and 57 to 59 respectively from the right to the left. Each LED can be used for selection among eight functions. The LED is defined as below: Displays the DI function. ON indicates high level and OFF indicates low level. 
U0-45	Fault code	1	0 to 51	Indicates the fault code of the AC drive.
U0-46	Fault subcode	1	0 to 51	Indicates the fault subcode of the AC drive.
U0-47	Drive unit temperature	1°C	-20°C to +120°C	Displays the temperature of the drive unit heatsink.
U0-48	Voltage received by PTC channel 1	0.001V	/	Indicates the voltage (V) received from the power supply unit when AI1 is used for temperature sensor input.
U0-49	Voltage received by PTC channel 2	0.001V	/	Indicates the voltage (V) received from the power supply unit when AI2 is used for temperature sensor input.
U0-50	Voltage received by PTC channel 3	0.001V	/	Indicates the voltage (V) received from the power supply unit when AI3 is used for temperature sensor input.
U0-51	PTC1 temperature	1°C	/	Indicates the temperature (°C) calculated when AI1 is used for temperature sensor input.
U0-52	PTC2 temperature	1°C	/	Indicates the temperature (°C) calculated when AI2 is used for temperature sensor input.
U0-53	PTC3 temperature	1°C	/	Indicates the temperature (°C) calculated when AI3 is used for temperature sensor input.
U0-54	Motor velocity	1 rpm	/	Indicates the current motor speed (rpm).
U0-55	Automatically-allocated station number	1	/	Indicates the station number that is automatically assigned.
U0-56	Auto-tuned axis type	1	1–3	Indicates the axis type identified by the AC drive. 1: Single axis 2: Dual-axis 1 3: Dual-axis 2
U0-57	Reserved	/	/	/

Parameter	Name	Minimum Unit	Value Range	Descriptions
U0-61	AC drive operation status word 1	1	/	AC drive operation status word 1 1: Forward running 2: Reverse running 3: Stop 4: Auto-tuning 5: Fault
U0-64	Special protocol status word	1	/	AC drive operation status word 2 **Bit 1 to Bit 0: Running status** 00: Stop 01: AC drive decelerating 11: AC drive running (accelerating or running at constant speed) **Bit 2: Whether jog enabled** 0: Non-jog state 1: Jog state **Bit 4 to Bit 3: Running direction state** 00: Forward running 01: Reverse running to forward running 10: Forward running to reverse running 11: Reverse running **Bit 3 to Bit 7: Reserved** **Bit 8: Main frequency set by communication** 0: Main frequency not set by communication 1: Main frequency set by communication **Bit 9: Main frequency set by AI** 0: Main frequency not set by AI 1: Main frequency set by AI **Bit 10: Command source from communication** 0: Main frequency not set by communication 1: Main frequency set by communication **Bit 11 to Bit 15: Reserved**

Parameter	Name	Minimum Unit	Value Range	Descriptions
U0-68	AC drive operation status word 2	1	/	AC drive operation status word 2 **Bit 0: Running status** 0: Stop 1: Running **Bit 1: Running direction (forward/reverse)** 0: Forward running 1: Reverse running **Bit 2: Whether a fault occurs** 0: No fault 1: Fault occurred **Bit 3: Whether output frequency reaches the frequency reference** 0: Frequency reference not reached 1: Frequency reference reached **Bit 4: Normal communication flag** 0: Communication exception 1: Communication normal **Bit 4 to Bit 7: Reserved** **Bit 8 to Bit 15: Fault code**
U0-78	AC drive rated current	0.1A	0.0 A to Rated AC drive current	Indicates the rated current (A) of the AC drive.
U0-79	AC drive power	0.1 kW	0.0 kW to the rated AC drive power	Indicates the rated power (kW) of the AC drive.
U0-81	Local LED state	1	/	Indicates the LED status of the drive unit. Bit 0: Running indicator Bit 1: Fault indicator
U0-82	Three-phase output phase A current	0.01A	0.00 A to 655.35 A	Single-phase output current A (A) of the AC drive
U0-83	Three-phase output phase B current	0.01A	0.00 A to 655.35 A	Single-phase output current B (A) of the AC drive
U0-84	Three-phase output phase C current	0.01A	0.00 A to 655.35 A	Single-phase output current C (A) of the AC drive
U0-88	Alarm code	1	/	Indicates the alarm code of the AC drive.
U0-89	Alarm subcode	1	/	Indicates the alarm subcode of the AC drive.
U0-90	Percentage of preset fan speed	1%	/	Indicates the current speed of the fan.

Parameter	Name	Minimum Unit	Value Range	Descriptions
U0-91	PTC1 mode	1	/	Indicates the AI1 input type. 0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input
U0-92	PTC2 mode	1	/	Indicates the AI2 input type. 0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input
U0-93	PTC3 mode	1	/	Indicates the AI3 input type. 0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input
U0-95	STO initialization flag	1	/	Indicates the STO initialization flag. 0: Initialization failed 1: Initialization passed
U0-96	STO status word monitoring	1	/	Indicates the STO internal status word monitoring.
U0-97	STO model	1	/	Indicates the flag used for identifying the STO model. 0: Not STO model 1: STO model
U0-98	STO AD sampling value	1	/	Indicates the AD value of the supply voltage of the STO circuit.
U0-99	STO internal execution flag	1	/	Indicates the execution flag of the internal detection program.

6.9 User Configuration

6.9.1 Local Parameter Backup

The local parameter backup function is set in FP-06 and FP-07 of the power supply unit. The operating panel displays "-CPY-" during parameter backup. When the set AC drive axis number does not exist or the power supply unit has a communication exception during backup, the AC drive reports E32.00.

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
FP-06	Local parameter backup mode	2	1: Back up all parameters 2: Back up non-motor parameters	Selects parameter backup mode. 1: Back up all parameters 2: Back up non-motor parameters
FP-07	Local parameter backup operation	0	Ones: Axis number 1 to 8 Tens: Backup operation 0: No action 1: Read 2: Write	Used to select the axis and type to be back up. Ones: Select the axis number to be back up. Tens: Backup operation 0: No action 1: Read Back up the selected axis number to the power supply unit. 2: Write Write the station number parameters stored on the power supply unit to the drive unit of the selected axis number.

