

Wuxi XINJE Electric Co., Ltd.

Data no. PD02 20170518 3.4



XINJE	il donghog x	
	Preface	n cau
XD/XL series PLC	Pulse output	
User manual [Positioning control]	Motion control	2
	Application	3
	Appendix	

Version 1

Basic explanation

Thank you for purchasing Xinje XD/XL series PLC.

This manual mainly introduces XD/XL series PLC instructions.

Please read this manual carefully before using and wire after understanding the content. About software and programming instructions, please refer to related manuals.

Please hand this manual over to operation users.

Notices for users

Only experienced operator can wire the plc. If any problem, please contact our technical department.

The listed examples are used to help users to understand, so it may not act.

Please confirm that PLC specifications and principles are suitable when connect PLC to other products. Please conform safety of PLC and machines by yourself when use the PLC. Machines may be damaged by PLC errors.

Responsibility declaration •

The manual content has been checked carefully, however, mistakes may happen.

We often check the manual and will correct the problems in subsequent version. Welcome to offer advices to us.

Excuse us that we will not inform you if manual is changed.

Contact information

If you have any problem about products, please contact the agent or Xinje company. Tel: 0086 510-85134136 85123803 Fax: 0086 510-85111290 Address: Building 7 fourth floor, No.100, Dicui Rd, Wuxi, China. Code: 214072

WUXI XINJE ELECTRIC CO., LTD. Copyrights

Do not copy or use manual without written permission. Offenders should be responsible for losses. Please keep all copyrights of our company including practical modules, designed patents and copyrights mentioned in register.

2015, 5, 12

07

Catalog	
PREFACE	3
1 PULSE OUTPUT	6
1-1. FUNCTION OVERVIEW	7
1-2. PULSE OUTPUT TYPE AND INSTRUCTION APPLICATION	9
1-2-1. Pulse parameter and configuration	9
1-2-2. Multi-segment pulse output [PLSR]	65
1-2-3. Variable frequency pulse output [PLSF]	
1-2-4. Relative single segment positioning [DRVI]	
1-2-5. Absolute single-segment positioning [DRVA]	
1-2-6. Mechanical origin return[ZRN]	
1-2-7. Pulse stop [STOP]	
1-2-8. Pulse continue [GOON]	174
1-3. PULSE PARAMETER CONFIGURATION WIZARD	177
1-3-1. Pulse Parameter Configuration Wizard Opening Mode	
1-3-2. Instructions for the Use of the Pulse Parameter Config guide	
1-4. OUTPUT WIRING AND NOTES	
1-4-1. Composition of Connecting Equipment	
1-4-2. Pulse output performance specification	
1-4-3. Positioning control layout and wiring notes	
1-4-4. Setting of Servo Amplifier (Driving Unit) Side	
1-4-5. Pulse sending complete flag notes	
1-4-6. Cautions for triggering conditions of positioning instructions	
1-4-7. Positioning Instruction and System Parameter Block Related Parameters	
1-4-8. Troubleshooting of Servo Motor and Stepping Motor	
1-4-9. Troubleshooting of incorrect stop position of servo motor and stepper motor	
1-5. POSITIONING INSTRUCTION EXAMPLE PROGRAMS	
1-5-1. I/O point assignment	
1-5-2. Forward and reverse rotation sequence control sample program	
1-5-3. Forward and reverse rotation process program	
1-5-4. Forward and reverse rotation multi-section process program	
1-5-5. Forward reverse multi-segment process program [PLSF, PLSR, ZRN]	
1-5-6. Forward reverse rotation mulsti-segment sequential control program	
1-5-7. Forward and reverse rotation multi-segment process program	
1-6. PULSE OUTPUT COIL AND REGISTER	
2 MOTION CONTROL	310
2-1. MOTION CONTROL INSTRUCTION LIST	
2-2. WRITING METHOD OF MOTION CONTROL INSTRUCTION	
2-3. PULSE OUTPUT TERMINAL DISTRIBUTION AND PARAMETERS	
2-3-1. Pulse output port distribution	
2-3-2. Pulse output terminal parameters	

5

E.	
2-4. MOTION CONTROL INSTRUCTION	
2-4-1. Quick positioning [DRV]	318
2-4-2. Quick positioning (polar coordinates) [DRVR]	328
2-4-3. Linear interpolation [LIN]	331
2-4-4. Clockwise arc [CW]	
2-4-5. Anticlockwise arc [CCW]	362
2-4-6. Clockwise arc [CW_R]	379
2-4-7. Anticlockwise arc [CCW_R]	395
2-4-8. Three points arc [ARC]	410
2-4-9. Follow [FOLLOW] [FOLLOW_AB]	425
2-5. HARDWARE WIRING AND PRECAUTIONS	430
2-5-1. Input wiring	430
2-5-2. Output wiring	434
2-6. EXAMPLES	436
2-6-1. Isosceles triangle	436
2-6-2. Circle + inscribed triangle	444
2-6-3. Line + Arc symmetric figure	452
2-6-4. Disorder line segments	458
3 APPLICATION EXAMPLES	463
3-1. APPLICATION OF PULSE OUTPUT	463
3-2. APPLICATION OF MOTION CONTROL IN ARC SAW MACHINING SYSTEM	471
3-3. APPLICATION OF MOTION CONTROL IN HAIR PLANTING MACHINE	474
APPENDIX SPECIAL SOFT ELEMENT LIST	479
APPENDIX 1. SPECIAL AUXILIARY RELAY	479
APPENDIX 2. SPECIAL DATA REIGSTER LIST	489
APPENDIX 3. SPECIAL FLASH REGISTER LIST	505
APPENDIX 4. EXTERNAL INTERRUPTION TERMINAL LIST	544
APPENDIX 5. PLC RESOURCE CONFLICT TABLE	545

·07

Preface

———positioning control

This manual is XD/XL series PLC positioning control manual, it introduces pulse output and motion control function, is suitable for XD2, XD3, XD5, XDM, XDC, XD5E, XDME, XDH, XL3, XL5, XL5E, XLME series PLC (XD1 and XL1 have no positioning function).

1. XD/XL series PLC features:

> Faster instruction processing speed

XD/XL series PLC instruction processing speed is $12\sim15$ times faster than XC series, especially for the floating number instruction, the unit of scanning period is μ s.

> Up to 10 to 16 modules and 2 BD cards, 1 ED module can be extended

Similar to XC series PLC, XD3, XD5, XDM, XDC, XD5E series PLC also support extension module and BD card (XD1/XD2 cannot extend module and BD card, XDH cannot extend ED and BD), including digital, analog, temperature module. The extension modules can be 10 or 16, BD card 1 or 2.

XL series PLC can support 10 right extension modules, 1 left extension ED module.

> Compatible with most functions of XC series

XD/XL series PLC support most basic functions of XC series PLC.

Compatible with XC series program

XD/XL series PLC software XDPPro can open the program of XC series PLC, but some different instructions will be shown in red colors, user only needs to modify this part of program.

> XL has compact size

XL series PLC is card type PLC, with a thinner and smaller appearance, which can greatly save the installation space.

> X-NET fieldbus

XD/XL PLC supports xnet fieldbus communication, which can realize fast and stable communication to XD/XL PLC and TG/TN touch screen. XDC series PLC supports the function of x-net motion bus and can control 20-axis synchronous motion.

Ethernet communication

Ethernet PLC has RJ45 port and supports TCP/IP protocol. It can realize MODBUS-TCP communication and free format communication based on Ethernet. Supports program download, online monitoring, remote monitoring, and communication with other TCP/IP devices.

EtherCAT bus

XDH series PLC supports EtherCAT bus function, and can control 32 axes synchronously, with synchronization period ≤ 1 ms.

2. Product models

XD1 series models:

- XD1-16R/T-E/C •
- XD1-32R/T-E/C

XD2 series models:

- XD2-16R/T-E/C •
- XD2-24R/T/RT-E/C
- XD2-32R/T/RT-E/C
- XD2-48R/T/RT-E/C
- XD2-60R/T/RT-E/C

XD3 series models:

- XD3-16R/T/RT-E/C, XD3-16PT-E/C •
- tudonahoatoancau.com XD3-24R/T/RT-E/C, XD3-24PR/T/RT-E/C •
- XD3-32R/T/RT-E/C, XD3-32PR/T/RT-E/C •
- XD3-48R/T/RT-E/C, XD3-48PT-E/C •
- XD3-60R/T/RT-E/C, XD3-60PT-E/C •

XD5 series models:

- XD5-16R/T-E/C •
- XD5-24R/T/RT-E/C, XD5-24T4-E/C
- XD5-32R/T/RT-E/C, XD5-32T4-E/C
- XD5-48R/T/RT-E/C
- XD5-60R/T/RT-E/C
- XD5-48T4-E/C
- XD5-48T6-E/C
- XD5-60T4-E/C
- XD5-60T6-E/C
- XD5-60T10-E/C •

XDM series models:

- XDM-24T4-E/C, XDM-24PT4-E/C •
- XDM-32T4-E/C, XDM-32PT4-E/C
- XDM-60T4-E/C
- XDM-60T10-E/C, XDM-60PT10-E/C
- XDM-60T4L-E •

XDC series models:

- XDC-24T-E/C •
- XDC-32T-E/C
- XDC-48T-E/C
- XDC-60T-E/C

XD5E series models:

- XD5E-30T4-E •
- XD5E-60T10-E •

XDME series models:

XDME-60T10-E

XDH series models:

- **XDH-60T4-E** •
- 3. XL series PLC

XL1 serise PLC:

XL1-16T, XL1-16T-U

XL3 serise PLC:

XL3-16R/T, XL3-16PR, XL3-32T •

XL5 serise PLC:

XL5-16T, XL5-32T, XL5-32T4 •

XL5E serise PLC:

tudonahoatoancau.com XL5E-16T, XL5E-32T, XL5E-32T4, XL5E-64T6 •

XLME serise PLC:

XLME-32T4 •

4. Version requirements

XD series PLC: XDPpro software v3.2 and up.

XL series PLC: XDPpro software v3.5 and up.

Part of the instructions have version requirements, please refer to the instruction details.

Pulse output

	(1F	Pulse output	
	Pulse output			
Pulse output	nt instruction list: function	Instruction writing format	chapter	
Pulse output	t			3
PLSR	Multi-segment pulse output	PLSR S0 S1 S2 D	1-2-2	•
PLSF	Variable frequency pulse output	PLSF S0 S1 D	1-2-3	
DRVI	Relative single segment positioning	DRVI S0 S1 S2 D1 D2	1-2-4	
DRVA	Absolute single segment positioning	DRVI S0 S1 S2 D1 D2	1-2-5	
ZRN	Mechanical return zero		1-2-6	
, 	/	The STOP S0 S1	1-2-7	
STOP	Stop pulse			

1-1. Function overview

XD2, XD3, XD5 (except XD5-48T6/60T6), XDC, XL3 series PLC have 2 channels of pulse output. XD5-48T6/60T6, XDM, XD5E series PLC have 4~10 channels of pulse output. The different pulse functions include single direction pulse output with or without acceleration, multi-segment double direction pulse output. The max output frequency can up to 100KHz.

Note: as XC series PLC cannot write two or more pulse output instructions for same terminal in main program or process. But XD series PLC has no problem cause its condition is edge-triggered.

PLC model	Pulse	Pulse output	output	Output	Output format
	channels	terminal	frequency	mode	Output Iormat
XD2-16T/RT					
XD2-24T/RT				Open	
XD2-32T/RT	2	Y0, Y1	0~100KHz	collector	Pulse+direction
XD2-48T/RT				conector	
XD2-60T/RT					
XD3-16T/RT				Open	Pulse+direction
XD3-24T/RT				collector	
XD3-32T/RT	2	Y0, Y1	0~100KHz		
XD3-48T/RT					
XD3-60T/RT					
XD5-16T/RT				Open	Pulse+direction
XD5-24T/RT				collector	
XD5-32T/RT	2	Y0, Y1	0~100KHz		
XD5-48T/RT					
XD5-60T/RT					
XD5-24T4				Open	Pulse+direction
XD5-32T4	4	Y0, Y1, Y2, Y3	0~100KHz	collector	
XD5-48T4	-	10, 11, 12, 13	0~100KHZ		
XD5-60T4					
XD5-48T6	6	Y0, Y1, Y2, Y3, Y4,	0~100KHz	Open	Pulse+direction
XD5-60T6	0	Y5	0~100K11Z	collector	
		Y0, Y2, Y4, Y6		Differential	Pulse+direction
XD5-48D4T4	8	Y0/Y1, Y2/Y3,	0~920KHz		AB phase
ADJ-40D414	0	Y4/Y5, Y6/Y7	0~920KHZ		
		Y10, Y12, Y14, Y16			Pulse+direction
VD5 (0T10	10	Y0, Y1, Y2, Y3, Y4,	0~100KHz	Open	Pulse+direction
XD5-60T10	10	Y5, Y6, Y7, Y10, Y11	0~100KHZ	collector	
XDM-24T4				Open	Pulse+direction
XDM-32T4	4	Y0, Y1, Y2, Y3	0~100KHz	collector	
XDM-60T4					

Pulse output terminal:

¢	Č	

XDM-60T4L						
XDM-60T10	10	Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y10, Y11	0~100KHz	Open collector	Pulse+direction	
XDC-24T XDC-32T XDC-48T XDC-60T	2	Y0, Y1	0~100KHz	Open collector	Pulse+direction	
XD5E-24/30/ 48/60T	2	Y0, Y1	0~100KHz	Open collector	Pulse+direction	
XD5E-30/60T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector	Pulse+direction	
XD5E-60T6	6	Y0, Y1, Y2, Y3, Y4, Y5	0~100KHz	Open collector	Pulse+direction	
XD5E-60T10	10	Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y10, Y11	0~100KHz	Open collector	Pulse+direction	0
XDME-60T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector	Pulse+direction	
XDME-60T10	10	Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y10, Y11	0~100KHz	Open collector	Pulse+direction	
XDH-60T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector	Pulse+direction	
XL3-16/32T	2	Y0, Y1	0~100KHz	Open collector	Pulse+direction	
XL5-16/32T	2	Y0, Y1	0~100KHz	Open collector	Pulse+direction	
XL5-32T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector	Pulse+direction	
XL5E-16/32T	2	Y0, Y1	0~100KHz	Open collector	Pulse+direction	
XL5E-32T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector	Pulse+direction	
XLME-32T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector	Pulse+direction	
XL5E-64T6	6	Y0, Y1, Y2, Y3, Y4, Y5	0~100KHz	Open collector	Pulse+direction	

Note:

%1: all the pulse can output frequency 100~200KHz, but not all the servo can work well, please connect 500 Ω resistor between output and 24V power supply.

 \approx 2: the direction terminal can be set to any terminal except pulse output terminal when using positioning instruction.

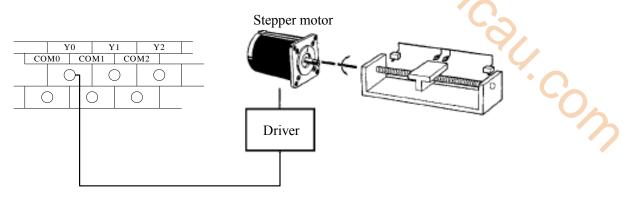
3: pulse output terminal transistor response time is below 0.5µs, other transistors is below 0.2ms.

X4: the pulse output terminal can be used to pulse direction output when it has no pulse output.

%5: For differential pulse output, if pulse + direction mode is adopted, transistor or differential output terminal can be selected as direction terminal (differential output terminal +, - should be connected); if it is in AB phase mode, terminals must be used in pairs, such as Y0 and Y1. See the table above for specific distribution.

Load current

Please make the open collector transistor output load current in the range of 10~100mA (DC5~24V) when the basic unit (transistor output type) pulse output terminal is used to pulse output or positioning instruction.



Note:

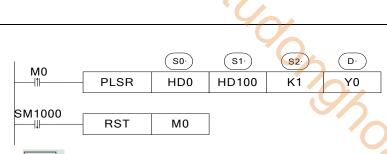
- *1: please use transistor terminal for pulse output. Such as XD3-16T-E or XD3-60T-E.
- *2: it can choose any terminals for direction output except pulse output terminal.
- ※3: the pulse direction temirnal will keep the state after the pulse output finished. if the state is ON, it will keep ON after pulse output finished. if the pulse output instruction does not have direction, user can control the direction terminal state by manual. If the pulse output instruction has direction, the instruction will automatically control the direction terminal.
- %4: the pulse output terminal LED will slight light when the pulse is outputting. Because the pulse is 50% empty square wave, so the LED will light in half of the period and off in another half of period.
- %5: the pulse output terminal Yn will be ON in software when the pulse is outputting, and it will be OFF when the pulse output finished.

1-2. Pulse output type and instruction application

1-2-1. Pulse parameter and configuration

XD/XL series PLC pulse output function needs to configure the pulse data, user parameters and system parameters. This chapter will introduce all the parameters and configuration methods. Now we take PLSR instruction as an example.

PLSR instruction write format:



Click in the software or right click the PLSR instruction in the program to open the configuration window of PLSR.

		multi se	ction pulse output	C	×	
	<u>S0</u>		<u>S1 S</u>	2 <u> </u>		1
data start a	address: HD0	user params address:	HD100 system params: K1	output: Y0		
mode:	relative 🗸	start execute section count:	0 Config		6	
Add De	elete Upwards Do	wnwards			4	
	frequence	pulse count	wait condition	wait register	jump register	
▶ 1	1000	1000	ACT time	K300	КЗ	
2	2000	3000	wait signal	M 10	K1	
3	2000	-3000	pulse sending complete	KO	K2	
used space	: HD0-HD39,HD100	-HD103	Read From PLC Write To	PLC OK	Cancel	

Configuration table:

Configuration item	Function
Data start address	Pulse data parameter address, occupied [S0] ~ [S0+N*10+8]
	(double words, N is pulse segment no.), store the pulse total segment
	number, pulse numbers, wait condition, register type and number,
	jump register type and number
User parameter address	User parameter address, occupied $[S1] \sim [S1+2]$ (double words),
	store the mode (relative/absolute), starting execute segment no.
System parameter	Choose which group of parameters, each pulse output terminal can
	set four group of parameters, the default is K1 (group 1)
Mode	Relative, absolute mode, default is relative mode
Start execute section count	PLSR executed from which segment, default is 0 (start from
	segment 1)
Config	Set the system parameters which are saved in special Flash register
	SFD900~SFD2193, it can set 4 groups of parameters of 10 pulse
	output terminals

1-2-1-1. Pulse data parameters (S0)

The pulse data parameters are set in the address starting from S0, please refer to the following table:

Address	Contents	Remark		
S0+0 (double words)	Pulse total segment number (1~100)			
S0+2 (8 words)	Reserved (8 words)			
S0+10 (double words)	Segment 1 pulse frequency			
S0+12 (double words)	Segment 1 pulse number			
	High 8-bit: [wait condition] (set when to send the next			
	segment of pulse)			
	H00: pulse output finished ("H" means hex format)			
	H01: wait time			
	H02: wait signal	\mathbf{O}		
	H03: ACT time			
	H04: EXT signal	+ 0		
	H05: EXT signal or pulse output finished			
80+14	Low 8-bit: [wait condition register type] (use together			
	with [wait condition])			
	H00: constant			
	H01: D			
	H02: HD	G		
	H03: FD	Segment 1		
	H04: X			
	H05: M			
	H06: HM			
	[constant/register number (wait condition)], use			
S0+15 (double words)	together with [wait condition], [wait condition register			
	type 】			
	Low 8-bit: [jump register type] (set the next pulse			
	segment no.)			
S0+17	H00: constant			
50+17	H01: D			
	H02: HD			
	H03: FD			
S0+18 (double words)	[constant/jump register number], use together with			
50+18 (double words)	[jump register type]			
S0+N*10+0 (double words)	Segment N pulse frequency			
S0+N*10+2 (double words)	Segment N pulse numbers			
S0+N*10+4	Wait condition, wait condition register type			
S0+N*10+5 (double words)	Constant or register number (wait condition)	Segment N		
S0+N*10+7	Jump register type			
S0+N*10+8 (double words)	Constant or register number (jump register)			

14

Note:

%1: pulse frequency is positive value (\geq 0), the value become larger is acceleration, become

Con

smaller is deceleration, it is not related to the pulse direction.

*2: pulse numbers can be positive or negative value, negative value means reverse direction pulse.

■ Wait condition (【S0+14】 high 8-bit)

To set when to enter next segment of pulse.

• Pulse sending finished (H00)

Jump to the setting pulse segment after executing this segment of pulse.

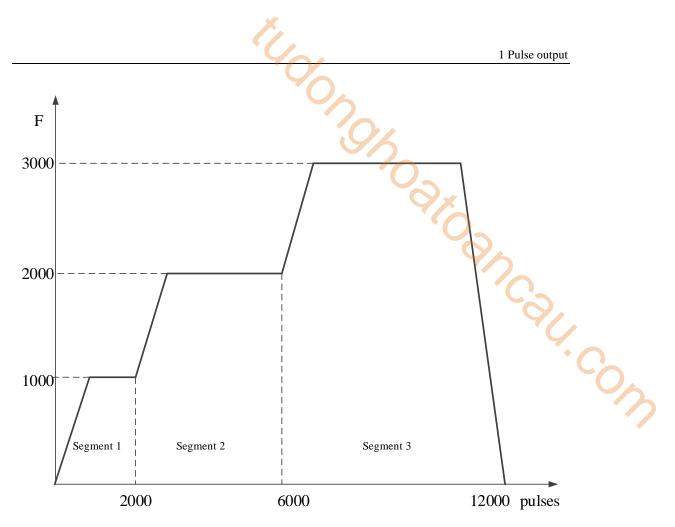
Example 1:

When the pulse intruction PLSR is triggered, it will send segment 1 2000 pulses with the speed 1000Hz, and jump to segment 2 at once after segment 1 finished. Segment 2 is 4000 pulses with speed 2000Hz. Then it will jump to segment 3 at once after semgent 2 finished. Segment 3 has 6000 pulses.

Configuration window:

data start ao mode:		params address: execute section count:	HD100 system params: K1 0 Config	output: Y0	
Add De	lete Upwards Downw	ards pulse count	wait condition	wait	jump
1	1000	2000	pulse sending complete	register KD	register KO
2	2000	4000	pulse sending complete	KO	KO
▶ 3	3000	6000	pulse sending complete	KO	KO

Multi-segment pulse configuration



Multi-segment sequence control pulse wave

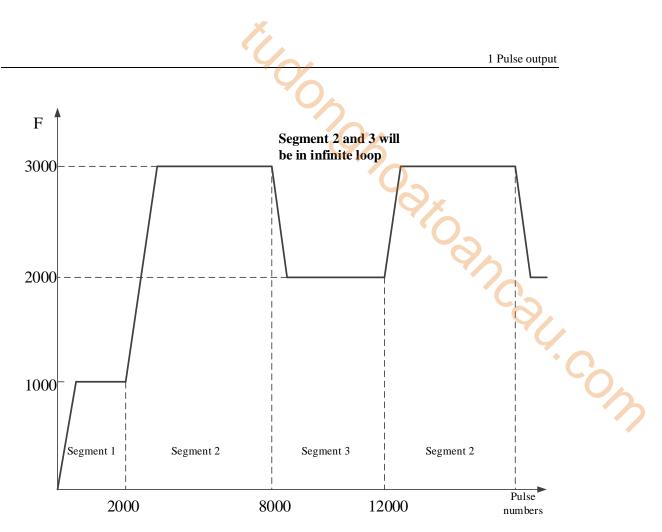
Example 2:

When the pulse instruction PLSR is triggered, it will send 2000 pulses with the speed 1000Hz, and jump to segment 3 to send 6000 pulses with the speed 3000Hz, then jump to segment 2 to send 4000 pulses, then jump to segment 3 to repeat the cycle.

The configuration window:

data start a mode:		execute section count:	HD100 system params: K1 0 Config	output:	YO
Add De	lete Upwards Downwa	rds			
	frequence	pulse count	wait condition	wait regist	
1	1000	2000	pulse sending complete	KO	КЗ
2	2000	4000	pulse sending complete	KO	KO
▶ 3	3000	6000	pulse sending complete	KO	K2

Multi-segment pulse output configuration table



Multi-segment pulse sending diagram

Note:

%1: the acceleration deceleration time can be set in 【config】 list, all the parameter details are in 【config guide】.

 ≈ 2 : 【jump register】 set to K0, it will jump to the next segment. If it is not 0, it will jump to corresponding segment. For example, K3 will jump to segment 3.

3: when setting multi-segment of pulse, and **(**jump register **)** is set, endless pulse outputting loop should be avoided.

• Wait time (H01)

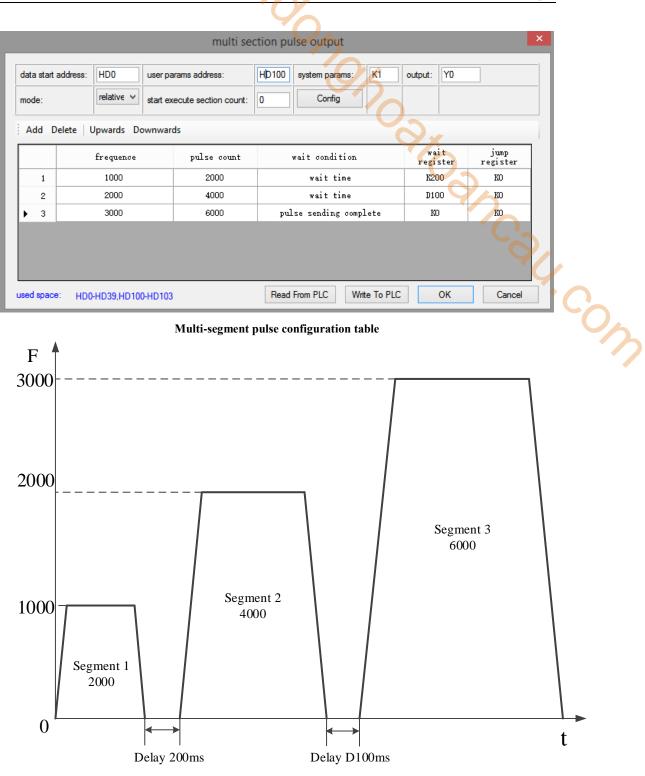
It starts to timing after present pulse segment end, it will jump to appointed segment when the time is up. The time can be constant or register D, HD, FD. The unit is ms.

For example:

When the relative mode pulse instruction PLSR is triggered, it sends 2000 pulses with the speed of 1000Hz, it will delay 200ms after segment 1 end then jump to segment 2. It sends 4000 pulses with the speed 2000Hz, it will delay the time of D100 (if D100=100, it will delay 100ms), then jump to segment 3 which will send 6000 pulses.

Configurations:

1 Pulse output



Pulse sending diagram

Note:

%1: the acceleration deceleration time can be set in [config] list, all the parameter details are in [config guide].

2: delay time range: 1~32767ms, set to 0 will be seemed to 1ms.

X3: if the delay time is over 32767ms, please use two pulse instructions, and timer between them.

• Wait signal (H02)

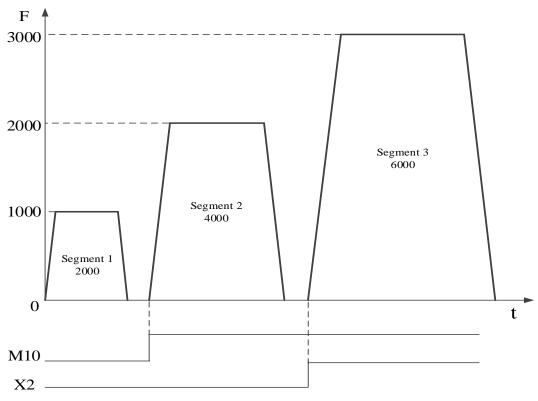
It will wait for the wait signal after pulse sending finished. When the signal is ON or from OFF to ON, it will jump to appointed segment. The wait signal can be X, M, HM and so on.

For example:

When the relative mode pulse instruction is triggered, it will send 2000 pulses with the speed 1000Hz, after segment 1 finished, it will wait for the M10 from OFF to ON, then jump to segment 2 which will send 4000 pulses with the speed 2000Hz, it will wait for X2 from OFF to ON, then jump to segment 3 which will send 6000 pulses. Configurations:

lata start address:	D0 user p	arams address:	D100 system params:	K1 output	: Y0		
node:	relative 🗸 start e	xecute section count:	0 Config				
Add Delete	Upwards Downwa	rds	I	1 1			
	frequence	pulse count	wait condition		ait ister	jump register	
1	1000	2000	wait signal	1	110	KO	
2	2000	4000	wait signal		X2	KO	
▶ 3	3000	6000	pulse sending compl	lete	ко	KO	
3	3000	6000	pulse sending compl	lete	KO	KO	

Multi-segment pulse output configuration table

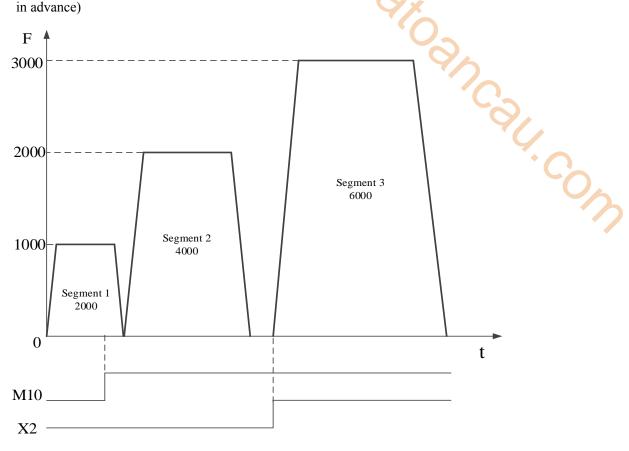


Pulse sending diagram

Note:

%1: the acceleration deceleration time can be set in [config] list, all the parameter details are in [config guide].

*2: if the present segment has not finished, but the wait signal is ON, it will jump to next segment after present segment finished, the wave is shown as below (M10 from OFF to ON in advance)



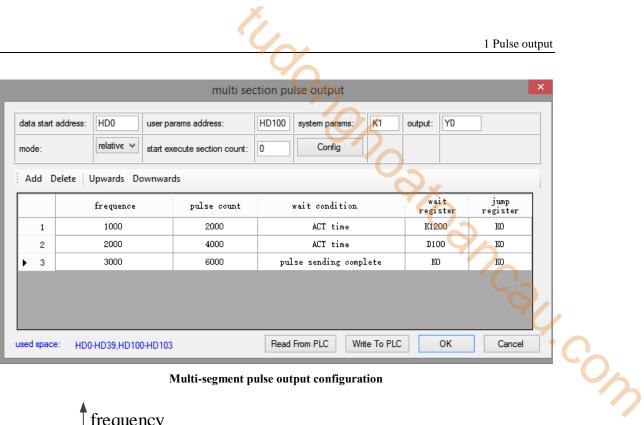
Pulse sending diagram

※3: if the wait signal is not ON after the present segment finished, it will wait until the signal is ON, then jump to the next segment.

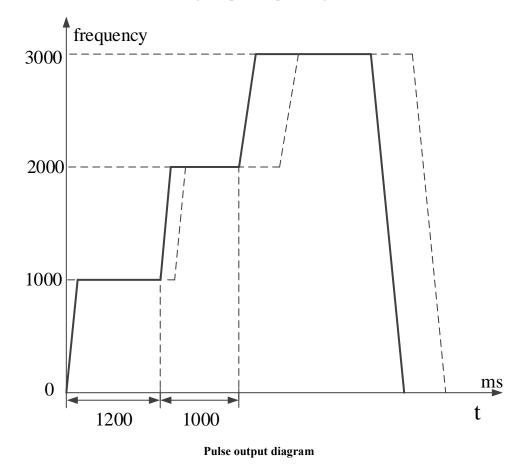
• ACT time (H03)

The pulse will output for the time appointed by ACT time, no matter the pulse sending process is finished or not, it will jump to the next segment at once. ACT time can be constant, or set through register D, HD, FD, the unit is ms.

For example: when the relative mode pulse instruction PLSR is triggered by pulse edge, it will output the first segment of pulse numbers with the speed 1000Hz, when the first segment pulse output time reaches 1200ms, no matter the pulse sending process is finished or not, it will jump to the second segment at once. When the second segment of pulse outputs with the speed 2000Hz and reaches the time setting in D100 (for example D100=1000), no matter the pulse sending process is finished or not, it will jump to the third segment at once and output 6000 pulses. The configuration:



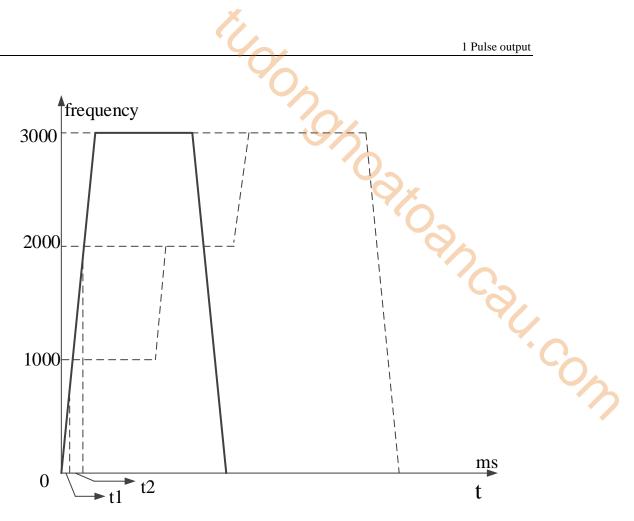
Multi-segment pulse output configuration



Note:

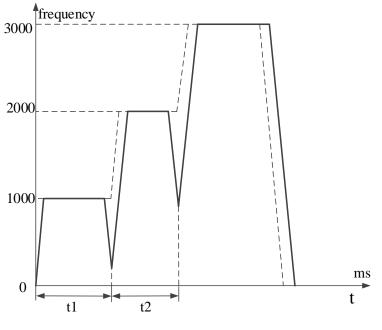
1: the accelertion time and deceleration time can be set in the parameter table, it will be explained in system parameters.

2: if the ACT time is very short and in the acceleration stage of the pulse segment, it will accelerate to the second segment from the position of ACT time reached, the same, it will accelerate to the third segment from the position of ACT time reached. Please see as the below diagram.



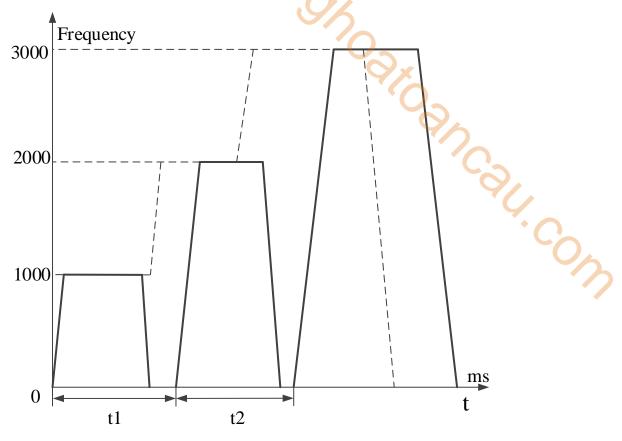
Pulse output diagram

3: if the ACT time is very long, and in the deceleration stage of the pulse segment, it will accelerate to the second segment from the position of ACT time reached, the same, it will accelerate to the third segment from the position of ACT time reached. Please see as the below diagram.



Pulse output digram

4: if the ACT time is very long, and the present pulse segment ends, it will wait the ACT time arrival and start the next segment. Please see the below diagram.



Pulse output diagram

• EXT signal (H04)

When the pulse is outputting (the pulse numbers have not been sent yet), if external signal is ON, it will jump to the next appointed segment. If the external signal has no action when the present pulse segment ends, it will wait for this signal. The external signal will input from X terminal (the response is higher if using external interruption terminal).

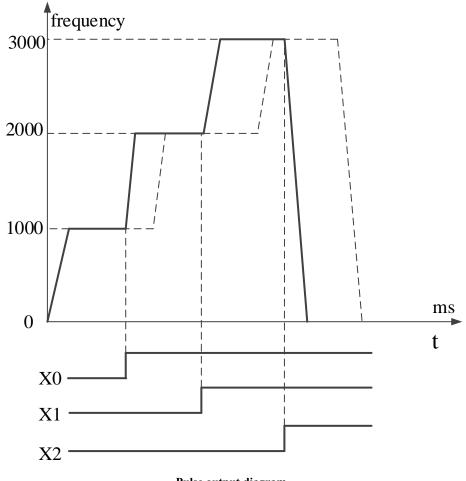
For example: when the relative mode pulse instruction PLSR is triggered by pulse edge, it will output the first segment of pulse numbers with the speed 1000Hz, the external signal inputs from X0 during the pusle is sending, it will jump to segment 2 at once. When the segment 2 pulse is sending with the speed 2000Hz, the external signal inputs from X1, it will jump to segment 3 at once. When the segment 3 pulse is sending with the speed 3000Hz, external signal inputs from X2, it will slow stop the pulse output at once.

The configuration window:

1 Pulse output

data start address:	HD0 use	er params address:	HD100 system params: K1	output: Y0	
mode:		int execute section count:	0 Config		
Add Delete	Upwards Down	wards		N	
	frequence	pulse count	wait condition	wait register	jump register
1	1000	2000	EXT signal	XO	КО
2	2000	4000	EXT signal	X1	KO
▶ 3	3000	6000	EXT signal	X2	KO
sed space: HD	0-HD39,HD100-HD)103	Read From PLC Write To PLC	ОК	Cancel

Multi-segment pulse output configuration

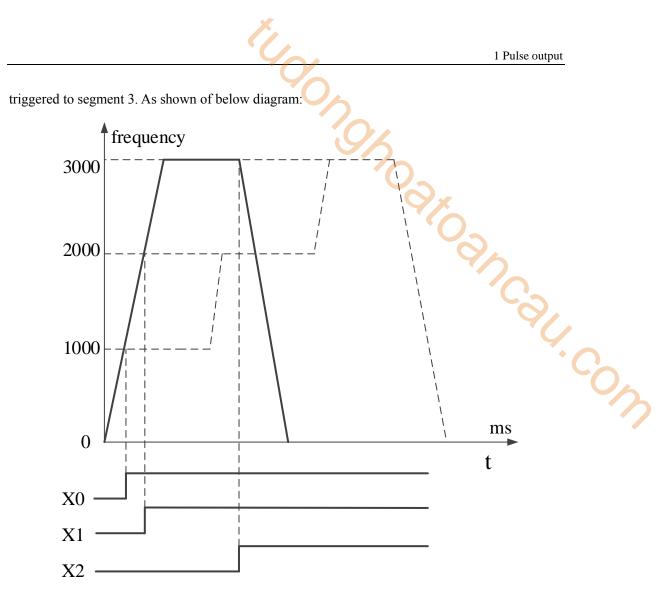


Pulse output diagram

Note:

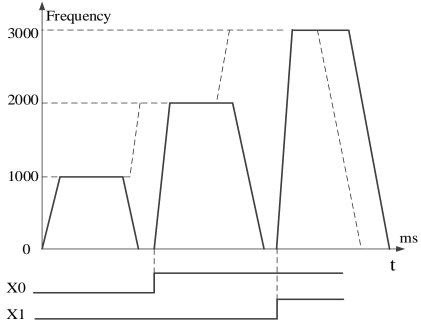
1: the acceleration and deceleration time can be set in parameter table, please refer to system parameters for details.

2: the pulse is accelerating when the EXT signal is triggered, it will accelerate from the present position to pulse segment 2. The same, it will accelerate from the present position of EXT singal



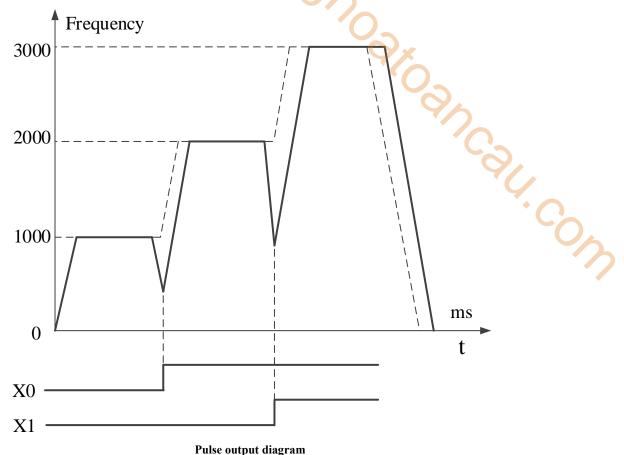
Pulse output diagram

3: if the EXT signal is triggered when the present pulse already ends, it will wait the EXT signal and start the next segment. Refer to below diagram.



Pulse output diagram

4: if the EXT signal is triggered when the pulse is decelearting, it will accelerate from present position to pulse segment 2, the same way, it will accelerate to pulse segment 3 from the position EXT signal is triggered. Refer to below diagram:



• EXT signal/pulse sending complete (H05)

It will jump to appointed segment when the bit signal is triggered or pulse sending completes. If the external signal is triggered before the pulse sending ends, it will jump to appointed segment, otherwise it will jump to appointed segment when present segment finishes (the pulse segment will send pulse as configuration parameters, if there is external EXT signal, it will not continue the present segment but jump to appointed segment). For example:

data start address:	HD0 user pa	arams address:	HD100 system params: K1	output: Y0	
node:	relative 🗸 start ex	ecute section count:	0 Config		
Add Delete	Upwards Downwar	ds		S _×	
	frequence	pulse count	wait condition	wait register	jump register
1	1000	2000	EXT signal/pulse sending com	XO	KO
2	2000	4000	EXT signal/pulse sending com	X1	KO
• 3	3000	6000	EXT signal/pulse sending com	X2	KO
		}	Read From PLC Write To PLC	ОК	Cancel

Multi-segment pulse configuration

EXT signal X0 is valid when segment 1 pulse is sending(frequency 1000Hz, pulse number 2000), EXT signal X1 is valid when segment 2 pulse is sending(frequency 2000, pulse number 4000), EXT signal X2 is valid when segment 3 pulse is sending(frequency 3000Hz, pulse number 6000).

Wait register

Constant (H00)

The value in register S0+N*10+5 (double word) is constant, range K0~K2147483647, eg. K2, K6, K3000.

• D (H01)

The value in register S0+N*10+5 (double word) is register D, for example, D0, D200.

HD (H02) •

The value in register S0+N*10+5 (double word) is register HD(latched register), for example HD0, HD200.

• FD (H03)

The value in register S0+N*10+5 (double word) is register FD(Flash register), for example, FD0, FD200.

• X (H04)

The value in register S0+N*10+5 (double word) is X(input signal), if the signal is external interruption terminal, the pulse will be triggered by interruption signal(response faster), for example X0, X6.

M (H05)

The value in register S0+N*10+5 (double word) is M(normal coil), for example, M0, M200.

HM (H06)

The value is register S0+N*10+5 (double word) is HM(latched coil), for example, HM0, HM200.

■ Jump register

Constant (H00)

The register value in S0+N*10+8 (double word) is constant, range K0~K100, for example K2, K6.

• D (H01)

·on

The value in register S0+N*10+8 (double word) is D(normal register), for example D0, D200.

• HD (H02)

The value in register S0+N*10+5 (double word) is HD(latched register), for example HD0, HD200.

• FD (H03)

The value in register S0+N*10+5 (double word) is FD(Flash register), for example FD0, FD200.

Note:

1: whatever it is constant or register, the value range is K0~K100.

2: this parameter means the present pusle segment ends and jumps to appointed segment. For

example, the value is K6, it will jump to pulse segment 6 when the present pulse segment ends.

3: if the jump register or constant is 0, it will jump to next segment, if there is no next pulse

segment, it will finish the present pulse segment then stop.

4: if the constant or register value is present segment number, it will infinite loop the present pulse segment.

1-2-1-2. Pulse user parameters (S1)

The pulse user parameters start from S1.

The pulse user parameters starting address (S1)

Address	Content
S1+0 (double word)	Pulse relative/absolute mode (0: relative 1: absolute) *1
S1+2 (double word)	Pulse start execution segment number $(1 \sim 100)^{*2}$

a. Relative/absolute mode

S1+0 (double word) defines the pulse configuration mode is relative or absolute, default is relative mode.

data start address:	DO	user params address:	D100	system params:	K1	output:	YO
mode:	relative ∨	start execute section count:	0	Config			

For example:

There are 3 segments of pulse, segment 1 is 2000 pulse numbers, 1000Hz, segment 2 is 4000 pulse numbers, 2000Hz, segment 3 is 6000 pulse numbers, 3000Hz. The pulse configuration is shown as below:

		frequence	pulse count	wait condition	wait register	jump register
	1	1000	2000	pulse sending complete	KO	KO
+	2	2000	4000	pulse sending complete	KO	KO
	3	3000	6000	pulse sending complete	KO	KO

Relative mode configuration table



		frequence	pulse count	wait condition	wait register	jump register
	1	1000	2000	pulse sending complete	KO	KO
	2	2000	6000	pulse sending complete	KO	KO
Þ	3	3000	12000	pulse sending complete	KO	KO

Absolute mode configuration table

b. Start execution segment

Start execution segment means the pulse instruction start segment (the pulse will start from the appointed segment but not segment 1).

Note: if it is set to 0 or 1, it will start from segment 1.

									7			
	data start address:	D0	user params address:	D100	system params:	K1	output:	YO		•		
	mode:	relative 🗸	start execute section count:	0	Config						20	
- 1									_			

For example:

There are three segments of pulse: segment 1 is 1000Hz, 2000 pulse numbers, segment 2 is 2000Hz, 4000 pulse numbers, segment 3 is 3000Hz, 6000 pulse numbers, the start execution segment is 2:

			multi sec	ction pulse outpu	ıt				
data start address: HD0 user par		user params address:	HD100 system para	ams: K1	output:	YO			
mode: relative 🗸 star		start execute section count:	2 Config	3					
Ad	ld Delete l	Jpwards Do	wnwards		1	1	1		
		frequence	pulse count	wait condi	tion	wa regi		jump register	٦
	1	1000	2000	pulse sending	g complete	KO)	KO	٦
	2	2000	4000	pulse sending	g complete	KO		KO	1
•	3	3000	6000	pulse sending	K)	KO		
used s	space: HDO	-HD39,HD100-	HD103	Read From PLC	Write To PL	c	ок	Cancel	

Multi-segment pulse output configuration table

The PLSR will send 4000 pulse numbers with the speed 2000Hz, then send 6000 pulse numbers with the speed 3000Hz.

1-2-1-3. System parameters (S2)

There are 4 groups of system parameters. User can select one of them to execute the pulse output. Each pulse output terminal has related system parameter address.

User can set the system parameter group no. in S2 (constant, register D, HD, FD...). As the following figure, system parameter group is 2, output terminal is Y0.

data start address:	HD0	user params address:	HD100	system params:	К2	output:	YO
mode:	relative 🗸	start execute section count:	0	Config		5	

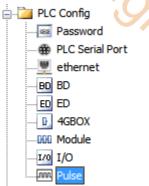
Click "config" button to enter system parameters.

Con	fig 🕶 Delete	PLC1 - Pulse Set			
	-		·		
_	Y0 axis		Value	\mathbf{A}	
Ч	Y1 axis	eters setting-Pulse direction logic	positive logic		
Ч	Y2 axis	eters setting-enable soft limit	disable		
Y	Y3 axis	eters setting mechanical back to	negative		
Y	Y4 axis	eters setting-Pulse unit	pulse number		
У	Y5 axis	eters setting-Interpolation coor	Cross coordi		
Y	Y6 axis	send mode	complete		
Y	Y7 axis	num (1)	1		
Y	Y10 axis	t (1)	1		
Y	Y11 axis	direction terminal	Y no terminal		
YO axi	is-Common-Del	layed time of pulse direction (ms)	10		
YO axi	is-Common-Ge	ar clearance positive compensation	0	~	
	Read	I From PLC Write To PLC OK	Cancel		

Click "config" can configure 10 channels (Y0~Y11) system parameters. Click each parameter to set the value:

PLC1 - Pulse Set		×
Config 🗸 Delete init axis config guide		
Param	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Pulse unit	pulse number	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
YO axis-Common-pulse send mode	complete ·	
YO axis-Common-Pulse num (1)	complete continue	
YO axis-Common-Offset (1)	1	
YO axis-Common-Pulse direction terminal	Y no terminal	
YO axis-Common-Delayed time of pulse direction (ms)	10	
YO axis-Common-Gear clearance positive compensation	0	~
Read From PLC Write To PLC OK	Cancel	

Some instructions do not have panel configuration mode, when user needs to set the system parameters, please click the left side of software, and click "pulse" to set the parameters.



Then click "config" to s		PLC Config Password PLC Serial Port ethernet D BD ED AGBOX Module I/O Pulse	Sanca Ca	
□ 🔁 PLC Config		C1 - Pulse Set		
Password PLC Serial Port PLC Serial PL	YO axis Y YO axis Y Y1 axis Y Y2 axis Y Y3 axis Y Y4 axis Y Y5 axis Y Y6 axis Y Y7 axis Y Y10 axis Y Y11 axis Y0 axis=Common-Del ay	eters setting Pulse direction logic eters setting Pulse direction logic eters setting mechanical back to eters setting Pulse unit eters setting Interpolation coor send mode num (1) t (1) direction terminal red time of pulse direction (ms) clearance positive compensation	Value positive logic disable negative pulse number Cross coordi complete 1 1 1 Y no terminal 10 0	
	Read Fr	rom PLC Write To PLC OK	Cancel	

Note:

For the same pulse output terminal, the system parameters are shared. For example, if set the system parameters is K1, all the pulse instructions for Y0 will use system parameter group 1.

The following table shows the 5 groups of system parameter of first channel (Y0), each group of parameter can set different pulse default speed, pulse default speed acceleration and deceleration time, gear clearance acceleration/deceleration time, max speed limit, start speed and end speed... (please see below details).

Take first channel (Y0) as an example, other terminal system parameters please refer to appendix 3.

K.

Address	Parameter	Explanation		
	Y0 (common pa			
SFD900	Pulse parameters	Bit1: pulse direction logic 0: positive logic, 1: negative logic, default is 0 Bit2: soft position limit 0: OFF 1: ON, default is 0 Bit3: machine back to origin direction 0: negative direction 1: positive direction, default is 0 Bit4: motor operation mode (closed loop pulse) 0: position mode 1: pulse mode, default is 0 Bit10~ Bit8: pulse unit Bit8: 0: pulse numbers, 1: equivalent 000: pulse numbers 01: micron 011: centimillimeter 101: decimillimeter 111: millimeter Default is 000 Bit13: pulse type 0: single direction pulse 1: AB phase pulse (only for XD5-48D4T4-E), default is 0		
		0: single direction pulse 1: AB phase pulse (only for XD5-48D4T4-E), default is 0 Bit15: interpolation coordinate mode 0: cross coordinate, 1: polar coordinate, default is 0		
SFD901	Pulse output mode	Bit0: pulse output mode 0: completion mode, 1: subsequent mode Default is 0		
SFD902	Pulse number/1 rotate low 16-bit			
SFD903	Pulse number/1 rotate high 16-bit			
SFD904	Movement amount/1 rotate low 16-bit			
SFD905	Movement amount/1 rotate high 16-bit			
SFD906	Pulse direction terminal	The number of terminal Y, 0xFF is no terminal		
SFD907	Direction delay time	Default is 20, unit: ms		
SFD908	Gear clearance positive compensation			

	6	
		1 Pulse outp
SFD909	Gear clearance negative	
SFD909	compensation	
SFD910	Electric origin low 16-bit	
SFD911	Electric origin high 16-bit	
		Bit0: origin signal ON/OFF state
		Bit1: Z phase ON/OFF state
		Bit2: positive limit ON/OFF state
SFD912	Signal terminal state setting	Bit3: negative limit ON/OFF state
		0: normally ON(positive logic), 1:
		normally close(negative logic), default is
00012		0
SFD913	Origin signal terminal setting	Dit0 Dit7: V terminal run 1 - 0 DD
SFD914	Z phase terminal setting	Bit0~Bit7: X terminal number, 0xFF is no terminal
		Bit7~Bit0: positive limit X terminal
		number, 0xFF is no terminal
SFD915	Limit terminal setting	Bit15~Bit8: negative limit X terminal
		number, 0xFF is no terminal
	Zero clear CLR signal output	Bit0~Bit7: Y terminal number, 0xFF is no
SFD917	terminal setting	terminal
SFD918	Return speed VH low 16-bit	
SFD919	Return speed VH high 16-bit	
SFD922	Crawling speed VC low 16-bit	
SFD923	Crawling speed VC high 16-bit	
SFD924	Mechanical origin low 16-bit	
SFD925	Mechanical origin high 16-bit	
SFD926	Z phase numbers	
SFD927	CLR signal delay time	Default is 20, unit: ms
SFD928		Low 16-bit
SFD929	Wheel radius (polar coordinate)	High 16-bit
SFD930	Soft limit positive pole velve	Low 16-bit
SFD931	Soft limit positive pole value	High 16-bit
SFD932	Soft limit pogetive rale value	Low 16-bit
SFD933	Soft limit negative pole value	High 16-bit
SFD934	Encoder pulse number/1 rotate	Low 16-bit
SFD935	(closed-loop pulse)	High 16-bit
SFD936	Encoder offset/1 rotate	Low 16-bit
SFD937	(closed-loop pulse)	High 16-bit
SFD938	Width of complete orientation	
51 0750	(closed-loop pulse)	
SFD939	Limit of deviation position	
51 1757	(closed-loop pulse)	

X		
Ģ		
	•	

	Ç		
SFD940	Motor rated speed (closed-loop pulse)	20	
SFD941	Rated speed corresponding frequency (100Hz) (closed loop pulse)		
SFD942	Positioning completion time limit (ms) (closed loop pulse)	A X	
SFD943	Motion control default parameter block	Bit0~bit7: fast positioning instruction default parameter block 0~4, default is 1 Bit8~bit15: interpolation instruction default parameter block 0~4, default is 2	
	Y0 (group0 par	, ,	0
HSD460	Pulse default speed low 16-bit	It will output pulse with default speed	
HSD461	Pulse default speed high 16-bit	when the speed is 0	
HSD462	Pulse default speed acceleration time		
HSD463	Pulse default speed deceleration time		
HSD464	Gear clearance acc/dec time		
HSD465	Acceleration deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~ Bit2: reserved	
HSD466	Max speed limit low 16-bit		
HSD467	Max speed limit high 16-bit		
HSD468	Start speed low 16-bit		
HSD469	Start speed high 16-bit		
HSD470	End speed low 16-bit		
HSD471	End speed high 16-bit		
HSD472	Follow performance parameter	$1 \sim 100$, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.	
HSD473	Follow feedforward compensation		
	parameter	0~100, percentage	
HSD474	Pulse frequency refresh time	1ms, 0.1ms	
HSD475	ZRN regression velocity VH	Low 16-bit	
HSD476		High 16-bit	
HSD477	ZRN crawl speed VC	Low 16-bit	

	Ľ,		
	· C	1 Pulse outpu	
	- C		
HSD478	The second se	High 16-bit	
	Y0 (group1 par	rameters)	
SFD950	Pulse default speed low 16-bit	It will output pulse with default speed	
SFD951	Pulse default speed high 16-bit	when the speed is 0	
SFD952	Pulse default speed acceleration time	97	
SFD953	Pulse default speed deceleration time	90	
SFD954	Gear clearance acc/dec time		
SFD955	Acceleration deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~ Bit2: reserved	
SFD956	Max speed limit low 16-bit		
SFD957	Max speed limit high 16-bit		
SFD958	Start speed low 16-bit		
SFD959	Start speed high 16-bit		
SFD960	End speed low 16-bit		
SFD961	End speed high 16-bit		
SFD962	Follow performance parameter	$1\sim100$, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.	
SFD963	Follow feedforward compensation		
51 0705	parameter	0~100, percentage	
SFD964	Pulse frequency refresh time	1ms, 0.1ms	
SFD965	ZRN regression velocity VH	Low 16-bit	
SFD966		High 16-bit	
SFD967	ZRN crawl speed VC	Low 16-bit	
SFD968		High 16-bit	
Y0 (group2 parameters)			
SFD970	Pulse default speed low 16-bit	It will output pulse with default speed	
SFD971	Pulse default speed high 16-bit	when the speed is 0	
SFD972	Pulse default speed acceleration time		
SFD973	Pulse default speed deceleration time		
SFD974	Gear clearance acc/dec time		

E.	

SFD975	Acceleration deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~ Bit2: reserved	
SFD976	Max speed limit low 16-bit		
SFD977	Max speed limit high 16-bit	Č,	
SFD978	Start speed low 16-bit		
SFD979	Start speed high 16-bit		
SFD980	End speed low 16-bit	S.	
SFD981	End speed high 16-bit		
SFD982	Follow performance parameter	$1\sim100$, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.	·CON
SFD983	Follow feedforward compensation parameter	0~100, percentage	
SFD984	Pulse frequency refresh time	1ms, 0.1ms	
SFD985		Low 16-bit	
SFD986	ZRN regression velocity VH	High 16-bit	
SFD987		Low 16-bit	
SFD988	ZRN crawl speed VC	High 16-bit	
	Y0 (group3 par	rameters)	
SFD990	Pulse default speed low 16-bit	It will output pulse with default speed	
SFD991	Pulse default speed high 16-bit	when the speed is 0	
SFD992	Pulse default speed acceleration time		
SFD993	Pulse default speed deceleration time		
SFD994	Gear clearance acc/dec time		
SFD995	Acceleration deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~ Bit2: reserved	
SFD996	Max speed limit low 16-bit		
SFD997	Max speed limit high 16-bit		
SFD998	Start speed low 16-bit		
SFD999	Start speed high 16-bit		
SFD1000	End speed low 16-bit		
SFD1001	End speed high 16-bit		

(Š	
	•	

SFD1002Follow performance parameter1-00, 100 means the time constant is ion or teck 1 means the time constant is ion or teck 1 means the time constant is ion or teck 1 means the time constant is ion or teck 1 means the time constant is ion or teck 1 means the time constant is ion or teck 1 means the time constant is ion or teck 1 means the time constant is ion icck 1 means the time constant is ion inck 1 means				
InterpretationnicksSFD1003Follow feedforward compensation parameter0~100, percentageSFD1004Pulse frequency refresh timeIms, 0. ImsSFD1005ZRN regression velocity VHLow 16-bitSFD1007ZRN regression velocity VHLow 16-bitSFD1008ZRN regression velocity VHLow 16-bitSFD1007ZRN regression velocity VHLow 16-bitSFD1008ZRN regression velocity VHLow 16-bitSFD1010Pulse default speed VCLow 16-bitSFD1011Pulse default speed low 16-bitMt will output pulse with default speedSFD1012Pulse default speed acceleration timeMt will output pulse with default speedSFD1013Pulse default speed acceleration timeSFD1013SFD1014Gear clearance acc/dec timeBit1-Bit0: acc/dec mode 00: linear acc/dec 10: sine curve acc/dec 11: reservedSFD1015Acceleration deceleration modeBit1-S Bit2: reserved Bit1-S Bit2: reservedSFD1016Max speed limit low 16-bitImage: second specific second			1~100, 100 means the time constant is	
SFD1003 Follow feedforward compensation parameter 0~100, percentage SFD1004 Putes frequency refresh time Ims, 0.1ms SFD1005 ZRN regression velocity VII Low 16-bit SFD1007 Re crawl speed VC Low 16-bit SFD1008 ZRN crawl speed VC High 16-bit SFD1010 Putes default speed low 16-bit It will output pulse with default speed when the speed is 0 SFD1011 Pulse default speed acceleration time It will output pulse with default speed when the speed is 0 SFD1012 Pulse default speed deceleration time It will output pulse with default speed when the speed is 0 SFD1011 Pulse default speed deceleration time It served a coldec time SFD1013 Pulse default speed deceleration time It served a coldec time SFD1014 Gear clearance acc/dec time It served a coldec time SFD1015 Acceleration deceleration mode Dit1-Bit0: acc/dec time SFD1016 Max speed limit low 16-bit Strip: reserved SFD1017 Max speed limit high 16-bit Strip: reserved SFD1018 Start speed high 16-bit It servered SFD1019 Start speed high 16-bit It was none tine constant is on t	SFD1002	Follow performance parameter	one tick, 1 means the time constant is 100	
$ \begin{array}{c c c c c c c } SFD100 & parameter & 0-100, percentage \\ \hline SFD1004 & Pulse frequency refresh time & Ims, 0.1ms \\ \hline SFD1005 & ZRN regression velocity VH & Low 16-bit \\ \hline High 16-bit & Ihigh 16-bit \\ \hline SFD1007 & ZRN crawl speed VC & Low 16-bit \\ \hline High 16-bit & Ihigh 16-bit \\ \hline SFD1008 & ZRN crawl speed VC & Icw 10-bit \\ \hline High 16-bit & Ihigh 16-bit \\ \hline SFD1010 & Pulse default speed low 16-bit & Ih will output pulse with default speed VC VG (group 4 parameters) \\ \hline SFD1010 & Pulse default speed low 16-bit & Ihigh 16-bit \\ \hline SFD1011 & Pulse default speed acceleration time & Ihigh 16-bit \\ \hline SFD1012 & Pulse default speed deceleration time & Ihigh 16-bit \\ \hline SFD1013 & Pulse default speed deceleration time & Ihigh 16-bit \\ \hline SFD1014 & Gear clearance acc/dec time & Ihigh 16-bit \\ \hline SFD1015 & Acceleration deceleration mode & Ihigh 18-bit & Ihigh 18-bit \\ \hline SFD1016 & Max speed limit low 16-bit \\ SFD1016 & Max speed limit high 16-bit \\ SFD1017 & Max speed limit high 16-bit \\ SFD1018 & Start speed high 16-bit \\ SFD1019 & Start speed high 16-bit \\ SFD1019 & Start speed high 16-bit \\ SFD1010 & Int speed limit high 16-bit \\ SFD1012 & End speed limit high 16-bit \\ SFD1013 & Start speed high 16-bit \\ SFD1014 & Int speed limit high 16-bit \\ SFD1015 & Start speed high 16-bit \\ SFD1015 & Start speed high 16-bit \\ SFD102 & End speed limit high 16-bit \\ SFD102 & Follow performance parameter \\ SFD102 & Follow performance parameter \\ SFD102 & Follow feedforward compensation parameter \\ SFD102 & Follow feedforward compensation parameter \\ SFD102 & Pulse frequency refresh time \\ SFD102 & ZRN regression velocity VH \\ \hline High 16-bit \\ \hline SFD102 & ZN regression velocity VH \\ \hline High 16-bit \\ \hline SFD102 & TN crawl speed VC \\ \hline TN cra$			ticks.	
sFD100 Pulse frequency refresh time Ims, 0.1ms SFD1005 ZRN regression velocity VII Ims, 0.1ms SFD1007 ZRN crawl speed VC High 16-bit SFD1008 ZRN crawl speed VC Ifigh 16-bit SFD1009 ZRN crawl speed VC Ifigh 16-bit SFD1010 Pulse default speed low 16-bit It will output pulse with default speed SFD101 Pulse default speed acceleration time It will output pulse with default speed SFD1011 Pulse default speed acceleration time It will output pulse with default speed SFD1013 Pulse default speed deceleration time It will output care acc/dec SFD1014 Gear clearance acc/dec time Bit1-Bit0: acc/dec mode SFD1015 Acceleration deceleration mode Dit is curve acc/dec SFD1016 Max speed limit low 16-bit Strue acc/dec SFD1015 Max speed limit low 16-bit Strue acc/dec SFD1016 Max speed limit low 16-bit It -v100, 100 means the time constant is SFD102 End speed high 16-bit -v100, percentage SFD102 End speed high 16-bit -v100, 100 means the time constant is SFD102 Follow performance parameter one tick, 1 means the time constant is SFD102 Follow feedforward compensation parameter 0-100, percentag	0001002	Follow feedforward compensation		
SFD1005 SFD1006 ZRN regression velocity VH Low 16-bit High 16-bit SFD1007 SFD1007 ZRN crawl speed VC Low 16-bit	SFD1003	parameter	0~100, percentage	
SFD1006 ZRN regression velocity VH High 16-bit SFD1007 ZRN crawl speed VC Low 16-bit SFD1008 ZRN crawl speed VC High 16-bit SFD1010 Pulse default speed low 16-bit It will output pulse with default speed SFD1011 Pulse default speed acceleration time It will output pulse with default speed SFD1012 Pulse default speed deceleration time It will output pulse with default speed SFD1013 Pulse default speed deceleration time Bit1-Bit0: acc/dec mode SFD1014 Gear clearance acc/dec time Bit1-Bit0: acc/dec SFD1015 Acceleration deceleration mode Bit1-Bit0: acc/dec SFD1016 Max speed limit low 16-bit Bit15~ Bit2: reserved SFD1017 Max speed limit high 16-bit Bit15~ Bit2: reserved SFD1018 Start speed high 16-bit SFD1012 SFD1019 Start speed high 16-bit I~100, 100 means the time constant is 100 ticks. SFD1021 Follow feedforward compensation parameter 0~100, percentage SFD1022 Follow feedforward compensation parameter 0~100, percentage SFD1023 Follow feedforward compensation parameter 0~100, percentage SFD1024 Pulse frequency refresh time Ims, 0.1ms SFD1025 ZRN regresion velocity VH High	SFD1004	Pulse frequency refresh time	1ms, 0.1ms	
SFD1006 Image: Control of the second sec	SFD1005		Low 16-bit	
SFD1008 ZRN crawl speed VC High 16-bit Image: speed spe	SFD1006	ZRN regression velocity VH	High 16-bit	
SFD1008 Image: Figure 10 bit High 16-bit SFD1010 Pulse default speed low 16-bit It will output pulse with default speed when the speed is 0 SFD1011 Pulse default speed acceleration time It will output pulse with default speed when the speed is 0 SFD1013 Pulse default speed deceleration time It will output pulse with default speed is 0 SFD1013 Pulse default speed deceleration time It will output pulse with default speed is 0 SFD1014 Gear clearance acc/dec time It will output pulse with default speed is 0 SFD1014 Gear clearance acc/dec time It will output pulse with default speed is 0 SFD1014 Gear clearance acc/dec time It will output pulse with default speed is 0 SFD1014 Gear clearance acc/dec time It will output pulse with default speed is 0 SFD1015 Acceleration deceleration mode It is incerve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved SFD1015 Max speed limit low 16-bit It is incerve acc/dec 10: sine curve acc/dec 11: reserved SFD1017 Max speed low 16-bit It is incerve acc/dec 10: sine curve acc/dec 11: reserved SFD1019 Start speed low 16-bit It is incerve acc/dec 10: sine curve acc/d	SFD1007	7DN 1 100	Low 16-bit	
V0 (group4 parameters) SFD1010 Pulse default speed low 16-bit It will output pulse with default speed when the speed is 0 SFD1011 Pulse default speed high 16-bit time It will output pulse with default speed when the speed is 0 SFD1013 Pulse default speed deceleration time It will output pulse with default speed when the speed is 0 SFD1014 Gear clearance acc/dec time It will output pulse with default speed deceleration deceleration mode SFD1015 Acceleration deceleration mode Bit1~Bit0: acc/dec 00: linear acc/dec 10: sine curve acc/dec 11: reserved Bit15~ Bit2: reserved SFD1016 Max speed limit low 16-bit Bit2: reserved SFD1017 Max speed limit high 16-bit SFD1018 SFD1018 Start speed low 16-bit I~100, 100 means the time constant is one tick, 1 means the time constant is 100 ticks. SFD1021 End speed high 16-bit I~100, percentage SFD1023 Follow feedforward compensation parameter 0~100, percentage SFD1024 Pulse frequency refresh time Ims, 0.1ms SFD1025 ZRN regression velocity VH Low 16-bit SFD1027 ZRN regression velocity VH Low 16-bit	SFD1008	ZRN crawl speed VC	High 16-bit	
SFD1010 Pulse default speed low 16-bit It will output pulse with default speed SFD1011 Pulse default speed high 16-bit when the speed is 0 SFD1012 Pulse default speed acceleration time				•
SFD1013Pulse default speed deceleration timeImage: constant speed spee		Y0 (group4 pa	rameters)	
SFD1013Pulse default speed deceleration timeImage: constant speed spee	SFD1010	Pulse default speed low 16-bit	It will output pulse with default speed	•
SFD1013Pulse default speed deceleration timeImage: constant speed spee	SFD1011	Pulse default speed high 16-bit	when the speed is 0	
SFD1013Pulse default speed deceleration timeImage: constant speed spee	GED1010	Pulse default speed acceleration		5
SFD1013Pulse default speed deceleration timeImage: constant speed spee	SFD1012	time		
timeImage: constant is consta	SED1012	Pulse default speed deceleration		*
SFD1015Bit1~Bit0: acc/dcc mode 00: linear acc/dcc 01: S curve acc/dcc 10: sine curve acc/dcc 11: reserved Bit15~ Bit2: reservedSFD1016Max speed limit low 16-bit SFD1017Max speed limit high 16-bitSFD1018Start speed low 16-bit SFD1019Start speed low 16-bitSFD1010End speed high 16-bit1~100, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.SFD1022Follow performance parameter parameter1~100, percentageSFD1023Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time ZRN regression velocity VHIms, 0.1msSFD1025ZRN regression velocity VH High 16-bitLow 16-bitSFD1027ZRN regression velocity VH ZRN crawl speed VCLow 16-bit	SEDIOIS	time		
SFD1015Acceleration deceleration mode00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~ Bit2: reservedSFD1016Max speed limit low 16-bitBit15~ Bit2: reservedSFD1017Max speed limit high 16-bit	SFD1014	Gear clearance acc/dec time		
SFD1015Acceleration deceleration mode01: S curve acc/dec 10: sine curve acc/dec 11: reservedSFD1016Max speed limit low 16-bitBit15~ Bit2: reservedSFD1017Max speed limit high 16-bit			Bit1~Bit0: acc/dec mode	
SFD1015Acceleration deceleration mode10: sine curve acc/dec 11: reservedSFD1016Max speed limit low 16-bitBit15~ Bit2: reservedSFD1017Max speed limit high 16-bit			00: linear acc/dec	
Image: series of the series	SED1015	A applaration deceleration mode	01: S curve acc/dec	
SFD1016Max speed limit low 16-bitBit15~ Bit2: reservedSFD1017Max speed limit high 16-bit-SFD1018Start speed low 16-bit-SFD109Start speed high 16-bit-SFD1020End speed low 16-bit-SFD1021End speed high 16-bit-SFD1020End speed high 16-bit-SFD1021End speed high 16-bit-SFD1022Follow performance parameter1~100, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.SFD1023Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1026ZRN regression velocity VHLow 16-bitSFD1027ZRN crawl sneed VCLow 16-bit	SEDIOIS	Acceleration deceleration mode	10: sine curve acc/dec	
SFD1016Max speed limit low 16-bitSFD1017Max speed limit high 16-bitSFD1018Start speed low 16-bitSFD1019Start speed high 16-bitSFD1020End speed low 16-bitSFD1021End speed high 16-bitSFD1022Follow performance parameterSFD1023Follow feedforward compensation parameterSFD1024Pulse frequency refresh timeSFD1025Follow regression velocity VHSFD1025ZRN regression velocity VHSFD1027ZRN crawl speed VCSFD1027ZRN crawl speed VC			11: reserved	
SFD1017Max speed limit high 16-bitSFD1018Start speed low 16-bitSFD1019Start speed high 16-bitSFD1020End speed low 16-bitSFD1021End speed high 16-bitSFD1021End speed high 16-bitSFD1022Follow performance parameterSFD1023Follow feedforward compensation parameterSFD1024Pulse frequency refresh timeSFD1025ZRN regression velocity VHSFD1026Low 16-bitSFD1027ZRN crawl speed VC			Bit15~ Bit2: reserved	
SFD1018Start speed low 16-bitSFD1019Start speed high 16-bitSFD1020End speed low 16-bitSFD1021End speed low 16-bitSFD1021End speed high 16-bitSFD1022Follow performance parameterSFD1022Follow performance parameterSFD1023Follow feedforward compensation parameterSFD1024Pulse frequency refresh timeSFD1025ZRN regression velocity VHSFD1026ZRN regression velocity VHSFD1027ZRN crawl speed VC	SFD1016	Max speed limit low 16-bit		
SFD1019Start speed high 16-bitSFD1020End speed low 16-bitSFD1021End speed high 16-bitSFD1022End speed high 16-bitSFD1022Follow performance parameter1~100, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.SFD1023Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1027ZRN crawl speed VCLow 16-bit	SFD1017	Max speed limit high 16-bit		
SFD1020End speed low 16-bitSFD1021End speed high 16-bitSFD1021End speed high 16-bitSFD1022Follow performance parameter1~100, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.SFD1023Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1027ZRN crawl speed VCLow 16-bit	SFD1018	Start speed low 16-bit		
SFD1021End speed high 16-bitSFD1022End speed high 16-bitSFD1022Follow performance parameterFollow performance parameter1~100, 100 means the time constant is 100 ticks.SFD1023Follow feedforward compensation parameterSFD1024Pulse frequency refresh timeSFD1025ZRN regression velocity VHSFD1026Low 16-bitSFD1027ZRN crawl speed VC	SFD1019	Start speed high 16-bit		
SFD1022Follow performance parameter1~100, 100 means the time constant is one tick, 1 means the time constant is 100 ticks.SFD1023Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1027ZRN crawl speed VCLow 16-bit	SFD1020	End speed low 16-bit		
SFD1022Follow performance parameterone tick, 1 means the time constant is 100 ticks.SFD1023Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1027ZRN crawl speed VCLow 16-bit	SFD1021	End speed high 16-bit		
Image: SFD1023Follow feedforward compensation parameterticks.SFD1024Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1027ZRN crawl speed VCLow 16-bit			,	
SFD1023Follow feedforward compensation parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1026ZRN crawl speed VCLow 16-bit	SFD1022	Follow performance parameter	one tick, 1 means the time constant is 100	
SFD1023parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1026ZRN crawl speed VCLow 16-bit			ticks.	
parameter0~100, percentageSFD1024Pulse frequency refresh time1ms, 0.1msSFD1025ZRN regression velocity VHLow 16-bitSFD1027ZRN crawl speed VCLow 16-bit	SFD1023	Follow feedforward compensation		
SFD1025 Low 16-bit SFD1026 ZRN regression velocity VH High 16-bit SFD1027 ZRN crawl speed VC Low 16-bit	5101025	parameter		
SFD1026 ZRN regression velocity VH High 16-bit SFD1027 ZRN crawl speed VC Low 16-bit	SFD1024	Pulse frequency refresh time		
SFD1026 High 16-bit SFD1027 ZRN crawl speed VC	SFD1025	ZRN regression velocity VH	Low 16-bit	
ZRN crawl speed VC	SFD1026		High 16-bit	
SFD1028 High 16-bit		ZRN crawl speed VC		
	SFD1028		High 16-bit	

Common parameter

• Pulse direction logic

Pulse direction includes positive logic(default) and negative logic.

Positive logic: when the pulse numbers are positive value, it will output forward direction pulse (for example, HSD0 value is increasing), pulse direction terminal is ON. when the pulse numbers are negative value, it will output reverse direction pulse(for example, HSD0 value is decreasing), pulse direction terminal is OFF.

Negative logic: when the pulse numbers are positive value, it will output forward direction pulse (for example, HSD0 value is increasing), pulse direction terminal is OFF. when the pulse numbers are negative value, it will output reverse direction pulse(for example, HSD0 value is decreasing), pulse direction terminal is ON.

When the pulse is outputting, the direction terminal is ON, this terminal will not be reset automatically after the pulse output ends. The direction terminal will change the direction according to the pulse settings when pulse sends next time. If the pulse instruction has no direction, it needs to reset the direction terminal in the program. Note:

1: this parameter default value is positive logic. All the program in this manual is made as positive logic.

2: fit for the instruction PLSR, PLSF, ZRN.

Enable soft limit

In order to avoid the movement beyond the range of travel, the protection function is added to both ends of the travel. It is used to auto-search the origin signal and protect when backing to mechanical origin. It will judge the value of pulse accumulated register and protect the travel. Note: soft limit and hardware limit can be used at the same time.

The parameter configuration:

Param	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable 🔹
YO axis-Common-Parameters setting-mechanical back to	disable enable
YO axis-Common-Parameters setting-Pulse unit	pulse number

• Soft limit positive value

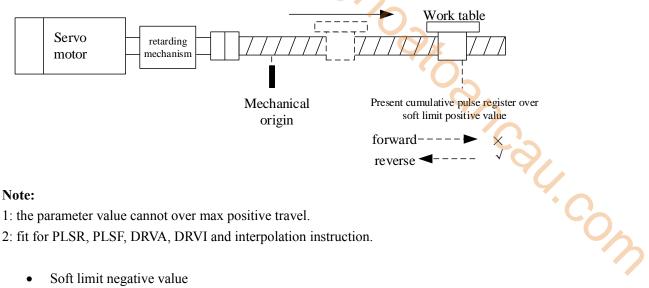
To prevent the table from moving beyond the range when executing the instruction PLSR, PLSF, DRVA, DRVI, interpolation instructions, it will add the value of present accumulated pulse register at the positive side of travel to protect the machine.

The configuration:

YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0
YO axis-group 1-Pulse default speed	0

If the forward sending pulse reaches soft limit positive value for instruction PLSR, PLSF, DRVA,

DRVI, interpolation instruction, the pulse will slow stop. If the present cumulative pulse register value is over soft limit positive value, the forward pulse will always be prohibitted, but the reverse pulse can be triggered.



2: fit for PLSR, PLSF, DRVA, DRVI and interpolation instruction.

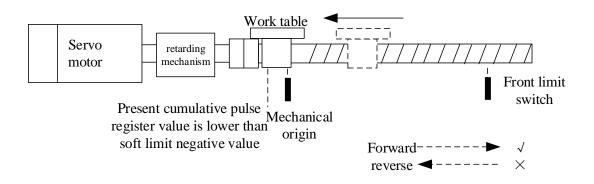
Soft limit negative value •

To prevent the table from moving beyond the range when executing the instruction PLSR, PLSF, DRVA, DRVI, interpolation instructions, it will add the value of present accumulated pulse register at the negative side of travel to protect the machine.

The configuration:

YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0
YO axis-group 1-Pulse default speed	0

If the forward sending pulse reaches soft limit negative value for instruction PLSR, PLSF, DRVA, DRVI, interpolation instruction, the pulse will slow stop. If the present cumulative pulse register value is lower than soft limit negative value, the reverse pulse will always be prohibitted, but the forward pulse can be triggered.



Note:

1: the parameter value cannot below min negative travel.

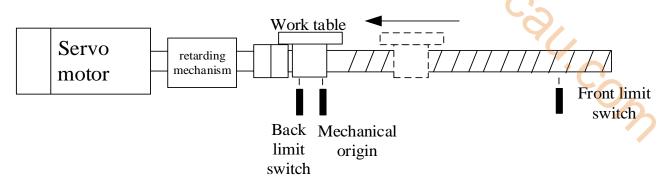
2: fit for PLSR, PLSF, DRVA, DRVI and interpolation instruction.

• Mechanical back to origin default direction

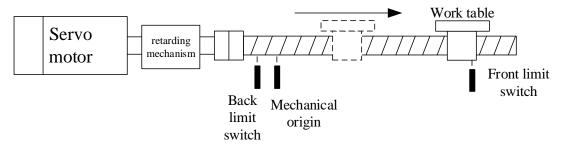
The work table default movement direction when the mechanical back to origin instruction ZRN is executed. The configuration:

YO	axis-Common-Parameters setting-enable soft limit	ļ	disable
YO	axis-Common-Parameters setting-mechanical back to the	I	negative
YO	axis-Common-Parameters setting-Pulse unit 💦 😽	I	pulse number
YO	axis-Common-Parameters setting-Interpolation coordina	C	Cross coordi
ive: tl	ne work table will move in reverse direction when executing Z	78	

Negative: the work table will move in reverse direction when executing ZRN.



Positive: the work table will move in forward direction when executing ZRN.



• Pulse unit

The pulse unit include pulse number(default) and equivalent (1um, 0.01mm, 0.1mm, 1mm optional).

axis-Common-Parameters setting-mechanical back to the	negative
axis-Common-Parameters setting-Pulse unit	pulse number 🔹
axis-Common-Parameters setting-Interpolation coordina	pulse number
axis-Common-pulse send mode	0.01mm
axis-Common-Pulse num (1)	0.1mm 1mm

pulse number: if the pulse unit is pulse number, all the pulse frequency and number in the configuration table are calculated by pulse number. for example:



		frequence	pulse count	wait condition	wait register	jump register
	1	1000	2000	pulse sending complete	KO	KO
	2	2000	4000	pulse sending complete	KO	KO
•	3	3000	6000	pulse sending complete	KO	KO

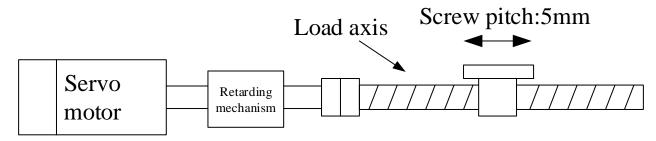
There are three segments in the configuration table, segment 1 will send 2000 pulses at the speed 1000Hz, segment 2 will send 4000 pulses at the speed 2000Hz, segment 3 will send 6000 pulses at the speed 3000Hz.

Equivalent: 1um, 0.01mm, 0.1mm, 1mm optional. All the pulse frequency and equivalent in the configuration table are calculated by length unit. Before explaining the equivalent, we will introduce pulse number (1 rotate) and offset(1 rotate) first.

Pulse number (1 rotate)

L.Con The pulse number that the transmission mechanism rotates 1 circle. As there is retarding mechanism, the motor rotates one circle does not mean the transmission mechanism rotates one circle.

For example: one servo motor drives lead screw through retarding mechanism, the servo drive model is DS2-20P7-AS, servo motor model is MS-80ST-M02430B-20P7(encoder 2500 ppr), the servo drive electronic gear ratio is 1:1, reduction ratio of retarding mechanism is 1:5, the pitch of the ball screw is 5mm.



The pulse number of ball screw rotating one circle:

$$50000 = 2500 * 4 * \frac{5}{1}$$

Offset(1 rotate) .

The movement quantity of transmission mechanism rotates 1 circle. For example, in the above application, the offset is the ball screw pitch 5mm. If the object is synchronous belt, the offset is the synchronous belt transmission mechanism shaft perimeter.

After knowing the pulse number and offset, next we will understand how to set the equivalent. We will send three segments of pulse through the above mechanical structure.

	frequence	pulse count	wait condition	wait register	jump register
1	10	20	pulse sending complete	KO	KO
2	15	30	pulse sending complete	KO	KO
▶ 3	20	40	pulse sending complete	KO	KO

It configured three segments in above table. The pulse unit is equivalent. Segment 1 will move 20mm at the speed 10mm/s, segment 2 will move 30mm at the speed of 15mm/s, segment 3 will move 40mm at the speed of 20mm/s. The common parameters are configured as the below table:

Jm	m at tr	ne spec	ed of 20mm/s. 11	he common paramete	ers are cor	111	igured a	s the belo	ow table:	
	axis-Common-Parameters setting-Pulse unit 🚺 🖬 🦷									
	axis-Common-Parameters setting-Interpolation coordina Cross coor						00rdi			
	axis-Common-pulse send mode comp						complet	e		
	axis-C	Common	-Pulse num (1)				50000			
	axis-Common-1mm(revolve)						5			
m the equivalent to related pulse frequency and pulse number, please see below table:						able:				
	No. Pulse unit Frequency/speed Pulse num					nber/len	gth	· · · · ·		
			aquivalant	10mm/s	2	0	mm			

transform the equivalent to related pulse frequency and pulse number, please see below table:

No.	Pulse unit	Frequency/speed	Pulse number/length
1	equivalent	10mm/s	20mm
1	Pulse number	100000pulse/s	200000 pulse
2	equivalent	15mm/s	30mm
Z	Pulse number	150000pulse/s	300000 pulse
3	equivalent	20mm/s	40mm
3	Pulse number	200000pulse/s	400000 pulse

Note:

1: when the pulse unit is pulse number, Y0 axis cumulative pulse register HSD0 (double word) is pulse numbers. When the pulse unit is equivalent, Y0 axis cumulative pulse register HSD0 (double word) is pulse numbers. Register HSD2(double word) is cumulative equivalent length. 2: when the pulse unit is equivalent, all the parameters will execute as equivalent, the length unit will transform to the equivalent unit, for example 1mm, then all the unit will transform as 1mm. and the unit of offset(1 rotate) should be same to pulse unit setting, for example, pulse unit is 0.1mm, offset is 6, which means the offset of one rotate is 6*0.1mm=0.6mm, and other unit related to length and speed will be 0.1mm or 0.1mm/s.

3: please note the max output frequency cannot over 200Khz when the pulse unit is equivalent. 4: fit for instruction PLSR, PLSF, ZRN.

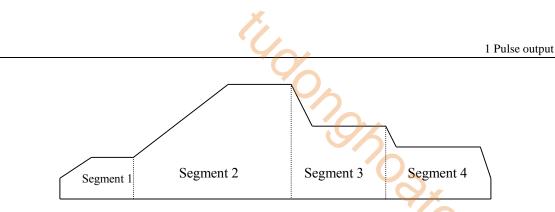
Interpolation coordinate mode ٠

This parameter is not valid for now, no need to modify.

Pulse send mode

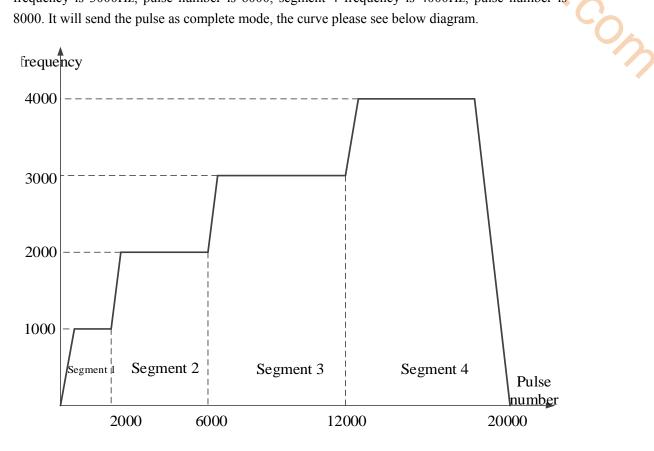
It includes complete mode and continue mode.

Complete mode: it starts next segment of pulse when present segment pulse finishes.

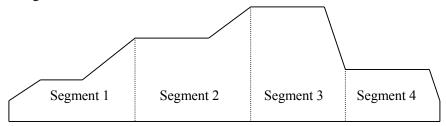


The pulse curve please refer to above diagram. Each segment will send the pulse numbers at setting speed. Except the last segment, each segment includes rising or falling part, stable part. The last segment includes rising part, falling part and stable part.

For example: the PLC needs to send four segments of pulse, segment 1 frequency is 1000Hz, pulse number is 2000, segment 2 frequency is 2000Hz, pulse number is 4000, segment 3 frequency is 3000Hz, pulse number is 6000, segment 4 frequency is 4000Hz, pulse number is 8000. It will send the pulse as complete mode, the curve please see below diagram.



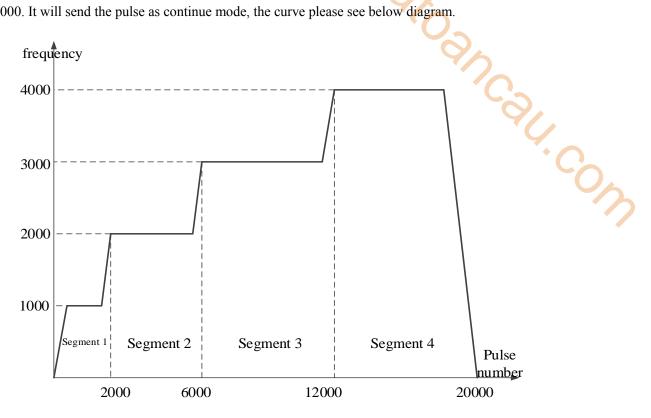
Continue mode: it already accelerates or decelerates to next segment when present segment pulse finishes sending.



The pulse curve diagram is as the above. When the present segment finishes sending, it already

switch to next segment speed. Except segment 1, each segment includes stable part, rising part or falling part. Segment 1 includes rising part or falling part, stable part, rising or falling part.

For example: the PLC needs to send four segments of pulse, segment 1 frequency is 1000Hz, pulse number is 2000, segment 2 frequency is 2000Hz, pulse number is 4000, segment 3 frequency is 3000Hz, pulse number is 6000, segment 4 frequency is 4000Hz, pulse number is 8000. It will send the pulse as continue mode, the curve please see below diagram.



Note: the two modes are fit for instruction PLSR and PLSF.

• Pulse direction terminal

The pulse direction of PLSR needs to configure in the parameter table:

YO axis-Common-Offset (1)	1
YO axis-Common-Pulse direction terminal	Y no terminal
YO axis-Common-Delayed time of pulse direction (ms)	10

XD2, XD3, XD5 (except XD5-48T6/60T6) and XDC series transistor output PLC all have two channels of pulse output (Y0, Y1), the direction terminal can be any terminal except Y0 and Y1. XD5-48T6/60T6 has 6 channels of pulse output (Y0, Y1, Y2, Y3, Y4, Y5). XDM series has 4 channels or 10 channels pulse output (Y0, Y1, Y2, Y3 or Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y10, Y11). The direction terminal can be any terminal except pulse output terminal.

The pulse output terminal uses high-speed optocoupler(response time below 5us), other terminals use normal optocoupler(response time below 0.2ms).

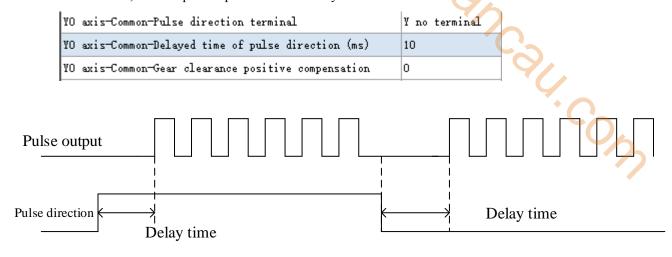
When Y0 is used to pulse output, and other pulse output terminals no need to output pulse, these terminals also can be pulse direction terminal. If Y0 no needs to output pulse, it also can be pulse direction terminal.

Note:

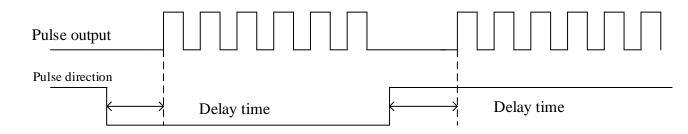
1: please do not choose the terminal over the actual output terminal number.

- 2: fit for PLSR, PLSF, ZRN.
 - Delayed time of pulse direction

When it is sending forward direction pulse, it will set ON the direction terminal first, then output the pulse after the delay time. When it is sending reverse direction pulse, it will set OFF the direction terminal first, then output the pulse after the delay time.



Pulse start, forward pulse switch to reverse pulse



Reverse pulse switch to forward pulse

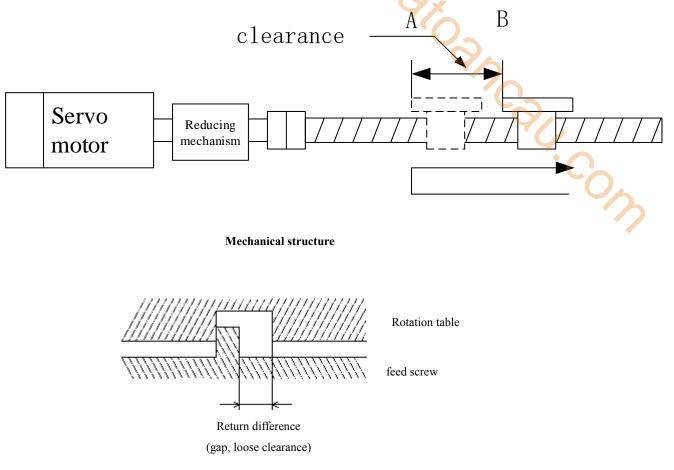
As the pulse output terminal is high-speed optocoupler(response time below 5us), other terminals are normal optocoupler(response time below 0.2ms)(such as XD3-32T-E) or relay output(about 10ms)(such as XD3-24R-E), the direction terminal will output after pulse terminal, so the direction terminal must be triggered first, then delay some time to output pulse. This can avoid the pulse error caused by direction switch lag(forward pulse switch to reverse pulse or reverse pulse switch to forward pulse).

The default pulse direction delay time is 10ms, user can adjust the time according to the terminal output type and scanning period(Y0 and Y1 response time is 5us, other transistor terminal is 0.2ms, relay output is 10ms).

Note: suitable for PLSR, PLSF, ZRN.

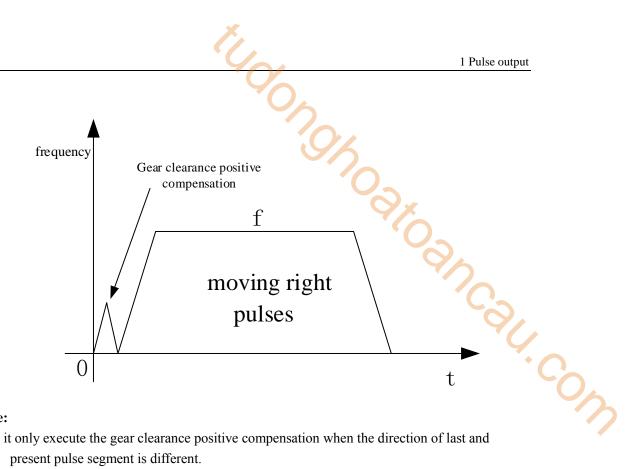
• Gear clearance positive compensation

When the work table finished reverse moving and switched to forward moving, there is clearance between table and ball screw, it will cause the actual moving distance is less than setting value, this parameter can delete this error.



Mechanical clearance structure

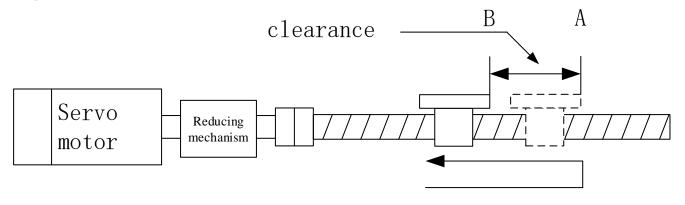
The table moves from right to left, when the table left side moves to position A, it will stop and moves from left to right. As the ball screw clearance, it cannot move right for some pulses, and the actual moving distance is less than setting value. If there is no clearance, it will move from A to B. in order to delete the error, we must send some pulses before moving right, and then send the actual moving right pulses.



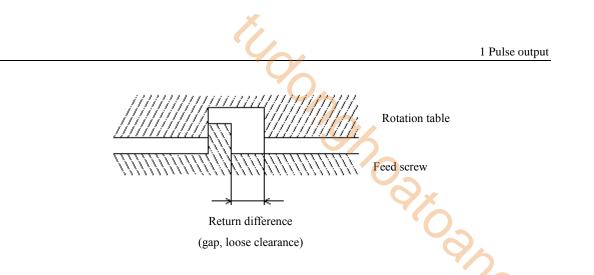
Note:

- %1: it only execute the gear clearance positive compensation when the direction of last and present pulse segment is different.
- *2: the gear clearance positive compensation pulses should output in separate segment, it cannot output in the same pulse segment of moving right pulses.
- X3: the gear clearance positive compensation pulses will not be counted in pulse cumulative registers (such as HSD0 for Y0 output terminal).
- **4: suitable for instruction PLSR, PLSF, ZRN.
- *5: the unit of gear clearance positive compensation is decided by pulse unit.
 - Gear clearance negative compensation •

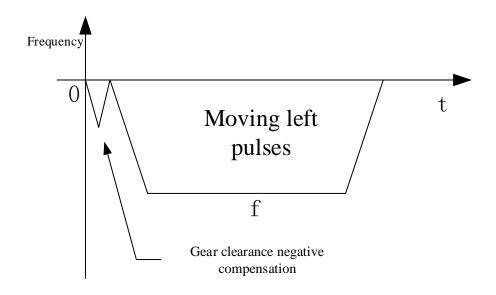
When the work table finished forward moving and switched to reverse moving, there is clearance between table and ball screw, it will cause the actual moving distance is less than setting value, this parameter can delete this error.



Mechanical structure



The table moves from left to right, when the table right side moves to position A, it will stop and moves from right to left. As the ball screw clearance, it cannot move left for some pulses, and the actual moving distance is less than setting value. If there is no clearance, it will move from A to B. in order to delete the error, we must send some pulses before moving left, and then send the actual moving left pulses.



Note:

- %1: it only execute the gear clearance negative compensation when the direction of last and present pulse segment is different.
- *2: the gear clearance negative compensation pulses should output in separate segment, it cannot output in the same pulse segment of moving left pulses.
- ※3: the gear clearance negative compensation pulses will not be counted in pulse cumulative registers (such as HSD0 for Y0 output terminal).
- [™]4: suitable for instruction PLSR, PLSF, ZRN.
- %5: the unit of gear clearance negative compensation is decided by pulse unit.
 - Electrical origin position

This parameter cannot modify.

, on

22

• Signal terminal switch state-point switch state setting

It can set the state of the signal collection terminal. The terminal state can be normally open and normally close. The signal terminal includes origin point, Z phase switch, positive limit switch, negative limit switch.

PLC1 - Pulse Set	× ۲	
Config - Delete init axis config guide		
Param	Value ^	
YO axis-Common-Delayed time of pulse direction (ms)	10	
YO axis-Common-Gear clearance positive compensation	0	
YO axis-Common-Gear clearance negative compensation	0	
YO axis-Common-Electrical origin position	0	$\boldsymbol{\mathcal{O}}$
YO axis-Common-signal terminal switch state setting-Far-point	normally	· • (
YO axis-Common-signal terminal switch state setting-Z phase s	normally	
YO axis-Common-signal terminal switch state setting-positive	normally	
YO axis-Common-signal terminal switch state setting-negative	normally	
YO axis-Common-Far-point signal terminal setting	X no term	
YO axis-Common-Z phase terminal setting	X no term	
<		
Read From PLC Write To PLC OK	Cancel	

Take origin point as an example.

Normally open: the mechanical origin switch is normally open(OFF) when it returns origin, it will be ON when the machine touches the origin switch.

Normally close: the mechanical origin switch is normally close(ON) when it returns origin, it will be OFF when the machine touches the origin switch.

• Origin point signal terminal setting

The PLC input point of mechanical origin switch.

YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal

Note:

- %1: the input point range cannot over actual input of PLC.
- *2: only fit for mechanical return origin instruction ZRN.
- ※3: the origin point can be PLC input terminal, if the terminal is for external interruption input, the returning mechanical origin process will be operated as interruption and the precision will be improved (Z phase return origin has no effect). If the terminal is not for external interruption, the returning origin process will be affected by PLC scanning period (Z phase return origin has no effect).

%4: please refer to appendix 4 for details of external interruption terminal.

• Z phase terminal setting

When returning mechanical origin, it will move reverse slowly with slow speed and acceleration slop until reach origin creep speed, and it starts to count the Z phase signal at the moment of leaving the origin signal. Here can set the Z phase count input terminal.

YO	axis-Common-Far-point signal terminal setting	X no	terminal
YO	axis-Common-Z phase terminal setting	X no	terminal
YO	axis-Common-positive limit terminal setting	X no	terminal
¥О	axis-Common-negative limit terminal setting	X no	terminal

Note:

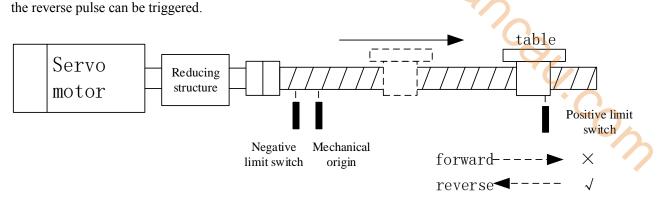
- %1: only fit for mechanical return origin instruction ZRN.
- *2: Z phase terminal only can be PLC external interruption input. As the pulse width of Z phase signal outputting from servo drive is very narrow, normal PLC input filter time is 10ms, the Z phase signal only can be catched through high speed optical coupler input. If using normal terminal, it cannot catch the Z phase signal and cause returning mechanical origin error.
- X3: Z phase input terminals:

PLC model	Z phase terminal setting
XD2-16/24/32/48/60	X2, X3, X4, X5, X6, X7
XD3-16/24/32/48/60	X2, X3, X4, X5, X6, X7
XD5-16	X2, X3, X4, X5, X6, X7
XD5-24/32/24T4/32T4/48T4/48D4T4/60T4	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XD5-48/60/48T6/60T6/60T10	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XDM-24T4/32T4	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XDM-60T4/60T4L/60T10	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XDC-24/32/48/60	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XD5E-24/30/48/60/30T4/60T4/60T6/60T10	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XDME-30T4/60T4/60T10	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XDH-60T4	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XL3-16	X2, X3, X4, X5, X6, X7
XL3-32	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XL5-16	X2, X3, X4, X5, X6, X7
XL5-32/32T4	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XL5E-16	X2, X3, X4, X5, X6, X7
XL5E-32T/32T4	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XL5E-64T6	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13
XLME-32T4	X2, X3, X4, X5, X6, X7, X10, X11, X12, X13

• Positive limit terminal setting

When the machine is returning origin (instruction ZRN), to prevent the table from moving beyond the range, the protection terminal is installed at both ends of the range. Please refer to ZRN instruction for details.

When the instruction ZRN, PLSR, PLSF are executed, if the forward pulse touches positive limit, the pulse will stop in slow stop mode (make sure the positive limit switch is in triggered state after pulse stop). The pulse will be always prohibitted when the positive limit switch is triggered, but



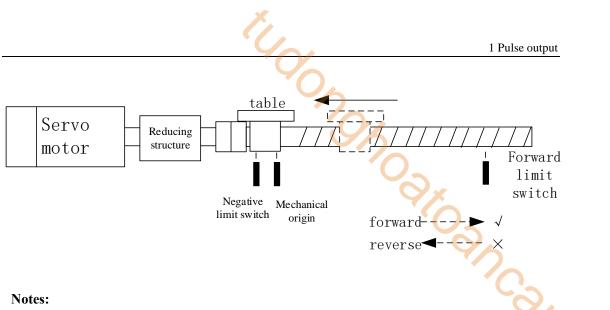
Notes:

- %1: the input terminal cannot over the PLC actual input range.
- *2: make sure the positive limit block is long enough, to ensure the positive limit switch is still triggered after pulse stop. Otherwise the table will strick the machine when the forward pulse is triggered again.
- *3: fit for instruction PLSR, PLSF, ZRN.
 - Negative limit terminal setting

When the machine is returning origin (instruction ZRN), to prevent the table from moving beyond the range, the protection terminal is installed at both ends of the range. Please refer to ZRN instruction for details.

YO axis-Common-positive limit terminal setting	X no terminal
YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0

When the instruction ZRN, PLSR, PLSF are executed, if the reverse pulse touches negative limit, the pulse will stop in slow stop mode (make sure the negative limit switch is in triggered state after pulse stop). The pulse will be always prohibitted when the negative limit switch is triggered, but the forward pulse can be triggered.



- %1: the input terminal cannot over the PLC actual input range.
- *2: make sure the negative limit block is long enough, to ensure the negative limit switch is still triggered after pulse stop. Otherwise the table will strick the machine when the reverse pulse is triggered again.
- 3: fit for instruction PLSR, PLSF, ZRN.
 - Zero clear CLR output setting

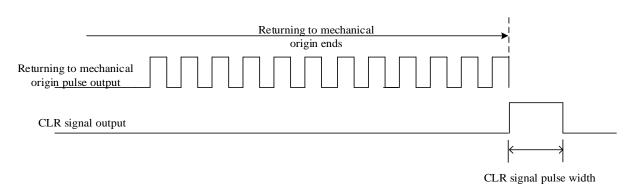
It will output the signal after the returning mechanical origin ends. This signal can send to other device such as servo drive to clear the servo motor error counter, then copy the mechanical origin position to present position to finish the returning to zero process.

YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	0

• CLR signal delayed time

The CLR signal pulse width time, the unit is ms. The range is 0 to 32767 (default is 20ms).

YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0



CLR signal diagram

03

Notes:

- 1: only fit for instruction ZRN.
- *2: please use PLC main unit output terminal for CLR signal output.
- 3: please do not set too small CLR signal delay time, otherwise the servo drive cannot receive too narrow pulse width signal.

Return speed VH

When it starts to run ZRN, the table accelerates to return speed VH and moves towards mechanical origin, this can shorten the returning time.

al origin, uns can shorten die returning time.		
YO axis-Common-Zero clear CLR output setting	Y no terminal	
YO axis-Common-Return speed VH	0	Q.
YO axis-Common-Creeping speed VC	0	
YO axis-Common-Mechanical zero position	0	°C_
v fit for instruction ZRN. on the ZRN starts, VH accelerates as setting acceleration slop,	then decelerates a	s setting

Notes:

 \times 1: only fit for instruction ZRN.

- 2: when the ZRN starts, VH accelerates as setting acceleration slop, then decelerates as setting deceleration slop when touching the near origin signal or origin signal.
- 3: if there is no near origin signal, please do not set the VH speed too large, otherwise it will cause mechanical oscillation as the VH speed quickly decelerating to zero.
- ×4: if there is no near origin signal, please do not set the VH speed too large and deceleration slop too small, otherwise it will cause the table out of origin signal and even touching the reverse limit signal when decelerating to zero as the table decelerating time is too long.
 - Creeping speed VC •

When it meets the origin signal, the start speed decelerates to zero, after delay time, it reverse accelerates to creeping speed. It will stop the creeping speed at once when the work table leaves origin signal. As the stop position of work table leaving origin signal is mechanical origin, in order to improve mechanical origin precision, generally, the creeping speed is small.

YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	0
YO axis-Common-Mechanical zero position	0

Note:

- \times 1: only fit for instruction ZRN.
- *2: the creeping speed acc/dec slope is same to setting acceleration/deceleration slope. It will urgent stop or count the Z phase pulse numbers when leaving origin signal.
- 3: Do not set the creeping speed over 100r/min, otherwise it will affect the high precision returning to origin.
- *4: Do not set the creeping speed larger than or equal to returning to origin speed VH.
 - Mechanical zero position

The present position after returning to mechanical origin ends. Take axis Y0 as an example, set the present position value HSD0(double word) or HSD2(double word) after returning to mechanical

origin.

Generally, the present value of mechanical origin is 0, it also can be set to other value. After the returning to mechanical origin, the related cumulative pulse register will be updated to setting value.

YO axis-Common-Creeping speed VC	0
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0

Note:

 \times 1: only fit for instruction ZRN.

- %2: if the pulse unit of axis Y0 is set to pulse numbers, the mechanical origin setting value will be written in HSD0(double word) after returning to mechanical origin. If the pulse unit of axis Y0 is set to equivalent (1mm, 0.1mm, 0.01mm, 1um), the mechanical origin setting value will be written in HSD2(double word) after returning to mechanical origin.
 - Z phase numbers

When it meets the origin signal, the start speed decelerates to zero, after delay time, it reverse accelerates to creeping speed. It can count the servo motor Z phase pulse when the work table leaves origin signal. It will stop creeping speed at once when the count value reaches setting Z phase pulse numbers, and mechanical returning to origin ends.

YO axis-Common-H	Mechanical zero position	0
YO axis-Common-3	Z phase num	0
YO axis-Common-	CLR signal delayed time (ms)	20

Note:

- **※**1: only fit for instruction ZRN.
- *2: if the Z phase numbers is set to 0, it means Z phase pulse catching function is invalid, it will stop at once when leaving origin with creeping speed and returning to origin ends.
- ※3: please avoid the interval between work table leaving origin signal and Z phase signal is too short, otherwise the origin position will be error.
- %4: Z phase signal maybe changed after install the servo motor again, please adjust it.
- *5: if it is stepper motor, the external proximity switch signal can be used to Z phase signal.
 - Grinding wheel radius(polar)

This parameter cannot be used right now.

YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0

Fast locate instruction default parameter block

DRV, DRVI, DRVA instruction use this parameter block. The first set is used by default.

YO axis-Common-Rated speed corresponding frequency (100Hz) (. 0
YO axis-Common-Positioning completion time limit (ms) (close	. 0
YO axis-Common-Fast locate instruction default parameter block	1
YO axis-Common-Interpolation instruction default parameter b.	. 2
YO axis-group O-Pulse default speed	1000

Note: this parameter only works for v3.4.6b and higher normal PLC and v3.5.3b and higher Ethernet type PLC.

• Interpolation instruction default parameter block

LIN, CW, CCW, ARC and other interpolation instruction use this parameter block. The second set is used by default.

YO axis-Common-Positioning completion time limit (ms) (close	0
YO axis-Common-Fast locate instruction default parameter block	1
YO axis-Common-Interpolation instruction default parameter b	2
VO axis-group O-Pulse default speed	1000

Note: this parameter only works for v3.4.6b and higher normal PLC and v3.5.3b and higher Ethernet type PLC.

Group 1 parameters (group 0, 2, 3, 4 parameters please refer to group 1)

Note:

*1: The group 0 parameters is only supported by ordinary PLC with firmware version v3.4.6b and above or Ethernet PLC with firmware version v3.5.3b and above.

* 2: When the user needs to frequently change the default speed, acceleration and deceleration time and other parameters, it is recommended to use group 0 parameters.

• Pulse default speed/acceleration time of default pulse speed/deceleration time of default pulse speed(ms)

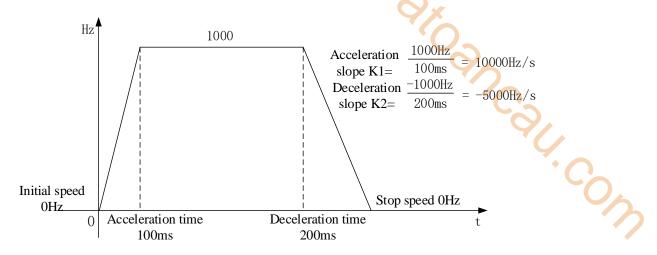
The three parameters and initial speed, stop speed are used to define the pulse acceleration and deceleration slop.

Acceleration slope = (pulse default speed-0)/ acceleration time of default pulse speed Deceleration slope = (pulse default speed-0)/ deceleration time of default pulse speed The unit of [default pulse speed] is still determined by whether the [pulse unit] is the number of pulses or equivalent (1 mm, 0.1 mm, 0.01 mm, 1 um) (that is, when the pulse unit is the number of pulses, the setting parameter unit is Hz; When the pulse unit is equivalent, the setting parameter is length.)

YO axis-group 1-Pulse default speed	0
YO axis-group 1-Acceleration time of Pulse default s	0
YO axis-group 1-Deceleration time of pulse default s	0

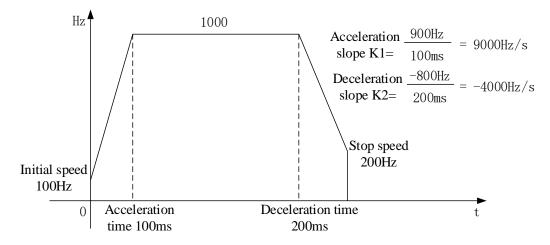
Example 1:

When the pulse unit is pulse numbers, pulse default speed is 1000Hz, acceleration time of pulse default speed is 100ms, deceleration time of pulse default speed is 200ms, initial speed is 0Hz, stop speed is 0Hz, it means the pulse frequency takes 100ms to increase 1000Hz and takes 200ms to decrease 1000Hz. If it accelerates from 0Hz to 5000Hz, the time is 5000/1000*100=500ms, if it decelerates from 5000Hz to 0Hz, the time is 5000/1000*200=1000ms.



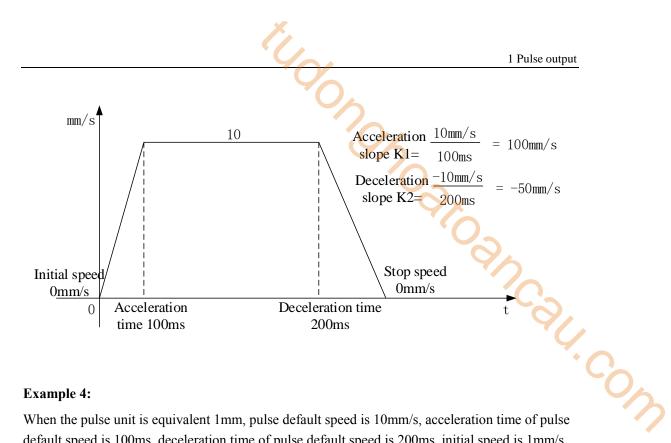
Example 2:

When the pulse unit is pulse numbers, pulse default speed is 1000Hz, acceleration time of pulse default speed is 100ms, deceleration time of pulse default speed is 200ms, initial speed is 100Hz, stop speed is 200Hz, it means the pulse frequency takes 100ms to increase (1000-100)=900Hz and takes 200ms to decrease (1000-200)=800Hz. If it accelerates from 0Hz to 5000Hz, the time is 5000/900*100=555ms, if it decelerates from 5000Hz to 0Hz, the time is 5000/800*200=1250ms.



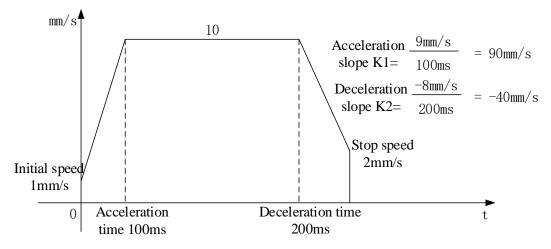
Example 3:

When the pulse unit is equivalent 1mm, pulse default speed is 10mm/s, acceleration time of pulse default speed is 100ms, deceleration time of pulse default speed is 200ms, initial speed is 0mm/s, stop speed is 0mm/s, it means the pulse frequency takes 100ms to increase 10mm/s and takes 200ms to decrease 10mm/s. If it accelerates from 0 to 50mm/s, the time is 50/10*100=500ms, if it decelerates from 50mm/s to 0, the time is 50/10*200=1000ms.



Example 4:

When the pulse unit is equivalent 1mm, pulse default speed is 10mm/s, acceleration time of pulse default speed is 100ms, deceleration time of pulse default speed is 200ms, initial speed is 1mm/s, stop speed is 2mm/s, it means the pulse frequency takes 100ms to increase (10-1)=9mm/s and takes 200ms to decrease (10-2)=8mm/s. If it accelerates from 0 to 50mm/s, the time is 50/9*100=555ms, if it decelerates from 50mm/s to 0, the time is 50/8*200=1250ms.

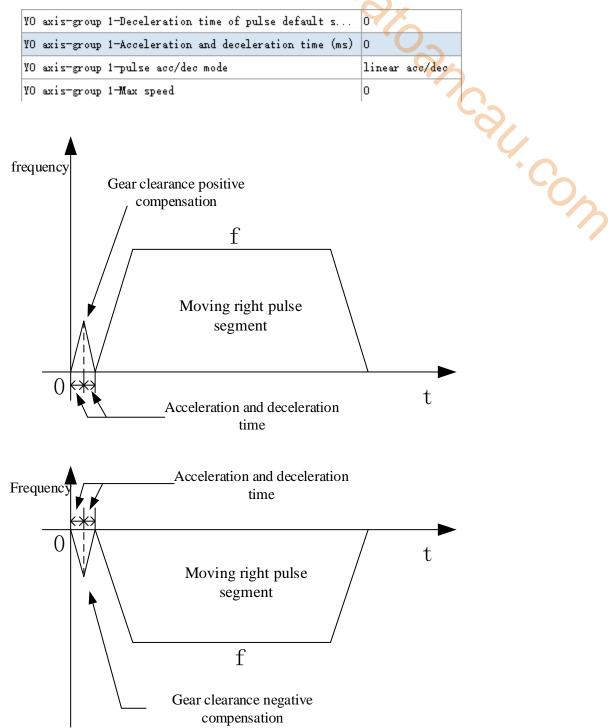


Note:

- ×1: the three parameters and initial speed, stop speed are used to define the acceleration and deceleration slope.
- 2: the pulse acceleration slope is determined by the time accelerating from initial speed to default pulse speed, the pulse deceleration slope is determined by the time decelerating from default pulse speed to stop speed.
- *3: the parameter is fit for instruction PLSR, PLSF, DRVI, DRVA, ZRN.
- %5: the pulse default speed is not related to the pulse frequency, it is only used to set the acceleration and deceleration slope. But when the pulse frequency is 0, it will output pulse as the default pulse speed.

• Acceleration and deceleration time (ms)

This time is for gear clearance positive and negative compensation. This acceleration and deceleration time is same whatever how many is the gear clearance compensation quantity, the unit is ms.



Note:

%1: the acceleration time and deceleration time is same.

*2: the acceleration and deceleration time is fixed value whatever how many is the gear

clearance compensation.

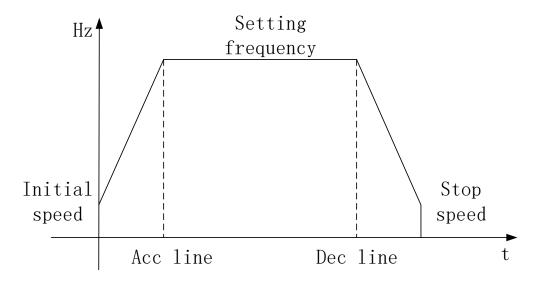
*3: this parameter is fit for instruction PLSR, PLSF, DRVI, DRVA, ZRN.

Pulse acc/dec mode

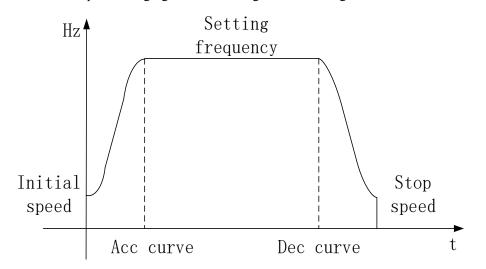
The pulse acceleration mode accelerating from initial speed to setting frequency and pulse deceleration mode decelerating from setting frequency to initial speed.