6.9.2 User-defined Parameters

Group FE consists of user-defined parameters (FE-00 to FE-29). Users can define up to 30 commonly used parameters for easier check and modification.

If F0.00 is displayed, the corresponding user-defined parameter is empty. In the user-defined parameter mode, the displayed parameters are defined by FE-00 to FE-31, and the sequence is consistent with that in group FE. The parameter is skipped if F0-00 is displayed.

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
FP-03	Individualized parameter display	11	Ones position: User-defined parameter group 0: Hidden 1: Displayed Tens (position): User-modified parameter group display 0: Hidden 1: Displayed	This parameter is used to determine whether the user-customized parameter group and the user-modified parameter group are displayed on the operating panel.

Parameter	Name	Default	Value Range	Descriptions
FE-00	User-defined parameter 0	F0-01	F0-00 to FP-xx A0-00 to Ax-xx U0-xx to U0-xx U3-00 to U3-xx	Group FE is the user-defined parameter group. You can select the required parameters from the parameter list and add them to group FE, which facilitates view and modification.
FE-01	User-defined parameter 1	F0-02		
FE-02	User-defined parameter 2	F0-03		
FE-03	User-defined parameter 3	F0-07		
FE-04	User-defined parameter 4	F0-08		
FE-05	User-defined parameter 5	F0-17		
FE-06	User-defined parameter 6	F0-18		
FE-07	User-defined parameter 7	F3-00		
FE-08	User-defined parameter 8	F3-01		
FE-09	User-defined parameter 9	F4-00		
FE-10	User-defined parameter 10	F4-01		
FE-11	User-defined parameter 11	F4-02		
FE-12	User-defined parameter 12	F5-04		
FE-13	User-defined parameter 13	F5-07		
FE-14	User-defined parameter 14	F6-00		
FE-15	User-defined parameter 15	F6-10		
FE-16	User-defined parameter 16	F0-00		
FE-17	User-defined parameter 17	F0-00		
FE-18	User-defined parameter 18	F0-00		
FE-19	User-defined parameter 19	F0-00		
FE-20	User-defined parameter 20	F0-00		
FE-21	User-defined parameter 21	F0-00		
FE-22	User-defined parameter 22	F0-00		
FE-23	User-defined parameter 23	F0-00		
FE-24	User-defined parameter 24	F0-00		
FE-25	User-defined parameter 25	F0-00		
FE-26	User-defined parameter 26	F0-00		
FE-27	User-defined parameter 27	F0-00		
FE-28	User-defined parameter 28	F0-00		
FE-29	User-defined parameter	F0-00		

6.9.3 Hibernation and Wakeup

During the AC drive running, when the frequency reference keeps lower than or equal to the hibernating frequency (F8-56) for the time set by F8-57, the AC drive enters the hibernation state and coasts to stop.

To use the hibernation and wakeup functions, set the wakeup frequency, hibernation frequency, and hibernation duration. Generally, set the wakeup frequency (F8-54) equal to or greater than the hibernation frequency (F8-56). The hibernation and wakeup function is disabled if both the wakeup frequency and hibernation frequency are set to 0.00 Hz.

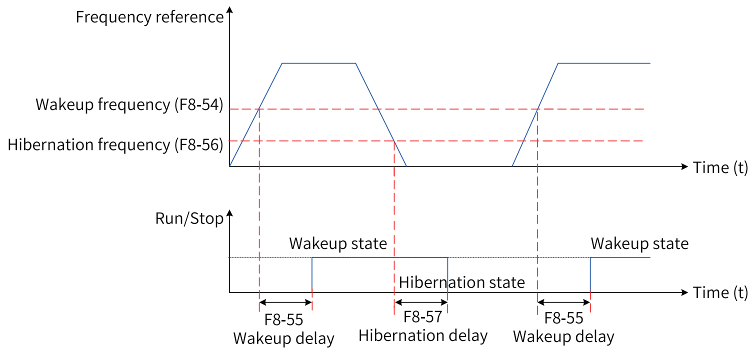


Figure 6-73 Hibernation and wakeup settings

Related Parameters

Parameter	Name	Default	Value Range	Descriptions
F8-54	Wakeup frequency	0.00 Hz	Hibernating frequency (F8-56) to Maximum frequency (F0-10)	In the sleep state, when the frequency reference is equal to or larger than F8-54 (Wakeup frequency) and the current running command is active, the drive starts directly after the time set by F8-55 (Wakeup delay) elapses.
F8-55	Wakeup delay	0.0s	0.0s to 6500.0s	
F8-56	Hibernation frequency	0.00 Hz	0.00 Hz to Wakeup frequency (F8-54)	During operation of the AC drive, when the frequency reference is lower than or equal to F8-56 (Sleep frequency), the drive enters the sleep state and coasts to stop after the time set by F8-57 (Sleep delay) elapses.
F8-57	Hibernation delay	0.0s	0.0s to 6500.0s	

6.9.4 Current Running Time Reached

Parameter	Name	Default	Value Range	Descriptions
F8-58	Current running time reach	0.0 min	0.0 min to 6500.0 min	When the current running time reaches the value of F8-58 and the DO function is set to 24, the DO outputs an active signal. This parameter is valid only for the present AC drive running time. The previous running time is not accumulated.
F8-60	Deceleration Time for Emergency Stop	Model dependent	0.0s to 6500.0s	F8-60 is added as the emergency stop deceleration time. The terminal emergency stop function decelerates according to the set deceleration time. When the deceleration time is 0s under V/F mode, the function decelerates according to the minimum unit time.