YO axis-group	1-Deceleration time of pulse default s	0	-
YO axis-group	1-Acceleration and deceleration time (ms)	0	
YO axis-group	1-pulse acc/dec mode	linear acc/dec	
YO axis-group	1-Max speed	0	9
YO axis-group	1-Initial speed	0	
acc/dec mode include linear mode, S curve mode and sine curve mode.			
ode: the speed o	changing for accelerating or decelerating is lin	e.	· · · ·
тт 🔺	Setting		•

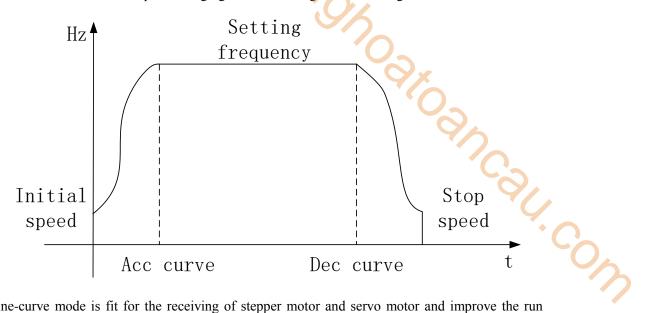
The pulse acc/dec mode include linear mode, S curve mode and sine curve mode. Linear mode: the speed changing for accelerating or decelerating is line.



S-curve mode: the speed changing for accelerating or decelerating is S-curve.



Sine curve mode: the speed changing for accelerating or decelerating is sine curve.



Sine-curve mode is fit for the receiving of stepper motor and servo motor and improve the run performance of stepper motor and servo motor. The details please refer to S-curve acceleration and deceleration.

Note: this parameter is fit for the instruction PLSR, PLSF, ZRN.

• Max speed

When all the pulse instructions in the program is executing parameter group 1, the highest pulse frequency cannot over the max speed, if it is over the max speed, PLC will run as the max speed.

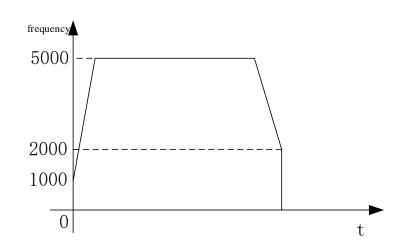
YO axis-group 1-Acceleration and deceleration time (ms)	0
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	0
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0

Note:

- %1: the max speed unit is changing as pulse unit(pulse number or equivalent).
- *2: XD all series PLC pulse output frequency max speed is 200Khz. The max speed cannot over this value.
- ※3: when the pulse unit is equivalent, the transformed pulse frequency maybe very large and over max speed, please pay attention.
- *4: User must set the max speed when using pulse instruction, otherwise the pusle cannot output normally.
- %5: this parameter is fit for instruction PLSR, PLSF, ZRN.
 - Initial speed and stop speed

The pulse start frequency and end frequency for the pulse instruction start and completion. Generally, the initial and stop speed is 0, but for some special occasions, the pulse needs to start with non-zero speed and complete with non-zero speed. For example, it needs to output 30000 pulses, and accelerates from 1000Hz, takes 100ms to reach 5000Hz. And it decelerates from 5000Hz, takes 50ms to reach 2000Hz, and the pulse will complete here. The configuration is shown as below:

e her	e. The configuration is shown as below:		
YO	axis-group 1-Max speed	200000	
¥٥	axis-group 1-Initial speed	1000	
YO	axis-group 1-stop speed	2000	
	frequency 5000 – –		· Com



Note:

- X1: the pulse unit of initial speed and stop speed is changing as the pulse number or equivalent.
- \times 2: the initial speed and stop speed must be less than the max speed.
- ※3: when the pulse unit is equivalent, the transformed pulse frequency maybe very large and over max speed, please pay attention.
- %4: make sure to set the initial speed and stop speed for pulse instruction, the default value is 0.%5: this parameter is fit for instruction PLSR, PLSF, ZRN.
 - Follow parameters

The FOLLOW instruction can make the slave axis servo motor or stepper motor following the master axis motor motion (which means the slave axis motion is consistant with main axis). The parameters include FOLLOW performance and FOLLOW feedforward compensation.

The FOLLOW instruction is motion following function, it can control the servo or stepper motor by outputting pulse according to motor encoder feedback.

FOLLOW performance: the function is similar to serve drive rigidity function. The smaller the value, the smaller the follow rigidity (delay time is long), the larger the value, the larger the follow rigidity (delay time is short).

FOLLOW feedforward compensation: there is delay time from receiving pulse to outputting pulse. In order to reduce the delay time, it can set the feedforward compensation, make the pulse a little advanced. But if the feedforward parameter is too large, it will enter infinite loop, the motor will vibrate when the follow process ends.

YO axis-group 1-stop speed	2000
YO axis-group 1-FOLLOW performance param(1-100)	50
YO axis-group 1-FOLLOW forward compensation(0-100)	
YO axis-group 2-Pulse default speed	0

Pulse frequency refresh time •

This time can be set by user, 100us or 1ms optional, the default is 1ms refresh time.

	requency refresh time e set by user, 100us or 1ms optional, the default is 1ms	refresh time.	
YO ax	is-group 1-FOLLOW forward compensation(0-100)	0	
YO ax	is-group 1-Pulse frequency refresh time	1 ms refresh	
YO ax	is-group 1-ZRN regression velocity VH	0	· C
	egression velocity VH is same to [common parameter—return speed VH], this	s parameter is pref	ferred.

ZRN regression velocity VH •

This parameter is same to [common parameter-return speed VH], this parameter is preferred.

YO axis-group 1-Pulse frequency refresh time	1 ms refresh
YO axis-group 1-ZRN regression velocity VH	0
YO axis-group 1-ZRN crawl speed VC	0

Note: this parameter is only valid for PLC firmware v3.4.6 and above.

ZRN crawl speed VC •

This parameter is same to [common parameter—creeping speed VC], this parameter is preferred.

Y٥	axis-group 1-ZRN regression velocity VH	0
YO	axis-group 1-ZRN crawl speed VC	0
YO	axis-group 2-Pulse default speed	1000

Note: this parameter is only valid for PLC firmware v3.4.6 and above.

1-2-1-4. Pulse interruption flag

Pulse instruction PLSR can set up to 100 segments of pulse. It can produce a interruption flag after each pulse segment completion.

Note: each pulse segment has only one related interruption flag, whatever how is the pulse configuration jump setting, the interruption flag will be executed when this pulse segment is running.

Interruption flag	Pulse axis	Notes
I60**(I6000~I6099)	PLS+0 (pulse)	Y0 axis 100 pulse segments interruption
I61**(I1000~I6199)	PLS+1 (pulse)	Y1 axis 100 pulse segments interruption
I62**(I6200~I6299)	PLS+2 (pulse)	Y2 axis 100 pulse segments interruption
I63**(I6300~I6399)	PLS+3 (pulse)	Y3 axis 100 pulse segments interruption

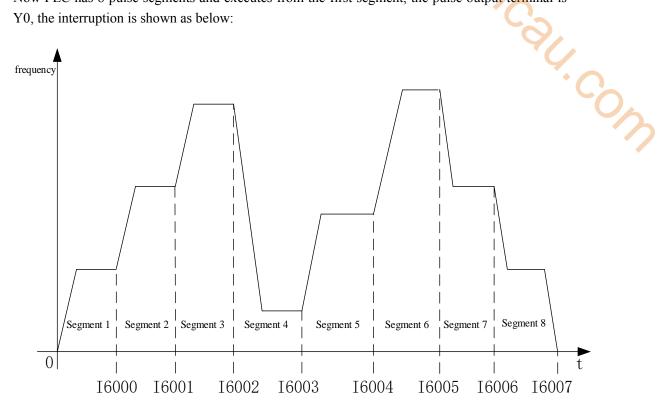
Interruption flag for each pulse segment:



I64**(I6400~I6499)	PLS+4 (pulse)	Y4 axis 100 pulse segments interruption
I65**(I6500~I6599)	PLS+5 (pulse)	Y5 axis 100 pulse segments interruption
I66**(I6600~I6699)	PLS+6 (pulse)	Y6 axis 100 pulse segments interruption
I67**(I6700~I6799)	PLS+7 (pulse)	Y7 axis 100 pulse segments interruption
I68**(I6800~I6899)	PLS+8 (pulse)	Y8 axis 100 pulse segments interruption
I69**(I6900~I6999)	PLS+9 (pulse)	Y9 axis 100 pulse segments interruption

Example 1:

Now PLC has 8 pulse segments and executes from the first segment, the pulse output terminal is Y0, the interruption is shown as below:

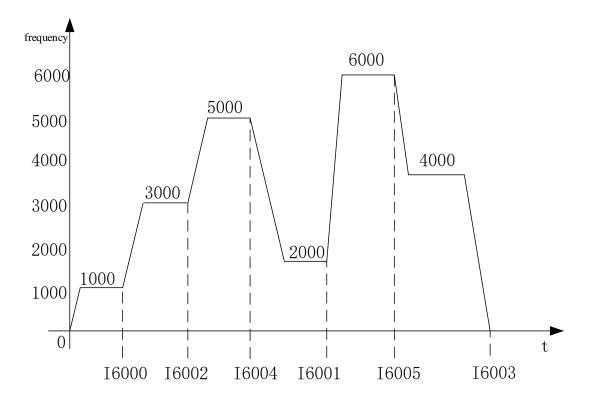


Example 2:

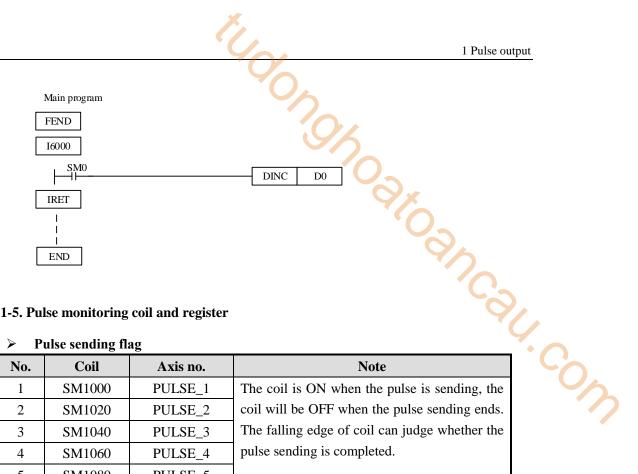
The PLC has 6 pulse segments, the pulse output terminal is Y0, but the pulse is not continuous outputting.

				multi sec	tion pul	lse output				
data start ac	dress:	HD0	user pa	arams address:	HD100	system params:	К1	output:	YO	
mode:	[relative 🗸	start ex	ecute section count:	0	Config				
Add De		pwards Do	ownward	ds			0			
				-		1. 11.1		wai	it	111000
	f	frequence		pulse count	v	vait conditio	n	wai regis		jump register
1	f	frequence 1000		pulse count 1000	-	vait conditio: se sending co			ster	jump register K3
1 2	f	-			pul		mplete	regis	ster	register
-		1000		1000	pul pul	se sending co	mplete mplete	regis KO	ster	register K3
2		1000 2000		1000	pul: pul: pul:	se sending co se sending co	mplete mplete mplete	regis KO KO	ster	register K3 K6
2		1000 2000 3000		1000 2000 3000	pul: pul: pul: pul:	se sending co se sending co se sending co	mplete mplete mplete mplete	regis KO KO KO	ster	register K3 K6 K5

As the pulse configuration table, the pulse outputting sequence is segment 1, 3, 5, 2, 6, 4. The interruption flag is I6000, I6002, I6004, I6001, I6005, I6003, please see below diagram:



Note: the program format is same for pulse interruption and external interruption.



1-2-1-5. Pulse monitoring coil and register

> P	ulse sending fl	ag	•					
No.	Coil	Axis no.	Note					
1	SM1000	PULSE_1	The coil is ON when the pulse is sending, the					
2	SM1020	PULSE_2	coil will be OFF when the pulse sending ends.					
3	SM1040	PULSE_3	The falling edge of coil can judge whether the					
4	SM1060	PULSE_4	pulse sending is completed.					
5	SM1080	PULSE_5						
6	SM1100	PULSE_6	Frequency					
7	SM1120	PULSE_7						
8	SM1140	PULSE_8						
9	SM1160	PULSE_9	Pulse segment					
10	SM1180	PULSE_10	0 t SM1000					

Pulse sending direction flag \triangleright

No.	Coil	Axis no.	Note			
1	SM1001	PULSE_1	When the pulse number is positive value and			
2	SM1021	PULSE_2	forward direction, the coil is ON, when the			
3	SM1041	PULSE_3	pulse number is negative value and reverse			
4	SM1061	PULSE_4	direction, the coil is OFF.			
5	SM1081	PULSE_5				
6	SM1101	PULSE_6	Frequency			
7	SM1121	PULSE_7	Pulse			
8	SM1141	PULSE_8	segment /			
9	SM1161	PULSE_9				
10	SM1181	PULSE_10	SM1001			

High speed pulse special regsiter HSD (latched) \triangleright

	Č.	,	
		2	1 Pulse o
No.	Function	Note	Axis no.
HSD0	Cumulative pulses low 16-bit		
HSD1	Cumulative pulses high 16-bit	The unit is pulse number	
HSD2	Cumulative pulses low 16-bit		PULSE_1
HSD3	Cumulative pulses high 16-bit	The unit is equivalent	-
HSD4	Cumulative pulses low 16-bit		6
HSD5	Cumulative pulses high 16-bit	The unit is pulse number	
HSD6	Cumulative pulses low 16-bit		PULSE_2
HSD7	Cumulative pulses high 16-bit	The unit is equivalent	10
HSD8	Cumulative pulses low 16-bit		Č
HSD9	Cumulative pulses high 16-bit	The unit is pulse number	
HSD10	Cumulative pulses low 16-bit		PULSE_3
HSD11	Cumulative pulses high 16-bit	The unit is equivalent	
HSD12	Cumulative pulses low 16-bit		PULSE_3
HSD13	Cumulative pulses high 16-bit	The unit is pulse number	
HSD14	Cumulative pulses low 16-bit		PULSE_4
HSD15	Cumulative pulses high 16-bit	The unit is equivalent	
HSD16	Cumulative pulses low 16-bit		
HSD17	Cumulative pulses high 16-bit	The unit is pulse number	
HSD18	Cumulative pulses low 16-bit		PULSE_5
HSD19	Cumulative pulses high 16-bit	The unit is equivalent	
HSD20	Cumulative pulses low 16-bit		
HSD21	Cumulative pulses high 16-bit	The unit is pulse number	
HSD22	Cumulative pulses low 16-bit		PULSE_6
HSD23	Cumulative pulses high 16-bit	The unit is equivalent	
HSD24	Cumulative pulses low 16-bit		
HSD25	Cumulative pulses high 16-bit	The unit is pulse number	
HSD26	Cumulative pulses low 16-bit		PULSE_7
HSD27	Cumulative pulses high 16-bit	The unit is equivalent	
HSD28	Cumulative pulses low 16-bit		
HSD29	Cumulative pulses high 16-bit	The unit is pulse number	
HSD30	Cumulative pulses low 16-bit		PULSE_8
HSD31	Cumulative pulses high 16-bit	The unit is equivalent	
HSD32	Cumulative pulses low 16-bit		
HSD33	Cumulative pulses high 16-bit	The unit is pulse number	
HSD34	Cumulative pulses low 16-bit	The unit is and in the st	PULSE_9
HSD35	Cumulative pulses high 16-bit	The unit is equivalent	
HSD36	Cumulative pulses low 16-bit		
HSD37	Cumulative pulses high 16-bit	The unit is pulse number	PULSE_10
HSD38	Cumulative pulses low 16-bit	The unit is equivalent	

	Ľ.		1 Pulse output
HSD39	Cumulative pulses high 16-bit	0	
		95	
		10	
		Y	0
			970
			Q.
			· Co
			-0,
			· · · · · · · · · · · · · · · · · · ·

1-2-2. Multi-segment pulse output [PLSR]

Instruction overview

Multi-segment pulse output instruction.

Multi-segme	ent pulse output [PLSR]		
16-bit	-	32-bit	PLSR
Execution	Rising /falling edge of the coil	Suitable	XD, XL (except XD1, XL1)
condition		model	
Hardware	-	Software	-

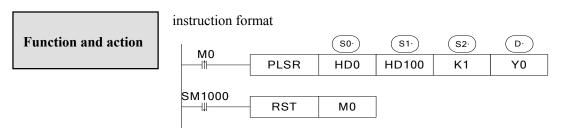
Operand

· · · · · · ·			_
Operand	Function	Туре	
S0	Pulse data start address	32-bit double word	
S1	User parameter start address	32-bit double word	
S2	System parameter start address (1 to 4)	32-bit double word	
D	Pulse output terminal	Bit	

• Suitable soft component

Word	Operand		System							Constant	Constant Module			
		D*	FI	D	TD*	CD	DX	DY	DM*	DS^*	K/H	ID	QD	
						*								
	S0	•	•		•	•	•	•	•	•				
	S1	٠	•		•	•	•	•	•	•				
	S2	•	•								•			
	Operand				Svs	tem			٦					
Bit	operand													
Dit		Х	Y	M*	S*	Τ*	C*	Dnm						
	D		•						7					
									_					

*Note: D means D, HD. TD means TD, HTD. CD means CD, HCD, HSCD, HSD. DM means DM, DHM. DS means DS, DHS. M means M, HM, SM. S means S, HS. T means T, HT. C means C, HC.

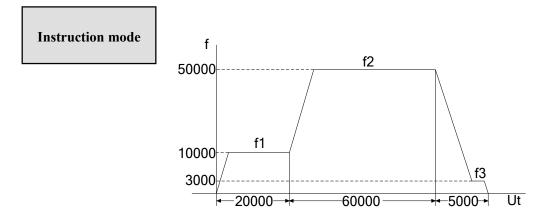


- S0 【data start address】 refer to chapter 1-2-1-1
- S1 [user parameter start address] refer to chapter 1-2-1-2
- S2 [system parameter group] K1~K4, refer to 1-2-1-3
- D [pulse output terminal] refer to chapter 1-1
- Pulse frequency range: 1Hz~100KHz. The value increasing means acceleration, the value

202

decreasing means deceleration, it is not related to the pulse direction.

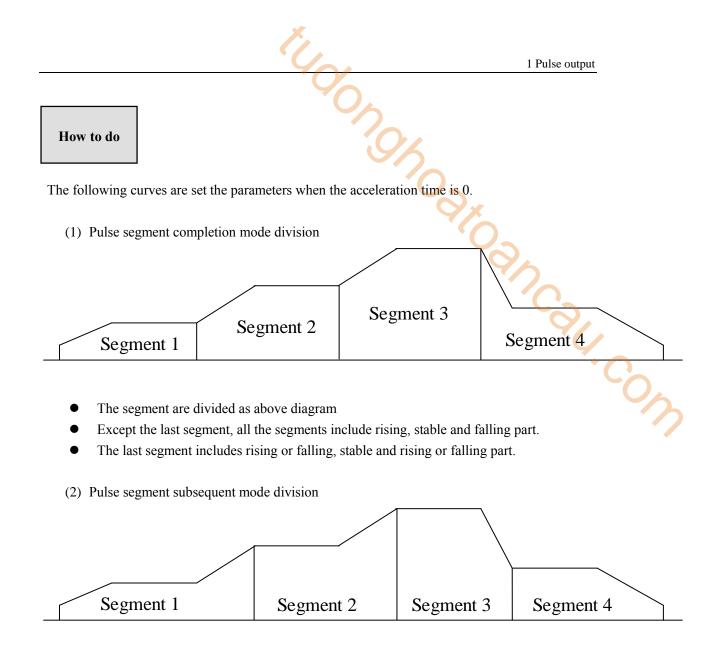
- Pulse number: K-2,147,483,648 ~ K2,147,483,647, negative value means reverse direction. The acceleration and deceleration is set in system parameters, refer to chapter 1-2-1-3.
- When M0 is from OFF to ON, PLC executes the instruction PLSR, even M0 is cut off, the pulse will keep sending until end.
- If it needs to stop the pulse outputting, please use the instruction STOP.
- When the pulse is sending, the pulse sending flag of Y0 axis SM1000 is ON, when the pulse sending ends, SM1000 is OFF.
- Y0 cumulative pulse numbers are saved in HSD0(double word), the present pulse numbers are saved in SD1002(double word), more details please refer to chapter 6-5.
- For the instruction PLSR, if the frequency is changed when the pulse is sending, it will be effective at once. Other parameters will not be effective at once after changing, but be effective when the condition triggerring next time.
- In absolute mode, if the pulse numbers and cumulative pulse numbers(HSD0) is equal, SM1000 has no action, there is no falling edge.



Pulse curve

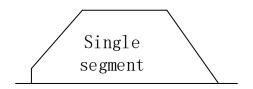
data start address: HD0 user params address: HD100 system params: K1 output: Y0								
mode:	relative V	start execute section count:	0 Config					
Add De	lete Upwards Do	ownwards						
	frequence	pulse count	wait condition		wait registe	jump r register		
1	10000	20000	pulse sending compl	ete	KO	KO		
2	50000	60000	pulse sending compl	ete	KO	KO		
▶ З	3000	5000	pulse sending compl	ete	KO	KO		

Pulse instruction parameter configuration table



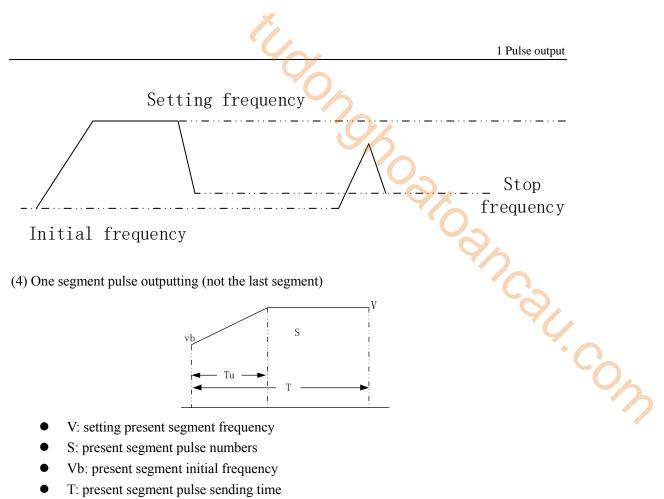
- The segment subsequent mode curve is shown as above diagram.
- It already switched to next segment speed when present segment ends. Except the first segment, other segments include stable part, rising or falling part.
- The first segment includes rising part or falling part, stable part, rising part or falling part.
- (3) Single segment pulse curve
- The pulse numbers are enough

The pulse can reach the setting max frequency, the curve is trapezoid.



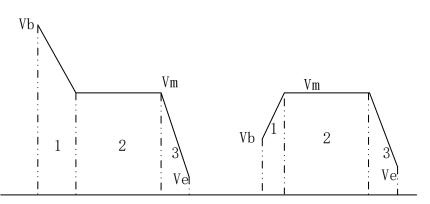
• The pulse numbers are not enough

The pulse curve is triangle.



• Tu: pulse rising/falling time (Tu = (V-VB) / K, K is rising or falling slope).

(5) The last segment



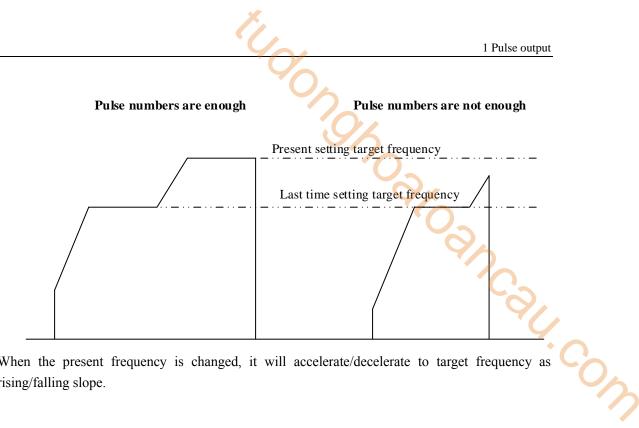
• The last segment includes rising/falling part, stable part, rising/falling part.

(6) the segment which the pulse numbers are 0

• If the present segment pulse frequency or pulse number is 0, it will output pulse as default speed.

(7) dynamic modify present pulse frequency

• Not the last segment



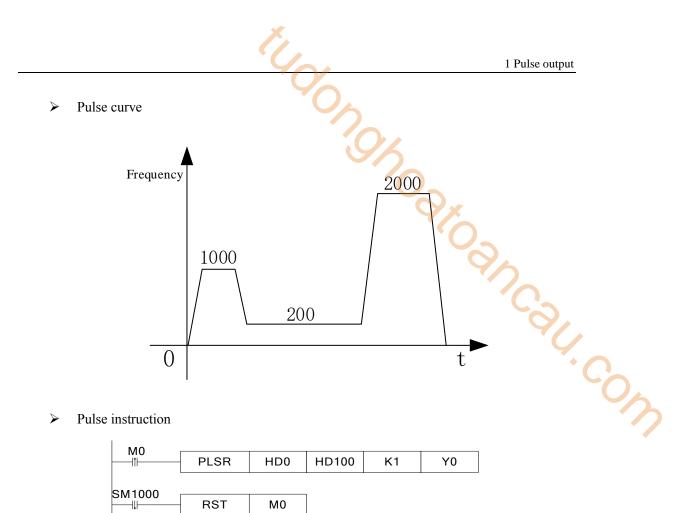
When the present frequency is changed, it will accelerate/decelerate to target frequency as rising/falling slope.

The last segment Target frequency changed Present setting target frequency Last time setting target frequency

When the present pulse frequency is changed by user, PLC will calcuate the pulse curve again, then output pulse as the new pulse curve.

It needs to output 3 continuous segments of pulse, the pulse terminal is Y0, direction terminal is Y2.

Segment	Setting frequency (Hz)	Setting pulse numbers	
Segment 1	1000	2000	
Segment 2	200	1000	
Segment 3	2000	6000	
Acceleration/deceleration	The frequency will change 1000Hz every 100		



- Software configuration
- (1) Pulse segment configuration

	multi section pulse output					
data start	address:	HDO	user params address:	HD100 system params: K1	output: Y0	
mode: relative ✓ start exe		start execute section count:	ecute section count: 0 Config			
Add D	elete U	pwards Do	wnwards			
	:	frequence	pulse count	wait condition	wait register	jump register
1		1000	2000	pulse sending complete	KO	KO
2		200	1000	pulse sending complete	KO	KO
▶ 3		2000	6000	pulse sending complete	KO	KO
ised space: HD0-HD39,HD100-HD103 Read From PLC Write To PLC OK Cancel						

(2) Pulse configuration parameters

PLC1 - Pulse Set	
Config - Delete init axis config guide	
Param	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to	negative
YO axis-Common-Parameters setting-Pulse unit	pulse number
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete
YO axis-Common-Pulse num (1)	1
YO axis-Common-Offset (1)	
YO axis-Common-Pulse direction terminal	¥2
YO axis-Common-Delayed time of pulse direction (ms)	10
	· · · · · · · · · · · · · · · · · · ·
Param	Value

ly and the second secon

Param	Value
YO axis-Common-Gear clearance positive compensation	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal
YO axis-Common-negative limit terminal setting	X no terminal

Param	Value
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	0
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0

Param		Value
YO axis-group	1-Pulse default speed	1000
YO axis-group	1-Acceleration time of Pulse default s	100
YO axis-group	1-Deceleration time of pulse default s	100
YO axis-group	1-Acceleration and deceleration time (ms)	0
YO axis-group	1-pulse acc/dec mode	linear acc/dec
YO axis-group	1-Max speed	200000
YO axis-group	1-Initial speed	0
YO axis-group	1-stop speed	0
YO axis-group	1-FOLLOW performance param(1-100)	50
YO axis-group	1-FOLLOW forward compensation(0-100)	0

(3) Pulse data address distribution table

10 111	. Start . was share	
YO axi:	-group 1-Initial speed	0
YO axi:	-group 1-stop speed	0
YO axis	=group 1-FOLLOW performance param(1-100)	50
YO axi:	-group 1-FOLLOW forward compensation(0-100)	0
(3) Pulse da	ta address distribution table	\sim
Address	Notes	0 Value
HD0	Dulas total assuments (1 to 100)	
(double word)	Pulse total segments (1 to 100)	3
HD2 (8 words)	Reserved	0
HD10	Pulse frequency (#1)	1000
(double words)	Pulse frequency (#1)	1000
HD12 (doub	Pulse number (#1)	2000
word)		2000
	bit15~bit8: waiting condition (#1)	
	H00: pulse sending completion	
	H01: wait time	
	H02: wait signal	
	H03: ACT time	
	H04: EXT signal	
	H05: EXT signal or pulse sending completing	on
HD14	bit7~bit0: waiting condition register type	0
	H00: constant	
	H01: D	
	H02: HD	
	H03: FD	
	H04: X	
	H05: M	
	H06: HM	
HD15	Constant value/ register no. (for waiting condition	on)(#1) 0
(double word)		
	bit7~bit0: jump register type	
HD17	H00: constant value	0
11017	H01: D	l · · · · · · · · · · · · · · · · · · ·
	H02: HD	

	Ľ.	1 Pulse output	
	H03: FD		l
HD+18 (double word)	Constant value/register no. (for jump register)(#1)	0	
HD+20 (double word)	Pulse frequency (#2)	200	
HD+22 (double word)	Pulse number (#2)	1000	
HD+24	Waiting condition, waiting condition register type (#2)	0	
HD+25 (double word)	Constant value or register no. (for waiting condition) (#2)	0	
HD+27	Jump type, jump register type (#2)	0	
HD+28 (double word)	Constant value or register no. (for jump register) (#2)	0	C
HD+30 (double word)	Pulse frequency (#3)	2000	CON
HD+32 (double word)	Pulse number (#3)	6000	
HD+34	Waiting condition, waiting condition register type (#3)	0	
HD+35 (double word)	Constant value or register no. (for waiting condition) (#3)	0	
HD+37	Jump type, jump register type (for waiting condition) (#3)	0	
HD+38 (double word)	Constant value or register no. (for jump register) (#3)	0	

(4) System parameters

		U.	
		40	1 Pulse output
SFD900	Pulse parameter setting	Bit1: pulse direction logic 0: positive logic, 1: negative logic, default is 0 Bit2: soft position limit 0: OFF 1: ON, default is 0 Bit3: machine back to origin direction 0: negative direction 1: positive direction, default is 0 Bit10~ Bit8: pulse unit Bit8: 0: pulse numbers, 1: equivalent 000: pulse numbers 001: micron 011: centimillimeter 101: decimillimeter 111: millimeter Default is 000 Bit13: pulse type 0: single direction pulse 1: AB phase pulse (only for XD5-48D4T4-E), default is 0 Bit15: interpolation coordinate mode 0: cross coordinate, 1: polar coordinate, default is 0	Common parameter
SFD901	Pulse sending mode	Bit 0: pulse sending mode 0: complete mode 1: subsequence mode, default is 0	0
SFD902	Pulse number/1 rotation low 16 bits		1
SFD903	Pulse number/1 rotation high 16 bits		0
SFD904	Motion quantity/1 rotation low 16 bits		1
SFD905	Motion quantity/1 rotation high 16 bits		0
SFD906	Pulse direction terminal	Y terminal no., 0xFF is no terminal	2
SFD907	Direction delay time	Default is 20, unit: ms	20
SFD908	Gear clearance positive compensation		0
SFD909	Gear clearance negative compensation		0
SFD910	Electrical origin low 16 bits		0
SFD911	Electrical origin high 16 bits		0

		Ċ,			
		40	1 Pulse	output	
SFD912	Signal terminal state setting	Bit0: origin signal switch state Bit1: Z phase switch state Bit2: positive limit switch state Bit3: negative limit switch state 0: normally open(positive logic) 1: normally close(negative logic) default is 0	0		
SFD914	Z phase terminal setting	Bit0~bit7: set X terminal, 0xFF is no terminal(interruption)	0xFF		
SFD915	Limit terminal setting	Bit7~bit0: X terminal of positive limit, 0xFF is no terminal Bit15~bit8: X terminal of negative limit, 0xFF is no terminal	FFFF		
SFD917	Clear signal CLR output terminal	Bit0~Bit7: Y terminal, 0xFF is no terminal	0xFF		C
SFD918	Returning speed VH low 16 bits		0		
SFD919	Returning speed VH high 16 bits		0		
SFD922	Crawling speed VC low 16 bits		0		
SFD923	Crawling speed VC high 16 bits		0		
SFD924	Mechanical origin position low 16 bits		0		
SFD925	Mechanical origin position high 16 bits		0		
SFD926	Z phase numbers		0		
SFD927	CLR signal delay time	Default 20, unit: ms	20		l
SFD928	Grinding wheel radius(polar	Low 16 bits	0		
SFD929	coordinate)	High 16 bits	0		
SFD930		Low 16 bits	0		I
SFD931	Soft limit positive limit value	High 16 bits	0		l
SFD932	Soft limit negative limit	Low 16 bits	0		I
SFD933	value	High 16 bits	0		I
•••					
SFD950	Pulse default speed low 16 bits		1000	Group 1	
SFD951	Pulse default speed high 16 bits	It will send pulse with default speed when the speed is 0.	0	2 1	
SFD952	Pulse default speed acceleration time		100		

SFD953	Pulse default speed deceleration time	5	100	
SFD954	Acceleration time and deceleration time	97	0	
SFD955	Pulse acceleration and deceleration mode	Bit 1~0: acc/dec mode 00: line 01: S curve 10: sine curve		
		10: sine curve 11: reserved Bit 15~2: reserved	20	
SFD956	Max speed limit low 16 bits		3392	
SFD957	Max speed limit high 16 bits		3	
SFD958	Initial speed low 16 bits		0	
SFD959	Initial speed high 16 bits		0	
SFD960	Stop speed low 16 bits		0	00
SFD961	Stop speed high 16 bits		0	
SFD962	Follow performance parameters	$1\sim100$, 100 means the time constant is one tick, 1 means the time constant is 100 tick.	50	
SFD963	Follow feedforward compensation	0~100, percentage	0	
•••				

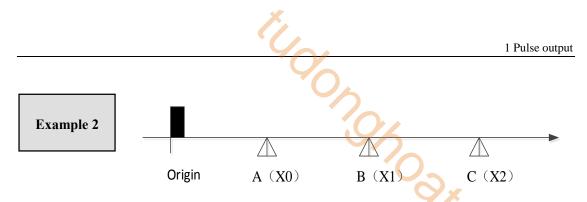
Note:

- ※1: As there are many configuration parameters of PLSR, we suggest to use software configuration table to set the parameters.
- *2: if user needs to set each segment pulse frequency and pulse numbers in the HMI, please configure through the configuration table first, then use instruction DMOV in the program to set the registers (S0+N*10+0, S0+N*10+2).

For example:

DMOV	HD200	HD10	//HD200 set segment 1 pulse frequency in HMI
DMOV	HD202	HD12	//HD202 set segment 1 pulse numbers in HMI
DMOV	HD204	HD20	//HD204 set segment 2 pulse frequency in HMI
DMOV	HD206	HD22	//HD206 set segment 2 pulse numbers in HMI
DMOV	HD208	HD30	//HD208 set segment 3 pulse frequency in HMI
DMOV	HD210	HD32	//HD210 set segment 3 pulse numbers in HMI

It can also set pulse frequency and numbers in registers HD10, HD12, HD20, HD22, HD30, HD32 directly in the HMI.



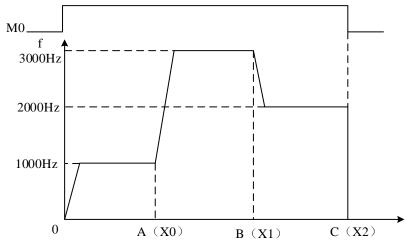
As the above diagram, it needs to move three segments of distance, the position of A, B, C is unknown and the moving speed is different for each segment. We can configure the PLSR to do it. First we install proximity switch at point A, B, C and connect to PLC input X0, X1, X2. The pulse output terminal is Y0, the direction terminal is Y2.

Each segment pulse frequency and numbers:

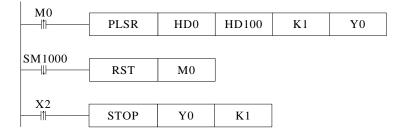
we install proximity switch at point A, B, C and connect to PLC input X0, X1, X2. The pulse it terminal is Y0, the direction terminal is Y2.							
Segment Frequency setting (Hz) Pulse number setting							
Origin to A	1000	999999999					
A to B	A to B 3000 999999999						
B to C 2000 99999999							
Acceleration/deceleration time The frequency will change 1000Hz every 100ms							

Note:

As the pulse numbers are unknown for each segment, we set a very large pulse numbers to ensure it can reach the proximity switch. When it reaches point C, the pulse will urgent stop by instruction STOP.



Pulse instructions \triangleright



Software configuration ۶

					Ye					l Pulse ou	utput
⊳ s	Softwar	e config	guratio	on		0					
(1) Pi	ulse seg	gment c	onfigu	uration		.0					
				multi sec	ction pu	Ise output	2				×
ata start a	ddress:	HD0	user pa	rams address:	HD100	system params:	К1	output: Y0			
iode:	[relative 🗸	start exe	ecute section count:	0	Config		7			
Add De	lete Up	owards Do	wnward	ls		1	1 1	-0	0		
	f	requence		pulse count		wait condition		wait register	r	jump gister	
		1000		999999999		EXT signal		ХО		KO	
1		2000		999999999		EXT signal		X1		KO	
1 2				999999999		EXT signal		X2		ко	6
		2000									

(2) Pulse configuration parameters

Param	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to th	negative
YO axis-Common-Parameters setting-Pulse unit	pulse number
YO axis-Common-Parameters setting-Interpolation coordin	Cross coordi
YO axis-Common-pulse send mode	complete
YO axis-Common-Pulse num (1)	1
YO axis-Common-Offset (1)	1
YO axis-Common-Pulse direction terminal	¥2
YO axis-Common-Delayed time of pulse direction (ms)	10

Param	Value
YO axis-Common-Gear clearance positive compensation	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting-Far	normally on
YO axis-Common-signal terminal switch state setting-Z p	normally on
YO axis-Common-signal terminal switch state setting-pos	normally on
YO axis-Common-signal terminal switch state setting-neg	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal

Param	Value
YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	0
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0
	• • • • •
Param	Value
10 axis-group 1-Pulse default speed	1000
YO axis-group 1-Acceleration time of Pulse default spee	100
VO axis-group 1-Deceleration time of pulse default spee	100

Param	Value
YO axis-group 1-Pulse default speed	1000
YO axis-group 1-Acceleration time of Pulse default spee	100
YO axis-group 1-Deceleration time of pulse default spee	100
YO axis-group 1-Acceleration and deceleration time (ms)	0
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	200000
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0
YO axis-group 1-FOLLOW performance param(1-100)	50
YO axis-group 1-FOLLOW forward compensation(0-100)	0

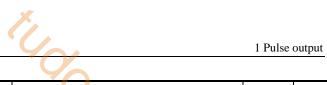
(3) Pulse data address distribution table

Address	Notes	Value	
HD0	Pulse total segments (1 to 100)	3	
(double word)		<u> </u>	
HD2 (8 words)	Reserved	0	
HD10	Pulse frequency (#1)	1000	
(double words)	ruise nequency (#1)	1000	
HD12 (double	Pulse number (#1)	9999999999	
word)	r uise liuliloei (#1)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	bit15~bit8: waiting condition (#1)		
	H00: pulse sending completion		
	H01: wait time		
HD14	H02: wait signal	1028	
	H03: ACT time		
	H04: EXT signal		
	H05: EXT signal or pulse sending completion		

	Č,		
		1 Pulse output	
	bit7~bit0: waiting condition register type H00: constant H01: D H02: HD		
	H01: D H02: HD H03: FD H04: X H05: M H06: HM		
HD15 (double word)	Constant value/ register no. (for waiting condition)(#1)	0	
HD17	bit7~bit0: jump register type H00: constant value H01: D H02: HD H03: FD	0	CON
HD+18 (double word)	Constant value/register no. (for jump register)(#1)	0	1
HD+20 (double word)	Pulse frequency (#2)	3000	
HD+22 (double word)	Pulse number (#2)	9999999999	
HD+24	Waiting condition, waiting condition register type (#2)	1028	
HD+25 (double word)	Constant value or register no. (for waiting condition) (#2)	1	
HD+27	Jump type, jump register type (#2)	0	
HD+28 (double word)	Constant value or register no. (for jump register) (#2)	0	
HD+30 (double word)	Pulse frequency (#3)	2000	
HD+32 (double word)	Pulse number (#3)	9999999999	
HD+34	Waiting condition, waiting condition register type (#3)	1028	
HD+35 (double word)	Constant value or register no. (for waiting condition) (#3)	2	
HD+37	Jump type, jump register type (for waiting condition) (#3)	0	
HD+38 (double word)	Constant value or register no. (for jump register) (#3)	0	

(4) System parameters

			1 Pulse output	
		- O	1 I uise output	
		Bit1: pulse direction logic 0: positive logic, 1: negative logic, default is 0 Bit2: soft position limit 0: OFF 1: ON, default is 0 Bit3: machine back to origin direction 0: negative direction 1: positive direction, default is 0	Common parameter	
SFD900	Pulse parameter setting	Bit10~ Bit8: pulse unit Bit8: 0: pulse numbers, 1: equivalent 000: pulse numbers 001: micron 011: centimillimeter 101: decimillimeter 111: millimeter Default is 000 Bit13: pulse type	0	C
		0: single direction pulse 1: AB phase pulse (only for XD5-48D4T4-E), default is 0 Bit15: interpolation coordinate mode 0: cross coordinate, 1: polar coordinate, default is 0		
SFD901	Pulse sending mode	Bit 0: pulse sending mode 0: complete mode 1: subsequence mode, default is 0	1	
SFD902	Pulse number/1 rotation low 16 bits		0	
SFD903	Pulse number/1 rotation high 16 bits		1	
SFD904	Motion quantity/1 rotation low 16 bits		0	
SFD905	Motion quantity/1 rotation high 16 bits		2	
SFD906	Pulse direction terminal	Y terminal no., 0xFF is no terminal	20	1
SFD907	Direction delay time	Default is 20, unit: ms	0	1
SFD908	Gear clearance positive compensation		0	
SFD909	Gear clearance negative compensation		0	
SFD910	Electrical origin low 16 bits		0	1
SFD911	Electrical origin high 16 bits		0	1



SFD912	Signal terminal state setting	Bit0: origin signal switch state Bit1: Z phase switch state Bit2: positive limit switch state Bit3: negative limit switch state 0: normally open(positive logic) 1: normally close(negative logic) default is 0	0xFF		
SFD914	Z phase terminal setting	Bit0~bit7: set X terminal, 0xFF is no terminal(interruption)	FFFF		
SFD915	Limit terminal setting	Bit7~bit0: X terminal of positive limit, 0xFF is no terminal Bit15~bit8: X terminal of negative limit, 0xFF is no terminal	0xFF		0
SFD917	Clear signal CLR output terminal	Bit0~Bit7: Y terminal, 0xFF is no terminal	0		CON
SFD918	Returning speed VH low 16 bits		0		1
SFD919	Returning speed VH high 16 bits		0		
SFD922	Crawling speed VC low 16 bits		0		
SFD923	Crawling speed VC high 16 bits		0		
SFD924	Mechanical origin position low 16 bits		0		
SFD925	Mechanical origin position high 16 bits		0		
SFD926	Z phase numbers		20		
SFD927	CLR signal delay time	Default 20, unit: ms	0		
SFD928	Grinding wheel radius(polar	Low 16 bits	0		
SFD929	coordinate)	High 16 bits	0		
SFD930		Low 16 bits	0		
SFD931	Soft limit positive limit value	High 16 bits	0		
SFD932	Soft limit negative limit	Low 16 bits	0		
SFD933	value	High 16 bits	1		
SFD950	Pulse default speed low 16 bits		1000	Group 1	
SFD951	Pulse default speed high 16 bits	It will send pulse with default speed when the speed is 0.	0	<u>5</u> 1	
SFD952	Pulse default speed acceleration time		100		

SFD953	Pulse default speed deceleration time	2	100	
	Acceleration and	92	0	
SFD954	deceleration time			
		Bit 1~0: acc/dec mode		
		00: line		
SFD955	Pulse acceleration and	01: S curve	0	
51 D755	deceleration mode	10: sine curve	U	
		11: reserved		
		Bit 15~2: reserved		
SFD956	Max speed limit low 16 bits		3392	
SFD957	Max speed limit high 16 bits		3	0
SFD958	Initial speed low 16 bits		0	
SFD959	Initial speed high 16 bits		0	0,
SFD960	Stop speed low 16 bits		0	
SFD961	Stop speed high 16 bits		0	
	Follow performance	$1 \sim 100$, 100 means the time constant is	50	
SFD962	parameters	one tick, 1 means the time constant is		
	parameters	100 tick.		
SFD963	Follow feedforward		0	
01/03	compensation	0~100, percentage		
•••				

Note:

- ※1: As there are many configuration parameters of PLSR, we suggest to use software configuration table to set the parameters.
- *2: if user needs to set each segment pulse frequency and pulse numbers in the HMI, please configure through the configuration table first, then use instruction DMOV in the program to set the registers (S0+N*10+0, S0+N*10+2).

For example:

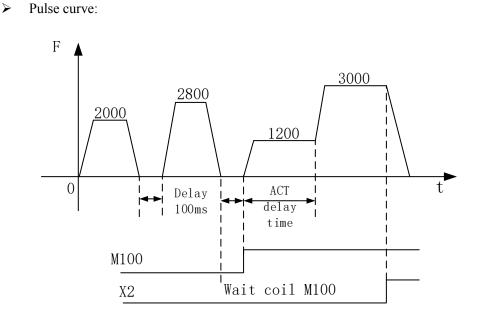
HD200	HD10	//HD200 set segment 1 pulse frequency in HMI
HD202	HD12	//HD202 set segment 1 pulse numbers in HMI
HD204	HD20	//HD204 set segment 2 pulse frequency in HMI
HD206	HD22	//HD206 set segment 2 pulse numbers in HMI
HD208	HD30	//HD208 set segment 3 pulse frequency in HMI
HD210	HD32	//HD210 set segment 3 pulse numbers in HMI
	HD202 HD204 HD206 HD208	HD202 HD12 HD204 HD20 HD206 HD22 HD208 HD30

It can also set pulse frequency and numbers in registers HD10, HD12, HD20, HD22, HD30, HD32 directly in the HMI.

Example 3

It needs to execute 4 segments of pulse: segment 1 pulse frequency is 2000Hz, pulse number is 3000, it will delay 100ms then segment 2 is executed. Segment 2 pulse frequency is 2800Hz, pulse number is 4000. It will wait for M100, when M100 is ON, the segment 3 starts to run. Segment 3 pulse frequency is 1200Hz, pulse number is 999999999. It will delay ACT time 2s after the pulse is outputting then switch to segment 4 at once. Segment 4 pulse frequency is 3000Hz, pulse number is 999999999. When the external signal X2 is ON, it will decelerate and stop the pulse. Pulse acceleration slope is 80ms every 1000Hz, deceleration slope is 1200Hz. The pulse direction terminal is Y2.

50,



Pulse instruction

MO					
	DI SD	HDO	HD100	K 1	\mathbf{v}_0
	I LSK	IID0	IID100	K1	10

- Pulse data configuration
- (1) Pulse segment configuration

						ulse output						
ata start a	ddress:	HD0	user pa	rams address:	HD100	system params:	К1	output:	YO			
ode:		relative v	start ex	ecute section count:	0	Config	20					
Add D	elete L	Jpwards Do	ownward	ds				5.				
		frequence		pulse count		wait condition		wa regi		jump register		
• 1		2000		3000		wait time		K10	0	KO		
2		2800		4000		wait signal		M10)0	KO		
3		1200		999999999		ACT time		K20	00	KO		
4		3000		999999999		EXT signal		X2	2	КО		
										, Q	Ķ	
ed space	HD0	HD49,HD10	D-HD103		Read	From PLC Wr	ite To PLC		ок	Cancel		
				Pulse data co	onfigura	ation (relative n	node)					
				and the second	stion nu	ulse output					x	

Un.

Pulse data configuration (relative mode)

data start ao		user params address:	HD100 system params:	K1	output:	YO		
mode: absolut start execute section count: 0 Config Add Delete Upwards Downwards								
	frequence	pulse count	wait condition		wa: regi:		jump register	
1	2000	3000	wait time		K10)0	KO	
2	2800	7000	wait signal		M10)0	KO	
3	1200	1000006999	ACT time		K20	00	KO	
▶ 4	3000	2000006998	EXT signal		X2	2	KO	

Pulse data configuration (absolute mode)

(2) System parameters

Param	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to	negative
YO axis-Common-Parameters setting-Pulse unit	pulse number
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete
YO axis-Common-Pulse num (1)	1
YO axis-Common-Offset (1)	1
YO axis-Common-Pulse direction terminal	¥2
YO axis-Common-Delayed time of pulse direction (ms)	10

YO	
Param	Value
YO axis-Common-Gear clearance positive compensation	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal
Param	Value C
YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	0
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0
Param	Value
YO axis-group 1-Pulse default speed	1000
NO axis-group 1-Acceleration time of Pulse default s	80
NO axis-group 1-Deceleration time of pulse default s	120
YO axis-group 1-Acceleration and deceleration time (ms)	0
YO axis group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	200000
YO axis-group 1-Initial speed	0
NO axis-group 1-stop speed	0
YO axis group 1-FOLLOW performance param(1-100)	50
YO axis group 1-FOLLOW forward compensation(0-100)	0
	<u> </u>

(3) Pulse data address distribution table

Address	Notes	Value
HD0	Pulse total segments (1 to 100)	4
(double word)	Pulse total segments (1 to 100)	4

	T,	
	<u> </u>	1 Pulse output
HD2 (8 words)	Reserved	0
HD10 (double words)	Pulse frequency (#1)	2000
HD12 (double		2000
word)	Pulse number (#1)	3000
	bit15~bit8: waiting condition (#1)	
	H00: pulse sending completion H01: wait time	
	H01: wait une H02: wait signal	6
	H03: ACT time	
	H04: EXT signal	
	H05: EXT signal or pulse sending completion	
HD14	bit7~bit0: waiting condition register type	256
	H00: constant	200
	H01: D	
	H02: HD	
	H03: FD	
	H04: X	
	H05: M	
	H06: HM	
HD15	Constant value/ register no. (for waiting condition)(#1)	100
double word)	constant value, register no. (for warning condition)(#1)	100
	bit7~bit0: jump register type	
	H00: constant value	
HD17	H01: D	0
	H02: HD	
	H03: FD	
HD+18	Constant value/register no. (for jump register)(#1)	0
double word)		
HD+20 double word)	Pulse frequency (#2)	2800
HD+22	Pulse number (#2)	7000
(double word)		
ID+24	Waiting condition, waiting condition register type (#2)	517
HD+25	Constant value or register no. (for waiting condition) (#2)	100
double word)	Constant value of register no. (for warting condition) (#2)	100
ID+27	Jump type, jump register type (#2)	0
ID+28	Constant value or register no. (for jump register) (#2)	0
double word)	C ···· ··· · · · · · · · · · · · · · ·	
HD+30	Pulse frequency (#3)	1200
double word)		
HD+32 (double word)	Pulse number (#3)	9999999999
uouble word)		<u> </u>

			_
HD+34	Waiting condition, waiting condition register type (#3)	768	
HD+35	Constant value or register no. (for voiting constition) (#2)	2000	
(double word)	Constant value or register no. (for waiting condition) (#3)	2000	
HD+37	Jump type, jump register type (for waiting condition) (#3)	0	
HD+38	Constant value or register no. (for iver register) (#2)	0	
(double word)	Constant value or register no. (for jump register) (#3)	0	
HD+40	Pulso frequency (#4)	3000	
(double word)	Pulse frequency (#4)	3000	
HD+42	Pulse number (#4)	00000000	
(double word)	Pulse number (#4)	9999999999	
HD+44	Waiting condition, waiting condition register type (#4)	1028	
HD+45	Constant value or register no. (for waiting condition) (#4)		
(double word)	Constant value or register no. (for waiting condition) (#4)	2	0
HD+47	Jump type, jump register type (for waiting condition) (#4)	0	<u>`</u> O.
HD+48	Constant value or register no. (for iver register) (#4)	0	
(double word)	Constant value or register no. (for jump register) (#4)	0	

(4) System parameters

		Bit1: pulse direction logic 0: positive logic, 1: negative logic, default is 0 Bit2: soft position limit		Common parameter
SFD900	Pulse parameter setting	 Bit2: soft position limit 0: OFF 1: ON, default is 0 Bit3: machine back to origin direction 0: negative direction 1: positive direction, default is 0 Bit10~ Bit8: pulse unit Bit8: 0: pulse numbers, 1: equivalent 000: pulse numbers 001: micron 011: centimillimeter 101: decimillimeter 111: millimeter Default is 000 Bit13: pulse type 0: single direction pulse 1: AB phase pulse (only for XD5-48D4T4-E), default is 0 Bit15: interpolation coordinate mode 0: cross coordinate, 1: polar 	0	parameter
		coordinate, default is 0		

		7.	
			1 Pulse output
		Bit 0: pulse sending mode	
SFD901	Pulse sending mode	0: complete mode 1: subsequence	0
		mode, default is 0	
	Pulse number/1 rotation low		
SFD902	16 bits		1
	Pulse number/1 rotation high	YX	
SFD903	16 bits		0
	Motion quantity/1 rotation		
SFD904	low 16 bits		1
	Motion quantity/1 rotation		
SFD905	high 16 bits		0
SFD906	Pulse direction terminal	Y terminal no., 0xFF is no terminal	2
SFD907	Direction delay time	Default is 20, unit: ms	20
GED 0.00	Gear clearance positive		0
SFD908	compensation		0
GED000	Gear clearance negative		
SFD909	compensation		0
SFD910	Electrical origin low 16 bits		0
SFD911	Electrical origin high 16 bits		0
		Bit0: origin signal switch state	
		Bit1: Z phase switch state	
		Bit2: positive limit switch state	
SFD912	Signal terminal state setting	Bit3: negative limit switch state	0
		0: normally open(positive logic)	
		1: normally close(negative logic)	
		default is 0	
SFD914	7 phase terminal actting	Bit0~bit7: set X terminal, 0xFF is no	0xFF
550914	Z phase terminal setting	terminal(interruption)	VXFF
		Bit7~bit0: X terminal of positive	
SFD915	Limit terminal setting	limit, 0xFF is no terminal	FFFF
517713	Emit terminal setting	Bit15~bit8: X terminal of negative	TTTT
		limit, 0xFF is no terminal	
SFD917	Clear signal CLR output	Bit0~Bit7: Y terminal, 0xFF is no	0xFF
51 0 71 /	terminal	terminal	VALT
SFD918	Returning speed VH low 16		0
51 0710	bits		U III
SFD919	Returning speed VH high 16		0
	bits		
SFD922	Crawling speed VC low 16		0
51 17722	bits		
SFD923	Crawling speed VC high 16		0
51 0725	bits		0

SFD924 Mechanical origin position low 16 bits 0 SFD925 Mechanical origin position high 16 bits 0 SFD926 Z phase numbers 0 SFD927 CLR signal delay time Default 20, unit: ms 20 SFD928 Grinding wheel radius(polar Low 16 bits 0 SFD929 coordinate) High 16 bits 0 SFD930 Soft limit positive limit value Low 16 bits 0 SFD931 Soft limit positive limit value Low 16 bits 0 SFD932 Soft limit positive limit value Low 16 bits 0 SFD933 value High 16 bits 0 SFD931 value High 16 bits 0 SFD951 Pulse default speed low 16 bits 1000 0 SFD952 Pulse default speed low 16 bits 1000 0 SFD953 Pulse default speed low 16 bits 1000 0 SFD954 Acceleration and deceleration mode 00 0 SFD955 Pulse acceleration and deceleration mode 00 0 SFD954 Nax speed limit high 16 bits 3392						
SF1925 Mechanical origin position high 16 bits 0 SF1926 Z phase numbers 0 SF1927 CLR signal delay time Default 20, unit: ms 20 SF1929 coordinate) High 16 bits 0 SF1929 coordinate) High 16 bits 0 SF1929 coordinate) Low 16 bits 0 SF1931 Soft limit positive limit value Low 16 bits 0 SF1933 value Low 16 bits 0 SF1933 value High 16 bits 0 SF1933 value High 16 bits 0 SF1950 Pulse default speed low 16 bits High 16 bits 0 SF1951 Pulse default speed low 16 bits Int will send pulse with default speed deceleration time 1000 SF1952 Pulse default speed deceleration time 100 0 0 SF1953 Pulse default speed deceleration time 100 0 0 SF1955 Pulse acceleration and deceleration time 01: S curve 10: sine curve 11: reserved Bit 15-2: reserved 3392 SF1956 Max speed limit high 16 bits 0 0	SFD924	• •	2	0		
SFD926 Z phase numbers 0 SFD927 CLR signal delay time Default 20, unit: ms 20 SFD928 Grinding wheel radius(polar Low 16 bits 0 SFD929 coordinate) High 16 bits 0 SFD931 Soft limit positive limit value Low 16 bits 0 SFD932 Soft limit negative limit Low 16 bits 0 SFD933 value High 16 bits 0 SFD930 value High 16 bits 0 SFD931 value Value 1000 SFD950 Pulse default speed low 16 bits 0 0 SFD951 Pulse default speed low 16 bits 1000 0 SFD952 Pulse default speed acceleration time 100 0 SFD953 deceleration made 100 0 0 SFD954 Acceleration and deceleration ime 0 0 0 SFD955 Pulse acceleration and deceleration mode 01: Scurve 10: since curve 11: reserved Bit 15-2: reserved Bit 15	SFD925	Mechanical origin position	07	0		
SFD927 CLR signal delay time Default 20, unit: ms 20 SFD928 Grinding wheel radius(polar Low 16 bits 0 SFD930 Soft limit positive limit value Low 16 bits 0 SFD931 Soft limit negative limit Low 16 bits 0 SFD932 Soft limit negative limit Low 16 bits 0 SFD933 value High 16 bits 0 SFD930 Soft limit negative limit Low 16 bits 0 SFD931 value High 16 bits 0 1000 0 SFD950 Pulse default speed low 16 bits 0 0 SFD951 Pulse default speed acceleration time 100 0 SFD952 acceleration time 100 0 SFD953 Pulse default speed default speed deceleration time 100 0 SFD954 Acceleration and deceleration made 0 0 SFD955 Pulse acceleration and deceleration made 01: S curve 10: sine curve 11: reserved 0 SFD955 Max speed limit low 16 bits 0 3392 3392 3592	SFD926	<u> </u>		0		
SFD928 Grinding wheel radius(polar Low 16 bits 0 SFD920 coordinate) High 16 bits 0 SFD930 Soft limit positive limit value Low 16 bits 0 SFD931 Soft limit negative limit Low 16 bits 0 SFD932 Soft limit negative limit Low 16 bits 0 SFD933 value High 16 bits 0 O High 16 bits 0 SFD933 value High 16 bits 0 O It will send pulse with default speed 0 Pulse default speed high 16 bits It will send pulse with default speed 0 SFD951 Pulse default speed high 16 bits It will send pulse with default speed 0 SFD953 deceleration time 100 0 SFD954 Acceleration and deceleration mode Bit 1-0: acc/dec mode 00: line 0 SFD955 Pulse acceleration and deceleration mode Bit 15-2: reserved Bit 15-2: reserved 3392 SFD955 Max speed limit hole 16 bits 0 3392 SFD956 Max speed limit hole 16 bits 0	SFD927	-	Default 20, unit: ms	20		
SFD929 coordinate) High 16 bits 0 SFD930 Soft limit positive limit value Low 16 bits 0 SFD932 Soft limit negative limit Low 16 bits 0 SFD933 value High 16 bits 0 SFD933 value High 16 bits 0 Iou 16 bits 0 SFD950 Pulse default speed low 16 bits 1000 0 SFD951 Pulse default speed high 16 bits 1000 0 SFD952 Pulse default speed low 16 bits 1000 0 SFD953 Pulse default speed low 16 bits 1000 0 SFD954 Acceleration time 1000 0 SFD955 Pulse default speed low 16 bits 100 0 SFD954 Acceleration and deceleration time 0 0 0 SFD955 Pulse acceleration and deceleration time 0 0 0 SFD955 Max speed limit low 16 bits 3392 3392 3392 SFD956 Max speed limit high 16 bits 0 0 0 SFD956 Initial speed high 1	SFD928			0		
SFD930 SFD931 Soft limit positive limit value Low 16 bits 0 SFD932 Soft limit negative limit Low 16 bits 0 SFD933 value High 16 bits 0 SFD933 value Low 16 bits 0 SFD933 value Low 16 bits 0 Juse default speed low 16 bits 0 0 SFD950 Pulse default speed high 16 bits 1000 0 SFD952 acceleration time 100 0 SFD953 Pulse default speed default speed deceleration time 100 0 SFD954 Acceleration and deceleration made 00: fine 0 SFD955 Pulse acceleration and deceleration mode 01: S curve 0 SFD956 Max speed limit low 16 bits 0 3392 SFD957 Max speed limit low 16 bits 3392 SFD958 Initial speed low 16 bits 0 SFD950 Initial speed low 16 bits 0 SFD950 Stop speed high 16 bits 0 SFD951 Initial speed low 16 bits 0 SFD950 Stop speed high 16	SFD929	e e	High 16 bits	0		
SF1931 Implified bits 0 SFD932 Soft limit negative limit Low 16 bits 0 SFD933 value High 16 bits 0 1000 SFD950 Pulse default speed low 16 bits 1000 0 SFD951 Pulse default speed high 16 bits It will send pulse with default speed when the speed is 0. 0 SFD952 Pulse default speed acceleration time 100 0 SFD953 Pulse default speed deceleration time 100 SFD954 Acceleration and deceleration mode 0 SFD955 Pulse acceleration and deceleration mode 0 SFD956 Max speed limit low 16 bits 3392 SFD957 Max speed limit high 16 bits 0 SFD958 Initial speed loy 16 bits 0 SFD954 Stop speed high 16 bits 0 SFD955 Initial speed loy 16 bits 0 SFD956 Stop speed high 16 bits 0 SFD951 Follow performance parameters 1~100,100 means the time constant is non tick, 1 means the time constant is non tick, 1 means the time constant is non tick. 50 SFD966 Follow feedforward compensation 0~100, percentage 0	SFD930		-	0		
SFD933valueHigh 16 bits0SFD950Pulse default speed low 16 bits10000SFD951Pulse default speed ligh 16 bitsIt will send pulse with default speed when the speed is 0.00SFD952Pulse default speed acceleration time1000SFD953Pulse default speed acceleration time1000SFD954Acceleration time00SFD955Acceleration and deceleration mode00SFD956Max speed limit low 16 bits0SFD957Max speed limit low 16 bits3392SFD957Max speed limit low 16 bits0SFD958Initial speed low 16 bits0SFD950Stop speed low 16 bits0SFD951Stop speed limit 16 bits0SFD952Follow performance parameters1~100, 100 means the time constant is one tick, 1 means the time constant is to0 tick.SFD961Follow feedforward compensation0~100, percentage0	SFD931	Soft limit positive limit value	High 16 bits	0		
SFD933valueHigh 16 bits0SFD950Pulse default speed low 16 bitsIt will send pulse with default speed when the speed is 0.1000OSFD951Pulse default speed acceleration time1000OSFD952Pulse default speed acceleration time100100SFD953Pulse default speed deceleration time1000SFD954Acceleration time deceleration time00SFD955Pulse acceleration and deceleration mode00SFD956Max speed limit low 16 bitsBit 1-0: acc/dec mode 00: line 01: S curve 11: reserved Bit 15~2: reserved0SFD955Initial speed limit high 16 bits3392SFD956Max speed limit high 16 bits0SFD950Initial speed limit 16 bits0SFD951Stop speed high 16 bits0SFD961Stop speed high 16 bits0SFD962Follow parameters1~100, 100 means the time constant is not tick.0SFD963Follow parameters0~100, percentage0	SFD932	Soft limit negative limit	Low 16 bits	0		
Image: SFD950 Pulse default speed low 16 bits It will send pulse with default speed when the speed is 0. It will send pulse with default speed 0 SFD951 Pulse default speed high 16 bits It will send pulse with default speed 0 0 SFD952 Pulse default speed default speed acceleration time 100 0 SFD953 Pulse default speed deceleration time 100 0 SFD954 Acceleration and deceleration time 0 0 SFD955 Pulse acceleration and deceleration mode 01: S curve 0 SFD956 Max speed limit low 16 bits 3392 SFD957 Max speed limit low 16 bits 0 SFD958 Initial speed low 16 bits 0 SFD959 Initial speed high 16 bits 0 SFD950 Stop speed high 16 bits 0 SFD951 Follow performance parameters 0 SFD962 Follow feedforward compensation 0 SFD963 Follow feedforward compensation 0	SFD933	-	High 16 bits	0	4	
SFD951 Pulse default speed high 16 bits twill send pulse with default speed when the speed is 0. 0 SFD952 Pulse default speed acceleration time 100 100 SFD953 Pulse default speed default speed deceleration time 100 100 SFD954 Acceleration and deceleration time 0 0 SFD954 Acceleration and deceleration time 0 0 SFD955 Max speed limit low 16 bits Bit 1~0: cac/dec mode 00: line 0 SFD956 Max speed limit low 16 bits 0 3392 SFD957 Max speed limit high 16 bits 3 3 SFD959 Initial speed low 16 bits 0 3392 SFD950 Initial speed low 16 bits 0 3392 SFD950 Stop speed low 16 bits 0 0 SFD950 Initial speed high 16 bits 0 0 SFD961 Stop speed high 16 bits 0 0 SFD962 Follow performance parameters 1~100, 100 means the time constant is one tick, 1 means the time constant is o					•	Cor
SFD951Pulse default speed right is bitsit will send pulse with default speed when the speed is 0.0SFD952Pulse default speed acceleration time100SFD953deceleration time100deceleration time0SFD954Acceleration and deceleration time0SFD955Pulse acceleration and deceleration mode01: S curve 11: reserved Bit 15~2: reserved0SFD956Max speed limit low 16 bits3392SFD957Max speed limit high 16 bits0SFD958Initial speed low 16 bits0SFD959Initial speed high 16 bits0SFD960Stop speed high 16 bits0SFD961Stop speed high 16 bits0SFD962Follow performance parameters1~100, 100 means the time constant is 100 tick.50SFD963Follow performance parameters0~100, percentage0	SFD950	-		1000	Group	3
SFD952acceleration time100SFD953Pulse default speed deceleration time100SFD954Acceleration	SFD951	1 0		0	1	
SFD953deceleration time100SFD954Acceleration time0Acceleration time0Bit 1~0: acc/dec mode 00: line0O0Pulse acceleration and deceleration mode01: S curve 10: sine curve 11: reserved Bit 15~2: reserved0SFD955Max speed limit low 16 bits3392SFD956Max speed limit high 16 bits3SFD957Max speed limit high 16 bits0SFD958Initial speed low 16 bits0SFD959Initial speed low 16 bits0SFD960Stop speed low 16 bits0SFD961Stop speed high 16 bits0SFD962Follow performance parameters1~100, 100 means the time constant is one tick, 1 means the time constant is 100 tick.50SFD963Follow feedforward compensation0SFD963Follow feedforward compensation0	SFD952	1		100		
SFD954 deceleration time Image: SFD954 Bit 1~0: acc/dec mode 00: line 00: line 00: line 01: S curve 10: sine curve 11: reserved Bit 15~2: reserved Bit 15~2: reserved Pulse acceleration mode 10: sine curve 11: reserved Bit 15~2: reserved SFD956 Max speed limit low 16 bits Image: SFD957 Max speed limit low 16 bits 3392 SFD957 Max speed limit low 16 bits Image: SFD958 Initial speed low 16 bits Image: SFD959 SFD959 Initial speed low 16 bits Image: SFD959 Image: SFD959 Image: SFD959 Image: SFD959 SFD950 Stop speed low 16 bits Image: SFD959 Image: SFD959 Image: SFD959 Image: SFD959 SFD951 Stop speed low 16 bits Image: SFD959 Image: SFD959 Image: SFD959 Image: SFD959 SFD952 Follow performance parameters Image: Image: SFD959 Image: Image: SFD959 Image: Image: Image: SFD959 Image: Image: SFD959 Image: Image: SFD959 Image:	SFD953	1		100		
SFD955 Pulse acceleration mode 00: line 01: S curve 10: sine curve 11: reserved Bit 15~2: reserved 0 SFD956 Max speed limit low 16 bits 3392 SFD957 Max speed limit high 16 bits 3392 SFD958 Initial speed low 16 bits 0 SFD959 Initial speed low 16 bits 0 SFD950 Stop speed low 16 bits 0 SFD961 Stop speed low 16 bits 0 SFD962 Follow performance parameters 1~100, 100 means the time constant is one tick, 1 means the time constant is one tick, 1 means the time constant is one tick, 1 means the time constant is ono tick. 50 SFD963 Follow feedforward compensation 0~100, percentage 0	SFD954			0		
SFD957Max speed limit high 16 bits3SFD958Initial speed low 16 bits0SFD959Initial speed high 16 bits0SFD960Stop speed low 16 bits0SFD961Stop speed high 16 bits0SFD962Follow performance parameters1~100, 100 means the time constant is one tick, 1 means the time constant is 100 tick.SFD963Follow feedforward compensation0	SFD955		00: line 01: S curve 10: sine curve 11: reserved	0		
SFD958Initial speed low 16 bits0SFD959Initial speed high 16 bits0SFD960Stop speed low 16 bits0SFD961Stop speed high 16 bits0SFD962Follow performance parameters1~100, 100 means the time constant is one tick, 1 means the time constant is 100 tick.50SFD963Follow feedforward compensation0	SFD956	Max speed limit low 16 bits		3392		
SFD959Initial speed high 16 bits0SFD960Stop speed low 16 bits0SFD961Stop speed high 16 bits0SFD962Follow performance parameters1~100, 100 means the time constant is one tick, 1 means the time constant is 100 tick.50SFD963Follow feedforward compensation0	SFD957	Max speed limit high 16 bits		3		
$ \begin{array}{c c c c c c c c } \hline SFD960 & Stop speed low 16 bits & 0 \\ \hline SFD961 & Stop speed high 16 bits & 0 \\ \hline SFD962 & Follow & performance \\ parameters & & 1^{-100, 100 means the time constant is \\ one tick, 1 means the time constant is \\ 100 tick. & 0 \\ \hline SFD963 & Follow & feedforward \\ compensation & 0^{-100, percentage} & 0 \\ \hline \end{array} $	SFD958	Initial speed low 16 bits		0		
SFD961 Stop speed high 16 bits 0 SFD962 Follow performance parameters 1~100, 100 means the time constant is one tick, 1 means the time constant is 100 tick. 50 SFD963 Follow feedforward compensation 0~100, percentage 0	SFD959	Initial speed high 16 bits		0		
SFD962 Follow performance parameters 1~100, 100 means the time constant is one tick, 1 means the time constant is 100 tick. SFD963 Follow feedforward compensation 0	SFD960	Stop speed low 16 bits		0		
SFD962 Follow performance parameters 1~100, 100 means the time constant is one tick, 1 means the time constant is 100 tick. SFD963 Follow feedforward compensation 0	SFD961			0		
SFD963 compensation 0~100, percentage		Follow performance	one tick, 1 means the time constant is	50		
	SFD963		0~100, percentage	0		
	•••					

Un.

Note:

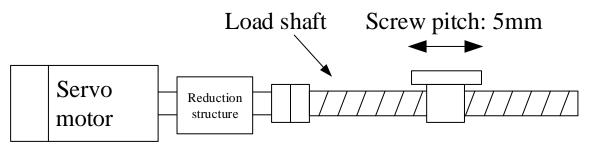
- *1: As there are many configuration parameters of PLSR, we suggest to use software configuration table to set the parameters.
- *2: if user needs to set each segment pulse frequency and pulse numbers in the HMI, please configure through the configuration table first, then use instruction DMOV in the program to set the registers (S0+N*10+0, S0+N*10+2). For example:

1 OI CAUII	ipie.		
DMOV	HD200	HD10	//HD200 set segment 1 pulse frequency in HMI
DMOV	HD202	HD12	//HD202 set segment 1 pulse numbers in HMI
DMOV	HD204	HD20	//HD204 set segment 2 pulse frequency in HMI
DMOV	HD206	HD22	//HD206 set segment 2 pulse numbers in HMI
DMOV	HD208	HD30	//HD208 set segment 3 pulse frequency in HMI
DMOV	HD210	HD32	//HD210 set segment 3 pulse numbers in HMI
DMOV	HD212	HD40	//HD212 set segment 4 pulse frequency in HMI
DMOV	HD214	HD42	//HD214 set segment 4 pulse numbers in HMI

al.com It can also set pulse frequency and numbers in registers HD10, HD12, HD20, HD22, HD30, HD32, HD40, HD42 directly in the HMI.

Example 4

There is a transmission mechanism which includes one servo drive (electronic gear ratio is 1:1), one servo motor (encoder is 2500ppr), it connects the ball screw through a reducer (the reduction ratio is 1:2), the ball screw pitch is 10mm, the ball screw drives a working table which can move left and right. Now it needs to move the table from left to right for 200mm, then move in reverse direction for 200mm, the speed is 20mm/s, acceleration time is 100ms, deceleration time is 200ms, the pulse direction terminal is Y2.



Mechanical structure

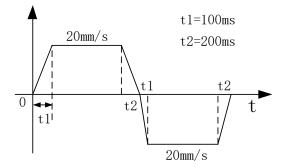
Pulse number per rotate =
$$20000 = 2500 * 4 * \frac{2}{1}$$

Motion quantity per rotate= pitch = 10mm

$$20 \text{mm/s} = \frac{20 \text{mm}}{10 \text{mm}} * 20000 = 40000 \text{ pulse/s}$$

The max pulse output frequency is 40K/s, less than 200K/s, the PLC can run well. Cau.com

Pulse curve \triangleright



Pulse instruction \geq

M0					
	PLSR	HD0	HD100	K1	Y0

Pulse configuration \triangleright

(1) Pulse segment configuration

multi section pulse output					×						
data start a mode:		ss: HD0 user params address: relative v start execute section count: Upwards Downwards		HD100 system params: K1 0 Config		output: Y0					
Add D		frequence	ownward	pulse count		wait condition			it ster	jump register]
1		20		200		lse sending comp		K	-	KO	
▶ 2		20		-200	րս	lse sending comp	lete	K	D	KO	
used space: HD0-HD29,HD100-HD103 Read From PLC Write To PLC OK Cancel											

Relative mode

		r	multi section pu	ilse output		×	
data start address:	HD0	user params addres	ss: HD100	system params: K1	output: Y0		
mode:	absolut 🗸 start execute section count:			Config			
Add Delete	Upwards D	ownwards		C	2.		
	frequence	pulse	count	wait condition	wait register	jump register	
1	20	20)0 թա	lse sending complete	KO	ко	
▶ 2	20	() թմ	pulse sending complete KO			
						Co	
used space: HD	0-HD29,HD10	0-HD103	Read	From PLC Write To P	LC OK	Cancel	
			Absolute 1	node			100

Absolute mode

Param	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to	negative
YO axis-Common-Parameters setting-Pulse unit	1mm
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete
YO axis-Common-Pulse num (1)	20000
YO axis-Common-1mm(revolve)	10
YO axis-Common-Pulse direction terminal	¥2
YO axis-Common-Delayed time of pulse direction (ms)	10

Param	Value
YO axis-Common-Gear clearance positive compensation	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal

Param	Value
YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0
Param	Value
YO axis-group 1-Pulse default speed	20
YO axis-group 1-Acceleration time of Pulse default s	100
YO axis-group 1-Deceleration time of pulse default s	200

Param	Value
YO axis-group 1-Pulse default speed	20
YO axis-group 1-Acceleration time of Pulse default s	100
YO axis-group 1-Deceleration time of pulse default s	200
YO axis-group 1-Acceleration and deceleration time (ms)	0
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	100
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0
YO axis-group 1-FOLLOW performance param(1-100)	50
YO axis-group 1-FOLLOW forward compensation(0-100)	0

(3) Pulse data address distribution table

Address	Notes	Value
HD0	Pulse total segments (1 to 100)	2
(double word)		2
HD2 (8 words)	Reserved	0
HD10	Pulse frequency (#1)	20
(double words)	Turse nequency (#1)	20
HD12 (double	\mathbf{Pulse} number (#1)	200
word)	Pulse number (#1)	200
	bit15~bit8: waiting condition (#1)	
	H00: pulse sending completion	
	H01: wait time	
HD14	H02: wait signal	0
111/14	H03: ACT time	0
	H04: EXT signal	
	H05: EXT signal or pulse sending completion	
	bit7~bit0: waiting condition register type	

	E.	1 Pulse output	
	H00: constant H01: D H02: HD H03: FD H04: X H05: M H06: HM		
HD15 (double word)	Constant value/ register no. (for waiting condition)(#1)	0	
HD17	bit7~bit0: jump register type H00: constant value H01: D H02: HD H03: FD	0	C
HD+18 (double word)	Constant value/register no. (for jump register)(#1)	0	
HD+20 (double word)	Pulse frequency (#2)	20	
HD+22 (double word)	Pulse number (#2)	-200	
HD+24	Waiting condition, waiting condition register type (#2)	0	
HD+25 (double word)	Constant value or register no. (for waiting condition) (#2)	0	
HD+27	Jump type, jump register type (#2)	0	
HD+28 (double word)	Constant value or register no. (for jump register) (#2)	0	

(4) System parameters

			1 Pulse o	utput
				-
SFD900	Pulse parameter setting	Bit 1: pulse direction logic 0: positive logic 1: negative logic, default is 0 Bit 2: use soft limit function 0: not use 1: use default is 0 Bit 3: mechanical return to origin direction 0: negative direction 1: positive direction default is 0 Bit 10~8: pulse unit Bit8: 0: pulse number 1: equivalent	1792	Common parameter
		000: pulse number 001: 1 um 011: 0.01mm 101: 0.1mm 111: 1 mm Default is 000 Bit15: interpolation coordinate mode 0: cross coordinate 1: polar coordinate Default is 0		Ç
SFD901	Pulse sending mode	Bit 0: pulse sending mode 0: complete mode 1: subsequence mode, default is 0	0	
SFD902	Pulse number/1 rotation low 16 bits		20000	
SFD903	Pulse number/1 rotation high 16 bits		20000	
SFD904	Motion quantity/1 rotation low 16 bits		10	
SFD905	Motion quantity/1 rotation high 16 bits		10	
SFD906	Pulse direction terminal	Y terminal no., 0xFF is no terminal	2	
SFD907	Direction delay time	Default is 20, unit: ms	20	
SFD908	Gear clearance positive compensation		0	
SFD909	Gear clearance negative compensation		0	
SFD910	Electrical origin low 16 bits		0	
SFD911	Electrical origin high 16 bits		0	

		U.			
			1 Pulse	output	
SFD912	Signal terminal state setting	Bit0: origin signal switch state Bit1: Z phase switch state Bit2: positive limit switch state Bit3: negative limit switch state 0: normally open(positive logic) 1: normally close(negative logic) default is 0	0		
SFD914	Z phase terminal setting	Bit0~bit7: set X terminal, 0xFF is no terminal(interruption)	0xFF		
SFD915	Limit terminal setting	Bit7~bit0: X terminal of positive limit, 0xFF is no terminal Bit15~bit8: X terminal of negative limit, 0xFF is no terminal	FFFF	PC.	
SFD917	Clear signal CLR output terminal	Bit0~Bit7: Y terminal, 0xFF is no terminal	0xFF		
SFD918	Returning speed VH low 16 bits		0		
SFD919	Returning speed VH high 16 bits		0		
SFD922	Crawling speed VC low 16 bits		0		
SFD923	Crawling speed VC high 16 bits		0		
SFD924	Mechanical origin position low 16 bits		0		
SFD925	Mechanical origin position high 16 bits		0		
SFD926	Z phase numbers		0		
SFD927	CLR signal delay time	Default 20, unit: ms	20		
SFD928	Grinding wheel radius(polar	Low 16 bits	0		
SFD929	coordinate)	High 16 bits	0		
SFD930		Low 16 bits	0		
SFD931	Soft limit positive limit value	High 16 bits	0		
SFD932	Soft limit negative limit	Low 16 bits	0		
SFD933	value	High 16 bits	0		
			-		
				\vdash	
SFD950	Pulse default speed low 16 bits		20	Group 1	
SFD951	Pulse default speed high 16 bits	It will send pulse with default speed when the speed is 0.	0	1	
SFD952	Pulse default speed acceleration time		100		

SFD953	Pulse default speed deceleration time	2	200		
SFD954	Acceleration time and deceleration time	97	0		
SFD955	Pulse acceleration and deceleration mode	Bit 1~0: acc/dec mode 00: line 01: S curve 10: sine curve 11: reserved Bit 15~2: reserved	0		
SFD956	Max speed limit low 16 bits		100		
SFD957	Max speed limit high 16 bits		0		
SFD958	Initial speed low 16 bits		0	· • •	
SFD959	Initial speed high 16 bits		0		•
SFD960	Stop speed low 16 bits		0		5
SFD961	Stop speed high 16 bits		0		
SFD962	Follow performance parameters	$1\sim100$, 100 means the time constant is one tick, 1 means the time constant is 100 tick.	50		
SFD963	Follow feedforward compensation	0~100, percentage	0		
•••					

Note:

- ※1: As there are many configuration parameters of PLSR, we suggest to use software configuration table to set the parameters.
- *2: if user needs to set each segment pulse frequency and pulse numbers in the HMI, please configure through the configuration table first, then use instruction DMOV in the program to set the registers (S0+N*10+0, S0+N*10+2).

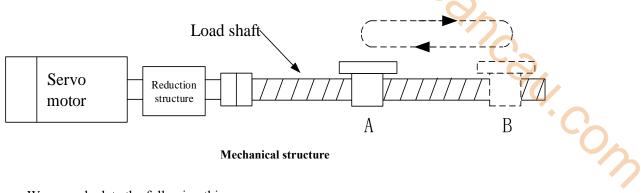
For example:

DMOV	HD200	HD10	//HD200 set segment 1 pulse frequency in HMI
DMOV	HD202	HD12	//HD202 set segment 1 pulse numbers in HMI
DMOV	HD204	HD20	//HD204 set segment 2 pulse frequency in HMI
DMOV	HD206	HD22	//HD206 set segment 2 pulse numbers in HMI

It can also set pulse frequency and numbers in registers HD10, HD12, HD20, HD22 directly in the HMI.

Example 5

There is a transmission mechanism which includes one servo drive (electronic gear ratio is 1:1), one servo motor (encoder is 2500ppr), it connects the ball screw through a reducer (the reduction ratio is 1:2), the ball screw pitch is 5mm, the ball screw drives a working table which can move left and right. Now it needs to move forth and back on the table, A to B distance is 200mm, A to B speed is 20mm/s, B to A speed is 30mm/s, acceleration time is 100ms, deceleration time is 200ms, the pulse direction terminal is Y2, the mechanical clearance of A to B to A is 3mm, B to A to B is 2mm.



Mechanical structure

We can calculate the following things:

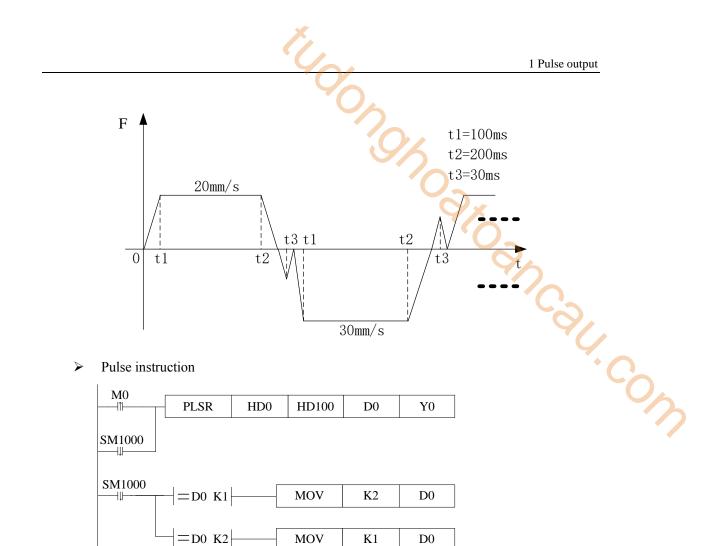
Pulse number per rotate= $20000 = 2500 * 4 * \frac{2}{1}$

Moving quantity= pitch = 5mm

$$20 \text{ mm/s} = \frac{20 \text{ mm}}{5 \text{ mm}} * 20000 = 80000 \text{ pulse/s}$$
$$30 \text{ mm/s} = \frac{30 \text{ mm}}{5 \text{ mm}} * 20000 = 120000 \text{ pulse/s}$$

As the acceleration and deceleration time for forward motion and reverse motion is same, but the max frequency is different, so their acceleration and deceleration slope is different. Forward acceleration slope: 80000Hz/100ms, forward deceleration slope: 80000Hz/200ms. Reverse acceleration slope: 120000Hz/100ms, reverse deceleration slope: 120000Hz/200ms. We needs to set two groups of parameter as there are two groups of acc/dec slope. The max frequency is 40K/s and 120K/s, less than 200K/s, so PLC can work normally.

Pulse curve



- Pulse data configuration
- (1) Pulse segment configuration

				multi sec	ction pu	Ilse output				
data start i	address: HD0)	user pa	rams address:	HD100	system params:	K1	output:	YO	
mode:	relat	tive ∨	start exe	ecute section count:	0	Config				
Add D	elete Upwa	rds Do	wnward	ls						
	freq	uence		pulse count		wait condition		wa regi	it ster	jump register
1	20			200	թվ	lse sending com	plete	KO		KO
▶ 2	3	0		-200	թո	lse sending com	plete	К	D	KO
sed space	HD0-HD2	9 HD100	HD103		Read	From PLC W	/rite To PLC		ОК	Cancel

Relative mode

											_	
data start i	address:	HD0	user par	rams address:	HD100	system params:	K1	output:	YO		_	
mode:		absolut v	start exe	ecute section count:	0	Config						
Add D	elete l	Jpwards De	ownward	ls				S,				
		frequence		pulse count		wait condition		wa regi		jump register		
1		20		200	րո	se sending com	lete	KU		KO		
▶ 2		30		0	րո	se sending com	lete	KO		KO		
										Co		•
sed space	: HDO	HD29,HD10	0-HD103		Read	From PLC W	ite To PLC		ок	Cancel		C
				Ab	solute r	node						0

Absolute mode

ve logic
2
/e
coordi
te

Param	Value
YO axis-Common-Gear clearance positive compensation	3
YO axis-Common-Gear clearance negative compensation	2
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal

Param	Value
YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0
Param	Value
YO axis-group 1-Pulse default speed	20
YO axis-group 1-Acceleration time of Pulse default s	100
VD evis-group 1-Deceleration time of pulse default s	200

ly ----

Param	Value
YO axis-group 1-Pulse default speed	20
YO axis-group 1-Acceleration time of Pulse default s	100
YO axis-group 1-Deceleration time of pulse default s	200
YO axis-group 1-Acceleration and deceleration time (ms)	30
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	50
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0
YO axis-group 1-FOLLOW performance param(1-100)	50
YO axis-group 1-FOLLOW forward compensation(0-100)	0
	1

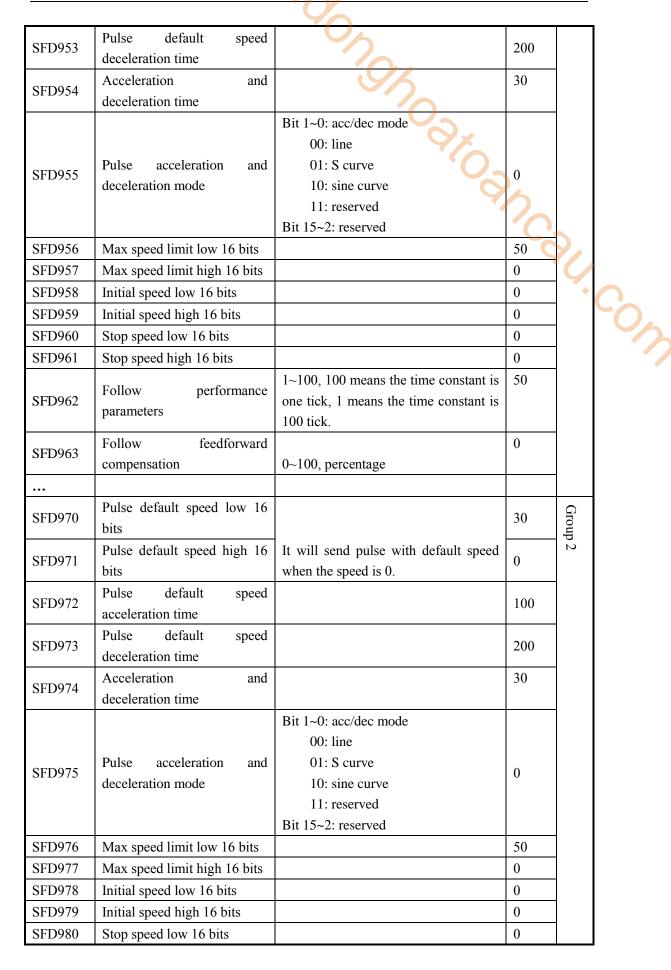
Param	Value
YO axis-group 2-Pulse default speed	30
YO axis-group 2-Acceleration time of Pulse default s	100
YO axis-group 2-Deceleration time of pulse default s	200
YO axis-group 2-Acceleration and deceleration time (ms)	30
YO axis-group 2-pulse acc/dec mode	linear acc/dec
YO axis-group 2-Max speed	50
YO axis-group 2-Initial speed	0
YO axis-group 2-stop speed	0
YO axis-group 2-FOLLOW performance param(1-100)	50
YO axis-group 2-FOLLOW forward compensation(0-100)	0

(3) Pulse data	address distribution table(relative mode)		I
Address	Notes	Value	
HD0	Pulse total segments (1 to 100)	2	
(double word)	Turse total segments (T to 100)	2	
HD2 (8 words)	Reserved	0	
HD10	Pulse frequency (#1)	20	
(double words)	Pulse frequency (#1)	20	
HD12 (double	Dulse number (#1)	200	
word)	Pulse number (#1)	200	
	bit15~bit8: waiting condition (#1)		
	H00: pulse sending completion		
	H01: wait time		
	H02: wait signal	•	
	H03: ACT time		0,
	H04: EXT signal		
	H05: EXT signal or pulse sending completion		
HD14	bit7~bit0: waiting condition register type	0	
	H00: constant		
	H01: D		
	H02: HD		
	H03: FD		
	H04: X		
	H05: M		
	H06: HM		
HD15			
(double word)	Constant value/ register no. (for waiting condition)(#1)	0	
	bit7~bit0: jump register type		
	H00: constant value		
HD17	H01: D	0	
	H02: HD		
	H03: FD		
HD+18			
(double word)	Constant value/register no. (for jump register)(#1)	0	
HD+20			
(double word)	Pulse frequency (#2)	20	
HD+22	Pulse number (#2)	-200	
(double word)			
HD+24	Waiting condition, waiting condition register type (#2)	0	
HD+25		~	
(double word)	Constant value or register no. (for waiting condition) (#2)	0	
HD+27	Jump type, jump register type (#2)	0	
HD+27 HD+28		· ·	
(double word)	Constant value or register no. (for jump register) (#2)	0	

(3) Pulse data address distribution table(relative mode)

			1 Pulse outpu	t
		10		_
(4) S	ystem parameters			-
SFD900	Pulse parameter setting	Bit 1: pulse direction logic 0: positive logic 1: negative logic, default is 0 Bit 2: use soft limit function 0: not use 1: use default is 0 Bit 3: mechanical return to origin direction 0: negative direction 1: positive direction default is 0 Bit 10~8: pulse unit Bit8: 0: pulse number 1: equivalent 000: pulse number 001: 1 um 011: 0.01mm 101: 0.1mm 111: 1 mm Default is 000 Bit15: interpolation coordinate mode 0: cross coordinate 1: polar coordinate Default is 0	Common parameter 1792	Con
SFD901	Pulse sending mode	Bit 0: pulse sending mode 0: complete mode 1: subsequence mode, default is 0	0	
SFD902	Pulse number/1 rotation low 16 bits		20000	
SFD903	Pulse number/1 rotation high 16 bits		0	
SFD904	Motion quantity/1 rotation low 16 bits		5	
SFD905	Motion quantity/1 rotation high 16 bits		0	
SFD906	Pulse direction terminal	Y terminal no., 0xFF is no terminal	2	
SFD907	Direction delay time	Default is 20, unit: ms	20	
SFD908	Gear clearance positive compensation		0	
SFD909	Gear clearance negative compensation		0	
SFD910	Electrical origin low 16 bits		0	
SFD911	Electrical origin high 16 bits		0	

		Č.			
			1 Pulse	output	
SFD912	Signal terminal state setting	Bit0: origin signal switch state Bit1: Z phase switch state Bit2: positive limit switch state Bit3: negative limit switch state 0: normally open(positive logic) 1: normally close(negative logic) default is 0	0		
SFD914	Z phase terminal setting	Bit0~bit7: set X terminal, 0xFF is no terminal(interruption)	0xFF		
SFD915	Limit terminal setting	Bit7~bit0: X terminal of positive limit, 0xFF is no terminal Bit15~bit8: X terminal of negative limit, 0xFF is no terminal	FFFF	PC.	
SFD917	Clear signal CLR output terminal	Bit0~Bit7: Y terminal, 0xFF is no terminal	0xFF		0
SFD918	Returning speed VH low 16 bits		0		
SFD919	Returning speed VH high 16 bits		0		
SFD922	Crawling speed VC low 16 bits		0		
SFD923	Crawling speed VC high 16 bits		0		
SFD924	Mechanical origin position low 16 bits		0		
SFD925	Mechanical origin position high 16 bits		0		
SFD926	Z phase numbers		0		
SFD927	CLR signal delay time	Default 20, unit: ms	20		
SFD928	Grinding wheel radius(polar	Low 16 bits	0		
SFD929	coordinate)	High 16 bits	0		
SFD930		Low 16 bits	0		
SFD931	Soft limit positive limit value	High 16 bits	0		
SFD932	Soft limit negative limit	Low 16 bits	0		
SFD933	value	High 16 bits	0		
SFD950	Pulse default speed low 16 bits		20	Group 1	
SFD951	Pulse default speed high 16 bits	It will send pulse with default speed when the speed is 0.	0) 1	
SFD952	Pulse default speed acceleration time		100		





2017

· · · · · · · · · · · · · · · · · · ·			
SFD981	Stop speed high 16 bits		0
SFD982	Follow performance parameters	$1\sim100$, 100 means the time constant is one tick, 1 means the time constant is 100 tick.	50
SFD983	Follow feedforward compensation	0~100, percentage	0
•••		·O.	

Note:

- * 1: As there are many configuration parameters of PLSR, we suggest to use software configuration table to set the parameters.
- *2: if user needs to set each segment pulse frequency and pulse numbers in the HMI, please configure through the configuration table first, then use instruction DMOV in the program to set the registers (S0+N*10+0, S0+N*10+2).

For example:

DMOV	HD200	HD10	//HD200 set segment 1 pulse frequency in HMI
DMOV	HD202	HD12	//HD202 set segment 1 pulse numbers in HMI
DMOV	HD204	HD20	//HD204 set segment 2 pulse frequency in HMI
DMOV	HD206	HD22	//HD206 set segment 2 pulse numbers in HMI

It can also set pulse frequency and numbers in registers HD10, HD12, HD20, HD22 directly in the HMI.

1-2-3. Variable frequency pulse output [PLSF]

Instruction summarization

Variable frequency pulse output instruction.

Variable free	quency pulse output [PLSF]		
16-bit	-	32-bit instruction	PLSF
Execution	Normally open/close coil	Suitable mode	XD, XL (except XD1, XL1)
condition			
Hardware	-	Software	-

Operand

Operand	Function	Туре
S0	Pulse frequency	32-bit, double word
S 1	System parameters (1 to 4)	32-bit, double word
D	Pulse output terminal	Bit

· com

Suitable soft component

										-		
word	Operand				Sys	tem)/_	Constant	Mod	lule
		D^*	FD	TD^*	CD*	DX	DY	DM*	DS*	K/H	D	QD
	SO	•	•	•	•	•	•	•	•	•		
	S1	•	•							·Ox		
			•					•				
bit	Operand				Syster	n					~	
		Х	Y	M*	S^*	Τ*	C*	Dnm				6
	D		•									1

*Note: D means D, HD. TD means TD, HTD. CD means CD, HCD, HSCD, HSD. DM means DM, DHM. DS means DS, DHS. M means M, HM, SM. S means S, HS. T means T, HT. C means C, HC.

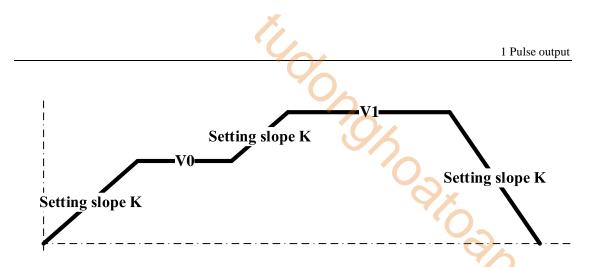
Function and action

Instruction mode:

M0		S0 .	S1 .	<u>D.</u>
	PLSF	HD0	K1	Y0
SM1000				
	RST	M0		

- Frequency range: 1Hz ~100KHz or -100KHz ~ -1Hz (note: PLC can output 100~200KHz pulse, but we cannot ensure all the servo drive can work fine, please connect 500 Ω resistor between output terminal and 24V power supply)
- When the frequency is positive, it outputs pulse in forward direction, when the frequency is negative, it outputs pulse in reverse direction
- Pulse direction terminal is set in system parameters
- The pulse frequency outputting from Y terminal will change as the S0 value
- HSD0 (double word) is cumulative pulse numbers, HSD2 (double word) is cumulative equivalents
- The frequency jump (acceleration/deceleration) will dynamic adjust as pulse rising or falling slope (refer to chapter 1-2-1-3)
- The system parameters are same to PLSR, refer to chapter 1-2-1-3

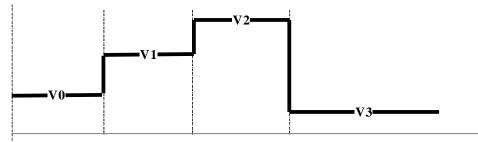
Output mode



- The pulse output terminal is set in system parameters (refer to chapter 6-2-1-3)
- When the frequency is positive, it outputs pulse in forward direction, when the frequency is negative, it outputs pulse in reverse direction
- When S0 is 0, PLSF stop pulse outputting.
- It will dynamic adjust pulse curve according to pulse slope and setting frequency. If the setting frequency is 0, pulse will stop outputting. And it will output pulses when setting frequency is non-zero value.

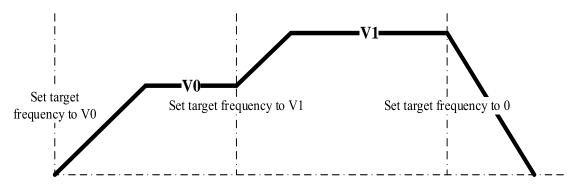


(A) Pulse default speed acceleration deceleration time is 0 The pulse frequency will change as setting frequency.



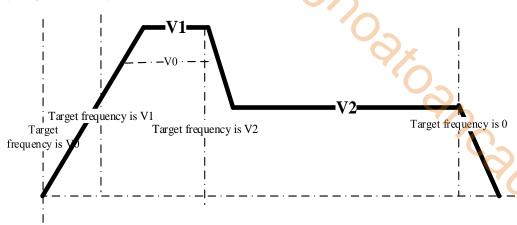
(B) Pulse default speed acceleration deceleration time is not 0

(1) the pulse is in stable segment when user setting new frequency, it will switch to setting frequency through the slope.



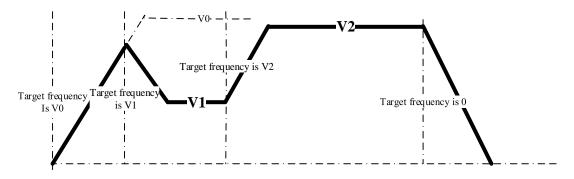
'on

(2) the pulse is not in stable segment when user setting new frequency, it will switch to setting frequency through the slope. (present setting frequency > last time setting frequency, takes present setting frequency as target).



User set target frequency V1 (V1>V0) before reaching setting frequency V0, at this time, it will go to new setting frequency V1 as the slope.

(3) the pulse is not in stable segment when user setting new frequency, it will switch to setting frequency through the slope. (present setting frequency < last time setting frequency, and present setting frequency < present frequency). setting frequency as target).



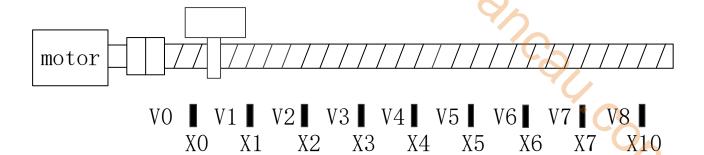
User set target frequency V1 (V1<V0, V1<present frequency) before reaching setting frequency V0, at this time, it will go to new setting frequency V1 as the down slope.

Example 1

As below diagram, the working table needs to move from left to right position X10. Now the position X0 to X10 all installed proximity switch. The speed from left to X0 is V0, X0 to X1 speed is V1, X1 to X2 speed is V2, X2 to X3 speed is V3, X3 to X4 speed is V4, X4 to X5 speed is V5, X5 to X6 speed is V6, X6 to X7 speed is V7, X7 to X10 speed is V8. Acceleration/deceleration slope is 1000Hz/100ms. Pulse direction terminal is Y2.

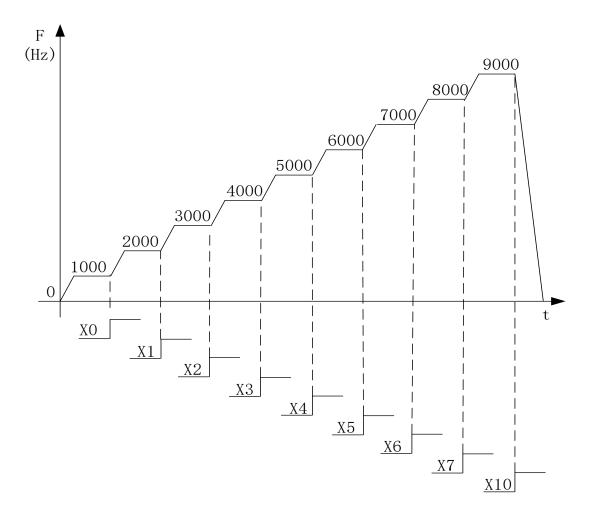


_						
	No.	Speed name	Speed	No.	Speed name	speed
	1	V0	1000Hz	6	V5	6000Hz
	2	V1	2000Hz	7	V6	7000Hz
	3	V2	3000Hz	8	V 7	8000Hz
	4	V3	4000Hz	9	V8	9000Hz
	5	V4	5000Hz			



Mechanical structure

Pulse curve



⊳ Pulse instruction

		C	4		1 Pulse output
se instruction			Ç	0	
	DMOV	K1000	HD0	\mathbf{H}	Q _A
M0 PLSF	HD0	K1	Y0]	O A x
X0 ↑	DMOV	K2000	HD0		Q x
	DMOV	K3000	HD0		°O _N
X2 ↑	DMOV	K4000	HD0		
X3	DMOV	K5000	HD0]	Cal
X4 ↑	DMOV	K6000	HD0		
X5 	DMOV	K7000	HD0	\square	×.0
X6 	DMOV	K8000	HD0		Con
	DMOV	K9000	HD0		
X10 		(1	10 R)		

- Software configuration ≻
- (1) Pulse segment configuration

			variable free	quency out	put		×	ĸ
Г							1	
L	Pulse frequence address:	HD0	System params:	К1	Output:	YO		
	Pulse frequence(HZ):	0				Config		
	used space:		Read From	PLC Wri	te To PLC	ОК	Cancel	

Ľ,

(2) System parameter configuration (relative mode)

Param	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to	negative
YO axis-Common-Parameters setting-Pulse unit	pulse number
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete
YO axis-Common-Pulse num (1)	1
YO axis-Common-Offset (1)	1
YO axis-Common-Pulse direction terminal	¥2
YO axis-Common-Delayed time of pulse direction (ms)	10

	· O _A	
Pa	ram	Value
ΥО :	axis-Common-Gear clearance positive compensation	0
ΥО -	axis-Common-Gear clearance negative compensation	0
ΥО :	axis-Common-Electrical origin position	0
YO :	axis=Common=signal terminal switch state setting=	normally on
ΥО :	axis=Common=signal terminal switch state setting=	normally on
ΥО :	axis=Common=signal terminal switch state setting=	normally on
ΥО :	axis=Common=signal terminal switch state setting=	normally on
YO :	axis-Common-Far-point signal terminal setting	X no terminal
YO :	axis-Common-Z phase terminal setting	X no terminal
YO :	axis-Common-positive limit terminal setting	X no terminal

YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal
Param	Value
YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	0
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0

Param	Value
YO axis-group 1-Pulse default speed	1000
YO axis-group 1-Acceleration time of Pulse default s	100
YO axis-group 1-Deceleration time of pulse default s	100
YO axis-group 1-Acceleration and deceleration time (ms)	0
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	200000
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0
YO axis-group 1-FOLLOW performance param(1-100)	50
YO axis-group 1-FOLLOW forward compensation(0-100)	0

(3) System parameters address:

		Ú.,		
			1 Pulse outp	out
SFD900	Pulse parameter setting	Bit 1: pulse direction logic 0: positive logic 1: negative logic, default is 0 Bit 2: use soft limit function 0: not use 1: use default is 0 Bit 3: mechanical return to origin direction 0: negative direction 1: positive direction default is 0 Bit 10~8: pulse unit Bit8: 0: pulse number 1: equivalent 000: pulse number 001: 1 um 011: 0.01mm 101: 0.1mm 111: 1 mm Default is 000 Bit15: interpolation coordinate mode 0: cross coordinate 1: polar coordinate Default is 0	Common parameter	
SFD901	Pulse sending mode	Bit 0: pulse sending mode 0: complete mode 1: subsequence mode, default is 0		
SFD902	Pulse number/1 rotation low 16 bits		0	
SFD903	Pulse number/1 rotation high 16 bits		0	
SFD904	Motion quantity/1 rotation low 16 bits		0	
SFD905	Motion quantity/1 rotation high 16 bits		0	
SFD906	Pulse direction terminal	Y terminal no., 0xFF is no terminal	2	
SFD907	Direction delay time	Default is 20, unit: ms	20	
SFD908	Gear clearance positive compensation		0	
SFD909	Gear clearance negative compensation		0	
SFD910	Electrical origin low 16 bits		0	
SFD911	Electrical origin high 16 bits		0	

		Č,		
		9	1 Pulse	output
	-			1
SFD912	Signal terminal state setting	 Bit0: origin signal switch state Bit1: Z phase switch state Bit2: positive limit switch state Bit3: negative limit switch state 0: normally open(positive logic) 1: normally close(negative logic) default is 0 	0	
SFD914	Z phase terminal setting	Bit0~bit7: set X terminal, 0xFF is no terminal(interruption)	0xFF	
SFD915	Limit terminal setting	Bit7~bit0: X terminal of positive limit, 0xFF is no terminal Bit15~bit8: X terminal of negative limit, 0xFF is no terminal	FFFF	Q.
SFD917	Clear signal CLR output terminal	Bit0~Bit7: Y terminal, 0xFF is no terminal	0xFF	
SFD918	Returning speed VH low 16 bits		0	
SFD919	Returning speed VH high 16 bits		0	
SFD922	Crawling speed VC low 16 bits		0	
SFD923	Crawling speed VC high 16 bits		0	
SFD924	Mechanical origin position low 16 bits		0	
SFD925	Mechanical origin position high 16 bits		0	
SFD926	Z phase numbers		0	
SFD927	CLR signal delay time	Default 20, unit: ms	20	
FD928	Grinding wheel radius(polar	Low 16 bits	2	1
SFD929	coordinate)	High 16 bits	0	1
SFD930		Low 16 bits	0	1
SFD931	Soft limit positive limit value	High 16 bits	0	
SFD932	Soft limit negative limit	Low 16 bits	0	
SFD933	value	High 16 bits	0	
••				
SFD950	Pulse default speed low 16 bits		1000	Group 1
SFD951	Pulse default speed high 16 bits	It will send pulse with default speed when the speed is 0.	0	5 1
SFD952	Pulse default speed acceleration time		100	

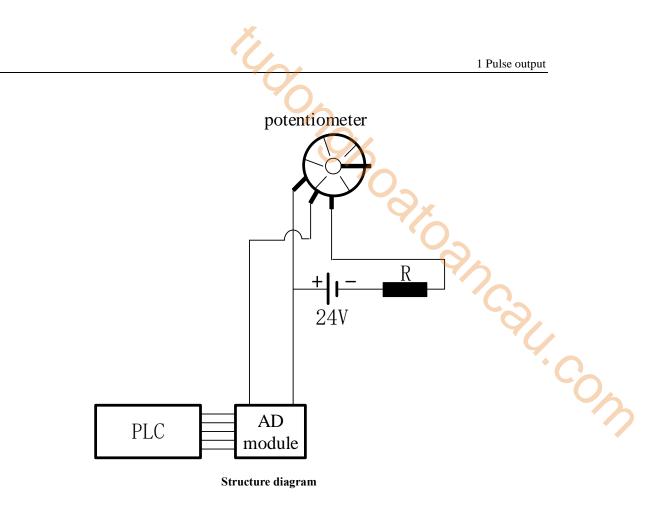
SFD953	Pulse default speed		100		
	deceleration time				
SFD954	Acceleration and		0		
51 0754	deceleration time				
		Bit 1~0: acc/dec mode			
		00: line			
SFD955	Pulse acceleration and	01: S curve	0		
SFD955	deceleration mode	10: sine curve	0		
		11: reserved			
		Bit 15~2: reserved	C.		
SFD956	Max speed limit low 16 bits		3392		
SFD957	Max speed limit high 16 bits		3		
SFD958	Initial speed low 16 bits		0	•	\mathbf{O}
SFD959	Initial speed high 16 bits		0		
SFD960	Stop speed low 16 bits		0		
SFD961	Stop speed high 16 bits		0		
		$1 \sim 100$, 100 means the time constant is	0		
SFD962	Follow performance	one tick, 1 means the time constant is			
	parameters	100 tick.			
	Follow feedforward		0		
SFD963	compensation	0~100, percentage			
•••					

Note:

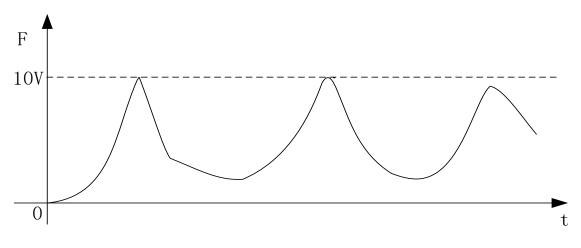
※ 1: As there are many configuration parameters of PLSF, we suggest to use software configuration table to set the parameters.

Example 2

As below diagram, the AD module collects 0-10V voltage signal and transforms to digital value 0-16383, this value will be sent to PLSF pulse frequency register, and PLC will output the pulse curve changing as the voltage signal.

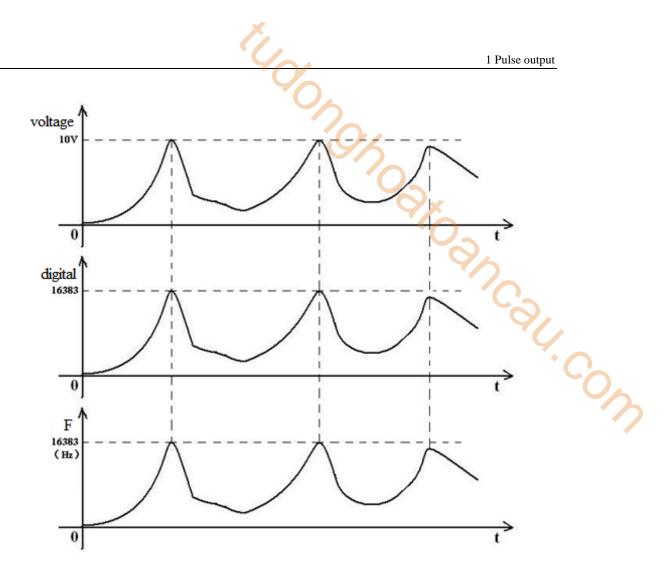


For example: the output signal of potentiometer is shown as below:



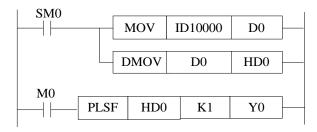
voltage signal diagram

The transformed digital value is 0 to 16383 of 0-10V voltage signal, which means the pulse frequency is $0\sim16383$ Hz (because of the response problem, PLSF acceleration deceleration time is 0). The relationship of voltage signal, digital value and pulse output frequency is shown as below diagram:





Pulse instruction



- > Software configuration
- (1) Pulse segment configuration

			variable free	quency out	put			×
Г								
L	Pulse frequence address:	HD0	System params:	К1	Output:	Y0		
L	Pulse frequence(HZ):	0				Config		
L	used space:		Read From	PLC Wri	te To PLC	ОК	Cancel	

(2) System parameters (relative mode)

Param	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to.	negative
YO axis-Common-Parameters setting-Pulse unit	pulse number
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete
YO axis-Common-Pulse num (1)	1
YO axis-Common-Offset (1)	1
YO axis-Common-Pulse direction terminal	¥2
YO axis-Common-Delayed time of pulse direction (ms)	10
D	Velue C
Param	Value
YO axis-Common-Gear clearance positive compensation	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0

Param	Value
YO axis-Common-Gear clearance positive compensation	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal

Param	Value
YO axis-Common-negative limit terminal setting	X no terminal
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	0
YO axis-Common-Creeping speed VC	0
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	0
YO axis-Common-CLR signal delayed time (ms)	20
YO axis-Common-grinding wheel radius(polar)	0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0

Param	Value
YO axis-group 1-Pulse default speed	0
YO axis-group 1-Acceleration time of Pulse default s	0
YO axis-group 1-Deceleration time of pulse default s	0
YO axis-group 1-Acceleration and deceleration time (ms)	0
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	200000
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0
YO axis-group 1-FOLLOW performance param(1-100)	50
YO axis-group 1-FOLLOW forward compensation(0-100)	0

Note:

id. Com %1: As there are many configuration parameters of PLSF, we suggest to use software configuration table to set the parameters.

1-2-4. Relative single segment positioning [DRVI]

■ Instruction overview

Relative single segment positioning pulse instruction.

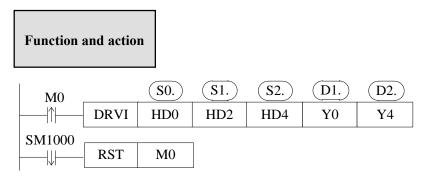
Relative sing	gle segment positioning [DRVI]		
16-bit	-	32-bit	DRVI
instruction		instruction	
Execution	Rising/falling edge coil	Suitable	XD, XL (except XD1, XL1)
condition		model	
Hardware	V3.3.1 and up	Software	V3.3 and up

Operand

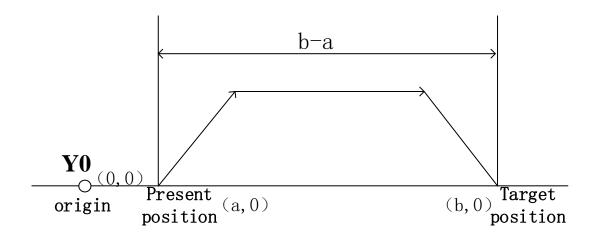
Operand	Function	Туре
S0	Pulse numbers or soft component address	32-bit, BIN
S1	Pulse frequency or soft component address	32-bit, BIN
S2	Pulse acceleration/deceleration time or soft	32-bit, BIN
	component address	
D0	Pulse output terminal	Bit
D1	Pulse direction terminal	Bit

Suitable soft component

Word Operand					Sys	stem		10		Constant	Modul	e		
	D^*	FD) Т	D*	CD^*	DX	X DY	DM*	DS*	K/H	ID	QD		
SO	•	•	•		•	•	•	•	•	•				
S1	•	•	•		•	•	•	•	•	·Ox				
S2	•	•	•		•	•	•	•	•	•				
Operand				Syst	em					C	3			
Bit	Х	Y	M*	S^*	T*	C*	Dnm					2		
D1		•									•	(C).		
D2		•										Ç		
ote: D means D, HD.	TD m	eans '	TD, H	ITD.	CD n	neans	CD, HC		CD, HS .ns T, I	SD. DM mea		DHM.	(2



- Pulse frequency output range:1Hz ~100KHz (note: PLC can output 100~200KHz pulse, but we cannot ensure all the servo drive can work fine, please connect 500Ω resistor between output terminal and 24V power supply)
- Pulse numbers: K-2,147,483,648 ~ K2,147,483,647; negative value means output pulse in reverse direction.
- Relative driving mode: move from the present position (the distance between present position and target position), HSD0, HSD2, HSD4, HSD6..... are the reference point.