7 List of Fault Codes

7.1 List of Fault Codes for the Power Supply Unit

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Fault Cause	Solution
E12.01 A12.01	Input voltage phase loss occurs.	0: Cancel 1: Faulty 2: Warning	2: Warning	Yes	Input three-phase loss occurs on the power grid.	Check the three-phase power supply. Make sure that it is normal. Check the input cables for breakage. Make sure that they are normal. Check the input terminals. Make sure that they are properly connected. Ensure that the hardware voltage detection circuit is normal.
E12.04 A12.04	High input three-phase voltage	0: Cancel 1: Faulty 2: Warning	2: Warning	Supported	The power grid input voltage exceeds the rated value.	Check whether the input voltage is within the rated value. Three-phase 380 V models: 576 V Single-phase 220 V models: 288 V
E14.00 A14.00	AC drive overheat	1: Faulty	1: Faulty	Supported	The ambient temperature is too high.	1. Reduce the ambient temperature to less than 40°C for overload applications and 50°C for no overload applications. 2. Overload applications: Derating when the temperature is between 40°C and 60°C. 3. No overload applications: Derating when the temperature is between 50°C and 60°C.
					The ventilation duct is blocked.	Clean the ventilation duct.
					The fan is damaged.	Replace the damaged fan.
					The thermistor is damaged.	Replace the thermistor.
					Fan speed is low.	Check whether the fan works normally.
					The module is damaged.	Contact Inovance for technical support.
E16.01	Modbus communication timeout	1: Faulty	1: Faulty	Supported	Modbus communication times out.	Ensure that the RS485 cable is connected properly. Ensure that the RS485 cable is free from interference. Ensure that the value of FD-04 for the power supply unit is greater than the PLC communication cycle.
E16.02	Protective cover not installed for three-way terminal	1: Faulty	1: Faulty	Supported	The protective cover of the three-way terminal is not installed.	Ensure the protective cover of the three-way terminal for the last drive unit is installed properly.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Fault Cause	Solution
E16.03	Station number allocation failure	1: Faulty	1: Faulty	Supported	Station number allocation fails.	Insert the safety baffle of the backplane properly. Power off and then power on all equipment. If the fault persists, repeat the operation.
E16.04	Continuous frame loss of the expansion card	1: Faulty	1: Faulty	Supported	The number of frames that the I/O expansion card has lost continuously exceeds the set value.	Ensure that the expansion cards are connected properly. Check whether the value of F9-67 is too small.
E16.11	CANopen communication timeout	1: Faulty	1: Faulty	Supported	CANopen communication timeout	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.
E16.12	The PDO mapping configured by CANopen is inconsistent with the actual communication mapping.	1: Faulty	1: Faulty	Supported	The PDO mapping configured by CANopen is inconsistent with the actual communication mapping.	Check whether the PDO mapping of group FE/AF is consistent with the PDO and ensure that the PDO is configured correctly. Check whether the mapping relationship configured on the master station conforms to the EDS file specification of the AC drive.
E16.13	Timeout during receiving of interactive data by drive unit	1: Faulty	1: Faulty	Supported	An abnormality occurs when the drive unit receives interactive data from the power supply unit.	Check whether the power supply unit works normally. If the power supply unit is faulty, contact the technical support personnel.
E16.14	Abnormality during receiving of interactive data by drive unit	1: Faulty	1: Faulty	Supported	An abnormality occurs when the drive unit receives interactive data from the power supply unit.	The power supply unit is faulty. Contact the technical support personnel.
E16.21	CANlink heartbeat timeout	1: Faulty	1: Faulty	Supported	The CANlink heartbeat message times out.	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.
E16.22	CANlink station number conflict	1: Faulty	1: Faulty	Supported	CANlink station numbers conflict.	Change the same CAN station number to different ones by using FD-13.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Fault Cause	Solution
E16.52	EtherCAT communication card EEPROM fault	1: Faulty	1: Faulty	Supported	EtherCAT communication card EEPROM fault	If the programming or upgrading of the communication card fails, program the communication card again. If this fault occurs during normal use, replace the communication card.
E16.53	Slave control chip of the EtherCAT communication card faulty	1: Faulty	1: Faulty	Supported	Slave control chip of the EtherCAT communication card faulty	If the programming or upgrading of the communication card fails, program the communication card again. If this fault occurs during normal use, replace the communication card.
E16.55	Incorrect EtherCAT parameter setting	1: Faulty	1: Faulty	Supported	Incorrect EtherCAT parameter setting	When the master station becomes wrong, check whether it sends synchronous frames (FD-78). If not, make sure that TPDO and RPDO have been configured for the master PDO. If the master PDO is configured correctly, check the network port status (FD-72 to FD-77) and make sure that the communication cable is connected properly.
E16.71	Master station offline during operation of the communication card	1: Faulty	1: Faulty	Supported	The master station goes offline during operation of the communication card.	Check and ensure that the connection between the communication card and PLC is normal. Check whether the network cable in use is the shielded Cat 5e cable. Check and ensure the proper grounding and no EMC interference issues. Check whether the master station is abnormal.
E16.72	Internal slave station offline during operation of the communication card	1: Faulty	1: Faulty	Supported	The internal slave station goes offline during operation of communication card.	Check and ensure that both the connection between the communication card and the power supply unit, as well as the connection between the power supply unit and the drive unit, are normal.