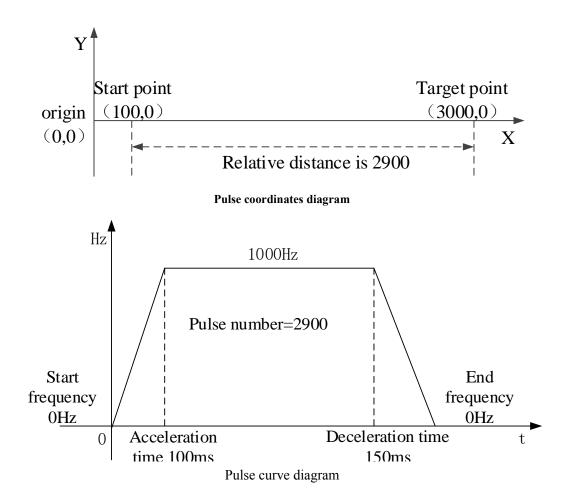


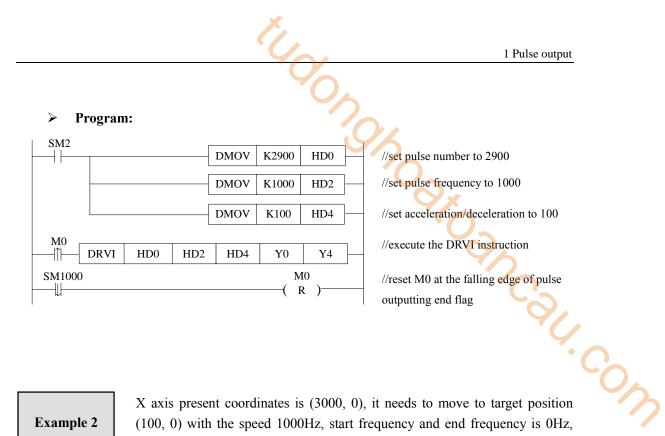
Con,

- The pulse number is accumulated in register HSD0 (double word).
- The pulse frequency can be real-time changed when the instruction is executing, the new frequency will be effective at once. (PLC firmware v3.4.5 and up can support)
- The acceleration and deceleration time is same for DRVI instruction.
- The direction of relative positioning instruction depends on S0 (pulse number), if the number of pulses is set to a positive value, the pulse is sent in forward direction and the accumulative pulse register (HSD0, HSD4...) value increases; if the number of pulses is set to a negative value, the pulse is sent in reverse direction and the accumulative pulse register (HSD0, HSD4...) value decreases.
- DRVI does not use the system parameter block configuration mode, if the public and the first set of parameters (except the deceleration parameters) are configured, they will be effective for DRVI.

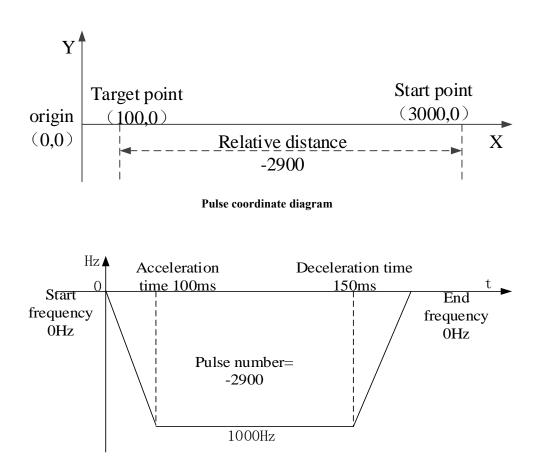
Example 1

X axis present coordinates is (100, 0), it needs to move to target position (3000, 0) with the speed 1000Hz, start frequency and end frequency is 0Hz, pulse output terminal is Y0, direction terminal is Y4. As HSD0(dword) present value is 100, the relative distance from target position 3000 to present position 100 is 3000-100=2900. The execution diagram of DRVI is shown as below:

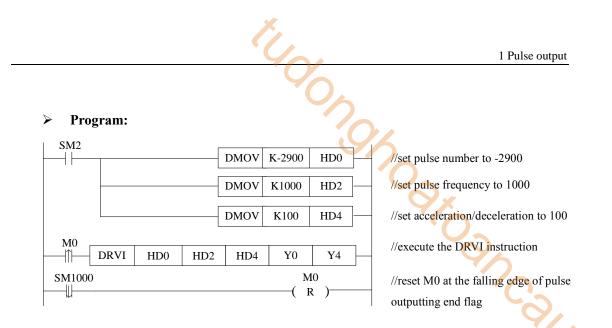




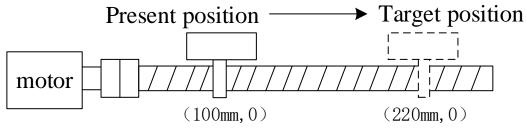
X axis present coordinates is (3000, 0), it needs to move to target position (100, 0) with the speed 1000Hz, start frequency and end frequency is 0Hz, pulse output terminal is Y0, direction terminal is Y4. As HSD0(dword) present value is 3000, the relative distance from target position 100 to present position 3000 is 100-3000=-2900. The execution diagram of DRVI is shown as below:



Pulse curve diagram

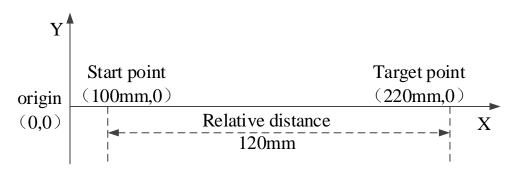


There is a ball screw workbench, the motor has 5000 pulses per circle, X axis present coordinate is (100mm, 0), start speed and end speed is 0mm/s, it needs to reach the target position (220mm, 0) with the speed 15000 (30mm/s), the pulse output terminal is Y0, pulse direction terminal is Y4,as the accumulated pulse number register HSD0 present value is 50000 (100mm), the relative distance from target position 110000 (220mm) to present position 50000 (100mm) is 60000=110000-50000. The execution diagram of DRVI is shown as below:

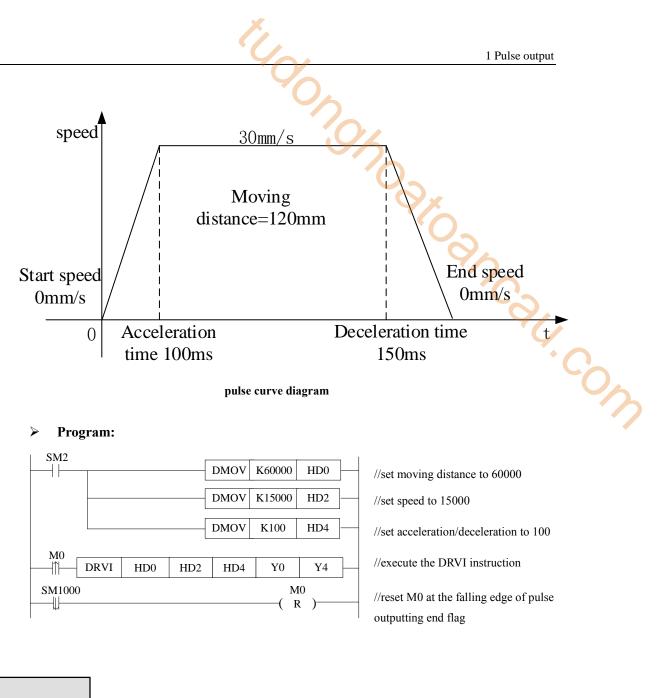


Ball screw pitch: 10mm

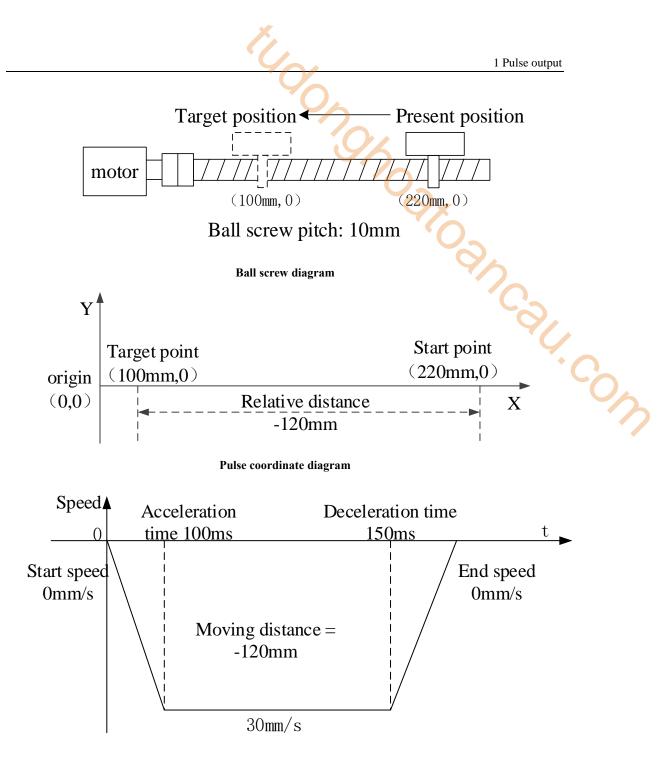
Ball srew diagram



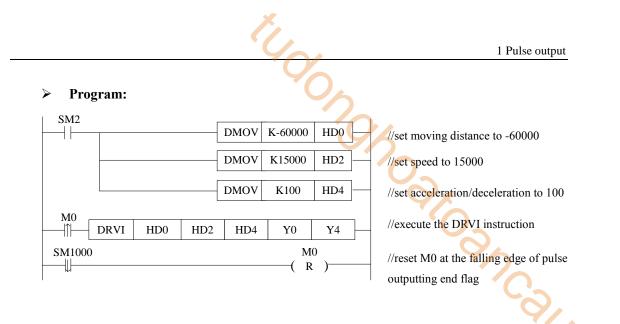
Pulse coordinate diagram



There is a ball screw workbench, the motor has 5000 pulses per circle, X axis present coordinate is (220mm, 0), start speed and end speed is 0mm/s, it needs to reach the target position (100mm, 0) with the speed 15000 (30mm/s), the pulse output terminal is Y0, pulse direction terminal is Y4,as the accumulated pulse number register HSD0 present value is 110000 (220mm), the relative distance from target position 50000 (100mm) to present position 110000 (220mm) is -60000=50000-110000. The execution diagram of DRVI is shown as below:



Pulse curve diagram



1-2-5. Absolute single-segment positioning [DRVA]

1. Instruction summarization

Absolute single-segment positioning instruction.

Absolute sin	Absolute single-segment positioning [DRVA]							
16-bit	-	32-bit	DRVA					
instruction		instruction						
Execution	Rising/falling edge of the coil	Suitable	XD, XL (except XD1, XL1)					
condition		model						
Hardware	V3.3.1 and up	Software	V3.3 and up					

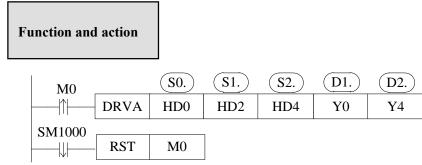
2. operand

Operand	Function	Туре
S0	Output pulse numbers register address	32-bit, BIN
S 1	Output pulse frequency register address	32-bit, BIN
S2	Pulse acceleration/deceleration time register	32-bit, BIN
	address	
D0	Pulse output terminal	Bit
D1	Pulse output direction	Bit

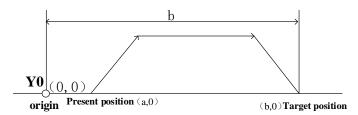
3. Suitable soft component

word	Operand					Syst	em				Constant	Mod	lule
		D^*	FD	П	D *	CD^*	DX	DY	DM*	DS*	K/H	D	QD
	S0	•	•	•		•	•	•		•	•		
	S1	•	•	•		•	•	•	•	•	•		
							1						
	S2	•	•	•		•	•	٠	•	•	•••		
Bit	S2 Operand	•	•	•	Sy	vstem	•	•	•	•	•0,	20	
Bit		• X	• Y	• M*	Sy S*		• C*	• Dn.m	•	•	• •		2
Bit					-	vstem		• Dnm	•	•).	

*Note: D means D, HD. TD means TD, HTD. CD means CD, HCD, HSCD, HSD. DM means DM, DHM. DS means DS, DHS. M means M, HM, SM. S means S, HS. T means T, HT. C means C, HC.



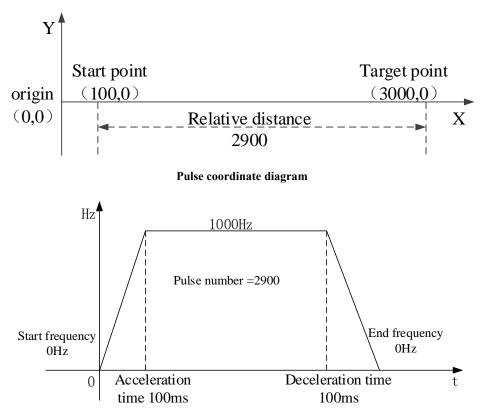
- Pulse frequency output range:1Hz ~100KHz (note: PLC can output 100~200KHz pulse, but we cannot ensure all the servo drive can work fine, please connect 500 Ω resistor between output terminal and 24V power supply)
- Pulse numbers: K-2,147,483,648 ~ K2,147,483,647; negative value means output pulse in reverse direction.
- Absolute driving mode: move from the origin point (the distance between origin position and target position), origin point is the reference point.



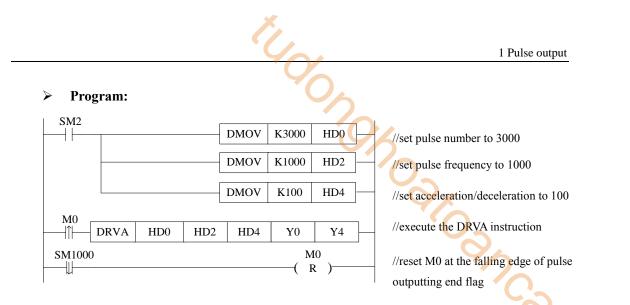
- DRVA does not use the system parameter block configuration mode, if the public and the first set of parameters (except the deceleration parameters) are configured, they will be effective for DRVA.
- The pulse number is accumulated in register HSD0 (double word).
- The pulse frequency can be real-time changed when the instruction is executing, the new frequency will be effective at once. (PLC firmware v3.4.5 and up can support)

- The acceleration and deceleration time is same for DRVA instruction.
- The direction of absolute positioning instruction depends on whether the target position is larger than present position, if the target position is larger than present position(the target position is on the right of present position on the axis), the pulse is sent in forward direction and the accumulative pulse register (HSD0, HSD4...) value increases; if the target position is smaller than present position(the target position is on the left of present position on the axis), the pulse is sent in reverse direction and the accumulative pulse register (HSD0, HSD4...) value decreases, if the target position is equal to present position(the target position overlaps present position on the axis), it will not send pulse.
- When S0 parameters are same to pulse accumulated register HSD0, SM1000 will not act, no falling edge.

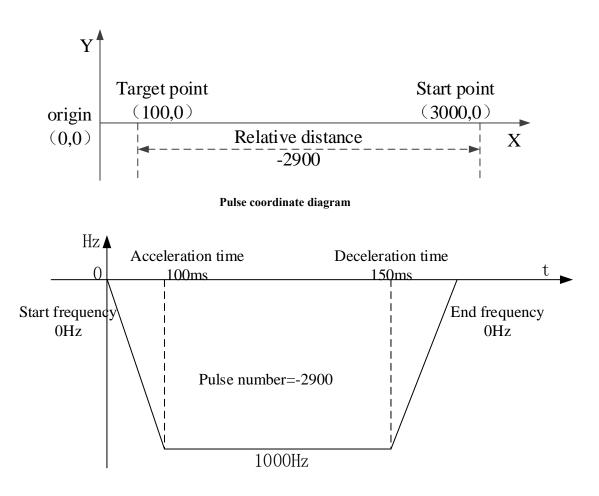
X axis present coordinates is (100, 0), it needs to move to target position (3000, 0) with the speed 1000Hz, start frequency and end frequency is 0Hz, pulse output terminal is Y0, direction terminal is Y4. As HSD0(dword) present value is 100, the target position is 3000, target position is larger than present position, send forward direction pulse, the execution diagram of DRVA is shown as below:



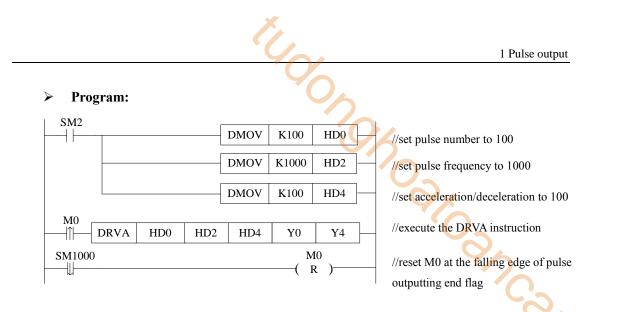
Pulse curve diagram



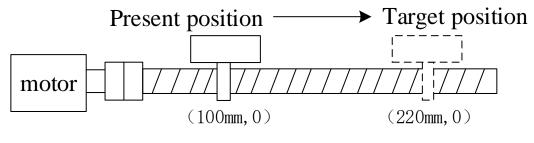
X axis present coordinates is (3000, 0), it needs to move to target position (100, 0) with the speed 1000Hz, start frequency and end frequency is 0Hz, pulse output terminal is Y0, direction terminal is Y4. As HSD0(dword) present value is 3000, the target position is 100, present position is 3000, the relative ditance is 100-3000=-2900, the execution diagram of DRVA is shown as below:



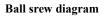
Pulse curve diagram

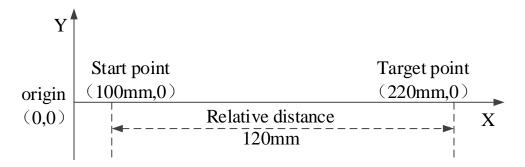


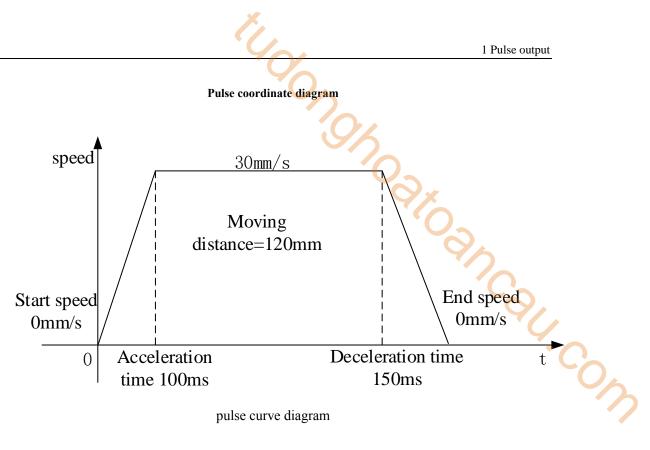
There is a ball screw workbench, the motor has 5000 pulses per circle, X axis present coordinate is (100mm, 0), start speed and end speed is 0mm/s, it needs to reach the target position (220mm, 0) with the speed 15000 (30mm/s), the pulse output terminal is Y0, pulse direction terminal is Y4, as the accumulated pulse number register HSD0 present value is 50000 (100mm), the relative distance from target position 110000 (220mm) to present position 50000 (100mm) is 60000=110000-50000. The execution diagram of DRVA is shown as below:



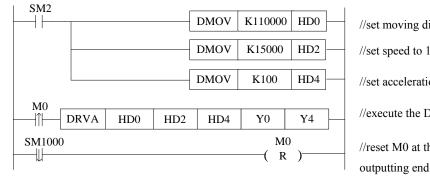
Ball screw pitch: 10mm







Program: \geq



//set moving distance to 110000

//set speed to 15000

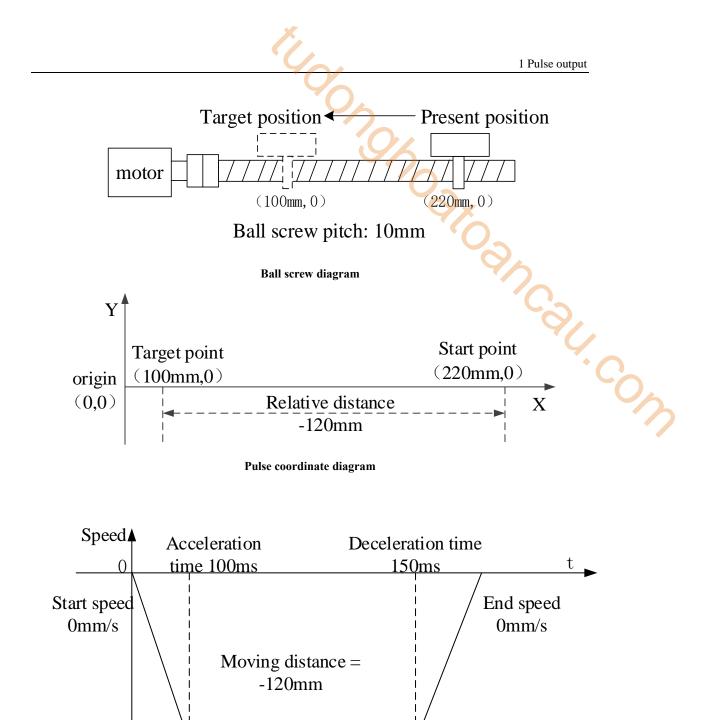
//set acceleration/deceleration to 100

//execute the DRVA instruction

//reset M0 at the falling edge of pulse outputting end flag

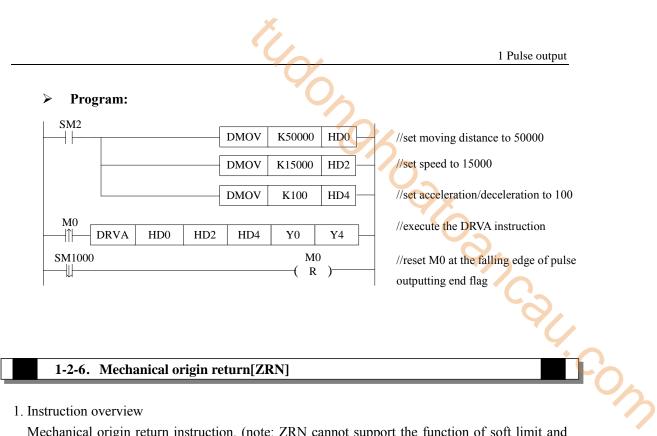
Example 4

There is a ball screw workbench, the motor has 5000 pulses per circle, X axis present coordinate is (220mm, 0), start speed and end speed is 0mm/s, it needs to reach the target position (100mm, 0) with the speed 15000 (30mm/s), the pulse output terminal is Y0, pulse direction terminal is Y4, as the accumulated pulse number register HSD0 present value is 110000 (220mm), the relative distance from target position 50000 (100mm) to present position 110000 (220mm) is -60000=50000-110000. The execution diagram of DRVA is shown as below:



Pulse curve diagram

mm/s



1-2-6. Mechanical origin return[ZRN]

1. Instruction overview

Mechanical origin return instruction. (note: ZRN cannot support the function of soft limit and origin auxiliary signal)

Mechanical origin return [ZRN]							
16-bit		32-bit	ZRN				
instruction		instruction					
Execution	Rising/falling edge of the coil	Suitable	XD, XL (except XD1, XL1)				
condition		model					
Hardware	-	Software	-				

2. Operand

Operand	Function	Туре
S	System parameter block address	32-bit, double words
D	Pulse output terminal	Bit

3. Suitable soft component

ord	Operand					System	m				Constant	Moc	Module	
		D^*	FD	TD^*	С	D* I	DX	DY	DM*	DS^*	K/H	ID	QD	
	S	•	•	•	•		•	•	•	•	•			
					<u> </u>							•		
Bit	Operand				Syste	em								
Bit	Operand	X	Y	M*	· · ·	1	C*	Dnn	1					

*Note: D means D, HD. TD means TD, HTD. CD means CD, HCD, HSCD, HSD. DM means DM, DHM.

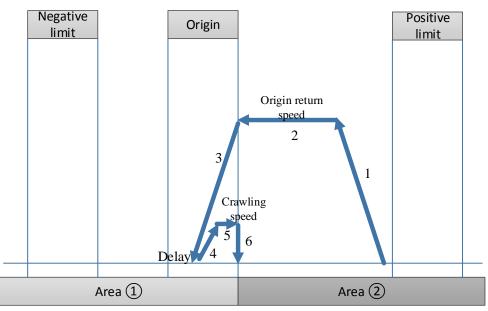
DS means DS, DHS. M means M, HM, SM. S means S, HS. T means T, HT. C means C, HC.

Function :	and action		
M0		S·	D
	ZRN	K1	Y0

- The system parameter block please refer to chapter 1-2-1-3. •
- ZRN instruction panel configuration is shown as below:

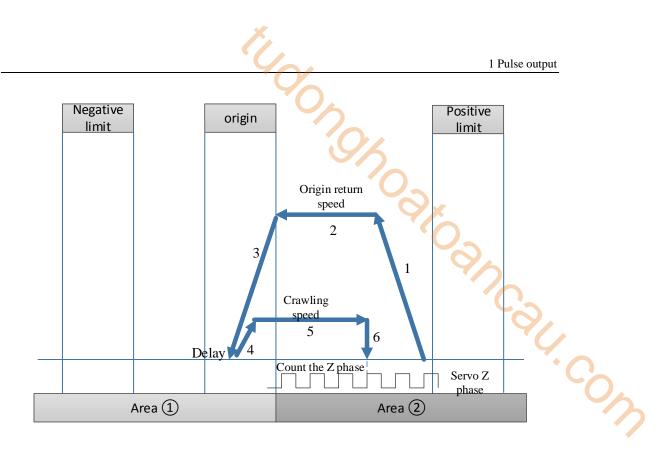
	1 Pulse output
n Oh	
$ \begin{array}{c c} \hline S \cdot & \hline D \\ \hline K1 & Y0 \\ \hline \end{array} \\ \hline meter block please refer to chapter 1-2-1-3. \\ panel configuration is shown as below: \\ \hline \end{array} $	ax an
Mechanical origin regression(ZRN) System params: D0 Output: Y0 Pulse config OK Cancel	

Mechanical origin returning diagram:



Note:

If setting the servo Z phase, it starts to count the Z phase signal at the monment of leaving the origin signal with crawling speed (5), it stops mechanical origin return instruction after Z phase signal counting reached, please see below diagram:



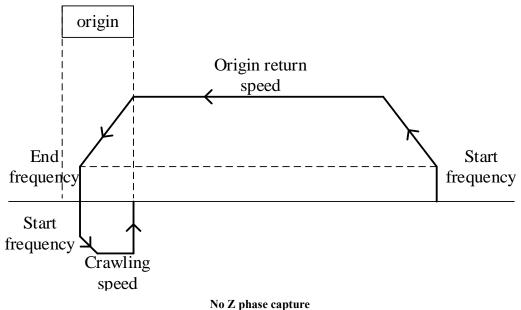
• Mechanical origin return movement

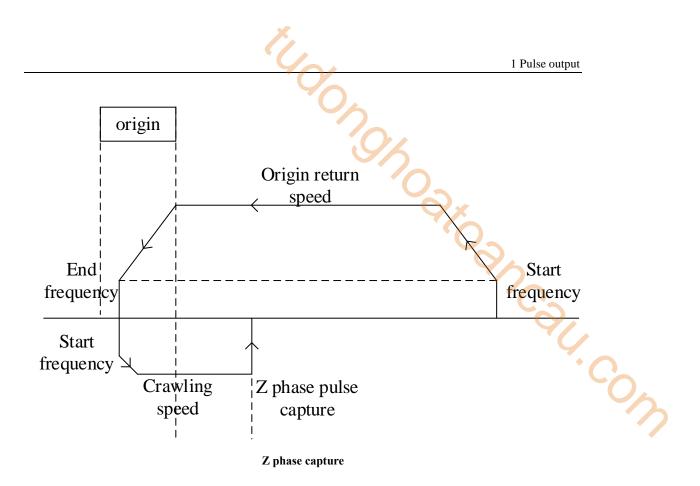
(1) when the origin return starts, it accelerates as the acceleration slope, after reaching the origin return speed, it will move towards origin return direction with this speed.

(2) when it meets the rising edge of origin signal, it will decelerate with deceleration slope until stop(frequency =0).

(3) delay(direction delay time in SFD), then accelerate with acceleration slope until reaching the crawling speed, it stops origin return action at the moment of leaving the origin signal falling edge (if setting the Z phase pulse, it starts counting the Z phase after leaving the origin signal falling edge, it will stop origin return action after the counting value reached).

(4) if setting the origin return clear signal CLR, it will output CLR signal and delay (the CLR signal delay time in SFD, CLR signal can be used to clear the servo motor error counter), finally, copy the mechanical origin position to present position and the origin return action finished.





Mechanical origin input terminal positive/negative logic (normally on/off) setting:

PLC1 - Pulse Set		×
Config 🗸 Delete init axis config guide		
Param SFD912 bit0	Value	^
YO axis-Common-Delayed time of pulse direction (ms)	10	
YO axis-Common-Gear clearance positive compensation	0	
YO axis-Common-Gear clearance negative compensation	0	
YO axis-Common-Electrical origin position	0	
YO axis-Common-signal terminal switch state setting-Far-point	normally	1
YO axis-Common-signal terminal switch state setting-Z phase sw	normally	
YO axis-Common-signal terminal switch state setting-positive 1	normally	
YO axis-Common-signal terminal switch state setting-negative 1	normally	
YO axis-Common-Far-point signal terminal setting	X no ter	
YO axis-Common-Z phase terminal setting	X no ter	
<		~
Read From PLC Write To PLC OK (Cancel	

Mechanical orgin return setting notes:

The origin signal terminal can select all input points on the PLC; However, if the selected input

point is the external interrupt terminal on the PLC, the process of returning to the mechanical origin will be processed according to the interrupt, so as to further improve the accuracy of returning to the mechanical origin (it will not be affected if Z phase is used to return to the origin). The selected input point is the external interrupt terminal not from the PLC, which will be affected by the scanning cycle of PLC in the process of mechanical origin (it will not be affected if Z phase is used to return to the origin). For detailed external interrupt terminals, please refer to appendix 4 of this manual.

PLC mode	Pulse channel	Pulse output terminal	Max output frequency	Output mode	Output mode
XD2-16T/RT XD2-24T/RT XD2-32T/RT	2	Y0, Y1	0~100KHz	Open collector mode	Pulse + direction
XD2-48T/RT XD2-60T/RT					
XD3-16T/RT XD3-24T/RT XD3-32T/RT XD3-48T/RT XD3-60T/RT	2	Y0, Y1	0~100KHz	Open collector mode	Pulse + direction
XD5-16T/RT XD5-24T/RT XD5-32T/RT XD5-48T/RT XD5-60T/RT	2	Y0, Y1	0~100KHz	Open collector mode	Pulse + direction
XD5-24T4 XD5-32T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector mode	Pulse + direction
XD5-48T6 XD5-60T6	6	Y0, Y1, Y2, Y3, Y4, Y5	0~100KHz	Open collector mode	Pulse + direction
XDM-24T4 XDM-32T4 XDM-60T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector mode	Pulse + direction
XDM-60T10	10	Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y10, Y11	0~100KHz	Open collector mode	Pulse + direction
XD5E-30T4	4	Y0, Y1, Y2, Y3	0~100KHz	Open collector mode	Pulse + direction
XL3-16	2	Y0, Y1	0~100KHz	Open collector	Pulse + direction

Pulse output terminal configuration table:

<u> </u>	
	1 Pulse output
mode	

Note:

1: PLC can output 100 KHz to 200 KHz pulses, but we cannot sure that all servo is running, please connect 500 Ω resistance between output and 24V power supply.

2. when using the positioning command, the pulse direction terminal can be freely defined in all the output transistor terminals except the pulse output terminal;

3. response time of pulse output transistor is 0.5us, response time of other output transistors is below 0.2ms.

; p. 4. when the pulse output terminal does not make the pulse output, it can also be used as the pulse direction terminal.

Mechanical origin returning pulse direction signal:

PLC1 - Pulse Set		H	×
Config 👻 Delete 🛛 init axis 🔷 config guide			
FD906	Value		^
Common-Parameters setting-Pulse unit	pulse number		
Common-Parameters setting-Interpolation coordinates mode	Cross coordi		
Common-pulse send mode	complete mode		
Common-Pulse num (1)	1		
Common-Offset (1)	1		
Common-Pulse direction terminal	Y14	•	
Common-Delayed time of pulse direction (ms)	Y no terminal Y0	^	
Common-Gear clearance positive compensation	Y1		
Common-Gear clearance negative compensation	- Y2 Y3		
Common-Electrical origin position	Y4 Y5	-	
	Y6 Y7		~
	Y10		
Read From PLC Write To PLC OK	Y11 Y12		
	1440		

Origin direction setting of mechanical origin returning:

Config - Delete init axis config guide		
FD900 bit3	Value ^	
Common-Parameters setting-Pulse direction logic 🥄 📏	positive logic	
Common-Parameters setting-enable soft limit	disable	
Common-Parameters setting-mechanical back to the origin d	negative	
Common-Parameters setting-Pulse unit	pulse number	
Common-Parameters setting-Interpolation coordinates mode	Cross coordi.	6
Common-pulse send mode	complete mode	
Common-Pulse num (1)	1	
Common-Offset (1)	1	
Common-Pulse direction terminal	Y no terminal	
Common-Delayed time of pulse direction (ms)	10	

Clear output signal CLR

CLR signal setting, to output an output signal immediately after the end of returning to the mechanical origin, this signal can be sent to some other control equipment to achieve the purpose of rapid information transmission between each other. For example, after returning to the mechanical origin, the CLR signal is output to the servo driver immediately, so as to output clearance signal to clear the Error Counter of the servo motor. At last, copy the mechanical origin position value to the current position and the origin returning action is completed. The parameter configuration table is as follows:

PLC1 - Pulse Set		×
Config 🗸 Delete init axis config guide		
917 bit0-bit7	Value	^
nmon-signal terminal switch state setting-positive limi	normally on	
nmon-signal terminal switch state setting negative limi	normally on	
nmon-Far-point signal terminal setting	X no terminal	
nmon-Z phase terminal setting	X no terminal	
nmon-positive limit terminal setting	X no terminal	
nmon-negative limit terminal setting	X no terminal	
nmon-Zero clear CLR output setting	Y no terminal	
nmon-Return speed VH	0	
nmon-Creeping speed VC	0	
nmon-Mechanical zero position	0	
< - `		
Read From PLC Write To PLC OK	Cancel	

CLR signal delay time:

the pulse width of CLR signal outputting after mechanical origin returning, the unit is ms, range is $0 \sim 32767$ (default 20ms). The parameter configuration table is as follows:

PLC1 - Pulse Set	
Config 🗸 Delete init axis config guide	9
927	Value
nmon-Zero clear CLR output setting	Y no terminal
nmon-Return speed VH	0
nmon-Creeping speed VC	0
nmon-Mechanical zero position	0
nmon-Z phase num	0
nmon-CLR signal delayed time (ms)	20
mmon-grinding wheel radius(polar Interpolation)	
nmon-soft limit positive value	0
nmon-soft limit negative value	0
nmon-encoder pulse number/1 rotate(closed-loop pulse)	1
<pre></pre>	
Read From PLC Write To PLC OK	Cancel
Return to origin end	
n to mechanical	
R signal output	
	CLR signal pulse width

CLR signal diagram

Note:

1. The CLR signal output terminal should use the output terminal of the PLC.

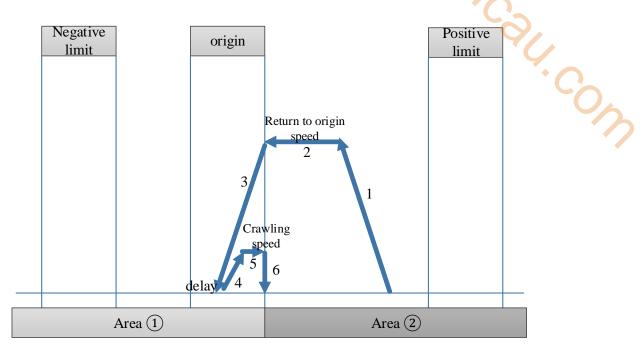
2. Do not set the delay time of CLR signal too small, or the servo driver may be unable to receive the CLR signal.

Motion analysis

1. The table is in area 2 when ZRN instruction started:

When the table is in area 2, it can be subdivided into three situations; the table is between the origin and the positive limit, the table is in the positive limit and the table is out of the positive limit.

(1) The workbench is between origin and positive limit, return to origin in reverse direction



2ng

Reverse return to origin

Actions:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and the acceleration is accelerated to the origin regression speed, and then the regression speed of the origin is pushed back toward the mechanical origin direction.

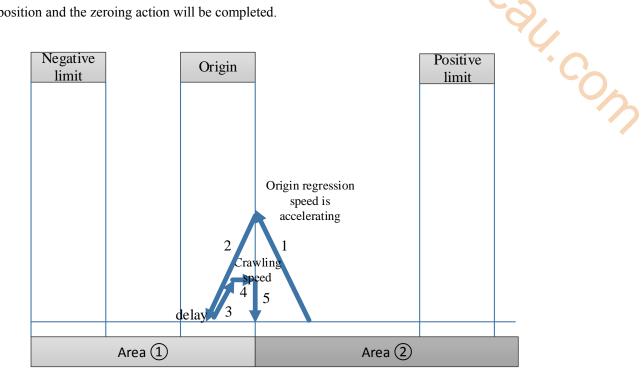
(2) When encountering the rising edge of the mechanical origin signal, slow down with the set deceleration slope until the deceleration to complete rest (frequency =0).

(3) delay (direction delay time in SFD), and then accelerate as the set acceleration slope, move forward until reaching the crawling speed, when leaving the mechanical origin falling edge signal instantaneous stop zero movement (if it sets the Z phase pulse, it starts to count Z phase signal after leaving the origin signal falling edge, then immediately stop motion when the counting reached).

(4) If "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

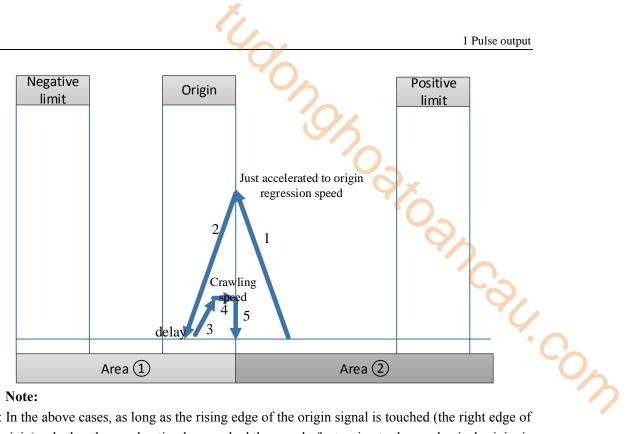
Special case 1:

When the acceleration of the just started ZRN instruction has reached the rising edge of the mechanical origin signal, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); delay (direction delay time in SFD) and then run in reverse direction at low speed as acceleration slope until reach origin regression speed, when leaving the origin falling edge signal instantaneous stop zero movement (if it sets the Z phase pulse, it starts to count Z phase signal after leaving the origin signal falling edge, then immediately stop motion when the counting reached), if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



Special case 2:

When the acceleration of the just started ZRN instruction, it just accelerated to origin regression speed and reached the rising edge of the mechanical origin signal, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); delay (direction delay time in SFD) and then run in reverse direction at low speed as acceleration slope until reach origin regression speed, when leaving the origin falling edge signal instantaneous stop zero movement (if it sets the Z phase pulse, it starts to count Z phase signal after leaving the origin signal falling edge, then immediately stop motion when the counting reached), if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



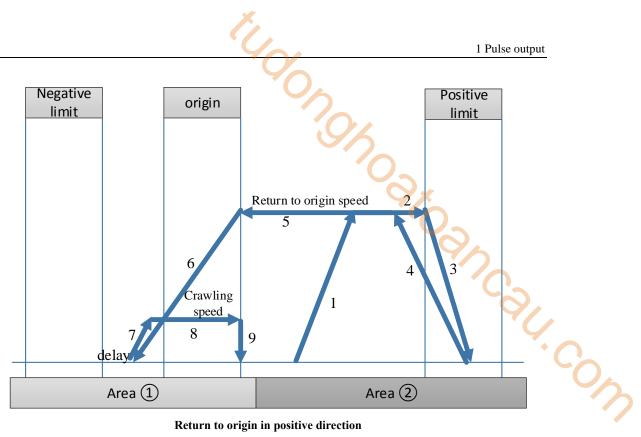
Note:

×1: In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the speed is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate in the same way.

*2: when it sets the servo Z phase pulse, Z phase pulse returning to origin capture function is effective, it will stop the mechanical origin regression in Z phase mode.

 \times 3: If the stopping position falls beyond the negative limit position, it may lead to collision. Please try your best to avoid such situation. This can be done by reducing the set deceleration slope or lengthening the length between the negative limit and the mechanical limit.

(2) workbench is between origin and positive limit, return to origin in forward direction



Return to origin in positive direction

Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and the acceleration is accelerated to the origin regression speed, and then the regression speed of the origin moves toward the positive limit direction.

(2) When encountering the rising edge of the positive limit signal, slow down with the set deceleration slope until the deceleration to complete rest (frequency =0).

(3) Immediately reverse and start accelerating according to the specified acceleration slope until reaching origin regression speed, then the speed begins to recede towards the origin.

(4) when encountering the rising edge of origin signal, slow down with the set deceleration slope until the deceleration to complete rest (frequency =0).

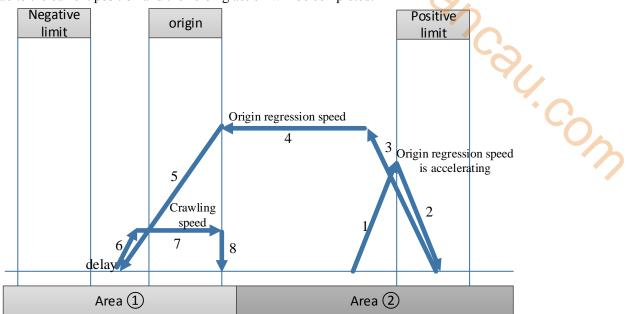
(5) delay (direction delay time in SFD), and then accelerate as the set acceleration slope, move forward until reaching the crawling speed, when leaving the mechanical origin falling edge signal instantaneous stop zero movement (if it sets the Z phase pulse, it starts to count Z phase signal after leaving the origin signal falling edge, then immediately stop motion when the counting reached).

(6) If "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Special case 1:

For the just started ZRN instruction, when accelerating in the positive limit direction and already reached the rising edge of the positive limit signal, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); then accelerate in reverse direction as acceleration slope until reach origin regression speed, then go back in origin direction, when meet the rising edge of origin signal, decelerate as deceleration slope until the

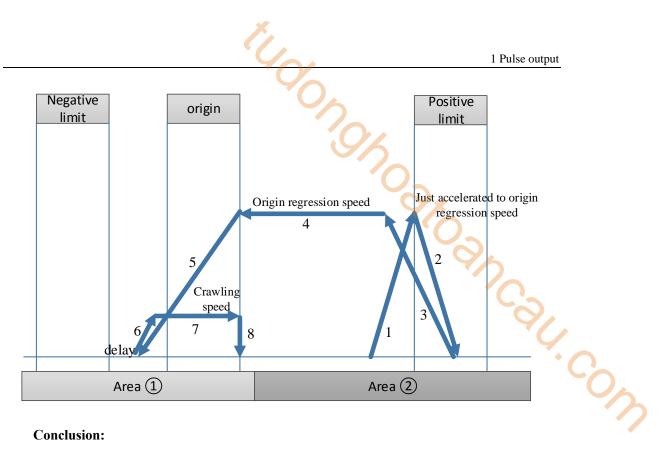
deceleration is completely still (frequency=0). Delay (direction delay time in SFD), low speed slow move in reverse direction with acceleration slope until reaching the origin regression speed, When leaving the origin falling edge signal instantaneous stop pulse outputting (if it sets the Z phase pulse, it starts to count Z phase signal after leaving the origin signal falling edge, then immediately stop zero return motion when the counting reached), if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



Special case 2:

For the just started ZRN instruction, when accelerating to origin regression speed in the positive limit direction and just reached the rising edge of the positive limit signal, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); then accelerate in reverse direction as acceleration slope until reach origin regression speed, then go back in origin direction, when meet the rising edge of origin signal, decelerate as deceleration slope until the deceleration is completely still (frequency=0). Delay (direction delay time in SFD), low speed slow move in reverse direction with acceleration slope until reaching the origin regression speed,

When leaving the origin falling edge signal instantaneous stop pulse outputting (if it sets the Z phase pulse, it starts to count Z phase signal after leaving the origin signal falling edge, then immediately stop zero return motion when the counting reached), if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



Conclusion:

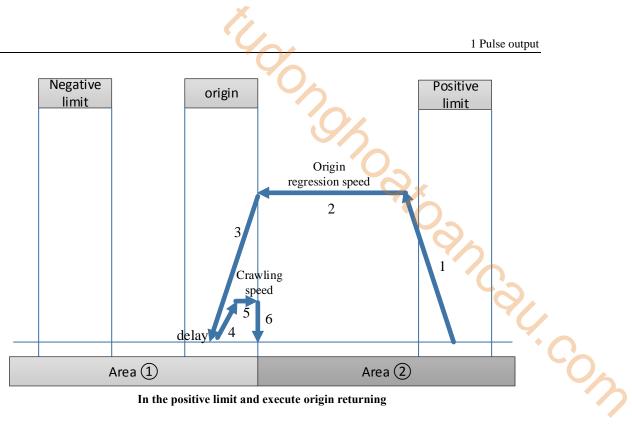
In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touched the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

 \approx 1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode. ≈ 2 : When the working table moves towards the positive limit with the speed of returning to the mechanical origin, it will start to decelerate according to the deceleration slope when it encounters the positive limit signal rising edge, and the deceleration stop position may fall on the positive limit or exceed the positive limit; Accidents that can occur when the positive limit is exceeded can be avoided by reducing the deceleration slope or widening the positive limit signal width. If the stopping position falls beyond the negative limit position, it may impact the machine. Please try your best to avoid such situation. This can be done by reducing the set deceleration slope or lengthening the length between the negative limit and the mechanical limit.

(3) Execute origin returning when the workbench is in the positive limit

When the workbench is in the positive limit, return to the origin can only be performed by default in the reverse return to the origin mode, no matter whether the direction of return to the origin is set as forward return to the origin or reverse return to the origin, as shown in the figure below:



In the positive limit and execute origin returning

Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and accelerated to the origin regression speed, and then the regression speed of the origin is withdrawn back to the direction of the origin.

(2) When encountering the rising edge of the origin signal, slow down with the deceleration slope until the deceleration is complete still (frequency =0).

(3) delay (the direction delay time in SFD), accelerate as the acceleration slope until reach the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(4) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Conclusion:

In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touched the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

 \times 1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode.

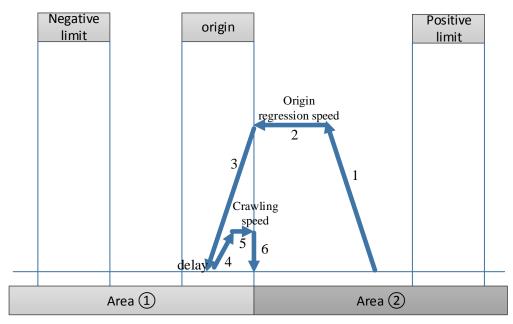
On,

※2: If the stopping position falls beyond the negative limit position, it may impact the machine. Please try your best to avoid such situation. This can be done by reducing the set deceleration slope or lengthening the length between the negative limit and the mechanical limit.

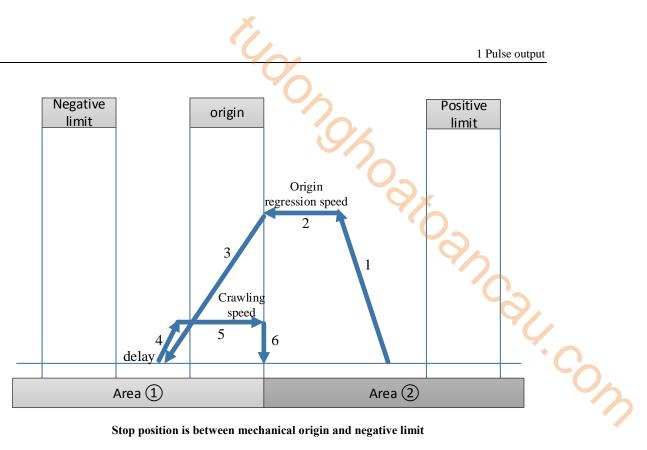
(4) execute the origin returning when workbench exceeds the positive limit

When the working table exceeds the positive limit, in order to prevent the occurrence of machine impact caused by positive return-to-origin, do not execute the return-to-origin. Please move the working table back to the negative(or positive) limit or between the positive limit and the negative limit manually, and then execute the mechanical return-to-origin instruction! The limit switch width of the negative limit and positive limit can also be widened to avoid the occurrence of breaking off the positive limit and negative limit when the pulse deceleration stops.

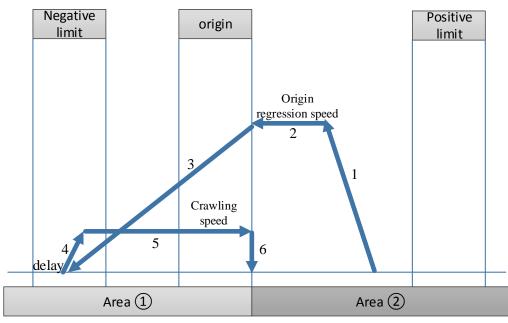
(5) When the table moves back toward the origin with the speed of mechanical return, it will start to slow down according to the set deceleration slope when it touches the rising edge of the mechanical origin. Due to the setting of different speed of mechanical return to the origin and deceleration slope, the final stop position of the table is relatively long, which shall be executed according to the following situations:



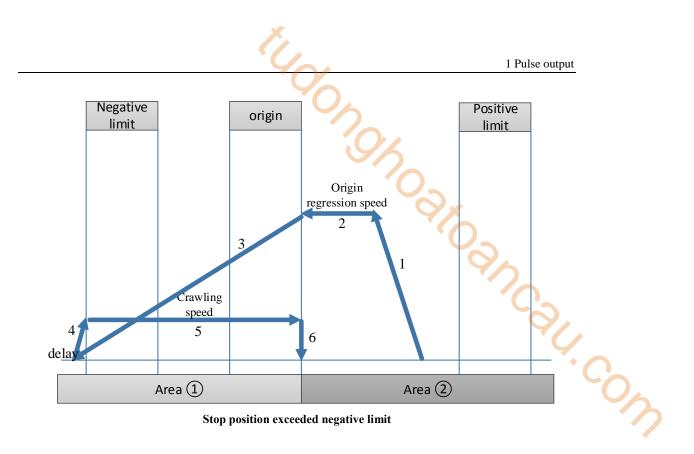
Stop position is on the mechanical origin



Stop position is between mechanical origin and negative limit



Stop position is on the negative limit

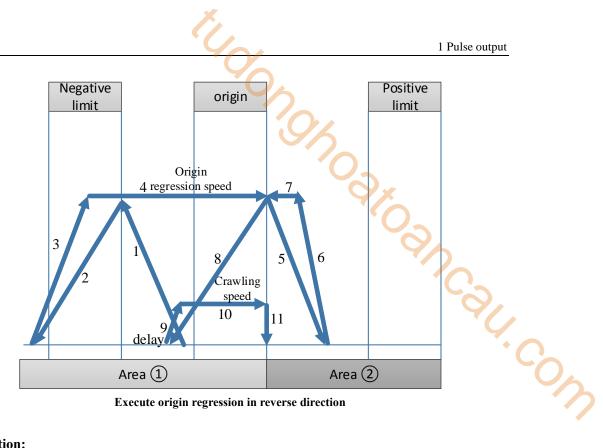


Note:

※1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode.
※2: If the stopping position falls beyond the negative limit position, it may impact the machine. Please try your best to avoid such situation. This can be done by reducing the set deceleration slope or lengthening the length between the negative limit and the mechanical limit.

2. when the mechanical origin returning instruction ZRN starts, the working table is in area (1): When the work table is located in the region, it can be divided into four situations: the work table is between the origin and the negative limit, the work table is at the mechanical origin, the work table is at the negative limit and the work table is beyond the negative limit position.

(1) execute origin regression when the work table is between the origin and negative limit



Execute origin regression in reverse direction

Action:

(1) When the origin regression action starts, the acceleration is carried out first by the set acceleration slope, and then go back in the negative limit direction with the origin regression speed after accelerating to the origin regression speed.

(2) when the work table encounters the rising edge of negative limit with the origin regression speed, it decelerates as the set deceleration slope until stop.

(3) accelerate as the set acceleration slope until reach the origin regression speed, move forward in mechanical origin direction.

(4) When the working table breaks away from the falling edge of the mechanical origin at the speed of mechanical return, it immediately begins to slow down according to the set deceleration slope, until the speed is 0.

(5) The working table immediately accelerates to the speed of returning to the mechanical origin according to the set acceleration slope, and moves back toward the mechanical origin.

(6) When encountering the rising edge of the origin signal, slow down with the deceleration slope until complete still (frequency =0).

(7) delay (the direction delay time in SFD), accelerate as the acceleration slope until reach the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(8) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

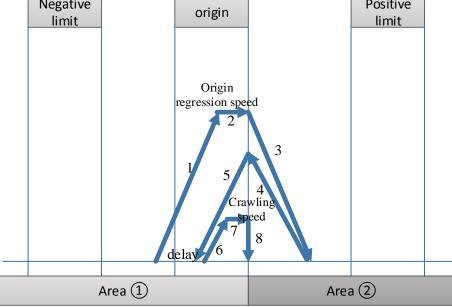
Conclusion:

In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

*1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode. *2: If the stopping position falls beyond the negative limit position, it may impact the machine. Please try your best to avoid such situation. This can be done by reducing the set deceleration slope or lengthening the length between the negative limit and the mechanical limit. · com

(2) execute the origin regression when the work table is between origin and negative limit Negative Positive



Return to origin in positive direction

Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and then accelerated to the origin regression speed and moved forward in mechanical origin direction.

(2) When the working table breaks away from the falling edge of the mechanical origin at the speed of mechanical return, it immediately begins to slow down according to the set deceleration slope, until the speed is 0.

(3) accelerate as the set acceleration slope until reach the mechanical origin regression speed, go back in mechanical origin direction.

(4) when the work table encounters the rising edge of origin signal, it decelerates as the set deceleration slope until stop (frequency is 0). Delay (the direction delay time in SFD), accelerate as the acceleration slope until reach the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action

ion,

at once when the count value reached)

(5) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Conclusion:

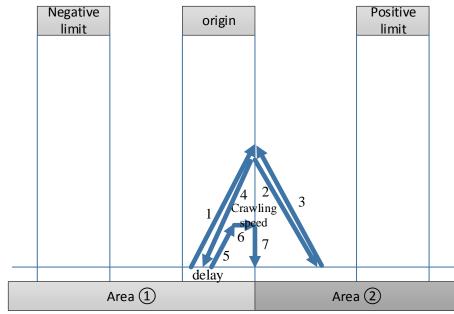
In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

※1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode.
※2: When the origin returning action is started, the speed shall be accelerated by the set acceleration slope first. No matter whether the speed is accelerated to the speed of mechanical return to the origin, the work table will start to decelerate according to the set deceleration slope as soon as it touches the decline edge of mechanical origin signal.

(3) execute the origin returning when the work table is at the mechanical origin When execute the reverse origin returning and the work table is at the mechanical origin, it will switch to positive origin returning inside, the details please refer to condition (4).

(4) execute the positive origin regression when the work table is at the mechanical origin



Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and then accelerated to the origin regression speed and moved forward in falling edge of mechanical origin direction.

(2) Whether the table has been accelerated to the speed of the mechanical return to the origin according to the set acceleration slope, it will immediately begin to decelerate according to the set deceleration slope at the descent edge of the mechanical origin until the speed is 0.

(3) The working table immediately starts to accelerate to the speed of returning to the mechanical origin according to the set acceleration slope, and moves back toward the mechanical origin.

(4) Whether the table has been accelerated to the speed of the mechanical return to the origin according to the set acceleration slope, it will immediately begin to decelerate according to the set deceleration slope at the rising edge of the mechanical origin until the speed is 0. Delay (the direction delay time in SFD), accelerate as the acceleration slope until reach the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(5) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Conclusion:

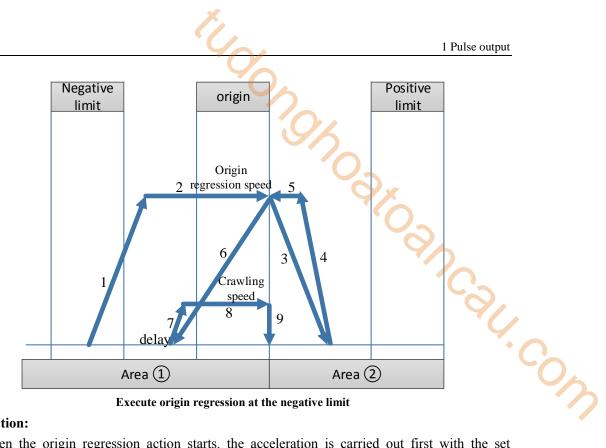
In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

※1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode.
※2: When the origin returning action is started, the speed shall be accelerated by the set acceleration slope first. No matter whether the speed is accelerated to the speed of mechanical return to the origin, the work table will start to decelerate according to the set deceleration slope as soon as it touches the decline edge of mechanical origin signal.

(5) execute the origin returning when the working table is at the negative limit

When the working table is at the negative limit, whatever the origin returning direction is set to positive or negative, it must execute as defaulted positive direction, shown as below:



Execute origin regression at the negative limit

Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and then accelerated to the origin regression speed and moved forward in origin direction.

(2) When encountering the descent edge of the origin signal, slow down by the deceleration slope until complete rest (frequency =0).

(3) The table starts to accelerate immediately according to the set acceleration slope. Whether it has accelerated to the speed of mechanical return to the origin or not, as long as the table touches the rising edge of mechanical origin signal, it will immediately start to decelerate according to the set deceleration slope.

(4) when the work table decelerated to stop, it started to delay (the direction delay time in SFD), then accelerated as the acceleration slope until reaching the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(5) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Conclusion:

In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode.

(6) execute origin returning when the work table exceeded negative limit

When the working table exceeds the negative limit, in order to prevent the occurrence of machine impact caused by reverse-returning to the origin, please do not go back to the origin. Please move the working table back to the negative or positive limit or between them by manual and then carry out the execution of the mechanical returning to the origin instruction! The limit switch width of the negative limit and positive limit can also be widened to avoid the

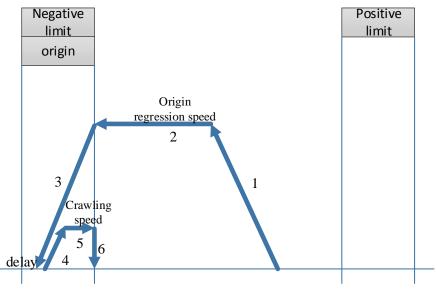
occurrence of breaking off the positive limit and negative limit when the pulse deceleration stops.

3. When in consideration of equipment cost or mechanical structure, negative limit switches and mechanical origin switches may need to be used with a proximity switch or travel switch.

First, we set the mechanical origin and negative limit switch in system parameter block as the same input point. When executing the ZRN mechanical return instruction, this input point is used as the mechanical origin. This input point is used as a negative limit when using pulse output commands such as PLSR, PLSF, DRVI, and DRVA.