E16.74	Communication card configuration fault	1: Faulty	1: Faulty	Supported	The communication card configuration is faulty.	Check whether the configured slave station exists, and check that start with station lost (FD-50) is disabled.
E16.75	Configurations of drive unit mappings on the communication card faulty	1: Faulty	1: Faulty	Supported	Configurations of the drive unit mapping on the communication card are faulty.	Check and ensure that the number of pieces of process data configured for the drive unit is consistent with the number of mapping relations.
E16.76	Configurations of power supply unit mappings on the communication card faulty	1: Faulty	1: Faulty	Supported	Configurations of the power supply unit mapping on the communication card are faulty.	Check and ensure that the number of pieces of process data configured for the power supply unit is consistent with the number of mapping relations.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Fault Cause	Solution
E16.81	Communication card connection failure	1: Faulty	1: Faulty	Supported	The communication card connection times out.	Check and ensure that the communication link is normal and the master station is running properly.
E16.82	Ethernet hardware error	1: Faulty	1: Faulty	Supported	An error occurs on the Ethernet hardware.	Contact the agent or Inovance.
E16.83	MAC address unconfigured	1: Faulty	1: Faulty	Supported	The MAC address is not programmed.	Contact the agent or Inovance.
E16.84	IP address conflict	1: Faulty	1: Faulty	Supported	The IP addresses conflict.	Ensure that the IP address of the AC drive is different from that of other devices.
E21.01	Parameter writing to the EEPROM timeout	1: Faulty	1: Faulty	Supported	Write parameter timeout	1. Check whether the write operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations. The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.
E21.02	Parameter reading from the EEPROM timeout	1: Faulty	1: Faulty	Supported	Read parameter timeout	1. Check whether the read operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations. The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.
E21.03	Operation on the EEPROM timeout	1: Faulty	1: Faulty	Supported	Timeout error occurs during writing/reading parameters.	1. Check whether the read/write operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations. The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.
E21.04	EEPROM buffer overflow	1: Faulty	1: Faulty	Supported	Number of parameters being written beyond the range	Check whether the write operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations.
E61.01	Braking transistor shoot-through	0: Cancel 1: Faulty	1: Faulty	Supported	The braking transistor is shoot-through at stop.	Check whether the resistance and power of the braking resistor are too small. Check whether the braking resistor is short-circuited.
E61.02	Braking transistor open circuit	0: Cancel 1: Faulty	1: Faulty	Supported	The braking transistor is open-circuited.	Check whether the braking resistor is damaged. Check whether the braking resistor is short-circuited.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Fault Cause	Solution
E61.03	Braking transistor shoot-through during running	1: Faulty	1: Faulty	Supported	The braking transistor is shoot-through during running.	Check whether the resistance and power of the braking resistor are too small. Check whether the braking resistor is short-circuited.
E80.00 A80.00	Fan running abnormal	0: Cancel 1: Faulty 2: Warning	1: Yes	Supported	The fan is running abnormally.	Check whether the fan on the power supply unit is connected correctly. Check whether the fan on the power supply unit is blocked.
A98.01	Continuous frame loss on drive unit	2: Warning	2: Warning	Supported	The power supply unit detects that the drive unit has lost more frames continuously than the value set by A0-01 of the power supply unit.	Check that the terminals of the power supply unit and drive unit bases are connected properly, and eliminate the interference.
A98.02	Continuous frame loss on expansion card	2: Warning	2: Warning	Supported	The power supply unit detects that the I/O expansion card has lost more frames continuously than the value set by A0-02 of the power supply unit.	Check that the power supply unit and I/O expansion card are connected properly, and eliminate the interference.
A98.03	Continuous frame loss on drive unit and expansion card	2: Warning	2: Warning	Supported	The power supply unit detects that the drive unit and the I/O expansion card have lost more frames continuously than the set value.	Check the wiring and eliminate the interference.
A99.01	The selected DI hardware resource does not exist.	2: Warning	2: Warning	Supported	The selected DI hardware resource does not exist.	Reinstall the IO expansion module. Check whether the power supply unit supports the DI hardware resource to be selected and ensure that the selected DI hardware resource exists.
A99.02	Selected DO/RO hardware resource not exist	2: Warning	2: Warning	Yes	The selected DO/RO hardware resource does not exist.	Reinstall the IO expansion module. Check whether the power supply unit supports the DO/RO hardware resource and ensure that the selected DO/RO hardware resource exists.
A99.03	The selected AI hardware resource does not exist.	2: Warning	2: Warning	Supported	The selected AI hardware resource does not exist.	Reinstall the IO expansion module. Check whether the power supply unit supports the AI hardware resource to be selected and ensure that the selected AI hardware resource exists.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Fault Cause	Solution
A99.04	Selected DI and DO/RO hardware resources not exist	2: Warning	2: Warning	Supported	The selected DI and DO/RO hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.01 and A99.02.
A99.05	Selected DI and AI hardware resources not exist	2: Warning	2: Warning	Supported	The selected DI and AI hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.01 and A99.03.
A99.06	Selected DO/RO and AI hardware resources not exist	2: Warning	2: Warning	Supported	The selected DO/RO and AI hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.02 and A99.03.
A99.07	The selected DI, DO/RO, and AI hardware resources do not exist.	2: Warning	2: Warning	Yes	The selected DI, DO/RO, and AI hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.01, A99.02, and A99.03.

7.2 List of Fault Codes for the Drive Unit

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Resettable	Fault Cause	Solution
E01.06	STO type recognition failure	0: Coast to stop	0: Coast to stop	Supported	The driver board is abnormal.	Contact the agent or Inovance.
E01.07	AC drive axis type recognition failure	0: Coast to stop	0: Coast to stop	Supported	The driver board is abnormal.	Contact the agent or Inovance.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E02.04	Output overcurrent	0: Coast to stop	0: Coast to stop	Supported	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and interruption contactor and make sure that they are not short-circuited.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					Acceleration time is too short.	Increase the acceleration time (F0–17).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 160%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The customized torque boost or V/f curve is improper.	Adjust the manual torque boost or V/F curve.
					The motor is started while rotating.	Enable the flying start function or start the motor after it stops.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E02.05	Bus overcurrent	0: Coast to stop	0: Coast to stop	Sup port ed	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and interruption contactor and make sure that they are not short-circuited.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					Acceleration time is too short.	Increase the acceleration time (F0–17).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 160%. The set value of F3-20 (Overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The customized torque boost or V/f curve is improper.	Adjust the manual torque boost or V/F curve.
					The motor is started while rotating.	Enable the flying start function or start the motor after it stops.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E02.06	Output and bus overcurrent	0: Coast to stop	0: Coast to stop	Sup port ed	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and interruption contactor and make sure that they are not short-circuited.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					Acceleration time is too short.	Increase the acceleration time (F0-17).
					The overcurrent stall suppression parameter is set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Current threshold for enabling V/f overcurrent stall suppression) is too large. Change it to a value between 120% and 160%. The set value of F3-20 (V/f overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The customized torque boost or V/f curve is improper.	Adjust the manual torque boost or V/F curve.
					The motor is started while rotating.	Enable the flying start function or start the motor after it stops.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E03.04	Output overcurrent	0: Coast to stop	0: Coast to stop	Supported	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					The deceleration time is too short under abrupt deceleration condition.	Increase the deceleration time (F0–18).
					The overcurrent stall prevention parameters are set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Current threshold for enabling V/f overcurrent stall suppression) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (V/f overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The braking unit and braking resistor are not installed.	Install a braking unit and braking resistor.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E03.05	Bus overcurrent	0: Coast to stop	0: Coast to stop	Supported	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					The deceleration time is too short under abrupt deceleration condition.	Increase the deceleration time (F0-18).
					The overcurrent stall prevention parameters are set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Current threshold for enabling V/f overcurrent stall suppression) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (V/f overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The braking unit and braking resistor are not installed.	Install a braking unit and braking resistor.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device may be faulty. Contact the manufacturer to replace them.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E03.06	Output and bus overcurrent	0: Coast to stop	0: Coast to stop	Supported	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					The deceleration time is too short under abrupt deceleration condition.	Increase the deceleration time (F0–18).
					The overcurrent stall prevention parameters are set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Current threshold for enabling V/f overcurrent stall suppression) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (V/f overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The braking unit and braking resistor are not installed.	Install a braking unit and braking resistor.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E04.04	Output overcurrent	0: Coast to stop	0: Coast to stop	Supported	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					The overcurrent stall prevention parameters are set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Current threshold for enabling V/f overcurrent stall suppression) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (V/f overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The power rating of the AC drive is too low.	During stable running, if the running current exceeds the rated motor current or rated output current of the AC drive , replace the AC drive with one of higher power class.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E04.05	Bus overcurrent	0: Coast to stop	0: Coast to stop	Supported	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					The overcurrent stall prevention parameters are set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Overcurrent stall action current) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (V/f overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The power rating of the AC drive is too low.	During stable running, if the running current exceeds the rated motor current or rated output current of the AC drive , replace the AC drive with one of higher power class.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E04.06	Output and bus overcurrent	0: Coast to stop	0: Coast to stop	Sup port ed	The output circuit of the AC drive is grounded or short-circuited.	Check the motor and make sure that the motor circuit is not short-circuited or disconnected.
					The control mode is FVC or SVC but parameter auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor parameter auto-tuning.
					The overcurrent stall prevention parameters are set improperly.	Ensure that the overcurrent stall suppression function (F3-19) is enabled. The set value of F3-18 (Current threshold for enabling V/f overcurrent stall suppression) is too large. Change it to a value between 120% and 150%. The set value of F3-20 (V/f overcurrent stall suppression gain) is too small. Change it to a value between 20 and 40.
					The power rating of the AC drive is too low.	In the stable operation state, if the operating current exceeds the rated current of the motor or the rated output current of the drive, select an AC drive with a higher power rating.
					The AC drive suffers external interference.	Check if the current upon the fault (F9-18, the current upon the latest fault) reaches the current threshold for enabling V/f overcurrent stall suppression (F3-18) in the fault log. If not, the fault may be caused by external interference. In this case, remove the external interference to clear the fault. If no external interference source is found, the driver board or Hall device might be damaged. Contact Inovance for replacement.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E05.00	Overvoltage during accelera tion	0: Coast to stop	0: Coast to stop	Sup port ed	The input grid voltage is too high.	Adjust the voltage to the normal range.