In view of the position of the work table returning to the mechanical origin, the following will be explained according to the following situations: the work table is between negative limit and positive limit, the work table is in negative limit, the work table is in positive limit, the work table exceeds positive limit position and the work table exceeds negative limit position.

(1) execute reverse origin returning when the work table is between negative limit and positive limit



Return to origin in reverse direction

Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and accelerated to the origin regression speed, and then went back toward the

Con,

mechanical origin direction.

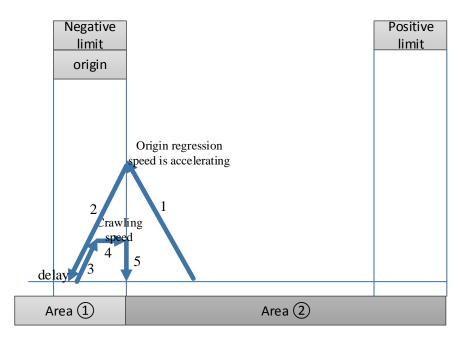
(2) When encountering the rising edge of the origin signal, slow down by the deceleration slope until complete rest (frequency =0).

(3) delay (the direction delay time in SFD), then accelerated as the acceleration slope until reaching the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(4) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Special case 1:

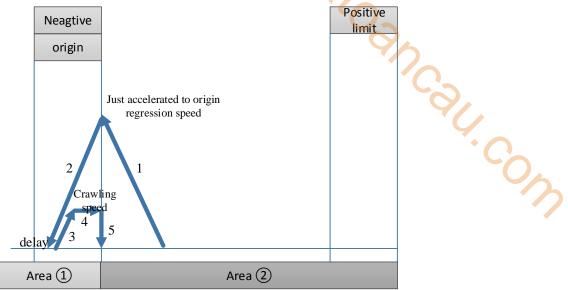
When the acceleration of the just started ZRN instruction has reached the rising edge of the mechanical origin signal, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); delay (the direction delay time in SFD), then reverse move at slow speed as acceleration slope until reach origin regression speed, when at the moment of leaving the origin signal falling edge, if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



Special case 2:

In the acceleration process of the just started ZRN instruction, when it just accelerated to origin regression speed, it reached the rising edge of the mechanical origin signal, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); delay (the direction delay time in SFD), then reverse move at slow speed as acceleration slope until

reach origin regression speed, stop returning action at the moment of leaving the origin signal falling edge (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached), if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



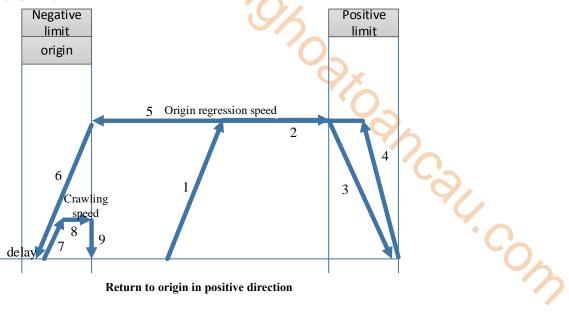
Conclusion:

In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

※1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode.
※2: If the stopping position falls beyond the negative limit position, it may lead to machine impact. Please try your best to avoid such situation. This can be done by reducing the stated deceleration slope or lengthening the length between the negative limit and the mechanical limit.

(2) execute origin returning in forward direction when the work table is between negative limit and positive limit



Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and accelerated to the origin regression speed, and then went forward toward the positive direction of positive limit.

(2) When encountering the rising edge of the origin signal, slow down by the deceleration slope until complete rest (frequency =0).

(3) Immediately reverse and start accelerating according to the specified acceleration slope until reaching the origin regression speed and begins to recede towards the origin.

(4) When encountering the rising edge of the origin signal, slow down by the deceleration slope until complete rest (frequency =0).

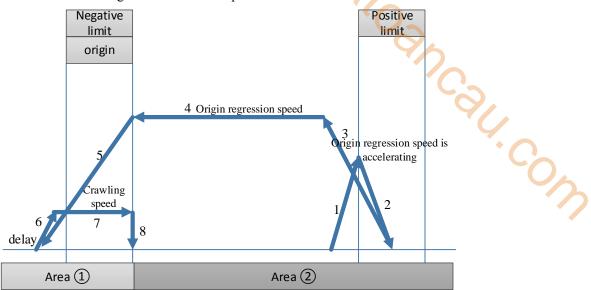
(5) delay (the direction delay time in SFD), then accelerated as the acceleration slope until reaching the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(6) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Special case 1:

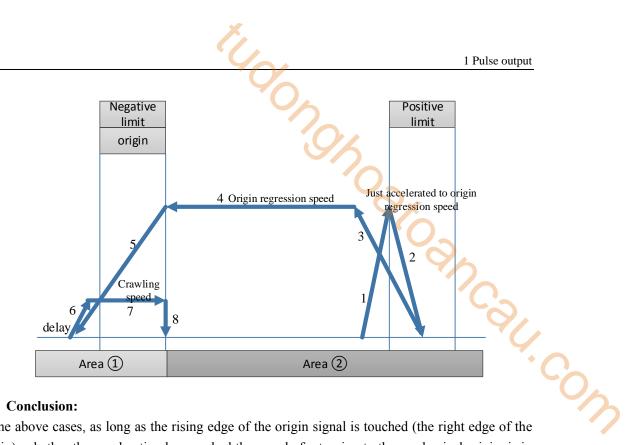
For the just started ZRN instruction, when it has already reached the rising edge of the positive limit signal in the process of accelerating towards positive limit, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); immediately reverse and start accelerating according to the set acceleration slope until reaching the origin regression speed, then start go back, when encountering the rising edge of the origin signal, slow down by the deceleration slope until complete stop (frequency =0); delay(direction delay time in SFD), then reverse move at slow speed as acceleration slope until reach origin regression speed, at

the moment of leaving the origin signal falling edge, stop pulse outputting at once(if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached). If "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



Special case 2:

For the just started ZRN instruction, when it just reached the rising edge of the positive limit signal in the process of accelerating towards positive limit and just accelerated to origin returning speed, the deceleration slope is used as the deceleration action until the deceleration is completely still (frequency =0); immediately reverse and start accelerating according to the set acceleration slope until reaching the origin regression speed, then start go back, when encountering the rising edge of the origin signal, slow down by the deceleration slope until complete stop (frequency =0); delay(direction delay time in SFD), then reverse move at slow speed as acceleration slope until reach origin regression speed, at the moment of leaving the origin signal falling edge, stop pulse outputting at once(if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached). If "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.



Conclusion:

In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

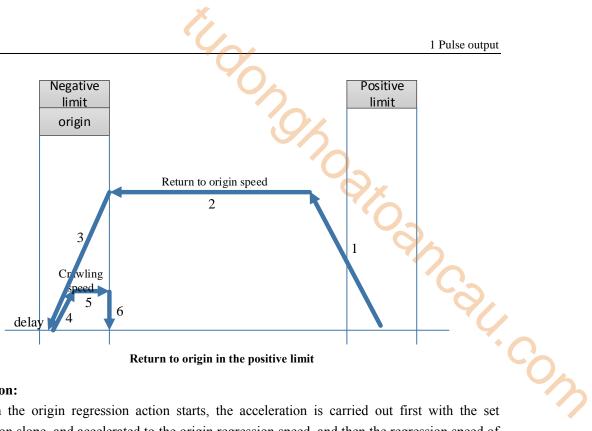
Note:

 \times 1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode. ≈ 2 : When the working table moves towards the positive limit with the speed of returning to the mechanical origin, it will start to decelerate according to the deceleration slope when it encounters the positive limit signal rising edge, and the deceleration stop position may fall on the positive limit or exceed the positive limit; Accidents that can occur when the positive limit is exceeded, which can be avoided by reducing the deceleration slope or widening the positive limit signal width.

×3: If the stopping position falls beyond the negative limit position, it may lead to machine impact. Please try your best to avoid such situation. This can be done by reducing the stated deceleration slope or lengthening the length between the negative limit and the mechanical limit.

(3) execute the origin returning when the work table is in the positive limit

When the work station is in the positive limit, return to the origin can only be performed by default in the reverse return to the origin mode, no matter whether the direction of return to the origin is set as forward return to the origin or reverse return to the origin, as shown in the figure below:



Return to origin in the positive limit

Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, and accelerated to the origin regression speed, and then the regression speed of the origin is withdrawn back towards the direction of the origin.

(2) When encountering the rising edge of the origin signal, slow down by the deceleration slope until complete rest (frequency =0).

(3) delay (the direction delay time in SFD), then accelerated as the acceleration slope until reaching the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(4) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

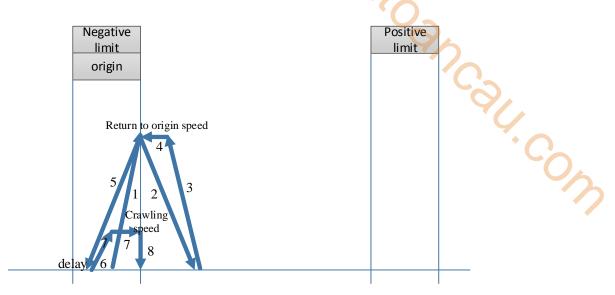
Conclusion:

In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

 \times 1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode. ≈ 2 : If the stopping position falls beyond the negative limit position, it may lead to machine impact. Please try your best to avoid such situation. This can be done by reducing the stated deceleration slope or lengthening the length between the negative limit and the mechanical limit.

(4) execute origin returning when the work table is at the mechanical origin When the worktable is at the mechanical origin, the worktable will return to the origin in positive direction no matter the setting direction is positive or negative, as shown in the figure below:



Action:

(1) When the origin regression action starts, the acceleration is carried out first with the set acceleration slope, after accelerated to the origin regression speed, move forward towards mechanical origin falling edge direction with origin returning speed.

(2) Whether or not the work table has been accelerated to the speed of the mechanical return to the origin according to the set acceleration slope, it will immediately begin to decelerate according to the set deceleration slope when leaving the descent edge of the mechanical origin until the speed acceleration is 0.

(3) The working table immediately starts to accelerate to the speed of returning to the mechanical origin according to the set acceleration slope, and moves back toward the mechanical origin.

(4) whatever the working table has been accelerated to the speed of mechanical return to the origin according to the set acceleration slope, when encountering the rising edge of the origin signal, the deceleration slope is used as the deceleration action until complete rest (frequency =0). Delay (the direction delay time in SFD), then accelerated as the acceleration slope until reaching the crawling speed, then move forward, stop zero returning action at the moment of leaving the falling edge of origin signal (if it set Z phase pulse, it starts counting the Z phase after leaving the falling edge of the origin signal, stop zero returning action at once when the count value reached)

(4) if "zeroing clear CLR signal" is set, it will output the clear signal immediately and delay (CLR signal delay time in SFD can be used to clear the Error Counter of the servo motor), At last, copy the mechanical origin position value to the current position and the zeroing action will be completed.

Conclusion:

In the above cases, as long as the rising edge of the origin signal is touched (the right edge of the origin), whether the acceleration has reached the speed of returning to the mechanical origin, is in the process of acceleration, or just accelerated to the speed of returning to the origin, the deceleration starts immediately according to the deceleration slope, until the deceleration is 0. Similarly, when the working table described below touches the rising edge of the negative limit (the right edge of the negative limit) and the rising edge of the positive limit (the left edge of the positive limit), please operate them in the same way.

Note:

%1: When the servo Z phase pulse is set, the Z phase pulse back to the origin capture function is effective, and the mechanical return to the origin will be stopped according to the Z phase mode.
%2: When the return operation of the origin is started, it will be accelerated by the set acceleration slope first. No matter the speed is accelerated to the speed of mechanical return to the origin, the work table will start to decelerate according to the set deceleration slope as soon as it touches the decline edge of mechanical origin signal.

 \times 3: When the table starts to accelerate towards the mechanical origin signal, whether it has accelerated to the speed of mechanical return to the origin or not, as long as the table touches the rising edge of the mechanical origin signal, it will immediately start to decelerate according to the set deceleration slope.

(5) execute the origin returning when the work table exceeds the positive limit

When the working table exceeds the positive limit, in order to prevent the occurrence of machine impact caused by positive return-to-origin, do not execute the return-to-origin. Please move the working table back to the negative(positive) limit or between the positive limit and the positive limit manually, and then execute the mechanical return-to-origin instruction!

The limit switch width of the negative limit and positive limit can also be widened to avoid the occurrence of breaking off the positive limit and negative limit when the pulse deceleration stops.

(6) execute the origin returning when the work table exceeds the negative limit

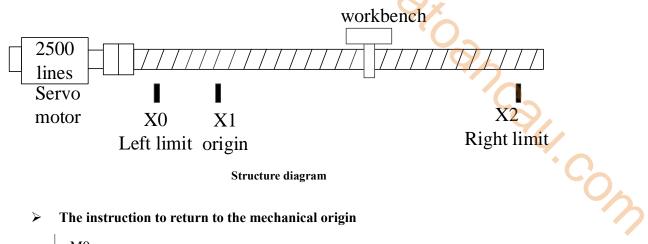
When the working table exceeds the negative limit, in order to prevent the occurrence of machine impact caused by positive return-to-origin, do not execute the return-to-origin. Please move the working table back to the negative(positive) limit or between the positive limit and the positive limit manually, and then execute the mechanical return-to-origin instruction!

The limit switch width of the negative limit and positive limit can also be widened to avoid the occurrence of breaking off the positive limit and negative limit when the pulse deceleration stops.

Example 1

As shown in the diagram below, one servo driver (electronic gear ratio is 1:1 by default) controls one servo motor (encoder 2500 lines), which is connected to the ball screw, whose pitch is 10mm. the ball screw drives workbench which can move right and left. Now the workbench needs to return to the origin, left limit switch connects the PLC input X0 (normally open), the right limit

switch connects the PLC input X2 (normally open), the origin position switch connects the PLC input X1 (normally open), the origin regression speed VH is 10000hz, direction delay time in SFD is 100 ms, crawling speed VC is 100hz, not count the Z phase signal, pulse output port is Y0, direction terminal is Y2, mechanical origin position is set to 0, accelerate slope is 1000hz per 100 ms, The deceleration slope is 1000Hz per 150ms.



The instruction to return to the mechanical origin \triangleright

$\begin{array}{c c} \hline MO \\ \hline \hline \end{array} \\ \hline \hline \end{array} \\ \hline ZRN \\ \hline K1 \\ Y0 \\ \hline \end{array}$	MO			
		ZRN	K1	Y0

System parameter configurations \geq

Config - Delete init axis config guide		
Param SFD906	Value	- 1
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	
YO axis-Common-Parameters setting-enable soft limit	disable	Ľ
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Pulse unit	pulse number	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
YO axis-Common-pulse send mode	complete mode	Ш
YO axis-Common-Pulse num (1)	1	Ш
YO axis-Common-Offset (1)	1	
YO axis-Common-Pulse direction terminal	¥2	
YO axis-Common-Delayed time of pulse direction (ms)	10	
YO axis-Common-Gear clearance positive compensation	0	1

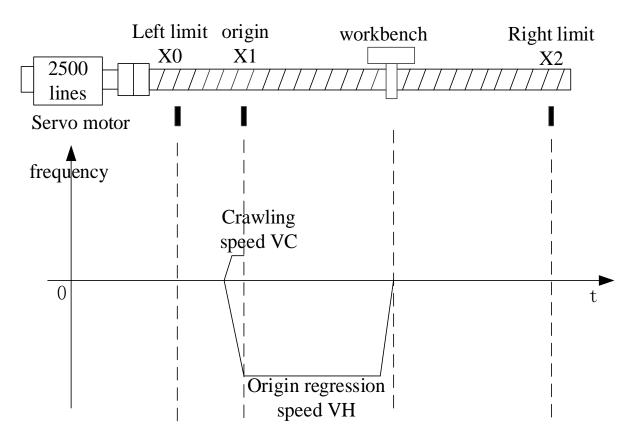
PLC1 - Pulse Set	×
Config 🗸 Delete init axis config guide	
Param SFD915 bit8-bit15	Value ^
YO axis-Common-Gear clearance positive compensation 🛛 🔨	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X1
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X2
YO axis-Common-negative limit terminal setting	XO 🗸
Read From PLC Write To PLC OK	Cancel

PLC1 - Pulse Set		
Config 👻 Delete init axis config guide		
Param SFD936(dword)	Value	^
YO axis-Common-positive limit terminal setting	X2	
YO axis-Common-negative limit terminal setting	хо	L
YO axis-Common-Zero clear CLR output setting	Y no terminal	Ŀ
YO axis-Common-Return speed VH	10000	1
YO axis-Common-Creeping speed VC	100	Ľ
YO axis-Common-Mechanical zero position	0	L
YO axis-Common-Z phase num	0	L
YO axis-Common-CLR signal delayed time (ms)	100	L
YO axis-Common-grinding wheel radius(polar Interpola.	0	L
YO axis-Common-soft limit positive value	0	1
YO axis-Common-soft limit negative value	0	

PLC1 - Pulse Set		×	
Config - Delete init axis config guide			
Param SFD963	Value	^	
YO axis-group 1-Pulse default speed	1000		
YO axis-group 1-Acceleration time of Pulse default s	100		
YO axis-group 1-Deceleration time of pulse default s	0		
YO axis-group 1-Acceleration and deceleration time (ms)	150		
YO axis-group 1-pulse acc/dec mode	linear acc/dec		
YO axis-group 1-Max speed	200000		0
YO axis-group 1-Initial speed	0		
YO axis-group 1-stop speed	0		4
YO axis-group 1-FOLLOW performance param(1-100)	50		C'A
YO axis-group 1-FOLLOW forward compensation(0-100)	0		
YO axis-group 2-Pulse default speed	0		
	I		

Q,

> Mechanical origin regression motion diagram

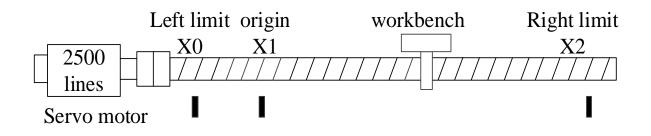


-20

- in the moment of leaving the falling edge of origin signal X1 with crawling speed, the mechanical origin regression end immediately.
- if origin regression speed, acceleration/deceleration time, and left limit origin position settings are unreasonable, in the deceleration process of touching the origin signal it has already touched left limit, although there are solutions for such special cases inside the software, we try our best to avoid such special cases in the design of the solution. Special circumstances are not explained here.
- Y2 pulse direction terminal always keeps OFF when the workbench is moving from right to left, Y2 is ON when reverse moving with crawling speed until stop.

Example 2

As shown in the diagram below, one servo driver (electronic gear ratio is 1:1 by default) controls one servo motor (encoder 2500 lines), which is connected to the ball screw, whose pitch is 10mm. the ball screw drives workbench which can move right and left. Now the workbench needs to return to the origin, left limit switch connects the PLC input X0 (normally open), the right limit switch connects the PLC input X2 (normally open), the origin position switch connects the PLC input X1 (normally open), the origin regression speed VH is 10000hz, direction delay time in SFD is 100 ms, crawling speed VC is 100hz, count the Z phase signal when reverse leaving the origin signal(connects to PLC input X4), Z phase number is set to 6, pulse output port is Y0, direction terminal is Y2, mechanical origin position is set to 0, accelerate slope is 1000hz per 100 ms, The deceleration slope is 1000Hz per 150ms.



Structure diagram

> The instruction of origin regression



System parameter configurations

YO	
PLC1 - Pulse Set	×
Config - Delete init axis config guide	
Param SFD963	Value ^
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to	negative
YO axis-Common-Parameters setting-Pulse unit	pulse number
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete mode
YO axis-Common-Pulse num (1)	1
YO axis-Common-Offset (1)	1
YO axis-Common-Pulse direction terminal	¥2
YO axis-Common-Delayed time of pulse direction (ms)	10
YO axis-Common-Gear clearance positive compensation	0
Read From PLC Write To PLC OK	Cancel

PLC1 - Pulse Set

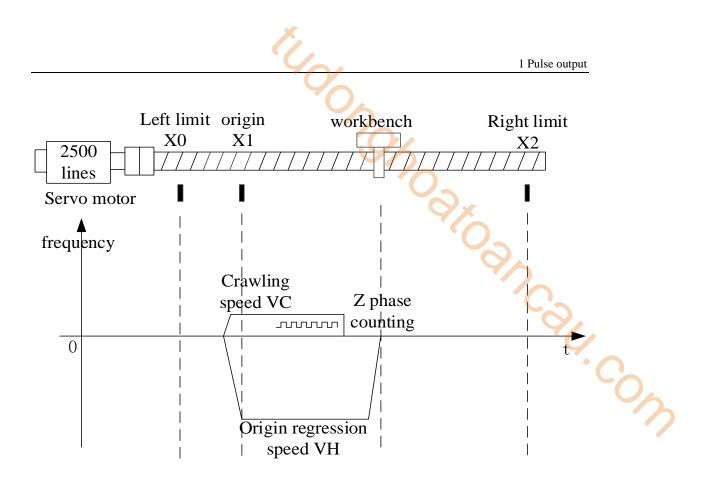
PLCT - Puise Set		
Config 👻 Delete init axis config guide		
Param SFD914 bit0-bit7	Value	^
YO axis-Common-Gear clearance positive compensation	0	
YO axis-Common-Gear clearance negative compensation	0	
YO axis-Common-Electrical origin position	0	
YO axis-Common-signal terminal switch state setting	normally on	
YO axis-Common-signal terminal switch state setting	normally on	
YO axis-Common-signal terminal switch state setting	normally on	
YO axis-Common-signal terminal switch state setting	normally on	
YO axis-Common-Far-point signal terminal setting	X1	
YO axis-Common-Z phase terminal setting	X4	
YO axis-Common-positive limit terminal setting	X2	
YO axis-Common-negative limit terminal setting	XO	~
Read From PLC Write To PLC OK	Cancel	

っ

PLC1 - Pulse Set	×
Config 🗸 Delete init axis config guide	\$
Param SFD927	Value ^
YO axis-Common-negative limit terminal setting	XO
YO axis-Common-Zero clear CLR output setting	Y no terminal
YO axis-Common-Return speed VH	10000
YO axis-Common-Creeping speed VC	100
YO axis-Common-Mechanical zero position	0
YO axis-Common-Z phase num	6
YO axis-Common-CLR signal delayed time (ms)	100
YO axis-Common-grinding wheel radius(polar Interpola	. 0
YO axis-Common-soft limit positive value	0
YO axis-Common-soft limit negative value	0
YO axis-Common-encoder pulse number/1 rotate(closed	. 1000
Read From PLC Write To PLC OF	K Cancel

PLC1 - Pulse Set Config - Delete | init axis | config guide Param SFD927 ^ Value YO axis-group 1-Pulse default speed 1000 YO axis-group 1-Acceleration time of Pulse default s... 100 YO axis-group 1-Deceleration time of pulse default s... 0 YO axis-group 1-Acceleration and deceleration time (ms) 150 YO axis-group 1-pulse acc/dec mode linear acc/dec YO axis-group 1-Max speed 200000 YO axis-group 1-Initial speed 0 YO axis-group 1-stop speed 0 YO axis-group 1-FOLLOW performance param(1-100) 50 YO axis-group 1-FOLLOW forward compensation(0-100) 0 YO axis-group 2-Pulse default speed 0 ¥ Read From PLC Write To PLC OK Cancel

> Mechanical origin regression motion diagram



- When leaving origin signal X1 with crawling speed, count Z phase at once, pulse stop at once when the Z phase counting value reached, the mechanical origin regression end immediately.
- if origin regression speed, acceleration/deceleration time, and left limit origin position settings are unreasonable, in the deceleration process of touching the origin signal it has already touched left limit, although there are solutions for such special cases inside the software, we try our best to avoid such special cases in the design of the solution. Special circumstances are not explained here.
- Y2 pulse direction terminal always keeps OFF when the workbench is moving from right to left, Y2 is ON when reverse moving with crawling speed until stop.

1-2-7. Pulse stop [STOP]

1. (deceleration	stop	pulse	outputting
------	--------------	------	-------	------------

Pulse stop [S	STOP]		
16-bit	STOP	32-bit	
instruction		instruction	A K
Execution	Rising edge /falling edge of the	Suitable	XD, XL (except XD1, XL1)
condition	coil	model	
Hardware	-	Software	-

2. Operand

2. Operand			_
Operand	Function	Туре	
S	The terminal to stop the pulse outputting	bit	
D	Pulse stop mode (0: stop slowly, 1: scram)	16-bit, word	\sim
3. Suitable se	oft component		S.

3. Suitable soft component

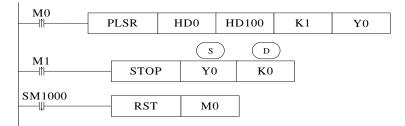
word	operand					Syst	em				constant	Mod	lule
		D^*	FD	П	D*	CD*	DX	DY	DM*	DS^*	K/H	\mathbb{D}	QD
	D	•	•	•		•	•	•	•	٠			
bit	Operand				Sys	stem]				
		Х	Y	M^*	S^*	T*	C*	Dnm					
	S		•										

*Note: D means D, HD; TD means TD, HTD; CD means CD, HCD, HSCD, HSD. DM means DM, DHM; DS means DS, DHS.

M means M, HM, SM; S means S, HS; T means T, HT; C means C, HC.

Function and action

Instruction format



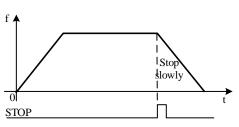
- Pulse stop mode: K0 (stop slowly), K1(scram) •
- When M0 is from OFF to ON, PLSR instruction outputs pulse from Y0, and stop pulse outputting when the pulse output numbers reached setting value
- At the rising edge of M1, STOP instruction will stop the pulse outputting of Y0 immediately,

-07

thoatoan.

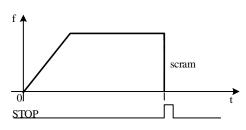
as the D parameter is K0, the pulse will stop slowly.

- Stop pulse includes PLSR, PLSF, DRVI, DRVA, ZRN.
- Stop slowly (K0)



According to the descending slope, the current pulse frequency of the pulse falls to the pulse stop frequency or the number of pulses in the pulse section is all sent out and stop the pulse output.

• Scram (K1)



Stop the pulse outputting immediately.

1-2-8. Pulse continue [GOON]

1. Instruction overview

Continue the pulse output.

Pulse continue [GOON]								
16-bit	GOON	32-bit	-					
instruction		instruction						
Execution	Rising/falling edge of the coil	Suitable	XD, XL (except XD1, XL1)					
condition		model						
Hardware	-	Software	-					

2. Operand

Operand	Function	Туре
S	The terminal to continue outputting the pulse	bit

3. Suitable soft component

Bit	Operand System								94		
2.0		Х	Y	M*	S*	Τ*	C*	Dn.m			
	S		•								
	•			•			•				

*Note: D means D, HD; TD means TD, HTD; CD means CD, HCD, HSCD, HSD. DM means DM, DHM; n Nealt Com DS means DS, DHS.

M means M, HM, SM; S means S, HS; T means T, HT; C means C, HC.

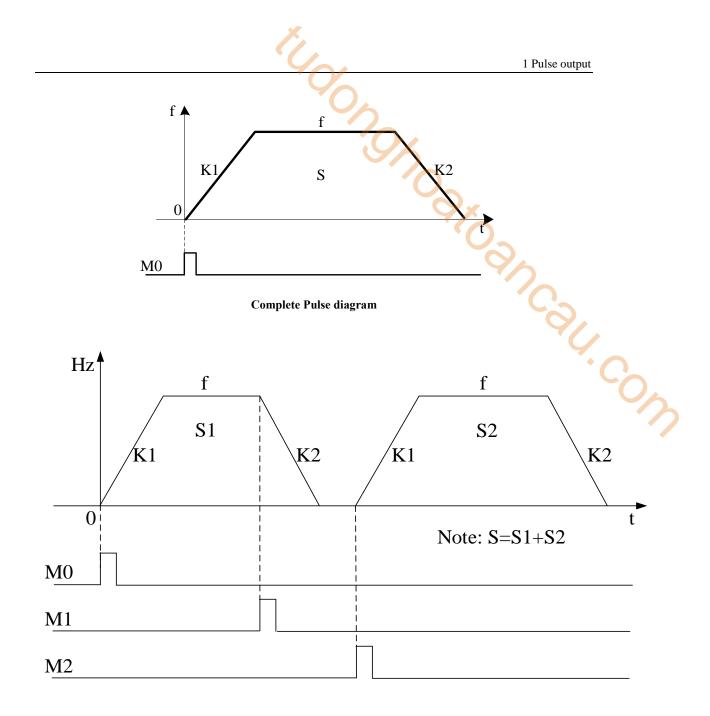
Function and action

Instruction format

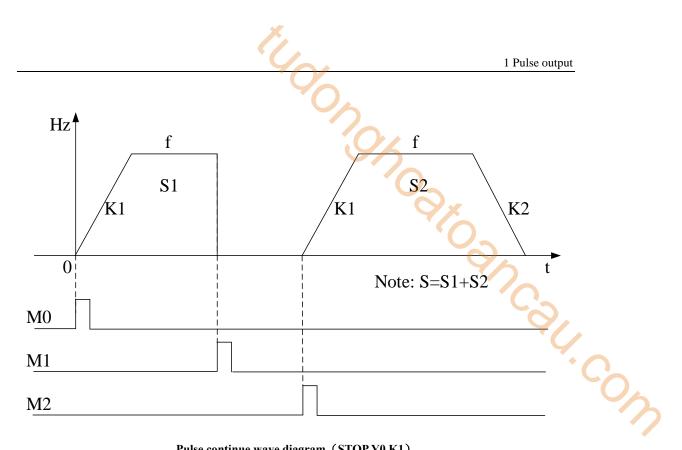
M0					
	PLSR	HD0	HD100	K1	Y0
M1					
	STOP	Y0	K0		
M2		S.			
	GOON	Y0			
SM1000	[
	RST	M0			

- When M0 from OFF to ON, PLSR instruction outputs pulse from Y0; When the number of output pulses reaches the set value, stop the output pulse.
- In the process of sending pulse, M1 from OFF to ON rising edge, STOP instruction immediately stop Y0 pulse outputting, as the parameter is K0, so the pulse will stop slowly;
- when M2 from OFF to ON rising edge, GOON Y0 instruction is executed, remaining pulses will send out according to the original deceleration slope.
- Please set ON M2 after pulse stop, otherwise GOON will not send pulse.
- Pulse continue instruction is applicable to the PLSR, DRVI, DRVA instructions. •
- The schematic diagram is as follows:

1 Pulse output



Pulse continue wave diagram (STOP Y0 K0)



Pulse continue wave diagram (STOP Y0 K1)

1-3. Pulse parameter configuration wizard

Pulse parameter configuration wizard function was added in V3.3.2 and higher version software. Because there are many system parameters of the pulse axis (including common parameters and the first to fourth sets of parameters), it may be difficult for novices. To solve this problem, a pulse parameter configuration wizard is added to the latest PC software, which configures the pulse parameters of each pulse axis directly through the pulse parameter configuration wizard, which is simple and convenient.

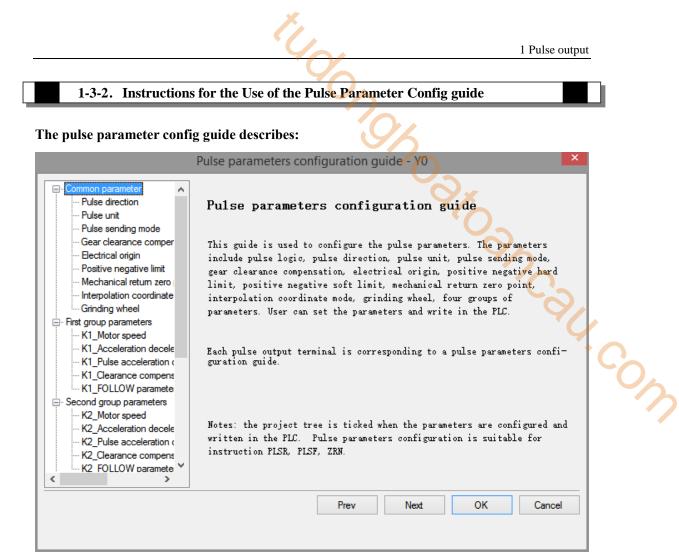
1-3-1. Pulse Parameter Configuration Wizard Opening Mode

On the top of the pulse parameter configuration interface, there is a "Config guide" option. Click on the "Configuration Wizard" to open the pulse parameter configuration wizard. As shown in the figure:

	1	1 Pulse	output
			-
PLC1 - Pulse Set		×	
Config - Delete init axis config guide			
Param SFD900 bit 1	Value	^	
YO axis-Common-Parameters setting-Pulse direction logic	positive logic		
YO axis-Common-Parameters setting-enable soft limit	disable		
YO axis-Common-Parameters setting-mechanical back to	negative		
YO axis-Common-Parameters setting Motor operating mo	Position Mode		
YO axis-Common-Parameters setting-Pulse unit	pulse number		
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi		3
YO axis-Common-pulse send mode	complete mode		<i>U</i> ,
YO axis-Common-Pulse num (1)	1		Y
YO axis-Common-Offset (1)	1		
YO axis-Common-Pulse direction terminal	Y no terminal		
YO axis-Common-Delayed time of pulse direction (ms)	10	,	

Engineering Tree is on the left of the following window. You can select the option you want to open in the Engineering Tree, and click directly to open it quickly. As shown in the figure:

	Pulse parameters configuration guide - Y0	×
Common parameter Pulse direction Pulse unit Pulse sending mode Gear clearance comper Electrical origin Positive negative limit Mechanical return zero Interpolation coordinate Grinding wheel First group parameters K1_Motor speed K1_Acceleration decele K1_Pulse acceleration (K1_Clearance compens K1_FOLLOW paramete Second group parameters K2_Motor speed K2_Acceleration decele K2_Pulse acceleration (K2_Clearance compens K2_FOLLOW paramete K3_FOLLOW paramete K4_FOLLOW paramet	Pulse parameters configuration guide This guide is used to configure the pulse parameters. The parameters include pulse logic, pulse direction, pulse unit, pulse sending mode, gear clearance compensation, electrical origin, positive negative hard limit, positive negative soft limit, mechanical return zero point, interpolation coordinate mode, grinding wheel, four groups of parameters. User can set the parameters and write in the PLC. Each pulse output terminal is corresponding to a pulse parameters confi- guration guide. Notes: the project tree is ticked when the parameters are configured and written in the PLC. Pulse parameters configuration is suitable for instruction PLSR, PLSF, ZRN.	
	Prev Next OK Cancel]



This interface is mainly used to briefly explain the pulse parameter configuration wizard.

★ Common parameter—pulse direction

It is used to set the pulse direction logic, the pulse direction terminal and the delay time of the pulse direction.

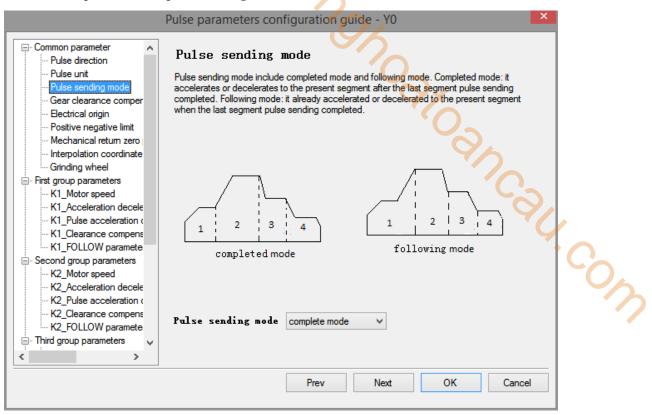
	Č.	
	1 Pulse output	t
		-
	Pulse parameters configuration guide - Y0	
Common parameter Pulse direction Pulse unit Pulse unit Pulse sending mode Gear clearance comper Electrical origin Positive negative limit Mechanical retum zero Interpolation coordinate Grinding wheel First group parameters K1_Acceleration decele K1_FOLLOW parameters K2_Acceleration decele K2_Acceleration decele K2_Pulse acceleration decele K2_PULOW paramete Third group parameters	Pulse direction XD series PLC pulse output mode is pulse + direction (open collector). If the pulse direction is positive logic, the motor will run forward when pulse direction signal has output, the motor will run reverse when the direction signal has no output. If the pulse direction is negative logic, the motor will run forward when pulse direction signal has no output, the motor will run reverse when the direction signal has output. If the pulse direction will run reverse when the direction signal has output. If the pulse direction will run reverse when the direction signal has output. If the pulse direction will run reverse when the direction signal has output. Pulse direction logic positive logic positive logic positive logic positive logic positive logic Pulse direction terminal is high-speed optocoupler (response time below 5µs), others are normal optocoupler (response time below 0.2ms). Please do not use normal optocoupler (relay) to output the pulse direction signal. Pulse direction terminal Y no termina When sending positive direction pulse, set ON the pulse direction terminal firstly, the pulse will output after delay time; when sending negative direction pulse, reset the pulse direction terminal firstly, the pulse will output after delay time. This delay time is pulse direction delay time (ms).	COL
< >	ms ms	
	Prev Next OK Cancel	

★ common parameters—pulse unit

It is used to set the unit of pulse, the basic unit of equivalent, the number of pulses and the amount of movement.

	Pulse parameters configuration guide - Y0	×
Common parameter Pulse direction Pulse unit	Pulse unit	
Pulse sending mode Gear clearance comper Eectrical origin Positive negative limit	Pulse parameters and system paramreters will change as the pulse unit. When pulse unit is pulse number, all the parameters are operated as pulse number; when pulse unit is equivalent, all the parameters are operated as equivalent.	
Wechanical return zero With the second sec	Pulse unit options 脉冲单位 V	
With the second se	Basic unit of equiver 1. 1. 1. V	
K1_FOLLOW paramete Second group parameters K2_Motor speed	The pulse numbers of motor turning one circle	
K2_Acceleration decele K2_Pulse acceleration (K2_Clearance compens K2_Clearance compens K2_FOLLOW paramete	1 Pulse Working table moving distance of motor turning one circle	
Third group parameters	1	
	Prev Next OK Cancel	

★ Common parameters—pulse sending mode



★ Common parameters—gear clearance compensation

It is used for setting forward compensation of gear clearance and reverse compensation of gear clearance.

	Pulse parameters configuration guide - Y0	
Common parameter Pulse direction Pulse unit Dulse sending mode Gear clearance comper Destive negative limit Mechanical return zero Interpolation coordinate Grinding wheel First group parameters K1_Motor speed K1_Acceleration decele K1_Pulse acceleration (K1_Clearance compens K1_FOLLOW parameter Second group parameters K2_Acceleration decele K2_Pulse acceleration (K2_Clearance compens K2_Clearance compens K2_Clearance compens K2_Clearance compens K2_FOLLOW parameter Third group parameters V	Gear clearance compensation] there is clearance between working table and ball screw. When the working table switched from reverse to forward moving, the forward ditance is less than setting distance. In order to delete this distance error, please use gear clearance positive compensation] there is clearance between working table and ball screw. When the working table switched from forward to reverse moving, the reverse ditance is less than setting distance. In order to delete this distance error, please use gear clearance negative compensation 1 there is clearance provide to reverse moving, the reverse ditance is less than setting distance. In order to delete this distance error, please use gear clearance negative compensation 0 gear clearance positive compensation 0 gear clearance negative compensation 0 longer to delete this distance error, please use gear clearance negative compensation 0 longer to delete this distance error, please use gear clearance negative compensation 0 longer to delete this distance error, please use gear clearance error, please use gear clearance negative compensation 0 longer to delete this distance error, please use gear clearance negative compensation 0 longer to delete this distance error, please use gear clearance error, please use gear clearance negative compensation 0 longer to delete this distance error, please use gear clearance	
	Prev Next OK Cancel	

★ Common parameters —electric origin

★ Common parameters -	-electric origin		1 Pulse output	
	Pulse parameters configuration	n guide - Y0	×	
Common parameter Pulse direction Pulse unit Pulse sending mode Gear clearance comper Positive negative limit Mechanical return zero Interpolation coordinate Grinding wheel First group parameters K1_Motor speed K1_Acceleration decele K1_Pulse acceleration decele K1_Pulse acceleration decele K1_Pulse acceleration decele K1_Pulse acceleration decele K2_Acceleration decele K2_Pulse acceleration decele K3_Pulse acceleration decele K4_Pulse acceleratio	Electrical origin			3
	Prev	Next OK	Cancel	

★ Common parameters—positive neagtive hard/soft limit

Used for setting positive and negative hard limit and positive and negative soft limit.

	Pulse parameters configuration guide - Y0
Common parameter Pulse direction Pulse unit Gear clearance comper Electrical origin Positive negative limit Mechanical return zero Interpolation coordinate Grinding wheel	Positive negative hard/soft limit The protection terminal is installed at the both ends of the trip (travel switch) to prevent the working table from moving out of the trip. It can used to search the origin signal when returning origin and protect machine, other pulse instructions are used to check trip limit and protect the device. This function is suitable for PLSR, PLSF, DRVI, DRVA, ZRN, interpolation instructions. positive hard limit switch state normally y terminal Xng term y
First group parameters K1_Motor speed K1_Acceleration decele	negative hard limit switch state normaly v terminal X no term v negative hard limit switch state normally v terminal X no term v To prevent the working table from moving out of the trip, it uses present pulse accumulated register to judge and protect the device.Note: positive negative soft limit and hard limit can be used at the same time.
 K2_Acceleration decele K2_Pulse acceleration (K2_Clearance compens K2_FOLLOW paramete Third group parameters 	Use the positive negative soft limit? disable Positive soft limit value 0 negative soft limit value 0 Note: this parameter will change as the pulse unit.
	Prev Next OK Cancel

★ Common parameters—Mechanical Zero Return Setting

Used to set the default direction of mechanical zero return, origin switch, Z phase switch, regression speed, CLR signal, mechanical origin position.

	Pulse parameters configuration guide - Y0	×	
Common parameter	Mechanical returning zero		
Pulse unit Pulse sending mode	1.1.Mechanical returning zero default direction	negative 🗸	
Gear clearance comper Electrical origin	2.Origin switch state	normally on \vee	
Positive negative limit	3. origin signal terminal	Xno termin: 🗸	
···· <u>Mechanical retum zero</u> ····Interpolation coordinate	4. Returning speed VH	1000	
Grinding wheel	5. crawling speed VC	100	
K1_Motor speed K1_Acceleration decele	6.Mechanical origin position	0	
K1_Pulse acceleration (7.Z phase switch state	normally on \vee	C
K1_FOLLOW paramete	8.Z phase signal terminal	X no termini 🗸	5
	9.Z phase pulse numbers	0	
···· K2_Acceleration decele ···· K2_Pulse acceleration (10.CLR signal delay time	20	
K2_Clearance compens K2_FOLLOW paramete	11. CLR signal terminal	Y no termini 🗸	
Third group parameters	Note: this parameter will change as the pulse unit.		
	Prev Next Of	Cancel	
l			

- ★ Common parameters —Interpolation coordinate mode
- ★ Common parameters —grinding wheel radius

The functions are not avaliable.



★ First group parameter		1 Pulse output
 Common parameter Pulse direction Pulse unit Pulse sending mode Gear clearance comper Electrical origin Positive negative limit Mechanical return zero Interpolation coordinate Grinding wheel First group parameters K1_Acceleration decele K1_Pulse acceleration of K1_Clearance compens K1_FOLLOW parameters K2_Acceleration decele K2_Pulse acceleration of K2_Clearance compens K2_FOLLOW parameters 	Pulse parameters configuration guide - Y0 First group parameters The first set of parameters includes the motor speed setting slope setting, pulse acceleration and deceleration mode, p FOLLOW parameter settings, etc., suitable for PLSR, PLS instructions. Note: do not apply interpolation movement instructions (ex- of parameters are set to apply to interpolation motion come	ig, acceleration and deceleration plus deceleration time setting and GF, ZRN and DRV and other pulse kcept DRV), and only second sets
	Prev Next	OK Cancel

★ First group parameters—motor speed

Used to set the maximum speed, starting speed, termination speed.

	Pulse parameters configuration guide - Y0	X
Common parameter Pulse direction Pulse unit Pulse sending mode Gear clearance comper Electrical origin Positive negative limit Mechanical return zero Interpolation coordinate Ginding wheel First group parameters	First group of parameter - motor speed [max speed]: all the pulse instructions in the program which executing the first group of parameter cannot over the max speed. If it is larger than the max speed, it will execute as the max speed. [start speed] and [end speed] is pulse startup frequency and end frequency. Generally, the start speed and end speed is 0. For some special conditions, the pulse needs to accelerate(decelerate) from nonzero speed, the speed is nonzero when the pulse finished	
First group parameters K1_Motor speed K1_Acceleration decele K1_Pulse acceleration (K1_Clearance compens K1_FOLLOW paramete Second group parameters K2_Motor speed K2_Acceleration decele K2_Pulse acceleration (K2_Clearance compens K2_FOLLOW paramete K2_FOLLOW paramete K2_FOLLOW paramete K2_FOLLOW paramete K2_FOLLOW paramete K2_FOLLOW paramete	Max speed 100000 Start speed 0 end speed 0 Note: the unit of max speed will change as the pulse unit. When the pulse unit is equivalent, the transformed pulse frequency maybe too large and over the max frequency. XD series PLC max pulse output frequency is 200KHz.	
	Prev Next OK Cancel	

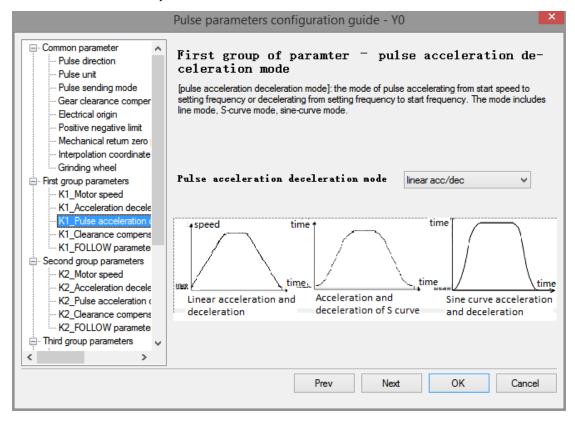
★ First group parameters —Acceleration and deceleration slope

Used to set default speed, default speed acceleration time, default speed deceleration time.

	Pulse parameters configuration guide - Y0
Common parameter Pulse direction Pulse unit Pulse unit Pulse sending mode Gear clearance comper Electrical origin Positive negative limit Positive negative limit Mechanical retum zero Interpolation coordinate Grinding wheel First group parameters K1_Motor sneed	First group of parameter- acceleration decelera- tion slope tat speed and end speed define the acceleration deceleration slope. Acceleration slope= (pulse default speed - start speed)/pulse default speed acceleration time; deceleration slope-(pulse default speed - start speed)/pulse default speed deceleration time; the unit of pulse default speed is depended on pulse unit (when the pulse unit is pulse number, this parameter unit is Hz. When the pulse unit is equivalent, this parameter unit is speed).
"First group parameters "K1_Motor speed "K1_Acceleration decele "K1 Pulse acceleration of	Pulse default speed 1000
K1_ruise acceleration (K1_ruise acceleration (K1_Clearance compens K1_FOLLOW paramete G. Second group parameters	Pulse default speed acceleration time 10 ms
K2_Motor speed K2_Acceleration decele K2_Pulse acceleration decele	pulse default speed deceleration time 10 ms
K2_Clearance compens K2_FOLLOW paramete	Note: pulse default speed will change as pulse unit; if pulse default speed is 0, it means no

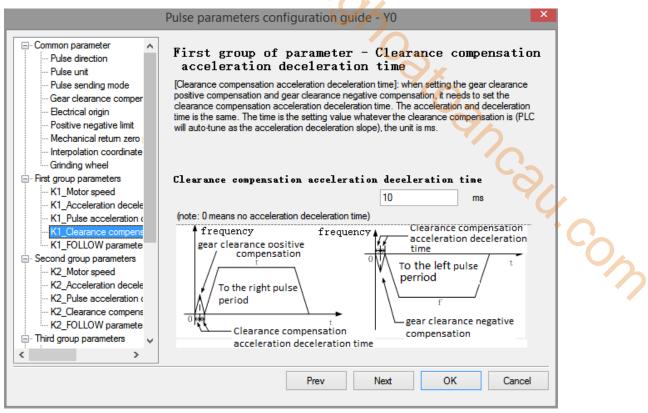
★ First group parameters —Pulse acceleration and deceleration mode

It is used to set three pulse acceleration and deceleration modes.



★ First group parameters —Clearance compensation acceleration and deceleration time

It is used to set the clearance compensation acceleration and deceleration time.

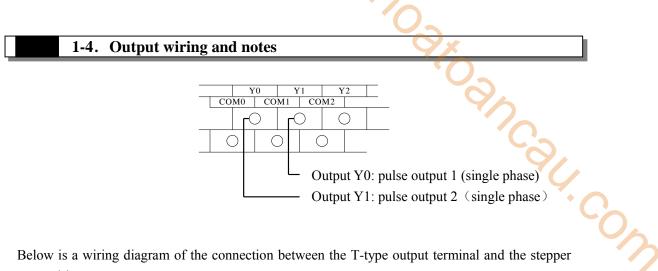


★ First group parameters —FOLLOW parameter

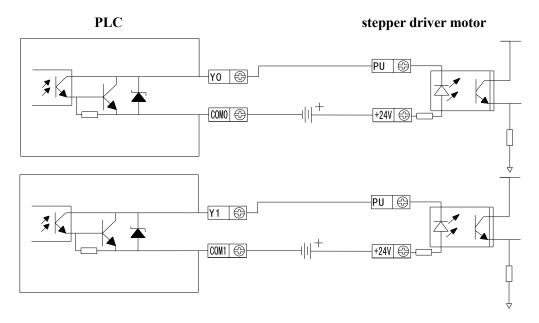
It is used to set the FOLLOW parameter and feedforward parameter.

	Pulse parameters configuration guide - Y0	×
Common parameter Pulse direction Pulse unit	First group of parameter - FOLLOW	
Fulse unit Pulse sending mode Gear clearance comper Bectrical origin Positive negative limit Mechanical retum zero First group parameters	FOLLOW function: PLC measures the pulse input feedbacking from encoder or pulse generator, and outputs corresponding pulse to control the stepper or servo motor. FOLLOW function is similar to servo rigidity. When this parameter is small, the follow rigidity is small (much delay time); when this parameter is large, the follow rigidity is large (little delay time). FOLLOW feedforward compensation: there is delay from receiving pulse to outputting pulse, this parameter can solve this problem. If setting too large, it will enter endless loop, the motor will vibrate after FOLLOW.	
K1_Motor speed K1_Acceleration decele K1_Pulse acceleration (
K1_Clearance compens	FOLLOW parameter 10	
Second group parameters K2 Motor speed	(range 1~100, default value is 50)	
K2_Acceleration decele K2_Pulse acceleration (K2_Pulse acceleration (FOLLOW feedforward parameter 0 (range 0~100, default value is 0, it no need to set for general condition)	
Third group parameters	Note: when FOLLOW parameter is large, please do not set the feedforward parameter too large.	
	Prev Next OK Cancel	

The second to fourth group of parameters are the same as the first group of parameters, please refer to the first group of parameters! After configuring the parameters, the program is downloaded to the PLC again, and then the power is cut off and restarted to take effect.

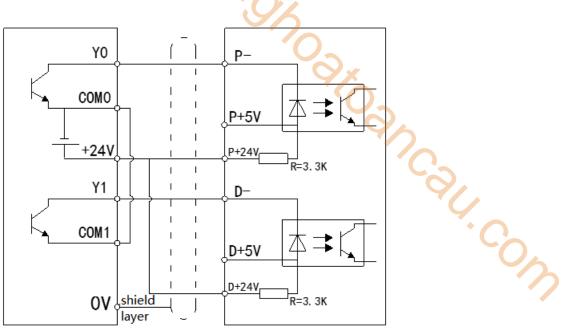


Below is a wiring diagram of the connection between the T-type output terminal and the stepper motor driver.



Note: If the pulse and direction terminals of stepper motor are driven by DC5V, please connect 2.2K resistance behind the pulse output terminal and direction output terminal.

Below is a wiring diagram of the connection between the T-type output terminal and the XINJE servo motor driver.

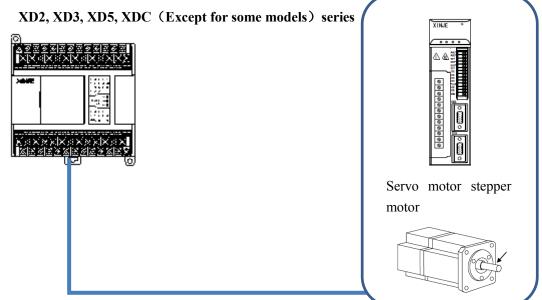


Note: Please suspend P+5V and D+5V.

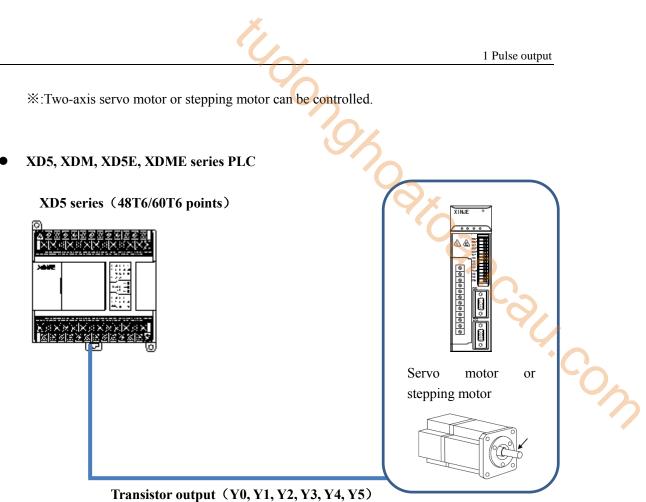
Detailed hardware wiring diagram refers to XD/XL Series Programmable Controller hardware User Manual.



• XD2, XD3, XD5, XDC series PLC

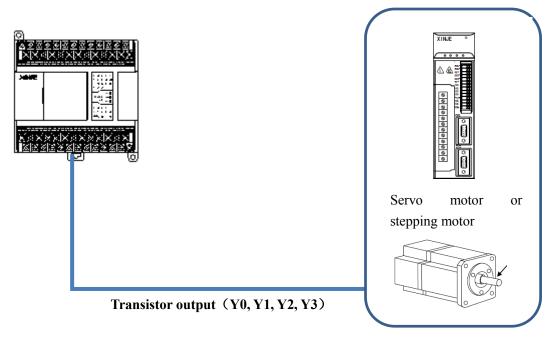


Transistor output (Y0, Y1)

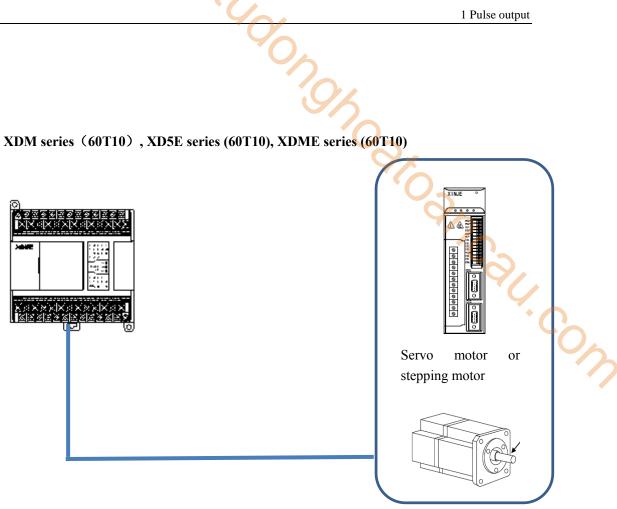


*: Six-axis servo motor or stepping motor can be controlled.





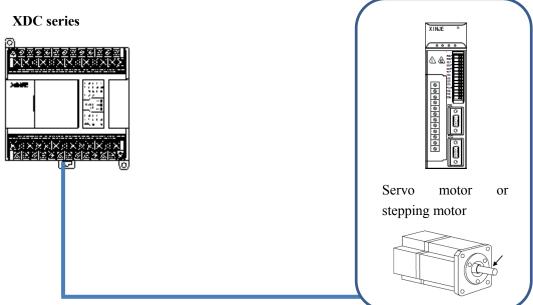
X: Four-axis servo motor or stepping motor can be controlled.



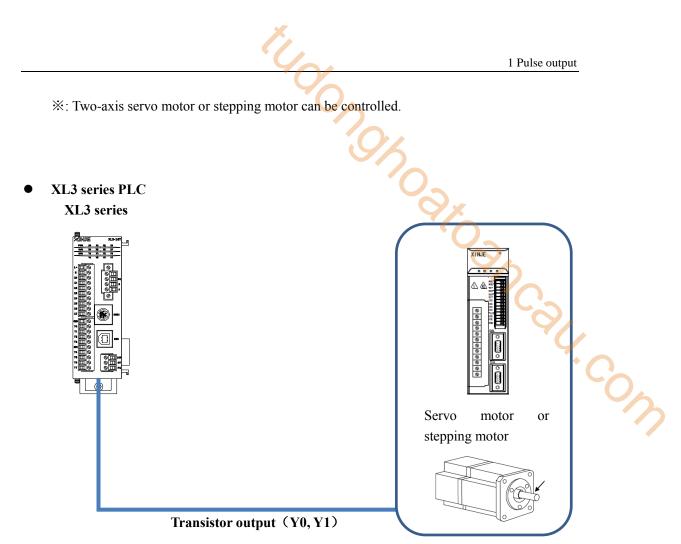
Transistor output (Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y10, Y11)

: Ten-axis servo motor or stepping motor can be controlled.

• XDC series PLC



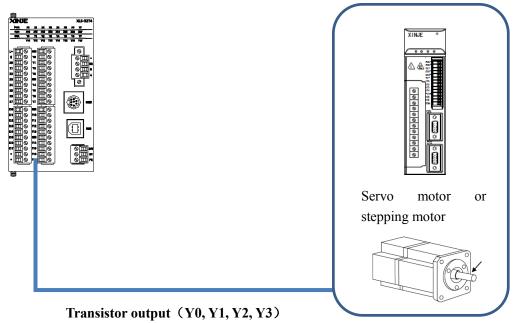
Transistor output (Y0, Y1)



*: Two-axis servo motor or stepping motor can be controlled.

• XL5, XL5E series PLC





X: 4-axis servo motor or stepping motor can be controlled.

1-4-2. Pulse output performance specification

Pulse output perform	ance spe	cification:		102	×	
Parameter	T/RT	T4	T6	T10	D4T4	
Axis number	2	4	6	10	8	
Interpolation function	/	XDM/XDME/ XDH/XLME support	/	XDM/XDME support	500	
Output mode		Open circuit mo	Open collector, differential			
Output form		Pulse + d	pulse+direction, AB phase	0		
Max frequency	100KHz				Open collector: 100KHz Differential: 920KHz	
Acceleration and deceleration treatment	Linear	acceleration and dec + sine cur	ration and deceleration ration			
Control unit	Pulse, 1mm, 0.1mm, 0.01mm, 1um					
Positioning range		-21474	183648	3~2147483647 (puls	e)	
Programming language	Ladder chart					
Manual pulse connection	/	XDM/XDME/ XDH/XLME support	/	XDM/XDME support	/	

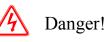
Note:

(1) All XD/XL series PLC's pulse output must be transistor output type, otherwise it can't send pulse!