					External force drives the motor during acceleration.	Remove the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when external force is applied.
					The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The value of F3-22 (Overvoltage stall action voltage) is too large. Change it to a value ranging from 700 V and 770 V. The value of F3-24 (Overvoltage stall suppression gain) is too small. Change it to a value ranging from 30 and 50.
					The braking unit and braking resistor are not installed.	Install a braking unit and braking resistor.
					The acceleration time is too short.	Increase the acceleration time.
E06.00	Overvoltage during decelera tion	0: Coast to stop	0: Coast to stop	Sup port ed	The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The value of F3-22 (Overvoltage stall action voltage) is too large. Change it to a value ranging from 700 V and 770 V. The value of F3-24 (Overvoltage stall suppression gain) is too small. Change it to a value ranging from 30 and 50.
					External force drives the motor during deceleration.	Remove the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when external force is applied.
					The deceleration time is too short.	Increase the deceleration time.
					The braking unit and braking resistor are not installed.	Install a braking unit and braking resistor.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E07.00	Overvoltage during operation at constant speed	0: Coast to stop	0: Coast to stop	Supported	The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The value of F3-22 (Overvoltage stall action voltage) is too large. Change it to a value ranging from 700 V and 770 V. The value of F3-24 (Overvoltage stall suppression gain) is too small. Change it to a value ranging from 30 and 50.
					External force drives the motor during running.	Remove the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when external force is applied.
E07.01	Overvoltage for single-phase models	0: Coast to stop	0: Coast to stop	Supported	The bus voltage of single-phase models exceeds 410 V.	Adjust the input voltage of single-phase models to a value lower than 290 V.
E09.00	Undervoltage	0: Coast to stop	0: Coast to stop	Supported	An instantaneous power failure occurs.	Enable the power dip ride-through function.
					The input voltage of the drive is beyond the specified range.	Adjust the voltage to the normal range.
					The undervoltage threshold is set too high.	Lower the A5-06 (undervoltage threshold).
					The power supply unit, the driver board of the drive unit, or the control board of the drive unit is faulty.	Method 1: Check whether the effective value of the DC bus voltage is about 1.414 times the effective value of the input voltage using the multimeter. Method 2: On the basis of Method 1, check whether the bus voltage on the AC drive is consistent with the bus voltage detected using the multimeter. Solution 1. In the Method 1, the power supply bridge may be faulty. It is recommended to replace the AC drive. 2. In the Method 2, the driver board of the drive unit, or the control board of the drive unit is faulty. It is recommended to replace the AC drive.
E10.00	Drive overload	0: Coast to stop	0: Coast to stop	Supported	The motor is started when the motor rotates in the forward direction.	Set F6-00 Start mode to flying start.
					The load is too heavy or the motor rotor is locked.	Reduce the load or check motor and mechanical conditions.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E11.00 A11.00	Motor overload	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	F9-01 (Motor overload protection gain) is set improperly.	Set F9-01 (Motor overload protection gain) properly. The motor overload time is prolonged if you increase the value of F9-01.
					The load is too heavy or the motor rotor is locked.	Reduce the load or check motor and mechanical conditions.
E13.00 A13.00	Output phase loss occurs.	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	The motor is faulty.	Check whether open circuit occurs on the motor.
					The cable connecting the drive and the motor is faulty.	Eliminate the external fault.
					The three-phase outputs of the AC drive are unbalanced during motor running.	Check whether the motor three-phase winding is normal and eliminate the fault.
					The driver board or the IGBT module is abnormal.	Contact the agent or Inovance for technical support.
E15.01 A15.01	External device fault (NO)	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Supported	An external fault signal is input through the multi-functional DI (NO).	Eliminate external faults and ensure that restart (F8-21) is allowed under the mechanical condition for reset.
					An external fault signal is input through the virtual I/O (NO).	Confirm that the virtual I/O parameters in group A1 are set correctly and reset the device.
E15.02 A15.02	External device fault (NC)	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Supported	An external fault signal is input through the multi-functional DI (NC).	Eliminate external faults and ensure that restart (F8-21) is allowed under the mechanical condition for reset.
					An external fault signal is input through the virtual I/O terminal (NC).	Confirm parameters in A1 group and virtual I/O group set correctly, then perform a reset operation.
E16.01 A16.01	Modbus communication timeout	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	Modbus communication times out.	Check whether the RS485 communication cable is correctly connected. Check whether the value of FD-04 and the PLC communication cycle are proper.
A16.02	Protective cover not installed for three-way terminal	4: Warning	4: Warning	Supported	The protective cover of the three-way terminal is not installed.	Install the protective cover of the three-way terminal for the last drive unit.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E16.04 A16.04	Continuous frame loss of the expansion card	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	The number of frames that the I/O expansion card has lost continuously exceeds the set value.	Ensure that the expansion cards are connected properly. Increase the value of F9-67 properly.
E16.11 A16.11	CANopen communication timeout	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	CANopen communication times out.	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.
E16.12 A16.12	The PDO mapping configured by CANopen is inconsistent with the actual communication mapping.	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	The PDO mapping configured by CANopen is inconsistent with the actual communication mapping.	Check whether the PDO mapping of group FE/AF is consistent with the PDO and ensure that the PDO is configured correctly. Check whether the mapping relationship configured on the master station conforms to the EDS file specification of the AC drive.
E16.21 A16.21	CANlink heartbeat timeout	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	The CANlink heartbeat message times out.	Ensure that the CAN communication cable is connected properly. Check parameters FD-15 to FD-17 to confirm the interference and eliminate the interference. Ensure that heartbeat messages are transmitted and the device is normal.
E16.22 A16.22	CANlink station number conflict	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	CANlink station numbers conflict.	Change the same CAN station number to different ones by using FD-13.
E18.01	Current detection circuit fault	0: Coast to stop	0: Coast to stop	Supported	The current sampling of the drive is abnormal.	Check whether the main circuit is powered on. Check whether the Hall sensor or current sampling module is damaged. If yes, contact the agent or Inovance for technical support.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E19.02 A19.02	Magnetic pole position auto-tuning of the synchro nous motor is faulty.	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Sup port ed	1. Output phase loss occurs and the motor is not connected. 2. The motor inductance is too high. 3. The current sampling circuit of the drive is abnormal.	1. Ensure the motor is connected. Check whether there is phase loss. Use a multimeter to check whether the output open circuit occurs. 2. For the low-speed motor, change the value of F2-29 to the minimum value and then perform auto-tuning. 3. Replace the driver board or the AC drive.