(2) PLC can output high-speed pulses ranging from 100KHz to 200KHz, but it can not guarantee the normal operation of all servos. Please connect $500 \,\Omega$ resistance between the output and 24V power supply.

1-4-3. Positioning control layout and wiring notes

>>>>> Design notes<<<<<



Please set up a safety circuit outside the programmable controller, so that when there are abnormal external power supply and programmable controller failure, the whole system can also be ensured to operate in a safe state. Misoperation and misoutput may lead to accidents.

1. Make sure to set up emergency stop circuit, protection circuit, interlocking circuit to prevent reverse and positive actions simultaneously, positioning upper and lower limits and other interlocking circuits to prevent mechanical breakage outside the programmable controller.

2. When the programmable controller CPU detects abnormalities through self-diagnostic functions such as watchdog timer, all outputs become OFF. In addition, when abnormalities occur in the input and output control parts which cannot be detected by the programmable controller CPU, the output control sometimes fails.

At this point, please design the external circuit and structure to ensure that the machine is running in a safe state.

3. Because of the faults of relays, transistors, thyristors and so on in the output unit, sometimes the output is always ON or OFF.

In order to ensure the safe operation of machinery, please design the external circuit and structure for the output signal which may lead to major accidents.



1. The control line should not be tied up with the main circuit or power line, or close to the connection.

In principle, please leave more than 100 mm or away from the main circuit. Otherwise, the noise will cause misoperation.

2. When using, please ensure that the built-in programming interface, power connector, input and output connector are not subject to external forces.

Otherwise, it will lead to disconnection and malfunction.

>>>>> Wiring notes <<<<<



1. When installing, wiring and other operations, be sure to disconnect all external power supply before operation.

Otherwise, there is a risk of electric shock and product damage.

2. After installation, wiring and other operations, when running on power, be sure to install the attached wiring terminal cover on the product.

Otherwise, there is a risk of electric shock.

Attention!

1. AC power supply wiring should be connected to the special terminals recorded in the basic unit manual.

If AC power supply is connected to DC output input terminal and DC power supply terminal, the programmable controller will be burned down.

2. DC power supply wiring should be connected to the special terminals recorded in the basic unit manual.

If AC power supply is connected to DC output input terminal and DC power supply terminal, the programmable controller will be burned down.

3. Please do not wiring the empty terminals outside.

It may damage the product.

4. Grounding terminals of basic units of XD/XL series should be D grounded with wires over 2 mm² (grounding resistance below 100 Ω).

However, do not grounding with strong current (refer to XD/XL Series Programmable Controller hardware User Manual).

5. When processing bolt holes and wiring operations, do not drop chips and wire chips into the ventilation holes of the programmable controller.

Otherwise, it may lead to fire, malfunction and misoperation.

6. When using, make sure that the input and output connectors are not subject to external forces.

Otherwise, it will lead to disconnection and malfunction.

7. The input and output cables should be firmly mounted on the specified connectors.

Poor contact can lead to erroneous movements.

8. When wiring the basic units of XD/XL series and terminal of XD/XL series extension equipment, please follow the following precautions.

Otherwise, it may lead to electric shock, fault, short circuit, wire breakage, misoperation and damage to the product.

- Please process the end of the wire according to the size recorded in the manual.

Tightening torque, please follow the torque recorded in the manual.

>>>>> Cautions in Starting and Maintenance <<<<<



1. Do not touch the terminal when electrifying.

Otherwise, there is the danger of electric shock, and it may cause misoperation.

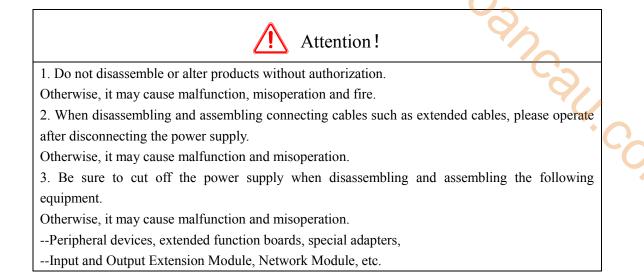
2. When cleaning and tightening terminals, be sure to operate after disconnecting all external

power supply.

If operated in the state of electrification, there is a danger of electric shock.

3. In order to change procedures, perform mandatory output, RUN, STOP and other operations during operation, you must read the manual well before you can operate it with full confirmation of safety.

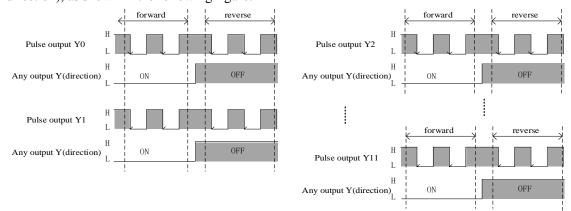
Operational errors may lead to mechanical damage and accidents.



1-4-4. Setting of Servo Amplifier (Driving Unit) Side

Pulse Output Form of Programmable Controller Side

The pulse output types of XD/XL series PLC are all collector open circuit signals (pulse + direction), as shown in the following figure:



Note: ON and OFF represent the output state of the programmable controller; H and L represent the waveform of HIGH and LOW.

• Setting of Instruction Pulse Input Form for Servo Amplifier (Driving Unit)

As shown in the table below, please make the input form of the pulse in the parameters of servo

2m

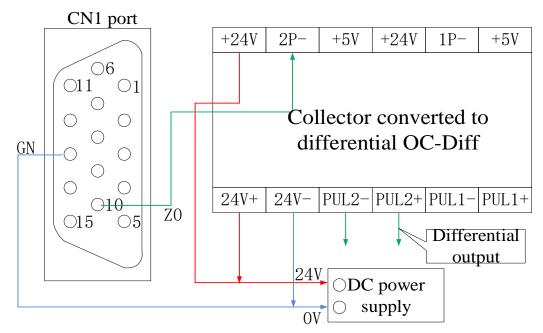


amplifier (ariving unit) contende with the output form of the programmable controller.					
	Pulse output form of basic unit	Collector convert to			
servo amplifier		differential DC-Diff			
(driving unit)	Transistor output (Leakage output)	Differential drive			
	Pulse + direction	Forward and reverse pulses			
Instruction pulse	Pulse + sign	Forward and reverse pulses			
input form		°O _n			
Instruction pulse	Negative logic	Negative logic			
logic					

amplifier (driving unit) coincide with the output form of the programmable controller.

Note: The main pulse output form of XD/XL series PLC is collector open-circuit signal output (pulse + direction). The collector open-circuit signal output (pulse + direction) can be converted into differential signal output through collector-to-differential expansion board DC-Diff.

<u>Wiring diagram of the open collector signal (pulse + direction) converted into differential</u> <u>signal by DC-Diff (taking DS2-21P5-A as an example):</u>



DS series servo driver parameter settings:

		Settings			
Series	Parameter	Pulse+direction	Differential signal		
		(negative logic)	(negative logic)		
DS2-AS		\checkmark	_		
DS2-AS2			_		
DS2-AS6	P2-00	2	1		
DS2-BS	_		—		
DS2-BS6	P2-00	2	1		
DS2-BSW	_		—		
DS2-BSW6	P2-00	2	1		
DS3-PQA	P2-00	2	1		

DS3E-PFA	P2-00	2	1
DS3 series	P0-10	2	1
DS3E series	P0-10	2	1

1 Pulse output

Electronic Gear Ratio of Servo Amplifier (Driving Unit) (Taking DS2 Series as an

Example)

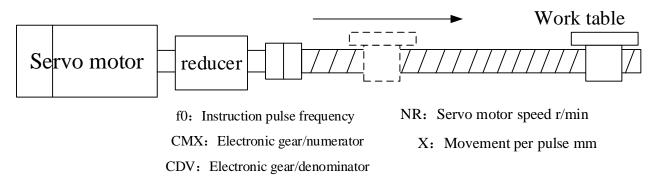
By using the electronic gear of the servo motor, the movement of each pulse can be set. For the setting of electronic gears, please refer to the manual of servo driver, set values that are a. consistent with the use.

Example 1

The movement of each pulse is set to $10 \,\mu$ m (when using mechanical screw).

Mechanical specifications

Servo driver	DS2 series
Rated Speed of Servo Motor	3000r/min
Ball screw lead pitch (Pb)	10mm
Reduction ratio of reducer (n)	1: 5
Resolution of servo motor (Pt)	10000PLS/REV



The formula for calculating the ratio of electronic gears is as follows:

$$\frac{\text{CMX}}{\text{CDV}} = X \times \frac{\text{Pt}}{n \times \text{Pb}} = 10 \times 10^{-3} \times \frac{10000}{1/5 \times 10} = \frac{50}{1}$$

As can be seen from the figure above, the ratio of electronic gear of servo driver should be set to 50:1.

At this time, the rotation speed of the servo motor at the maximum output pulse frequency (200,000 Hz) of the basic unit is calculated as follows:

$$NR = \frac{CMX}{CDV} \times \frac{60}{Pt} \times f0$$

$$= \frac{50}{1} \times \frac{60}{10000} \times 200000$$

$$= 6000 r/min > 3000 r/min (Rated speed)$$
197

Note: Please set the maximum speed on the side of the programmable controller so that the rotation speed of the servo motor can be controlled below the rated speed. ncau.com

tongh

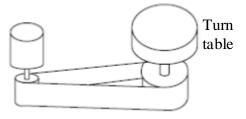
Example 2

The movement of each pulse is set to 0.01 degree (turntable).

Mechanical specifications

Servo driver	DS2 series
Servo motor rated speed	3000r/min
Turn table angle	360°/ REV
Reduction ratio (n)	1: 5
Servo motor resolution (Pt)	10000PLS/REV

Servo motor Pt=10000[PLS/REV]



Synchronous belt: 1:5

F0 : Instruction pulse frequency[Hz] (Collector open circuit) CMX: Electronic gear (Instruction Pulse Multiplier numerator) CDV: Electronic gear (Instruction Pulse Multiplier denominator) NR : Servo motor speed [r/min] X : Movement per pulse [°]

The formula for calculating the ratio of electronic gears is as follows:

$$\frac{CMX}{CDV} = X \times \frac{Pt}{n \times 360} = 1 \times 10^{-2} \times \frac{10000}{1/5 \times 360} = \frac{25}{18}$$

As can be seen from the figure above, the ratio of electronic gear of servo driver should be set to 25:1.

At this time, the rotation speed of the servo motor at the maximum output pulse frequency (200,000 Hz) of the basic unit is calculated as follows:

Con,

$$NR = \frac{CMX}{CDV} \times \frac{60}{Pt} \times f0$$
$$= \frac{25}{18} \times \frac{60}{10000} \times 100000$$

= 833.33r/min < 3000r/min (Rated speed)

Because the rotating speed of the servo motor is below the rated speed, the maximum speed of the programmable controller side does not need to be limited.

• Ready signal of servo driver (take DS2 as an example)

DS2 series servo enabling signal effectively represents the electrification of the servo motor. When the servo enabling signal is invalid, the motor does not operate.

Series name	Parameter	Setting value
DS2 series	P5-10	0010

1-4-5. Pulse sending complete flag notes

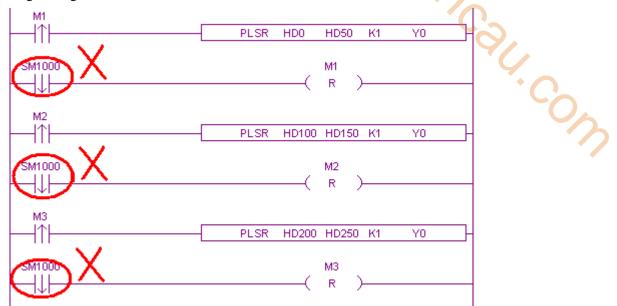
When the pulse sending flag SM1000, SM1020, SM1040 are changed from ON to OFF, it means that the action of instruction (pulse output action, etc.) is over. However, it does not mean that the action of the servo motor is over. In order to accurately grasp the end of the servo motor's operation, please correctly use the pulse sending flag.

Pulse sending flag:

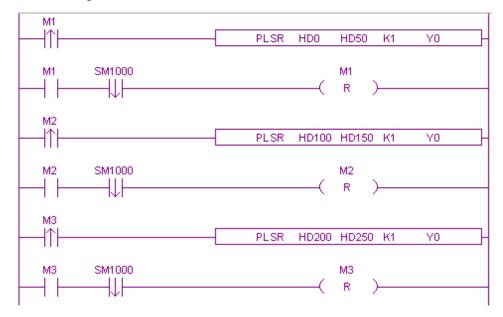
Flag	Axis	Explanation					
SM1000	PULSE_1	When the pulse is sending, the coil is ON, and					
SM1020	PULSE_2	the OFF is set immediately after the pulse is					
SM1040	PULSE_3	sent. The falling edge of the coil is used to					
SM1060	PULSE_4	judge whether the pulse is sent or not.					
SM1080	PULSE_5						
SM1100	PULSE_6	frequency					
SM1120	PULSE_7						
SM1140	PULSE_8						
SM1160	PULSE_9	Pulse					
SM1180	PULSE_10	0 t SM1000					

If multiple positioning instructions for the same pulse output port are written, then when the instructions are executed, the pulse flag SM1000, SM1020, SM1040 will change beween ON and OFF as each instructions. Therefore, if multiple instructions are executed, the sending pulse flag SM1000, SM1020, SM1020, SM1040... are used in the same program at the same time, it is impossible to judge which instruction is executed, and at the same time, it is impossible to obtain the flag supported by each instruction.

Wrong writing is as below:



Correct writing is as below:



-07

1-4-6. Cautions for triggering conditions of positioning instructions

XD/XL series of PLC positioning instructions are mainly PLSR (edge trigger), PLSF (normal open/close trigger), DRVI (edge trigger), DRVA (edge trigger), ZRN (edge trigger). Except PLSF instruction, all the other pulse instructions are edge trigger. In the process of executing a positioning instruction, the same pulse output port (such as Y0) is sending pulse, flag bit (SM1000) is always ON. The PLC will not respond to the pulse instruction triggered at the same pulse output port until the pulse output instructions being executed are sent out and the signal bit being sent is reset.

Since the conduction condition of PLSF pulse instruction is normally open/closed, when PLSF instruction is used, the conduction condition of PLSF instruction should be reset immediately when the pulse does not need to be executed (do not only set the pulse output frequency to 0 Hz, but not reset the pulse conduction condition).

1-4-7. Positioning Instruction and System Parameter Block Related Parameters

System parameter	PLSR	PLSF	DRVI	DRVA	ZRN
Common parameter—pulse direction logic	Must set	Must set	×	×	Must set
Common parameter—enable soft limit	May not set	May not set	×	×	May not set
Common parameter — Default direction of mechanical return to origin	×	×	×	×	Must set
Common parameter —pulse unit	Must set	Must set	×	×	Must set
Common parameter — Interpolated coordinate mode	×	×	×	×	×
Common parameter — pulse send mode	Must set	Must set	×	×	Must set
Common parameter — pulse number(1 rotation)	May not set	May not set	×	×	May not set
Common parameter — offset(1 rotation)	May not set	May not set	×	×	May not set
Common parameter —pulse direction terminal	May not set	May not set	×	×	Must set
Common parameter —delay time of pulse direction	May not set	May not set	×	×	May not set
Common parameter —gear clearance positive compensation	May not set	May not set	×	×	May not set
Common parameter —gear clearance	May not	May not	X	×	May not

The following table sorts out the parameters setting of pulse output instruction and system parameter block:

		<u> </u>		1	
negative compensation	set	set			set
Common parameter —electric origin	×	X	×	×	×
position					
Common parameter — origin switch	×	×	×	×	Must set
state setting			\sim		
Common parameter — origin signal	×	×	×	×	Must set
terminal setting			· · · ·		
Common parameter —Z phase switch	×	×	×	×	May not
state setting					set
Common parameter — Z phase	×	×	×	×	May not
terminal setting					set
Common parameter — positive limit		May not	×	×	Must set
switch status setting	set	set			•
Common parameter — positive limit	May not	May not	×	×	Must set
terminal setting	set	set			M
Common parameter —negative limit	May not	May not	×	×	Must set
switch status setting	set	set			M
Common parameter —negative limit	May not	May not	×	×	Must set
terminal setting	set	set			Movement
Common parameter —zero clear CLR	×	×	×	×	May not
signal output terminal setting					set
Common parameter — return speed	×	×	×	×	Must set
VL					Must set
Common parameter —creeping speed VC	×	×	\times	\times	Iviust set
Common parameter — mechanical					Must set
zero position	×	×	×	×	Must set
Common parameter — Z phase					May not
number	×	×	×	×	set
Common parameter — CLR signal					May not
delay time	×	×	×	×	set
Common parameter —grinding wheel					500
radius(polar coordinate mode)	×	×	×	×	×
Common parameter — soft limit					
positive limit value					
Common parameter — soft limit					
negative limit value					
Group 1 parameter — pulse default	Must set	Must set			Must set
speed			×	×	
Group 1 parameter — acceleration	Must set	Must set			Must set
time of pulse default speed			×	×	
Group 1 parameter — deceleration	Must set	Must set			Must set
time of pulse default speed			×	X	
*	I	I	1	1	<u> </u>

Com

07



Group 1 parameter — Interval	May not	May not	×	×	May not
acceleration and deceleration time	set	set	~	~	set
Group 1 parameter — pulse acc/dec	Must set	Must set	×	×	Must set
mode				×	
Group 1 parameter —max speed	Must set	Must set	X	×	Must set
Group 1 parameter —start speed	Must set	Must set	×	×	Must set
Group 1 parameter —end speed	Must set	Must set	×	X	Must set

Note: group 2 to 4 parameters are same to group 1.

1-4-8. Troubleshooting of Servo Motor and Stepping Motor

When the servo motor and stepper motor do not work, please confirm the following items:

1) Please confirm the connection.

2) Please execute the positioning instructions to confirm the status of the following LED.

LED set as pulse output signal

LED set as pulse direction signal

3) Make sure that when the programmable controller executes the positioning instructions, the values of the accumulated pulse registers of each axis are changing.

The cumulative registers	f 1-		1	· · 1- · f - 11 - · · · · · · · · 1- 1 - · ·	
i në cumulanve registers	Tor each	nuise ournui	are snown ir	\mathbf{r}	

No.	Function	Notes	Axis	
HSD0	Low 16-bit of cumulative pulse	Pulse number is the unit		
HSD1	High 16-bit of cumulative pulse	r uise number is the unit	PULSE_1	
HSD2	Low 16-bit of cumulative pulse	Pulse equivalent is the		
HSD3	High 16-bit of cumulative pulse	unit		
HSD4	Low 16-bit of cumulative pulse	Pulse number is the unit		
HSD5	High 16-bit of cumulative pulse	Puise number is the unit		
HSD6	Low 16-bit of cumulative pulse	Pulse equivalent is the	PULSE_2	
HSD7	High 16-bit of cumulative pulse	unit		
HSD8	Low 16-bit of cumulative pulse	Pulse number is the unit	PULSE_3	
HSD9	High 16-bit of cumulative pulse	Puise number is the unit		
HSD10	Low 16-bit of cumulative pulse	Pulse equivalent is the		
HSD11	High 16-bit of cumulative pulse	unit		
HSD12	Low 16-bit of cumulative pulse	Pulse number is the unit		
HSD13	High 16-bit of cumulative pulse	Puise number is the unit	PULSE_4	
HSD14	Low 16-bit of cumulative pulse	Pulse equivalent is the		
HSD15	High 16-bit of cumulative pulse	unit		
HSD16	Low 16-bit of cumulative pulse	Dulas number is the unit		
HSD17	High 16-bit of cumulative pulse	ruise number is the unit	DILLOF 5	
HSD18	Low 16-bit of cumulative pulse	Pulse equivalent is the	PULSE_5	
HSD19	High 16-bit of cumulative pulse	unit		

		Pulse number is the unit	Low 16-bit of cumulative pulse	HSD20
		Pulse number is the unit	High 16-bit of cumulative pulse	HSD21
	PULSE_6	Pulse equivalent is the	Low 16-bit of cumulative pulse	HSD22
		unit	High 16-bit of cumulative pulse	HSD23
			Low 16-bit of cumulative pulse	HSD24
	DILLOF 7	Pulse number is the unit	High 16-bit of cumulative pulse	HSD25
	PULSE_7	Pulse equivalent is the	Low 16-bit of cumulative pulse	HSD26
		unit	High 16-bit of cumulative pulse	HSD27
		Pulse number is the unit	Low 16-bit of cumulative pulse	HSD28
5.		Pulse number is the unit	High 16-bit of cumulative pulse	HSD29
	PULSE_8	Pulse equivalent is the	Low 16-bit of cumulative pulse	HSD30
		unit	High 16-bit of cumulative pulse	HSD31
		Pulse number is the unit	Low 16-bit of cumulative pulse	HSD32
	DILLOF O	Puise number is the unit	High 16-bit of cumulative pulse	HSD33
	PULSE_9	Pulse equivalent is the	Low 16-bit of cumulative pulse	HSD34
		unit	High 16-bit of cumulative pulse	HSD35
]			Low 16-bit of cumulative pulse	HSD36
	DILLOE 10	Pulse number is the unit	High 16-bit of cumulative pulse	HSD37
	PULSE_10	Pulse equivalent is the	Low 16-bit of cumulative pulse	HSD38
		unit	High 16-bit of cumulative pulse	HSD39

U.

4) Make sure that the pulse output form of the programmable controller side and the servo amplifier (driving unit) is consistent.

5) Make sure that the stop bit of the pulse output is in action.

No.	Coil	Axis	Note		
1	SM1001	PULSE_1	When the pulse value is positive, the coil is		
2	SM1021	PULSE_2	ON; when the pulse value is negative, the coil		
3	SM1041	PULSE_3	is OFF.		
4	SM1061	PULSE_4			
5	SM1081	PULSE_5	frequency		
6	SM1101	PULSE_6			
7	SM1121	PULSE_7	Pulse / Segment		
8	SM1141	PULSE_8			
9	SM1161	PULSE_9			
10	SM1181	PULSE_10	SM1001		

The pulse output flags of each pulse are shown in the table below.

6) Please confirm whether the limit (positive limit and reverse limit) is in action.

7) Please confirm the action sequence of positioning instruction.

When the pulse flag bit is ON, the positioning instruction or the pulse output instruction using the

same output terminal can not be executed.

1-4-9. Troubleshooting of incorrect stop position of servo motor and stepper motor

When the stop position is incorrect, please confirm the following items:

- 1) Make sure that the setting of the electronic gear of the servo amplifier (driving unit) is correct.
- 2) Please confirm whether the origin position is offset.

A. When designing the origin signal, consider that there is enough time for ON to slow down

to crawling speed.

The ZRN instruction begins to decelerate to stop at the front end of the origin, delays and reverse accelerates to crawl speed, stops when it leaves the origin, and clears the current value register. Failure to slow down to crawl speed in front of the back end of the origin will cause stop position offset.

B. Please make the crawling speed slow enough.

The stop of the origin regression instruction is not decelerated, so if the crawling speed is too fast, the stop position will be offset due to inertia.

C. Soft components for origin signals.

The origin signal terminal can select all the input points on the PLC; but if the selected input point is the external interrupt terminal on the PLC main unit, the process of returning to the mechanical origin will be handled according to the interrupt, which can further improve the accuracy of returning to the mechanical origin (if Z phase is used to return to the origin, it will not affect); and the selected input point is the external interrupt terminal on PLC extention module, in the process of mechanical origin, it will be affected by the scanning cycle of PLC (if Z phase is used to return to the origin, it will not be affected).

3) After the forward and reverse rotation (round-trip action), the stop position deviates.

Because of the contact gap between the worktable and the ball screw, when the worktable switches from the forward movement to the reverse movement, the reverse actual movement distance is less than the set distance; when the worktable switches from the reverse movement to the forward movement, the forward actual movement distance is less than the set distance.

It can be corrected by forward gear clearance compensation and reverse gear clearance compensation.

1-5. Positioning instruction example programs

This section mainly introduces the use of PLSR, PLSF, DRVA, DRVI, ZRN instructions through several sample programs.

Action	Instruction	Program example	
Action	Instruction	Sequential ladder chart	Process ladder chart
Multi section pulse	PLSR	1-5-4	1-5-5
positioning	PLSK	1-5-6	1-5-7
Variable frequency	PLSF	1-5-2	1-5-3
pulse output	r LSF	1-5-4	1-5-5
Relative single section	DRVI	1-5-2	1-5-3
positioning	DRVI	1-5-6	1-5-7
Absolute single	DRVA	1-5-2	1-5-3
section positioning	DRVA	1-5-6	1-5-7
Mechanical origin		1-5-2	1-5-3
regression	ZRN	1-5-4	1-5-5
		1-5-6	1-5-7

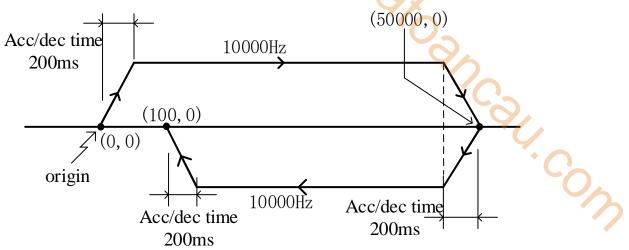
1-5-1. I/O point assignment

The pulse output Y0 (axis 1) is used in the program example. When using other pulse output terminals, please modify the corresponding soft components of the pulse axis.

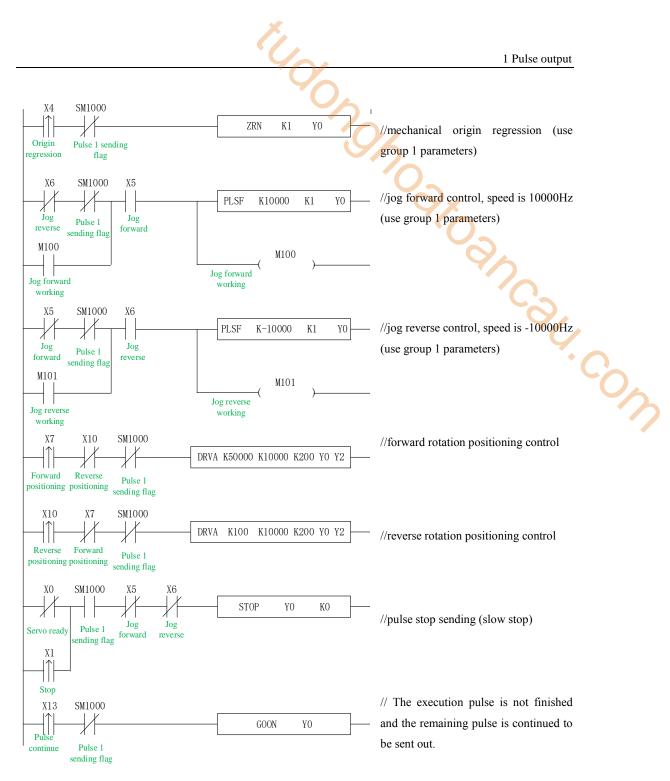
Signal name	I/O points	Notes
Pulse output port	Y0	
Pulse direction port	Y2	
CLR zero clear signal	Y3	
Servo ready	X0	
Stop	X1	
Pulse continue	X13	
Origin regression	X4	
Jog forward	X5	
Jog reverse	X6	
Forward rotation positioning	X7	
Reverse rotation positioning	X10	
Close origin input terminal	X2	
Origin input terminal	X3	External interruption terminal
Forward limit switch	X11	
Reverse limit switch	X12	

1-5-2. Forward and reverse rotation sequence control sample program [PLSF, DRVI, DRVA, ZRN]

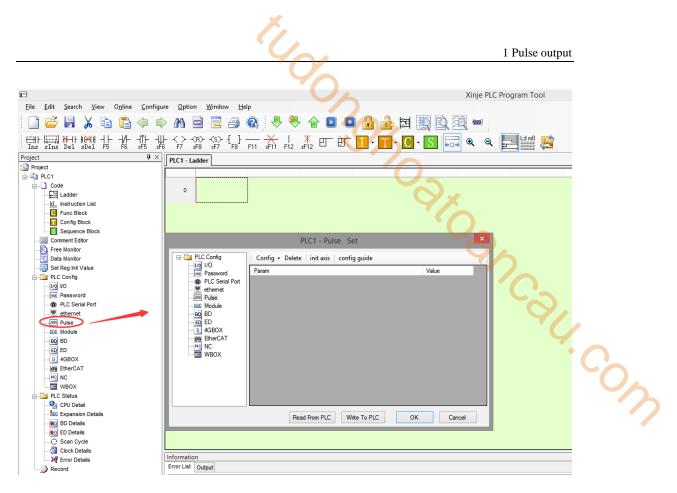
Example 1: According to the following figure, use the absolute single section positioning method.



Firstly, the ladder chart program is shown as follows:



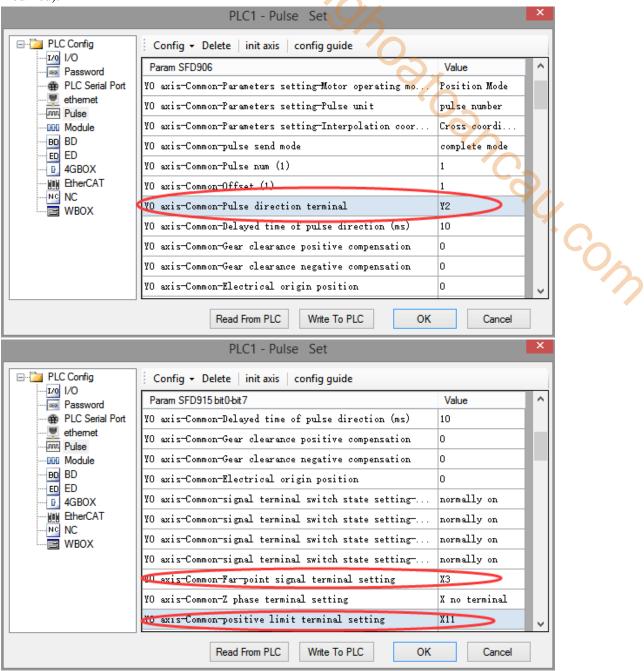
In the sample program, except DRVI and DRVA, all the system parameters used in the pulse instructions are group 1 parameters. So we click the "pulse configuration parameters" in the PLC programming software, as follows:

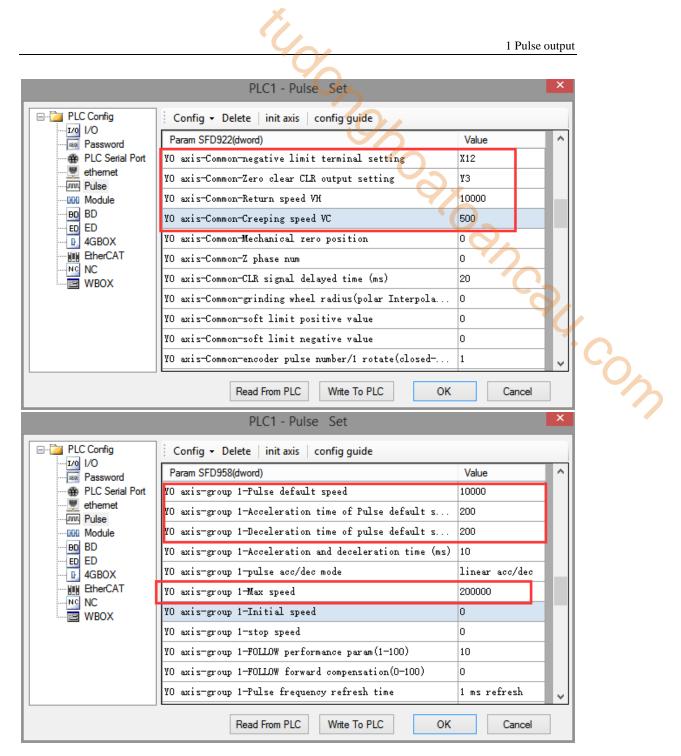


Click config, then select Y0 axis.

	PLC	C1 - Pulse Set		×
PLC Config	Config - Delete i	nit axis config guide		
I/O Password	Y0 axis		Value	
PLC Serial Port	Y1 axis			
ethemet	Y2 axis			
	Y3 axis			
BD BD	Y4 axis			
ED ED	Y5 axis			
EtherCAT	Y6 axis			
NC NC	Y7 axis			
WBOX	Y10 axis			
	Y11 axis			
		J		
	Read Fr	rom PLC Write To PLC	OK Cancel	

In the parameter configuration table, configure as follows (circled parameters need to be modified):

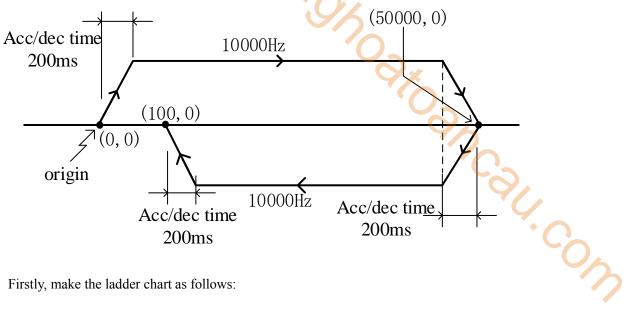




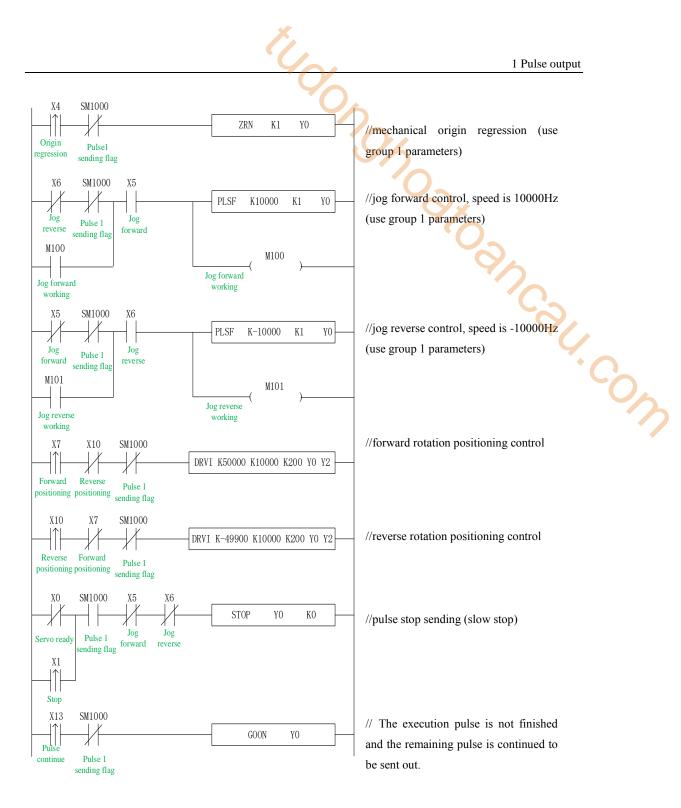
After configuring the parameters, click the "Write to PLC" button to write the parameters into the PLC. After downloading the program, power off the PLC and then power on again.

Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

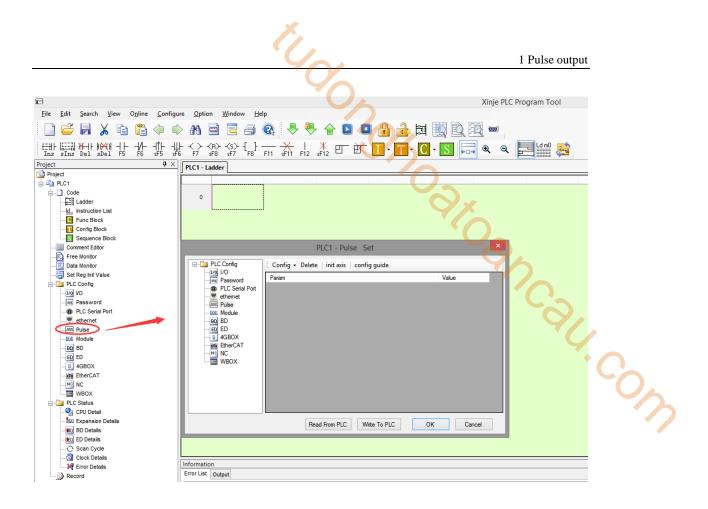
Example 2: According to the following figure, use the relative single segment positioning method.



Firstly, make the ladder chart as follows:



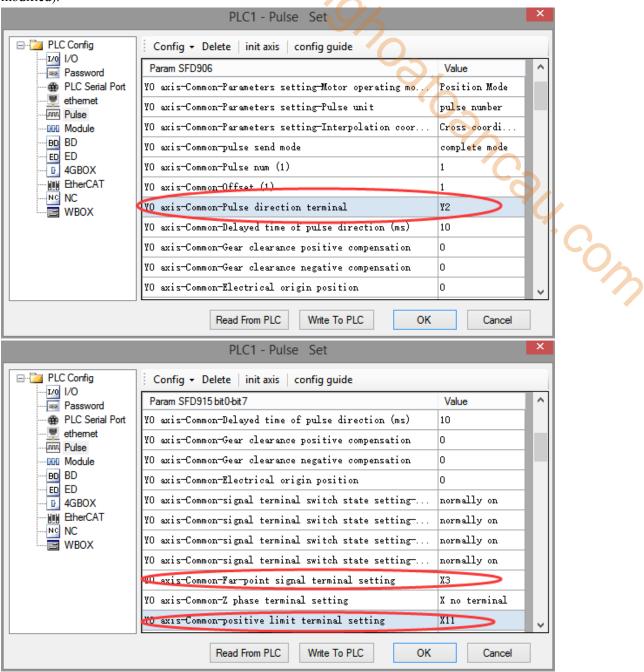
In the sample program, except DRVI and DRVA, all the system parameters used in the pulse instructions are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

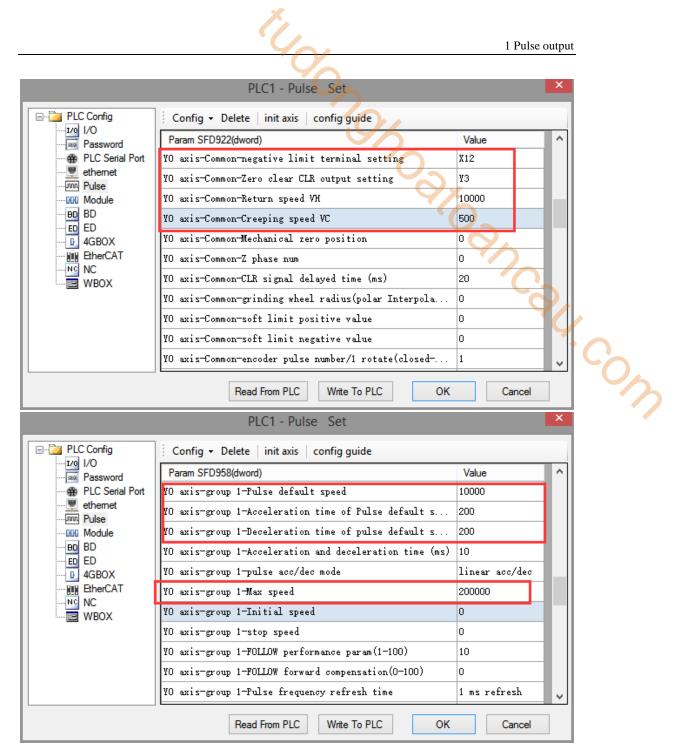


Click config, then select Y0 axis.

	PLC1 - Pulse Set	×
PLC Config	Config - Delete init axis config guide	
	Y0 axis Va	alue
PLC Serial Port	Y1 axis	
ethemet	Y2 axis	
	Y3 axis	
BD BD	Y4 axis	
ED ED	Y5 axis	
EtherCAT	Y6 axis	
NC NC	Y7 axis	
I B WBOX	Y10 axis	
	Y11 axis	
	Read From PLC Write To PLC OK	Cancel

In the parameter configuration table, configure as follows (circled parameters need to be modified):





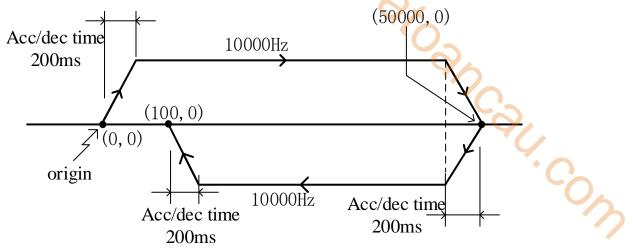
After configuring the parameters, click the "Write to PLC" button to write the parameters into the PLC. After downloading the program, power off the PLC and then power on again.

Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

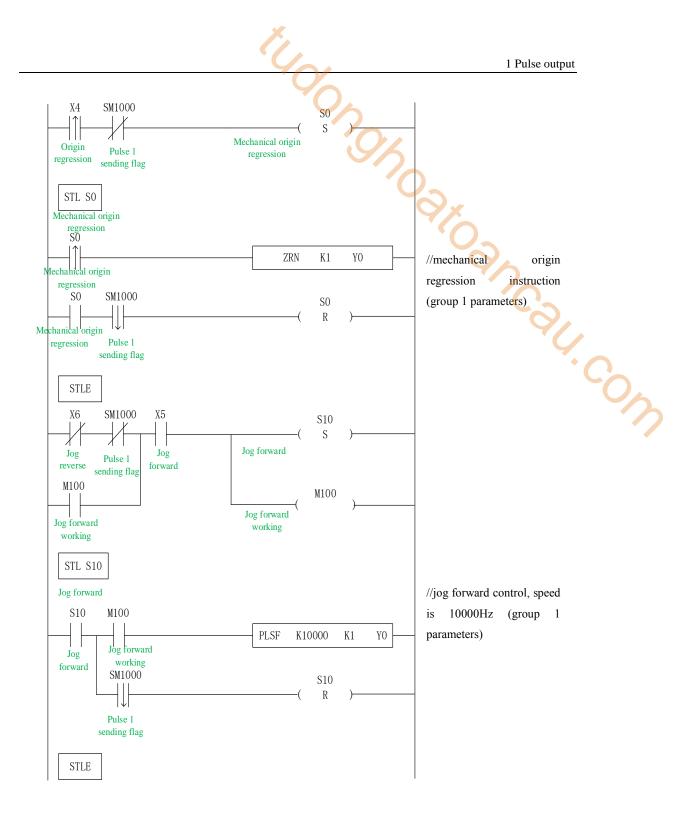


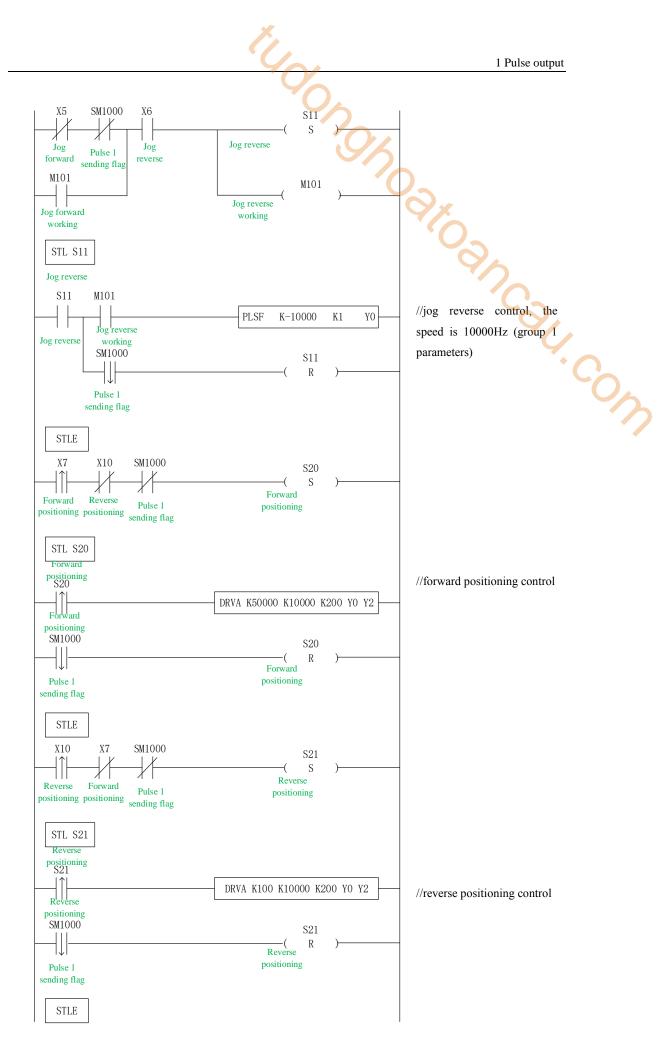
1-5-3. Forward and reverse rotation process program [PLSF, DRVI, DRVA, ZRN]

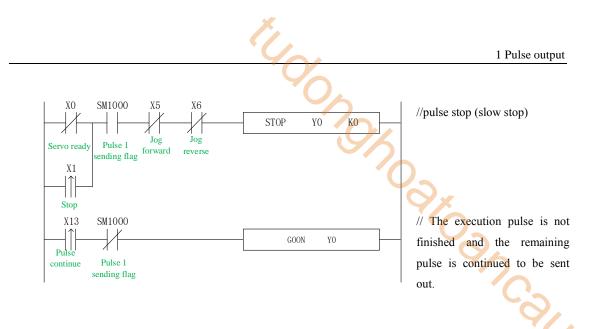
Example 1: According to the following figure, use the absolute single segment positioning method.



Firstly, make the ladder chart as follows:







In the sample program, except DRVI and DRVA, all the system parameters used in the pulse instructions are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

F	Xinje PLC Program Tool
<u>File Edit Search View Online Configur</u>	re <u>O</u> ption <u>W</u> indow <u>H</u> elp
📄 😅 📕 👗 🖻 🖺 🗇 📫	> M 🖻 📃 🚑 🔞 🦊 🤻 😭 💵 🔒 🔒 🛤 🧱 🔯 📼
	- < > <r> - <s> { } } - = → → ↓ ↓ X □ → ↓ ↓ X □ → ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓</s></r>
Project # ×	PLC1 - Ladder
Project	
E PLC1	
Code	0
d_ Instruction List	
Config Block	
Sequence Block	
Comment Editor	PLC1 - Pulse Set
Free Monitor	
Data Monitor	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
Set Reg Init Value	Param Value
PLC Config	Assword A
	- themet
Password	- Imi Pulse
PLC Serial Port	-B66 Module
ethernet	BO BD
Pulse	
	with the CAT
	NC NC
LU LU	WBOX
therCAT	
NC NC	
WBOX	
PLC Status	
Q CPU Detail	
BOD Expansion Details	Read From PLC Write To PLC OK Cancel
BD Details	
ED Details	
C Scan Cycle	
Clock Details	Information
	Error List Output

Click config, then select Y0 axis.

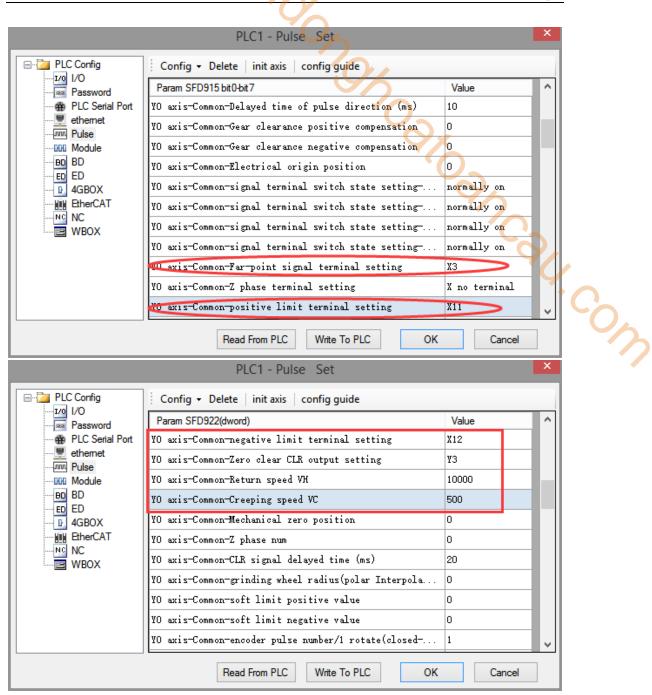
2n

PLC Config Image: PLC Serial Port Image: PLC Serial Port <th></th> <th>PLC1 - I</th> <th>Pulse Set</th> <th>1 Pulse output</th>		PLC1 - I	Pulse Set	1 Pulse output
	I/O Password PLC Serial Port ethemet Pulse BD BD ED ED L 4GBOX WN EtherCAT NC	Y0 axis Y1 axis Y2 axis Y3 axis Y4 axis Y5 axis Y6 axis Y6 axis Y7 axis Y10 axis	cis config guide	Value

In the parameter configuration table, configure as follows (circled parameters need to be modified):

.....

		PLC1 - Pulse Set		×
	PLC Config	🗄 Config 👻 Delete init axis config guide		
L	Password	Param SFD906	Value	^
L	🗝 🖶 PLC Serial Port	YO axis-Common-Parameters setting Motor operating mo	Position Mode	
L	ethernet	YO axis-Common-Parameters setting-Pulse unit	pulse number	
L		YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
L	ED ED	YO axis-Common-pulse send mode	complete mode	
L	GBOX	YO axis-Common-Pulse num (1)	1	
L	EtherCAT	YO axis-Common-Offset (1)	1	
L		VO axis-Common-Pulse direction terminal	¥2	
L		YO axis-Common-Delayed time of pulse direction (ms)	10	
L		YO axis-Common-Gear clearance positive compensation	0	
L		YO axis-Common-Gear clearance negative compensation	0	
L		YO axis-Common-Electrical origin position	0	
		Read From PLC Write To PLC OK	Cancel	

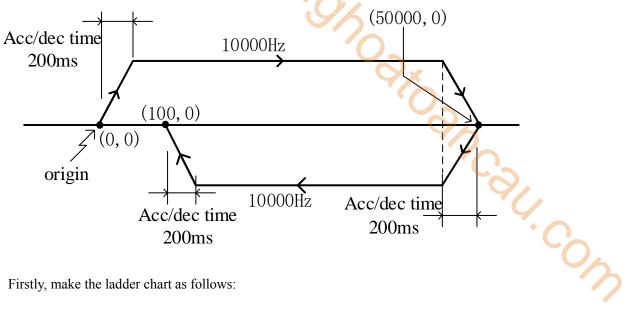


	Ľ.	1 Pulse outp	ut
	PLC1 - Pulse Set	×	
PLC Config PLC Config Password PLC Serial Port ethemet Pulse D Module BD BD ED ED D 4GBOX WBOX	Config - Delete init axis config guide Param SFD958(dword) YO axis-group 1-Pulse default speed YO axis-group 1-Acceleration time of Pulse default s YO axis-group 1-Deceleration time of pulse default s YO axis-group 1-Acceleration and deceleration time (ms) YO axis-group 1-Pulse acc/dec mode YO axis-group 1-Max speed YO axis-group 1-Initial speed YO axis-group 1-Initial speed	Value 10000 200 200 10 11near acc/dec 20000 0 0	
	YO axis-group 1-FOLLOW performance param(1-100) YO axis-group 1-FOLLOW forward compensation(0-100) YO axis-group 1-Fulse frequency refresh time	10 0 1 ms refresh	C
	Read From PLC Write To PLC OK	Cancel	

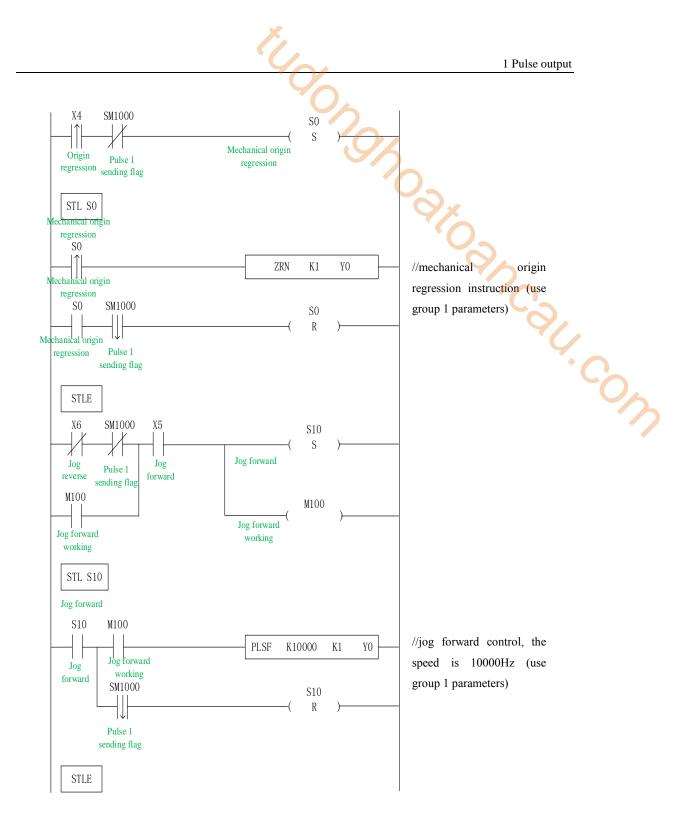
After configuring the parameters, click the "Write to PLC" button to write the parameters into the PLC. After downloading the program, power off the PLC and then power on again.

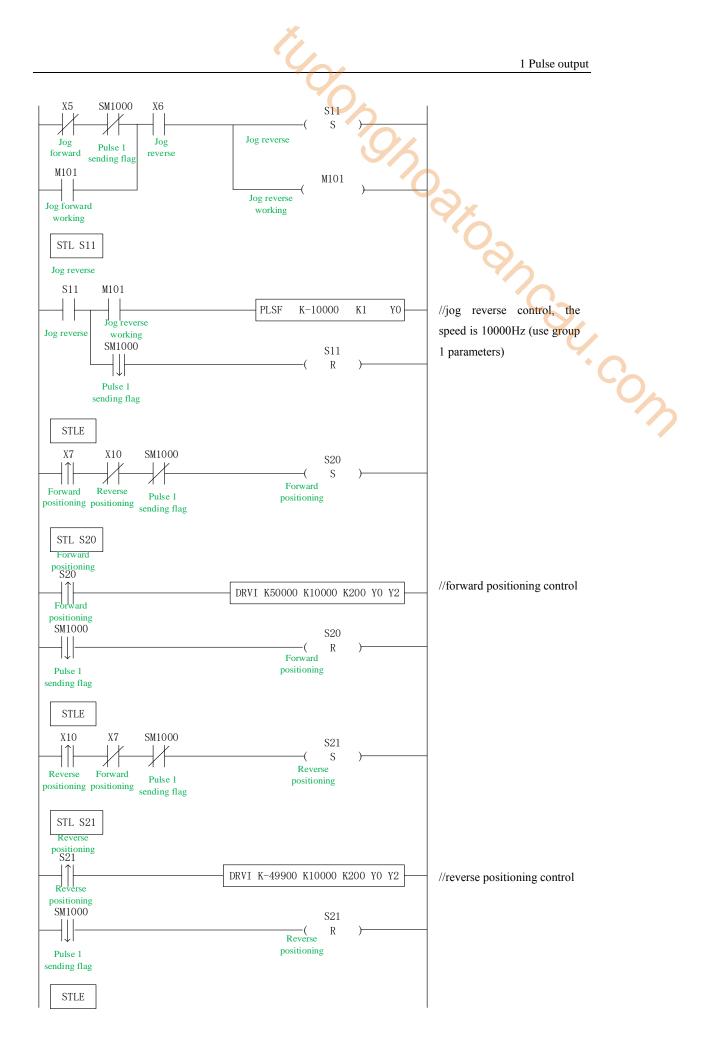
Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

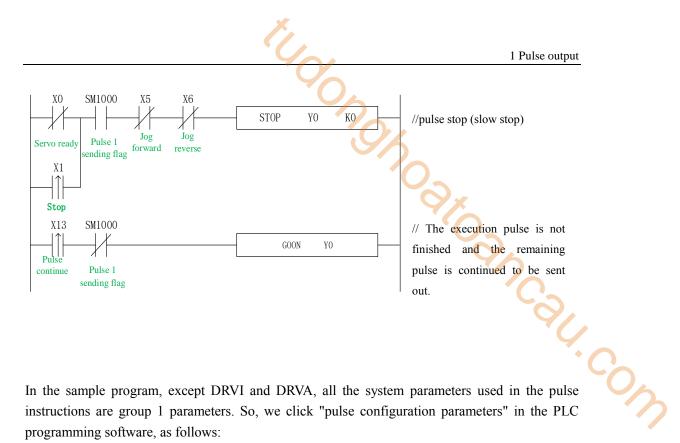
Example 2: According to the following figure, use the relative single segment positioning method.



Firstly, make the ladder chart as follows:







In the sample program, except DRVI and DRVA, all the system parameters used in the pulse instructions are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

Ē	Xinje PLC Program Tool
<u>File Edit Search View Online Configu</u>	re <u>O</u> ption <u>W</u> indow <u>H</u> elp
📄 😅 🛃 👗 🖻 🗂 🗘 🕻	> AA 🖻 🖻 🦂 🔇 🐣 🐥 🎴 💵 🔒 🍰 🛱 🧱 🗟 🖼 📟
	- < > <r> - <s> { } - = → → + = → → + = + → + = → → + = → → + → +</s></r>
Project # ×	PLC1 - Ladder
Project	
PLC1	
Èì Code	0
Config Block	
Sequence Block	
Comment Editor	PLC1 - Pulse Set
- Ex Free Monitor	
Data Monitor	□ □ □ PLC Config Config → Delete init axis config guide
	- 120 1/O Reserved Param Value
E PLC Config	PLC Serial Port
	- 💆 ethemet
Password	Pulse
PLC Serial Port ethernet	- CEO Module
Pulse	
	- I AGBOX
BD BD	
ED ED	
D 4GBOX	WBOX
EtherCAT	
NC NC	
📴 WBOX	
PLC Status	
CPU Detail	
	Read From PLC Write To PLC OK Cancel
BD Details	
ED Details	
Scan Cycle	
W Error Details	Information
B Record	Error List Output
La record	

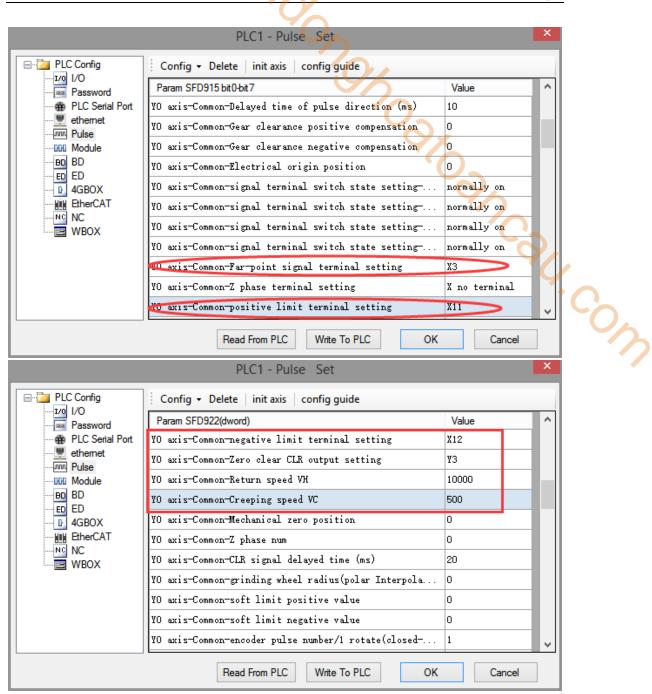
Click config, then select Y0 axis.