E19.07 A19.07	Stator resistance auto-tuning fault	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Sup port ed	AC drive or motor abnormal.	Replace the AC drive or motor.
E19.08 A19.08	Error in ending stator resistance auto-tuning	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Sup port ed	1. The motor is not connected. 2. The current sampling circuit of the drive is abnormal.	1. Ensure the motor is connected. Check whether there is phase loss. Use a multimeter to check whether the output open circuit occurs. 2. Replace the driver board or the AC drive.
E19.09 A19.09	Auto-tuning on the transient leakage inductance of the asynchro nous motor fails.	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Sup port ed	Check whether the motor is connected or output phase loss occurs.	Check whether the motor is connected or output phase loss occurs. Ensure that the motor is connected or the load is connected to the motor.
E19.10 A19.10	Auto-tuning of asynchro nous motor leakage inductance	0: Coast to stop 4: Warning 5: Cancel	0: Coast to stop	Sup port ed	Check whether the motor is connected or output phase loss occurs.	Check whether the motor is connected or output phase loss occurs. Ensure that the motor is connected or the load is connected to the motor.
E21.01	Parameter writing to the EEPROM timeout	0: Coast to stop	0: Coast to stop	Sup port ed	An error occurs during parameter writing.	1. Check whether the write operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations. The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.
E21.02	Parameter reading from the EEPROM timeout	0: Coast to stop	0: Coast to stop	Sup port ed	An error occurs during parameter reading.	1. Check whether the read operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations. The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E21.03	Operation on the EEPROM timeout	0: Coast to stop	0: Coast to stop	Sup port ed	An error occurs during parameter reading and writing.	1. Check whether the read/write operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations. The EEPROM chip is damaged. Contact the manufacturer to replace the main control board.
E21.04	EEPROM buffer overflow	0: Coast to stop	0: Coast to stop	Sup port ed	The number of parameters to be written exceeds the limit.	Check whether the write operation performed by the communication involves EEPROM operations, reduce the number of EEPROM operations.
E22.00	Stator resistance auto-tuning result warning	0: Coast to stop	0: Coast to stop	Sup port ed	The auto-tuned stator resistance exceeds the proper range.	The rated motor voltage and current are set incorrectly. Set F1-02 (rated motor voltage) and F1-03 (rated motor current) correctly according to the motor nameplate. Check that auto-tuning is performed after the motor stops.
E22.01	Rotor resistance auto-tuning result warning	0: Coast to stop	0: Coast to stop	Sup port ed	The auto-tuned rotor resistance of the asynchronous motor exceeds the permissible range.	The rated motor voltage and current are set incorrectly. Set F1-02 (rated motor voltage) and F1-03 (rated motor current) correctly according to the motor nameplate. Check that auto-tuning is performed after the motor stops.
E22.02	No-load current and mutual inductance auto-tuning result warning	0: Coast to stop	0: Coast to stop	Sup port ed	The auto-tuned asynchronous motor no-load current and mutual inductance exceed the permissible range. If such fault is reported, the AC drive calculates the mutual inductance and no-load current based on known motor parameters. The calculated values may be different from optimal values.	Set the motor parameters in group F1 correctly according to the motor nameplate. Before auto-tuning, check that the motor is not connected to any load.
E22.03	Back EMF auto-tuning result warning	0: Coast to stop	0: Coast to stop	Sup port ed	The tuned back EMF of the synchronous motor exceeds the permissible range.	Set F1-02 (Rated motor voltage) according to the motor nameplate. Before auto-tuning, check that the motor is not connected to any load.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E23.01	Hardware overcurrent detected during short circuit to ground detection upon power-on	0: Coast to stop	0: Coast to stop	No	Hardware overcurrent is detected during short circuit to ground detection upon power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.02	Overvoltage detected during short circuit to ground detection upon power-on	0: Coast to stop	0: Coast to stop	No	Hardware overvoltage is detected during short circuit to ground detection upon power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.03	Overcurrent detected during short circuit to ground detection upon power-on (hardware overcurrent or current exceeds threshold)	0: Coast to stop	0: Coast to stop	No	A high risk is detected during short circuit to ground detection upon power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.04	Output overcurrent detected during short circuit to ground detection before power-on	0: Coast to stop	0: Coast to stop	No	Lower bridge overcurrent is detected during short circuit to ground detection before power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E23.05	Bus overcurrent detected during short circuit to ground detection before power-on	0: Coast to stop	0: Coast to stop	No	Bus overcurrent is detected during short circuit to ground detection before power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E23.06	Output overcurrent and bus overcurrent detected during short circuit to ground detection before power-on	0: Coast to stop	0: Coast to stop	No	Bus overcurrent and lower bridge overcurrent are detected during short circuit to ground detection before power-on.	Check whether the cable or motor is short-circuited to ground. Ensure that the motor wiring is correct.
E25.00	Power supply unit fault	1: Decelerate to stop 5: Cancel	1: Decelerate to stop	Supported	The power supply unit is faulty.	1. Eliminate the power supply unit faults, such as input phase loss and overtemperature. 2. Check the I/O terminal configuration of the power supply unit. If any one of the following functions is selected, a fault is reported when there is no feedback signal. In this case, check the terminal configuration of the power supply unit. 1: Running enabling 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback If any one of the following functions is selected and the terminal is active, a fault is reported: a: Drive unit running forbidden b: The drive unit coasts to stop. 8: The drive unit stops according to preset mode for drive unit
E26.00 A26.00	Cumulative operating time reached	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Supported	The cumulative operating time reaches the set value.	Clear the record by parameter initialization.
E27.00 A27.00	User-defined fault 1	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Supported	The signal of user-defined fault 1 is input through the multi-functional DI. The signal of user-defined fault 1 is input through the virtual I/O terminal.	Eliminate external faults and ensure that restart (F8-21) is allowed under the mechanical condition for reset.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E28.00 A28.00	User-defined fault 2	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Supported	The signal of user-defined fault 2 is input through the multi-functional DI. The signal of user-defined fault 2 is input through the virtual I/O terminal.	Eliminate external faults and ensure that restart (F8-21) is allowed under the mechanical condition for reset.
E29.00 A29.00	Cumulative power-on time reached	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Supported	The cumulative power-on time reaches the set value.	Clear the record through parameter initialization.
E30.00 A30.00	Output load loss	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	5: Cancel	Supported	The operation current of the drive is lower than the value of F9-68.	Check whether the cables connecting the AC drive and the motor are disconnected. Modify the values of F9-68 and F9-69 to meet actual operating conditions.
E31.00 A31.00	PID feedback loss during running	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	1: Decelerate to stop	Supported	The PID feedback is lower than the setpoint of FA-26.	1. Check the PID feedback signal. 2. Set FA-26 to a proper value.
E36.00	Torque limit timeout	0: Coast to stop	0: Coast to stop	Supported	F2-10 (Electric torque upper limit) is set improperly or the load is too heavy.	Set the upper limit of electric torque according to the site conditions, reduce the load, or select an AC drive with a higher power rating.
E37.00	Frequency direction fault	0: Coast to stop	0: Coast to stop	Supported	The load is too heavy.	1. Set B7-21 (Frequency abnormality detection cycle) properly according to the field conditions. 2. Reduce the load, or select an AC drive with a higher power rating.
E38.00	Frequency following fault	0: Coast to stop	0: Coast to stop	Supported	The load is too heavy.	1. Set B7-22 and B7-23 according to the site conditions. 2. Reduce the load, or select an AC drive with a higher power rating.
E42.00 A42.00	Excessive speed deviation	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	Motor auto-tuning is not performed.	Perform motor auto-tuning.
					The speed deviation exceeds the threshold set by parameters F9-73 and F9-74.	Set detection-related parameters properly according to the actual conditions.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E45.00 A45.00	Motor overheat	0: Coast to stop 1: Decelerate to stop 4: Warning 5: Cancel	0: Coast to stop	Supported	The cable of the temperature sensor becomes loose.	Check whether the temperature sensor is connected loosely. If yes, tighten the cables.
					Motor overtemperature occurs.	Increase the carrier frequency or take other heat dissipation measures to cool the motor.
					The motor overheat protection threshold is too low.	Increase the motor overtemperature protection threshold (90°C to 100°C for normal motors).
E47.00	STO blocked	0: Coast to stop	0: Coast to stop	Supported	STO1 and STO2 signals are disconnected simultaneously.	Check the wiring of STO1 and STO2.
E47.02	STO triggering inconsistency fault	0: Coast to stop	0: Coast to stop	Supported	STO1 and STO2 signals are disconnected.	Check the wiring of STO1 and STO2.
E47.03	STO power supply fault	0: Coast to stop	0: Coast to stop	Supported	Undervoltage or overvoltage occurs on the STO circuit.	If the fault is constantly reported and cannot reset, the STO module is damaged. Ask for technical support.
E47.04	STO input subsystem fault	0: Coast to stop	0: Coast to stop	Supported	The STO circuit input subsystem is abnormal.	If the fault is constantly reported and cannot reset, the STO module is damaged. Ask for technical support.
E47.05	STO BUFFER chip fault	0: Coast to stop	0: Coast to stop	No	The STO output blocking chip is abnormal.	If the fault is constantly reported and cannot reset, the STO module is damaged. Ask for technical support.
E80.00	Fan excessive speed deviation	0: Coast to stop 1: Decelerate to stop 5: Cancel	0: Coast to stop	Supported	The fan is faulty.	Ensure that the fan on the drive unit is connected correctly. Check whether the fan on the drive unit does not rotate.
E90.01	Brake release feedback fault	0: Coast to stop	0: Coast to stop	Supported	The brake release feedback signal is abnormal.	1. Re-connect the AC drive to ensure that the brake release signal of the AC drive is correctly transmitted to the brake device, and that the brake release signal is normally fed back to the AC drive. 2. Replace the brake device.
E90.02	Brake apply feedback fault	0: Coast to stop	0: Coast to stop	Supported	The brake apply feedback signal is abnormal.	1. Re-connect the AC drive to ensure that the brake release signal of the AC drive is correctly transmitted to the brake device, and that the brake release signal is normally fed back to the AC drive. 2. Replace the brake device.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
E90.03	Brake apply signal and brake release signal feedback fault	0: Coast to stop	0: Coast to stop	Sup port ed	The brake apply and release feedback signal is abnormal.	1. Re-connect the AC drive to ensure that the brake release signal of the AC drive is correctly transmitted to the brake device, and that the brake release signal is normally fed back to the AC drive. 2. Replace the brake device.
E91.00	Frequency reach timeout	0: Coast to stop	0: Coast to stop	Sup port ed	The operating frequency has not reached the value of B7-01 or B7-02.	Ensure that the motoring torque upper limit defined by F2-10 is greater than the value of B7-03 and B7-04. Increase the brake release timeout detection time defined by B7-18.
E91.01	Torque/ Current reach timeout	0: Coast to stop	0: Coast to stop	Sup port ed	The output torque or current does not reach the value of B7-03 or B7-04.	Ensure that the motoring torque upper limit defined by F2-10 is greater than the value of B7-03 and B7-04. Increase the brake release timeout detection time defined by B7-18.
E91.02	Frequency/ Torque reach timeout	0: Coast to stop	0: Coast to stop	Sup port ed	The operating frequency does not reach the value of B7-01 or B7-02, and the output torque or output current does not reach the value of B7-03 or B7-04.	Ensure that the motoring torque upper limit defined by F2-10 is greater than the value of B7-03 and B7-04. Increase the brake release timeout detection time defined by B7-18.
E93.00	Command direction conflict	1: Decelerate to stop	1: Decelerate to stop	Sup port ed	The forward and reverse running commands of the DI are valid simultaneously.	Ensure that either the forward running command or the reverse running command of the DI is valid.
A99.01	The selected DI hardware resource does not exist.	4: Warning	4: Warning	Sup port ed	The selected DI hardware resource does not exist.	Reinstall the IO expansion module. Check whether the DI hardware resource is selected for the power supply unit and ensure that the selected DI hardware resource exists.
A99.02	Selected DO/RO hardware resource not exist	4: Warning	4: Warning	Sup port ed	The selected DO/RO hardware resource does not exist.	Reinstall the IO expansion module. Check whether the DO/RO hardware resource is selected for the power supply unit and ensure that the selected DO/RO hardware resource exists.
A99.03	The selected AI hardware resource does not exist.	4: Warning	4: Warning	Sup port ed	The selected AI hardware resource does not exist.	Reinstall the IO expansion module. Check whether the AI hardware resource is selected for the power supply unit and ensure that the selected AI hardware resource exists.

Fault Code	Fault Name	Fault Level Range	Default Fault Level	Reset table	Fault Cause	Solution
A99.04	Selected DI and DO/RO hardware resources not exist	4: Warning	4: Warning	Sup port ed	The selected DI and DO/RO hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.01 and A99.02.
A99.05	Selected DI and AI hardware resources not exist	4: Warning	4: Warning	Sup port ed	The selected DI and AI hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.01 and A99.03.
A99.06	Selected DO/RO and AI hardware resources not exist	4: Warning	4: Warning	Sup port ed	The selected DO/RO and AI hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.02 and A99.03.
A99.07	The selected DI, DO/RO, and AI hardware resources do not exist.	4: Warning	4: Warning	Sup port ed	The selected DI, DO/RO, and AI hardware resources do not exist.	Reinstall the IO expansion module. Check the power supply unit according to the solutions of A99.01, A99.02, and A99.03.

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