PLC Config Image: PLC Serial Port Image: PLC Serial Port <th></th> <th>PLC1 - I</th> <th>Pulse Set</th> <th>1 Pulse output</th>		PLC1 - I	Pulse Set	1 Pulse output
	I/O Password PLC Serial Port ethemet Pulse BD BD ED ED L 4GBOX WN EtherCAT NC	Y0 axis Y1 axis Y2 axis Y3 axis Y4 axis Y5 axis Y6 axis Y6 axis Y7 axis Y10 axis	cis config guide	Value

In the parameter configuration table, configure as follows (circled parameters need to be modified):

......

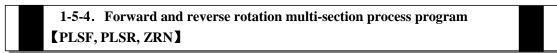
	PLC1 - Pulse Set		×
PLC Config	Config 👻 Delete init axis config guide		
Password	Param SFD906	Value	^
PLC Serial Port	YO axis-Common-Parameters setting Motor operating mo	Position Mode	
ethemet	YO axis-Common-Parameters setting-Pulse unit	pulse number	
- Mi Module	YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
BD BD	YO axis-Common-pulse send mode	complete mode	
B 4GBOX	YO axis-Common-Pulse num (1)	1	
EtherCAT	YO axis-Common-Offset (1)	1	
WBOX	VO axis-Common-Pulse direction terminal	¥2	
	YO axis-Common-Delayed time of pulse direction (ms)	10	
	YO axis-Common-Gear clearance positive compensation	0	
	YO axis-Common-Gear clearance negative compensation	0	
	YO axis-Common-Electrical origin position	0	_
	Read From PLC Write To PLC OK	Cancel	



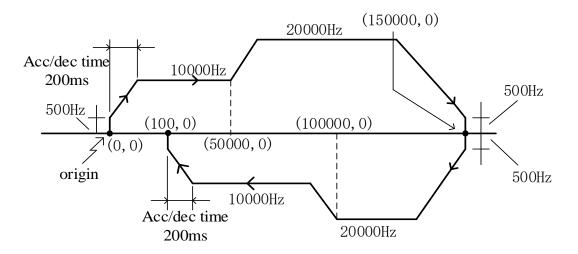
	- U	1 Pulse o	output
	PLC1 - Pulse Set		X
PLC Config <u>Iro</u> I/O 	Config - Delete init axis config guide Param SFD958(dword) VO axis=group 1=Pulse default speed	Value	^
ethemet	10 axis-group 1-Acceleration time of Pulse default s 10 axis-group 1-Acceleration time of pulse default s	200	
	YO axis-group 1-Acceleration and deceleration time (ms) YO axis-group 1-pulse acc/dec mode	10 linear acc/dec	
₩ EtherCAT NC NC WBOX	YO axis-group 1-Max speed YO axis-group 1-Initial speed	200000 0	
	YO axis-group 1-stop speed YO axis-group 1-FOLLOW performance param(1-100)	0	Cr.
	YO axis-group 1-FOLLOW forward compensation(0-100) YO axis-group 1-Fulse frequency refresh time	0 1 ms refresh	
	Read From PLC Write To PLC OK	Cancel	

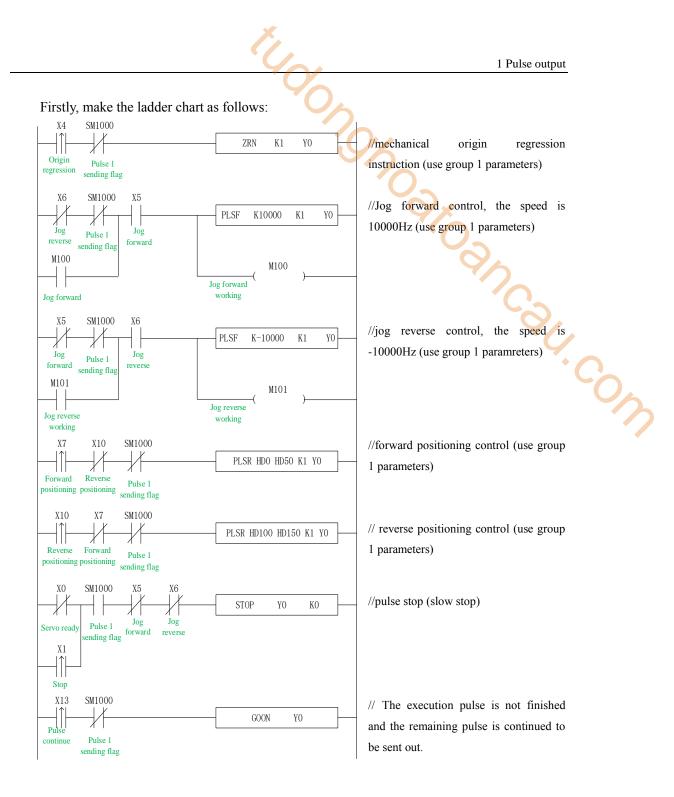
After configuring the parameters, click the "Write to PLC" button to write the parameters into the PLC. After downloading the program, power off the PLC and then power on again.

Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

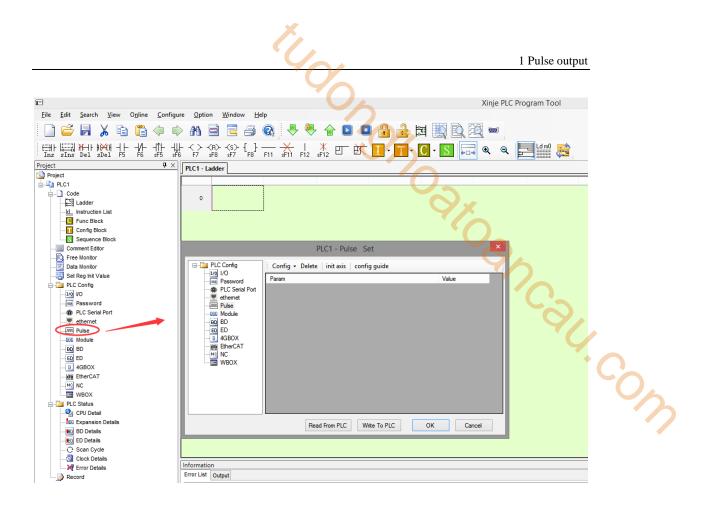


Example 1: According to the following figure, use multi-segment absolute positioning mode.





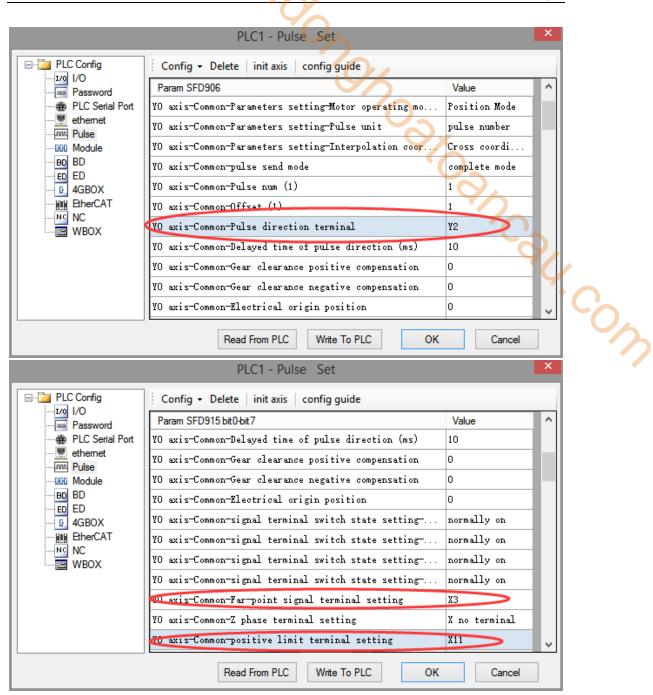
In the sample program, except DRVI and DRVA, all the system parameters used in the pulse instructions are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

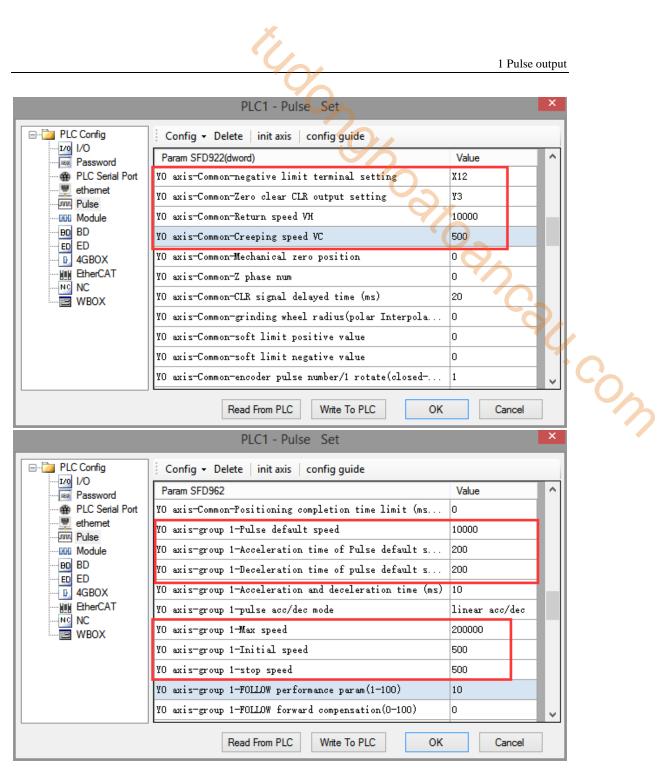


Click config, then select Y0 axis.

PLC1 - Pulse Set					
PLC Config	Config - Delete i	nit axis 🛛 config guide			
I/O Password	Y0 axis		Value		
PLC Serial Port	Y1 axis				
ethemet	Y2 axis				
Module	Y3 axis				
BD BD	Y4 axis				
ED ED	Y5 axis				
EtherCAT	Y6 axis				
	Y7 axis				
WBOX	Y10 axis				
	Y11 axis				
	Read Fr	om PLC Write To PLC	OK Cancel		

In the parameter configuration table, configure as follows (circled parameters need to be modified):





After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	1 you	1 Pulse output
r		
	LSR HD0 HD50 K1 Y0 PLSR Instruction Parameter Data Config]
∦ ⊫⊇ 1 ≧	Modify Reg Comment Ctrl+/ Add Row Comment Show Node Comment Cut Copy Paste	

In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

		multi se	ction p	ulse output					×	C
data start add mode:		user params address:	HD50 0	system params:	K1	output:	YO			0
Add Delet	te Upwards Do frequence	wnwards pulse count	_	wait condition		wa regi		jump register	1	

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

				0 Config	ecute section count:		mode:
iump	wait					e Upwards Downwar	Add Delet
register	gister	reș	rion	wait condi	pulse count	frequence	
KO	KO		; complete	pulse sending	50000	10000	
KO	KO		; complete	pulse sending	150000	20000	▶ 2
			-				•

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	PLSR HD100 HD150 K1 Y0	
 <	PLSR Instruction Parameter Data Config	
	Modify Reg Comment Ctrl+/	
	Add Row Comment Show Node Comment	5
Ж	Cut	
È	Сору	
Ē	Paste	

In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

multi se	ction pulse ou	tput			×
data start address: HD100 user params address:	HD150 system	params: K1	output:	Y0	
mode: absolut v start execute section count:	0 0	onfig			
Add Delete Upwards Downwards		1			

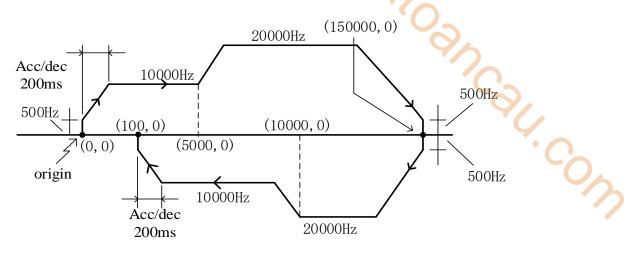
After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

mode:		execute section count:	0 Config				
Add Del	ete Upwards Downwa	ırds					
	frequence	pulse count	wait condition		wa rogi		jump rogistor
1	20000	100000	pulse sending comple	ete	KO)	KO
▶ 2	10000	100	pulse sending comple	K)	KO	

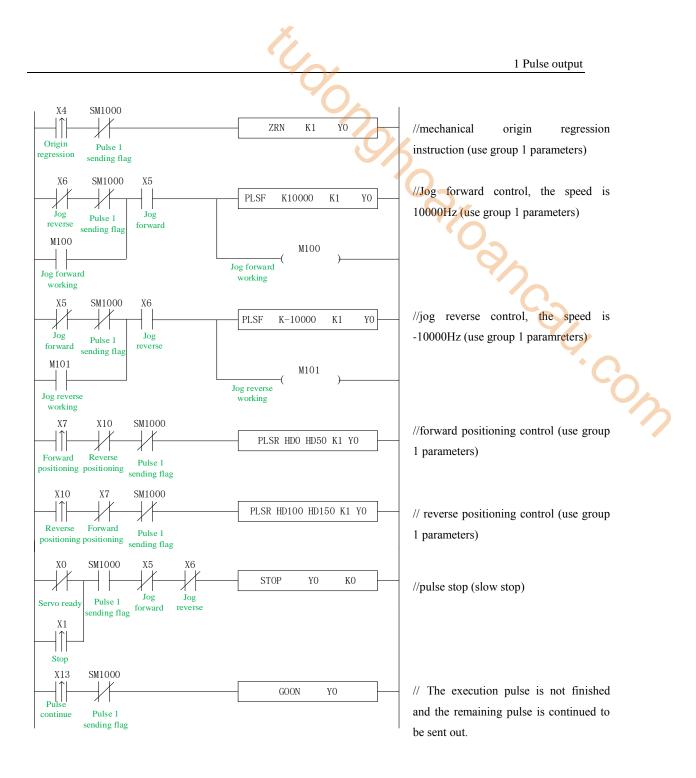
Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

After downloading the program, power off the PLC and then re-energize it. Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

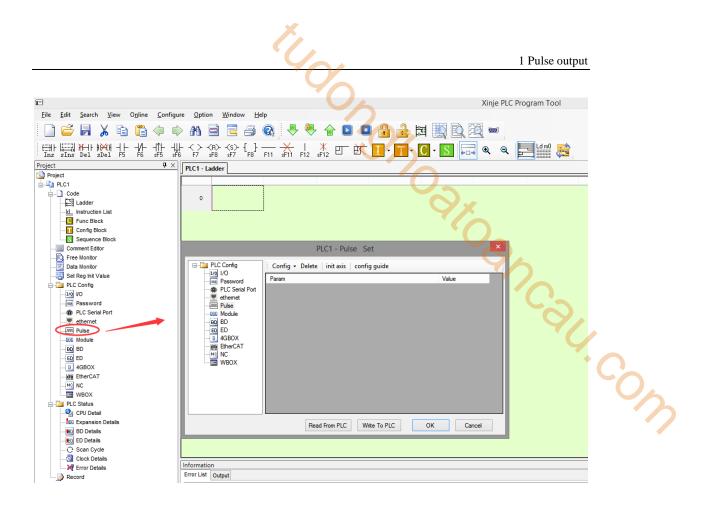
Example 2: According to the following figure, multi-segment relative positioning method is used.



Firstly, make the ladder chart as follows:



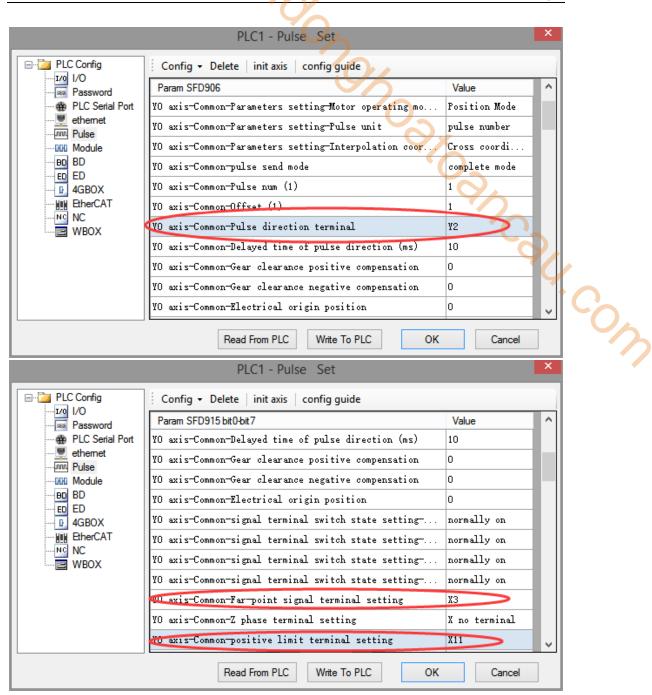
In the sample program, all the system parameters used in the pulse instructions are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

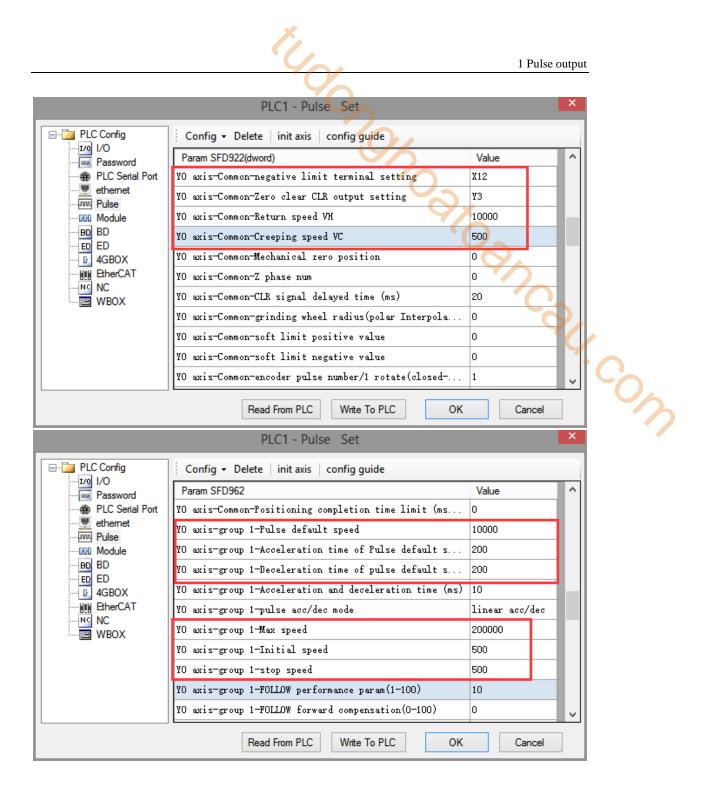


Click config, then select Y0 axis.

	PLC	1 - Pulse Set		×
PLC Config	Config 🗕 Delete i	nit axis 🛛 config guide		
Password	Y0 axis		Value	
PLC Serial Port	Y1 axis			
ethemet	Y2 axis			
	Y3 axis			
BD BD	Y4 axis			
ED ED	Y5 axis			
EtherCAT	Y6 axis			
NC NC	Y7 axis			
WBOX	Y10 axis			
	Y11 axis			
	Read Fr	om PLC Write To PLC	OK Cancel	

In the parameter configuration table, configure as follows (circled parameters need to be modified):





After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	14	1 Pulse output
,		
	LSR HD0 HD50 K1 Y0 PLSR Instruction Parameter Data Config]
∦ ⊫⊇ ∎⊇	Modify Reg Comment Ctrl+/ Add Row Comment Show Node Comment Cut Copy Paste	

In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is "relative"), as shown in the following figure:

		multi se	ction pu	Ilse output				
data start address:	HDO	user params address:	HD50	system params:	K1	output:	YO	
mode:	relative 🗸	start execute section count:	0	Config				
Add Delete	Upwards Di	ownwards						

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

nod	le:	relative ✓ start e	Recute section count:	0 Config				
Ad	dd Del	ete Upwards Downwar	ds					
_		frequence	pulse count	wait condition		wa		յատը register
t	1	10000	50000	pulse sending comple	ete	KO)	KO
۲	2	20000	100000	pulse sending comple	KO)	KO	

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	PLSR HD100 HD150 K1 Y0
<	PLSR Instruction Parameter Data Config
	Modify Reg Comment Ctrl+/
	Add Row Comment Show Node Comment
X	Cut
	Сору
Ĩ	Paste

Paste
In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is
"relative"), as shown in the following figure:

multi section pulse output						×		
data start address:	HD100	user params address:	HD150	system params:	K1	output:	YO	
mode:	relative	start execute section count:	0	Config				
Add Delete l	Jpwards Do	ownwards						

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of reverse rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

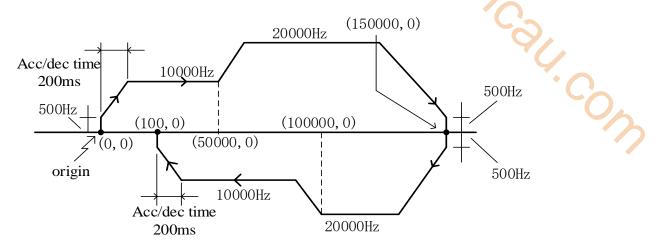
lata start ad		arams address:	HD150 system params: K1	output:	YO
node:	start ex	ecute section count:	0 Config		
Add Del	ete Upwards Downwar	ds			
	fraguarda	pulso count	wait condition	wai regis	
1	20000	-50000	pulse sending complete	-	КО
2	10000	-99900	pulse sending complete	KO	KO
L					

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

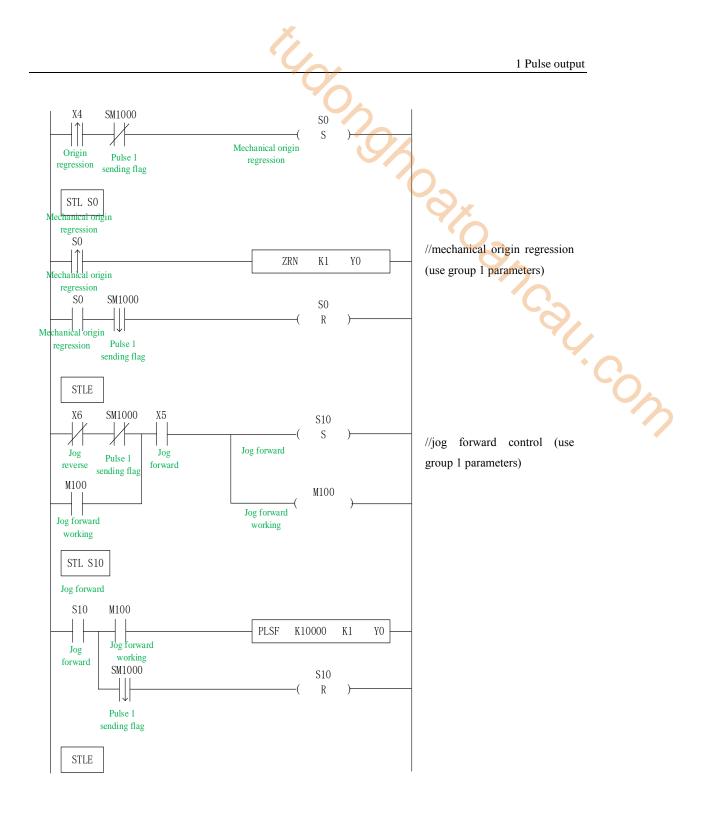
After downloading the program, power off the PLC and then re-energize it. Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

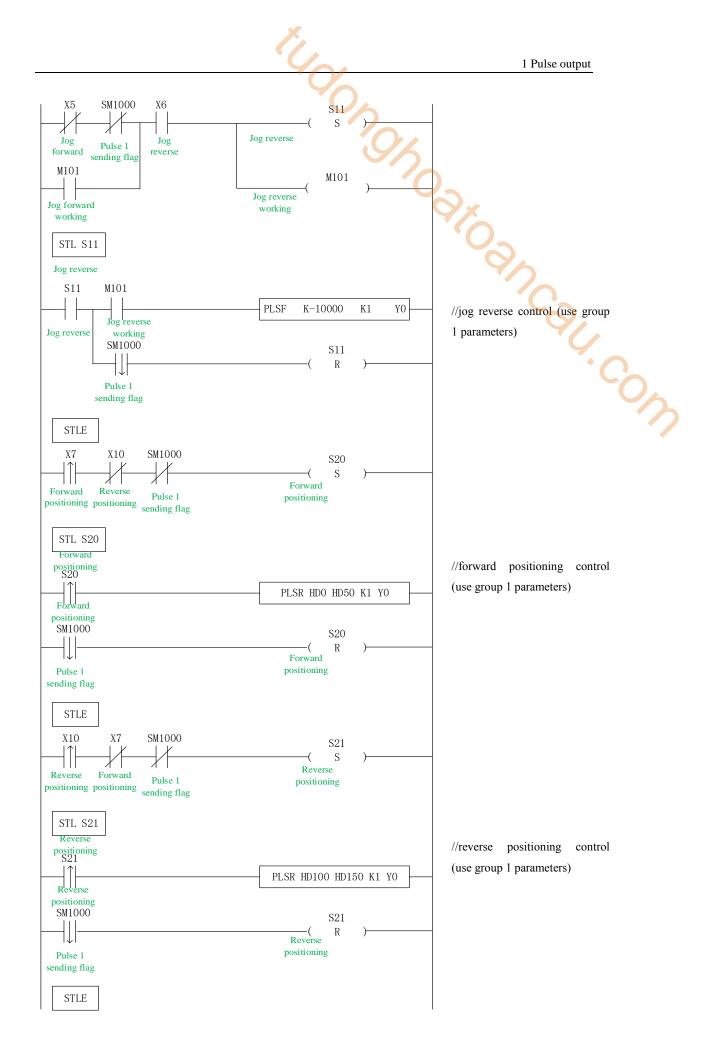


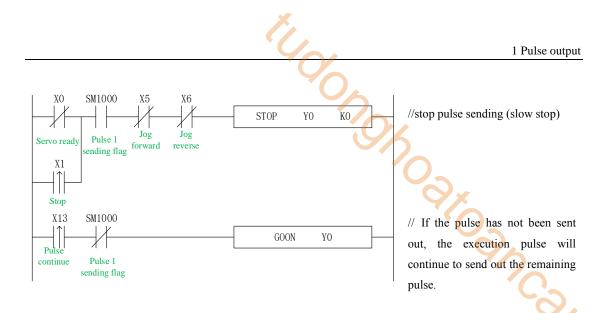
Example 1: According to the following figure, multi-segment absolute positioning is used.



Firstly, make the ladder chart as follows:







In the sample program, all the system parameters used in the pulse instructions are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

F	Xinje PLC Program Tool
<u>File Edit Search View Online Config</u>	rre <u>O</u> ption <u>W</u> indow <u>H</u> elp
	> AN 🖻 📃 🚑 🚱 🐥 🐥 🎓 🖻 🔳 🔒 🍰 🛱 🧱 🔯 📼
	↓ < >
Project # X	PLC1 - Ladder
Project	
E-PLC1	
Code	0
till Ladder	
Func Block	
Config Block	
S Sequence Block	
Comment Editor	PLC1 - Pulse Set
Data Monitor	Config C
	Param Value
E PLC Config	- PLC Serial Port
	- ethemet
Password	Pulse
PLC Serial Port	
BD BD	
ED ED	
I 4GBOX	WBOX
WIN EtherCAT	
NC NC	
WBOX	
- DI PLC Status	
- Qui CPU Detail	
	Read From PLC Write To PLC OK Cancel
ED Details	
Clock Details	Information
Error Details	Error List Output
Record	Line Lak Uniput

Click config, then select Y0 axis.

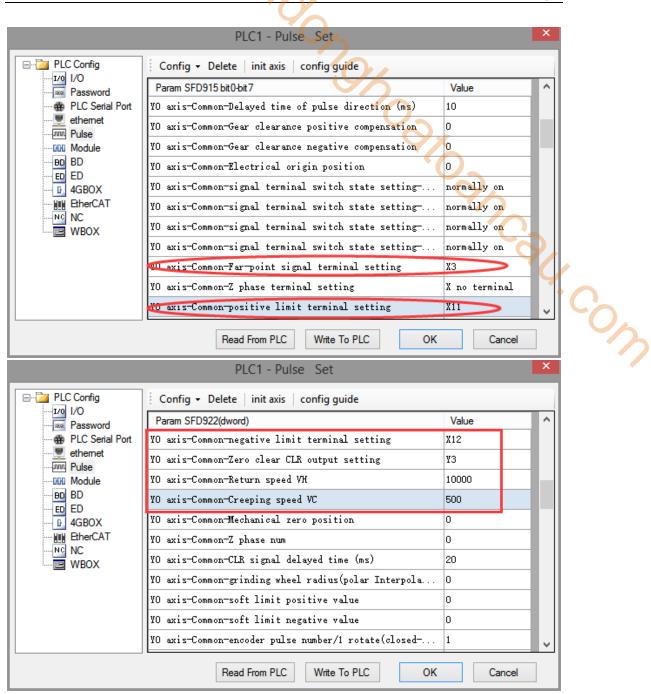
'on

 PLC Config Izo I/O Izo I/O Izo Password Izo PLC Serial Port Izo Pulse Izo Pulse<th>PL</th><th>LC1 - Pulse Set</th><th>1 Pulse output</th>	PL	LC1 - Pulse Set	1 Pulse output
	I/O Y0 axis Password Y1 axis PLC Serial Port Y1 axis Pulse Y2 axis Module Y3 axis ED Y4 axis ED Y5 axis WBOX Y6 axis Y1 axis Y1 axis Y2 axis Y2 axis Y3 axis Y4 axis Y4 axis Y5 axis Y5 axis Y6 axis Y7 axis Y1 axis	init axis config guide	Value

In the parameter configuration table, configure as follows (circled parameters need to be modified):

.....

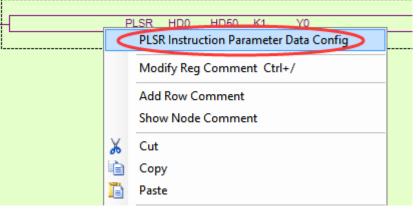
PLC1 - Pulse Set				
PLC Config PLC Config PLC Serial Port PLC Serial Port ethemet Pulse PLS ethemet PUlse PLS ED ED ED ED CD ED ED ED WBOX	Config 👻 Delete init axis config guide			
	Param SFD906	Value	^	
	YO axis-Common-Parameters setting Motor operating mo	Position Mode		
	YO axis-Common-Parameters setting-Pulse unit	pulse number		
	YO axis-Common-Parameters setting-Interpolation coor	Cross coordi		
	YO axis-Common-pulse send mode	complete mode		
	YO axis-Common-Pulse num (1)	1		
	YO axis-Common-Offset (1)	1		
	VO axis-Common-Pulse direction terminal	¥2		
	YO axis-Common-Delayed time of pulse direction (ms)	10		
	YO axis-Common-Gear clearance positive compensation	0		
	YO axis-Common-Gear clearance negative compensation	0		
	YO axis-Common-Electrical origin position	0	•	
	Read From PLC Write To PLC OK	Cancel		



	PLC1 - Pulse Set	1 Pulse output
PLC Config PLC Config PLC Serial Port PLC Serial Port PLS ethemet Pulse PLS ED ED ED ED AGBOX WBOX	Config - Delete init axis config guide Param SFD962 YO axis-Common-Positioning completion time limit (ms YO axis-group 1-Pulse default speed YO axis-group 1-Acceleration time of Pulse default s YO axis-group 1-Deceleration time of pulse default s YO axis-group 1-Acceleration and deceleration time (ms) YO axis-group 1-Pulse acc/dec mode YO axis-group 1-Max speed YO axis-group 1-Initial speed YO axis-group 1-stop speed YO axis-group 1-FOLLOW performance param(1-100)	Value 0 10000 200 200 10 10 11 11near_acc/dec 200000 500 500 10 10
	YO axis-group 1-FOLLOW forward compensation(0-100) Read From PLC Write To PLC OK	Cancel

After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":



In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

	multi sec	ction pulse output			×
data start address: HD0 mode: absolut ~	user params address: Start execute section count:	HD50 system params: 0 Config	K1 ou	tput: Y0	
Add Delete Upwards Defense	pulse count	wait condition	_	wait register	jump register

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

		multi se	ction pulse output 🍈 🧹		×
a start	address: HD0	user params address:	HD50 system params:	K1 output: Y0	
:	absolut 🗸	start execute section count:	0 Config	10.	
d D	Delete Upwards D	ownwards		9	
-	Îr equence	pulse count	wait condition	wait register	iumn register
	10000	50000	pulse sending comple		KO
2	20000	150000	pulse sending comple	te KO	KO
ed spac	e: HD0-HD29,HD50	-HD53	Read From PLC Write	To PLC OK	Cancel

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	PLSR HD100 HD150 K1 Y0	
 <	PLSR Instruction Parameter Data Config	
	Modify Reg Comment Ctrl+/	
	Add Row Comment	
	Show Node Comment	
Х	Cut	
È	Сору	
B	Paste	

In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

		multi se	ction pu	lse output				×
data start address:	HD100	user params address:	HD150	system params:	K1	output:	YO	
mode: 🤇	absolut 🗸	start execute section count:	0	Config		_		
Add Delete U	Jpwards Do	ownwards	1	1		1	1	

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

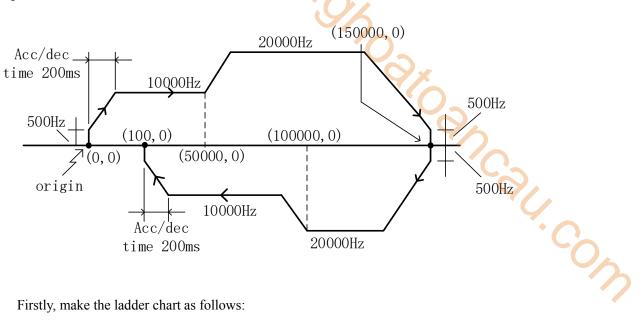
	_				_	_
		multi sec	tion pulse output		×	
ata start a	ddress: HD100 user pa	rams address:	HD150 system params: K1	output: Y0		
ode:	absolut 👻 start ex	ecute section count:	0 Config	10.		
Add De	elete Upwards Downward	ds		9		
	frequence	pulse count	wait condition	wait	jump	
1	20000	100000	pulse sending complete	KO	KO	
· 2	10000	100	pulse sending complete	KO	KO	
						10
ed space:	HD100-HD129,HD150-HD	153	Read From PLC Write To PLC	ОК	Cancel	

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

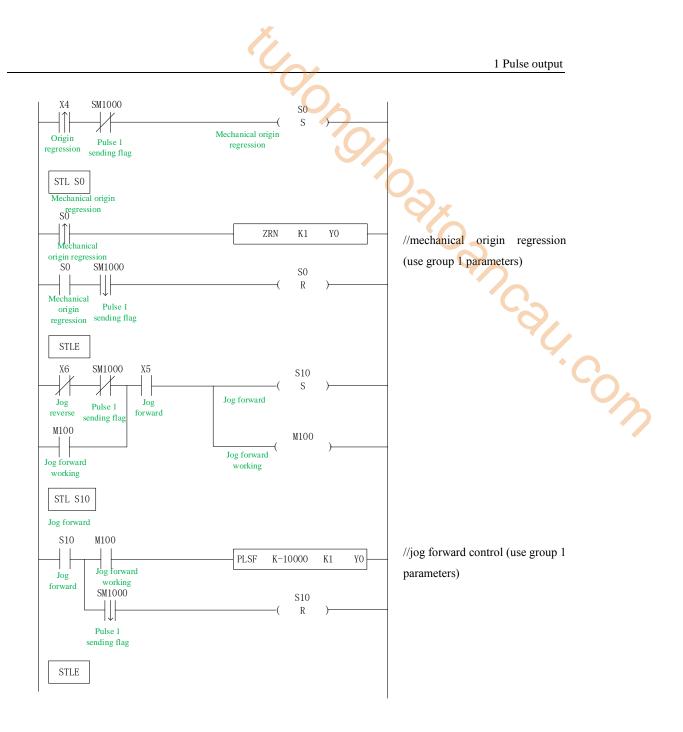
After downloading the program, power off the PLC and then re-energize it.

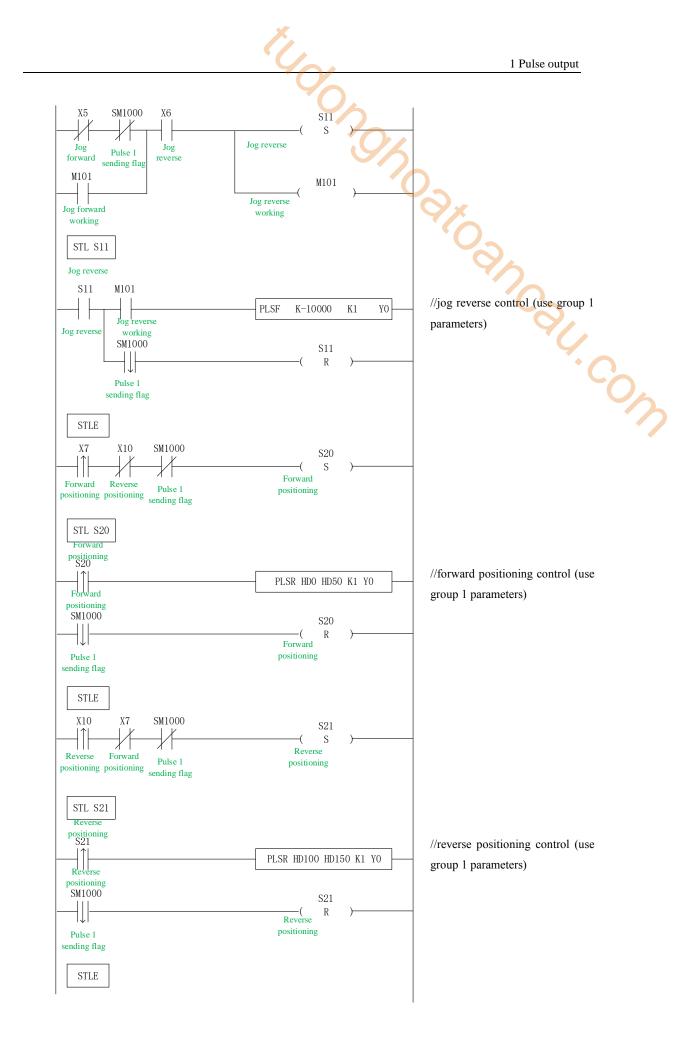
Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

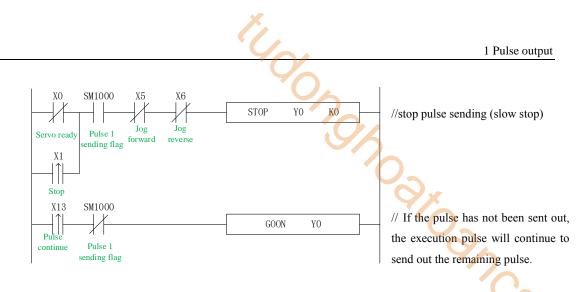
Example 2: According to the following figure, multi-segment absolute positioning mode is adopted.



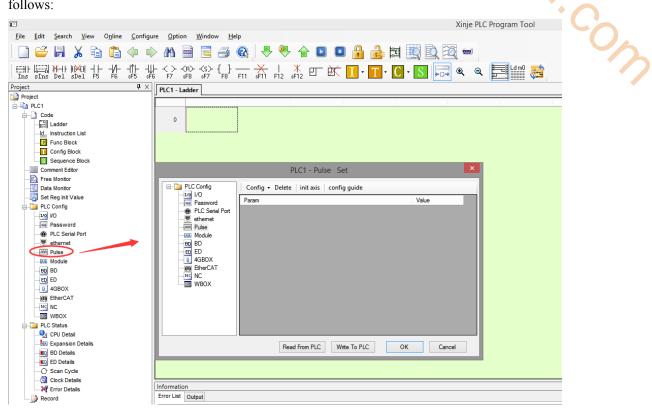
Firstly, make the ladder chart as follows:







In the sample program, all the system parameters used in the pulse instructions are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:



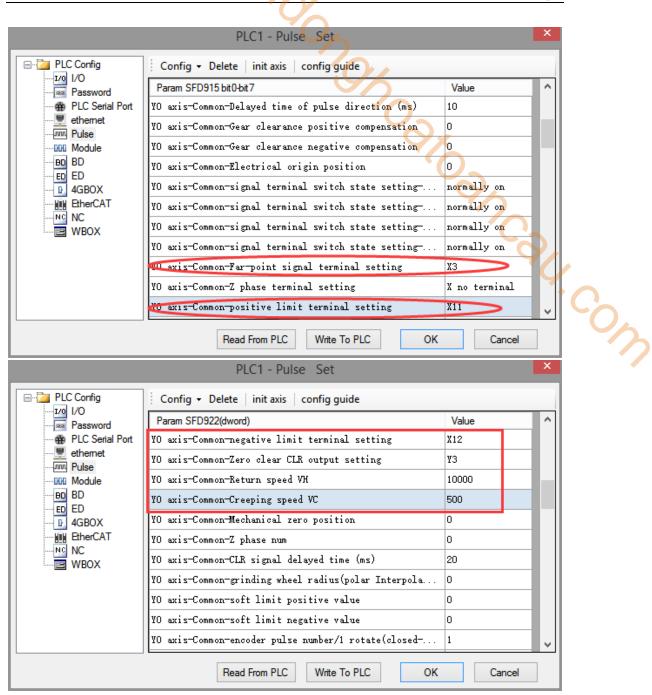
Click config, then select Y0 axis.

PLC Config Image: PLC Serial Port Image: PLC Serial Port <th></th> <th>PLC1 - I</th> <th>Pulse Set</th> <th>1 Pulse output</th>		PLC1 - I	Pulse Set	1 Pulse output
	I/O Password PLC Serial Port ethemet Pulse BD BD ED ED L 4GBOX WN EtherCAT NC	Y0 axis Y1 axis Y2 axis Y3 axis Y4 axis Y5 axis Y6 axis Y6 axis Y7 axis Y10 axis	cis config guide	Value

In the parameter configuration table, configure as follows (circled parameters need to be modified):

......

	PLC1 - Pulse Set		×
PLC Config	🗄 Config 👻 Delete init axis config guide		
Password	Param SFD906	Value	^
PLC Serial Port	YO axis-Common-Parameters setting Motor operating mo	Position Mode	
ethemet	YO axis-Common-Parameters setting-Pulse unit	pulse number	
Module	YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
BD BD	YO axis-Common-pulse send mode	complete mode	
I 4GBOX	YO axis-Common-Pulse num (1)	1	
EtherCAT	YO axis-Common-Offset (1)	1	
WBOX	VO axis-Common-Pulse direction terminal	¥2	
	YO axis-Common-Delayed time of pulse direction (ms)	10	
	YO axis-Common-Gear clearance positive compensation	0	
	YO axis-Common-Gear clearance negative compensation	0	
	YO axis-Common-Electrical origin position	0	•
	Read From PLC Write To PLC OK	Cancel	



	U .	1 Pulse output
	PLC1 - Pulse Set	×
PLC Config	Config 👻 Delete init axis config guide	
Password	Param SFD962	Value ^
PLC Serial Port	YO axis-Common-Positioning completion time limit (ms	0
ethernet	YO axis-group 1-Pulse default speed	10000
	YO axis-group 1-Acceleration time of Pulse default s.	200
BD BD	YO axis-group 1-Deceleration time of pulse default s	200
4GBOX	YO axis-group 1-Acceleration and deceleration time (ms)	10
EtherCAT	YO axis-group 1-pulse acc/dec mode	linear acc/dec
WBOX	YO axis-group 1-Max speed	200000
	YO axis-group 1-Initial speed	500
	YO axis-group 1-stop speed	500
	YO axis-group 1-FOLLOW performance param(1-100)	10
	YO axis-group 1-FOLLOW forward compensation(0-100)	o V
·,	Read From PLC Write To PLC OK	Cancel

After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

P	LSR HD0 HD50 K1 Y0	
 <	PLSR Instruction Parameter Data Config	
	Modify Reg Comment Ctrl+/	
	Add Row Comment	
	Show Node Comment	
X	Cut	
è	Сору	
Þ	Paste	

In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is "relative"), as shown in the following figure:

			multi se	ction pu	Ilse output				×
Г									
	data start address:	HD0	user params address:	HD50	system params:	K1	output:	YO	
	mode:	relative 🗸	start execute section count:	0	Config				
	Add Delete	Jpwards Do	ownwards						

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

				Ç	6				
			multi se	ction pu	ulse outpu	ut			
data start a	ddress: HD0	user par	ams address:	HD50	system par	ams: K1	output:	YO	
mode:	relative 🗸	start exe	cute section count:	0	Confi	g			
Add De	elete Upwards Do	woward	r		1				
Add De		witwaru	2				C,	-	
	frequence		pulse count wait condition			tion	wa		jump
1	10000		50000	pu	lse sendin	g complete	K		KO
▶ 2	20000		100000	pu	lse sendin	g complete	K		KO
									Co
sed space:	HD0-HD29,HD50-H	ID53		Read	From PLC	Write To PLC		ок	Cancel

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

-		PLSR HD100 HD150 K1 Y0	
	<	PLSR Instruction Parameter Data Config	
		Modify Reg Comment Ctrl+/	
		Add Row Comment	
		Show Node Comment	
	Ж	Cut	
	È	Сору	
	Ē	Paste	

In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is "relative"), as shown in the following figure:

	multi section pulse output									
Г										
L	data start address:	HD100	user params address:	HD150	system params:	K1	output:	YO		
L	mode:	relative 🗸	start execute section count:	0	Config					
L	Add Delete Upwards Downwards									

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of reverse rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

1	Pulse output
---	--------------

-007

			× Uni		1 Pulse outpu
			<u> </u>		
		multi sec	ction pulse output		×
data start ad		arams address:	HD150 system params: K1	output: Y0	
mode:	relative ✓ start ex	ecute section count:	0 Config		
Add Del	ete Upwards Downwar	ds		S .	
	fragrance	pulso count	moit condition	wait register	jump register
1	20000	-50000	pulse sending complete	KO	KO
▶ 2	10000	-99900	pulse sending complete	ко 💙	KO
					Ca
used space:	HD100-HD129,HD150-HD	152	Read From PLC Write To PLC	ок	Cancel

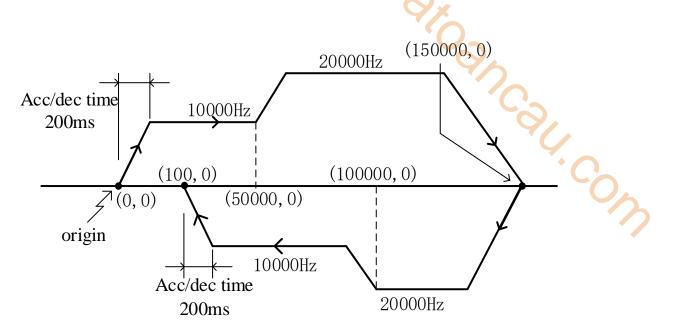
Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

After downloading the program, power off the PLC and then re-energize it.

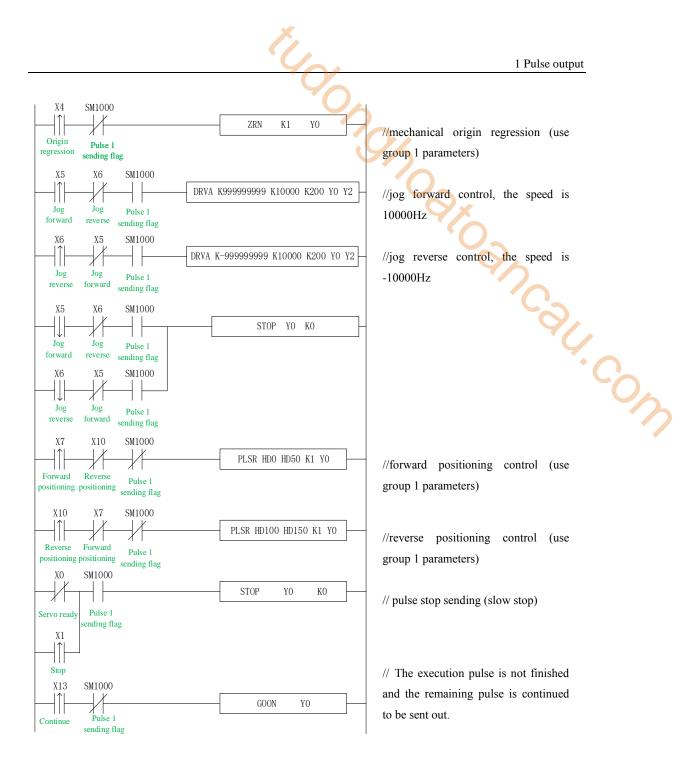
Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

1-5-6. Forward reverse rotation mulsti-segment sequential control program [DRVI, DRVA, PLSR, ZRN]

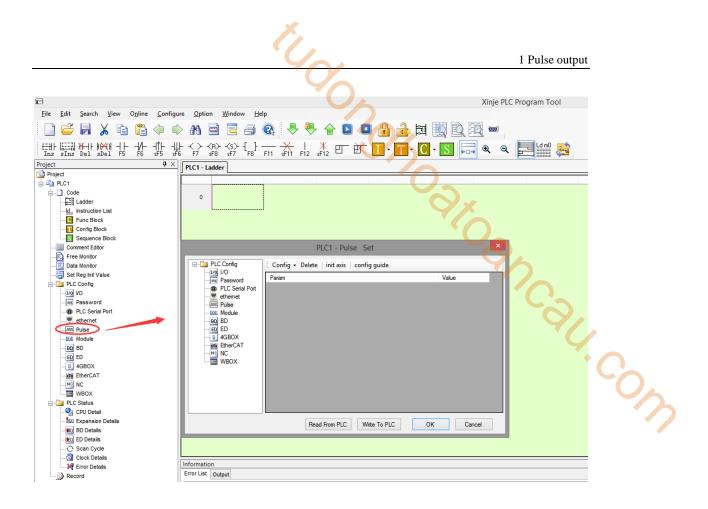
Example 1: According to the following figure, multi-segment absolute positioning mode is adopted.



Firstly, make the ladder chart as follows:



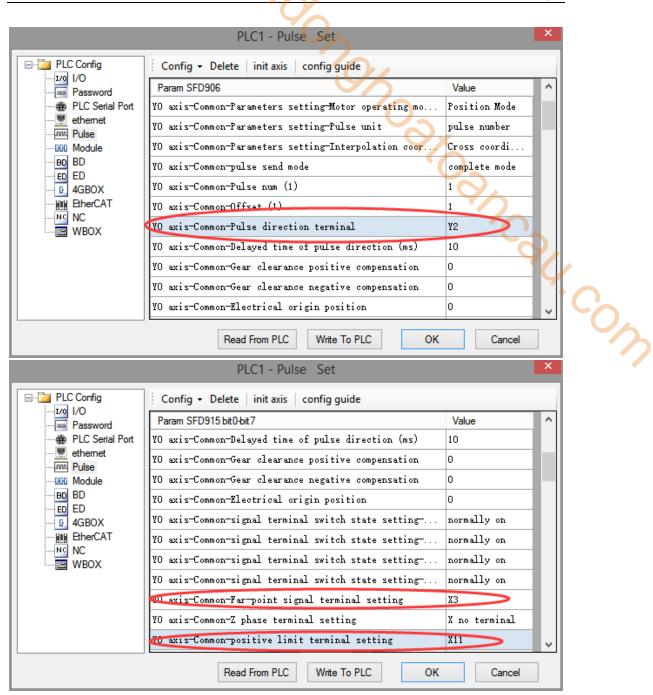
In the sample program, all the system parameters used in the pulse instructions (except DRVA, DRVI) are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

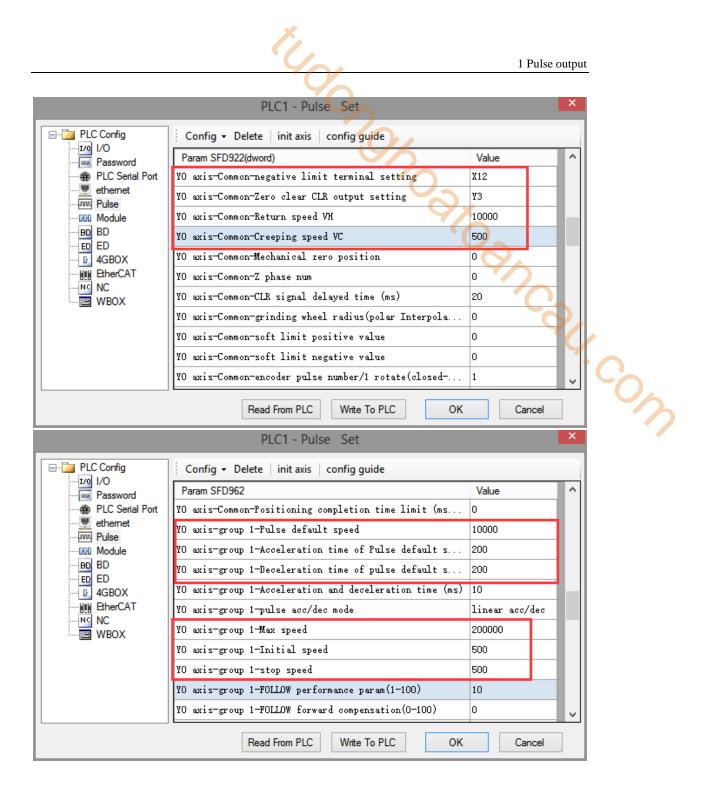


Click config, then select Y0 axis.

	PLC	C1 - Pulse Set		×
PLC Config	Config 🗕 Delete 🛛 i	nit axis 🛛 config guide		
Password	Y0 axis		Value	
PLC Serial Port	Y1 axis			
ethemet	Y2 axis			
Pulse	Y3 axis			
BD BD	Y4 axis			
ED ED	Y5 axis			
EtherCAT	Y6 axis			
NC NC	Y7 axis			
WBOX	Y10 axis			
	Y11 axis			
	Read Fr	rom PLC Write To PLC	OK Cancel	

In the parameter configuration table, configure as follows (circled parameters need to be modified):





After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	U.	1 Pulse output
[
	LSR HD0 HD50 K1 Y0 PLSR Instruction Parameter Data Config]
∦ ⊫⊇ 1 ≧	Modify Reg Comment Ctrl+/ Add Row Comment Show Node Comment Cut Copy Paste	

In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

		multi section pulse output												
	data start mode:	address:	HD0 absolut V		rams address: ecute section count:	HD50 0	system params:	K1	output:	YO			0	
l	Add C		Jpwards Do frequence	ownward	ds pulse count	_	wait condition		wa regi		jump register			
l														

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

node:		erams address:	HD50 system params: K1	output: Y0	
Add Del	ete Upwards Downwa	rds			
	fr equence	puise count	wait condition	wait register	iumn register
1	10000	50000	pulse sending complete	KO	KO
▶ 2	20000	150000	pulse sending complete	KO	KO

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	PLSR HD100 HD150 K1 Y0	
 <	PLSR Instruction Parameter Data Config	
	Modify Reg Comment Ctrl+/	
	Add Row Comment Show Node Comment	
Ж	Cut	
È	Сору	
Ē	Paste	

In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

multi section pulse output									
data start address: HD100 user params address:	HD150	system params:	K 1	output:	YO				
node: absolut v start execute section cour	nt: 0	Config							

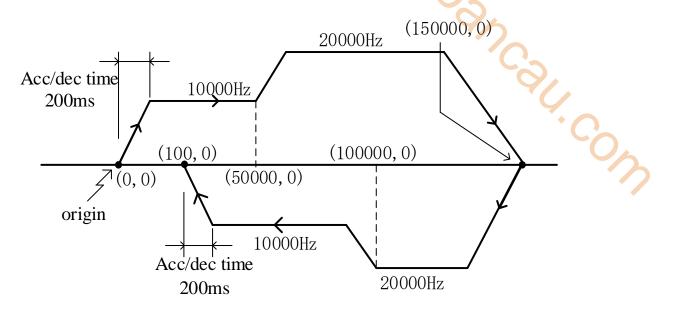
After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

lata start ad		params address:	HD150 system params:	К1	output:	YO	
Add Dele	ete Upwards Downw	ards			Ya		·
	frequence	pulse count	wait condition		wa rogi		jump rogistor
1 20000		100000	pulse sending compl	KO		KO	
2	10000	100	pulse sending complete)	KO

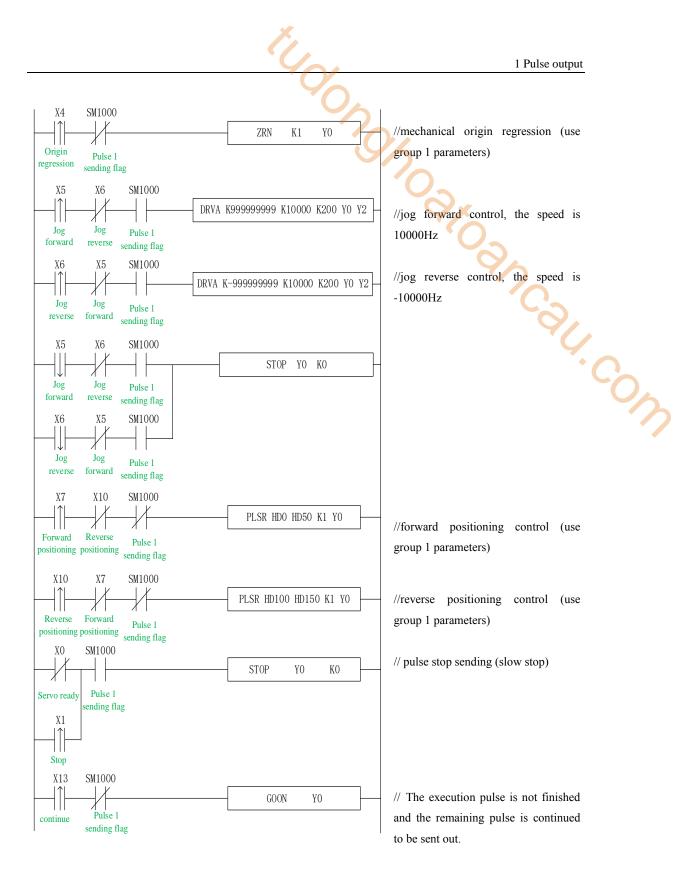
Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

After downloading the program, power off the PLC and then re-energize it. Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

Example 2: According to the following figure, the relative multi-segment pulse positioning method is used.



Firstly, make the ladder chart as the follows:



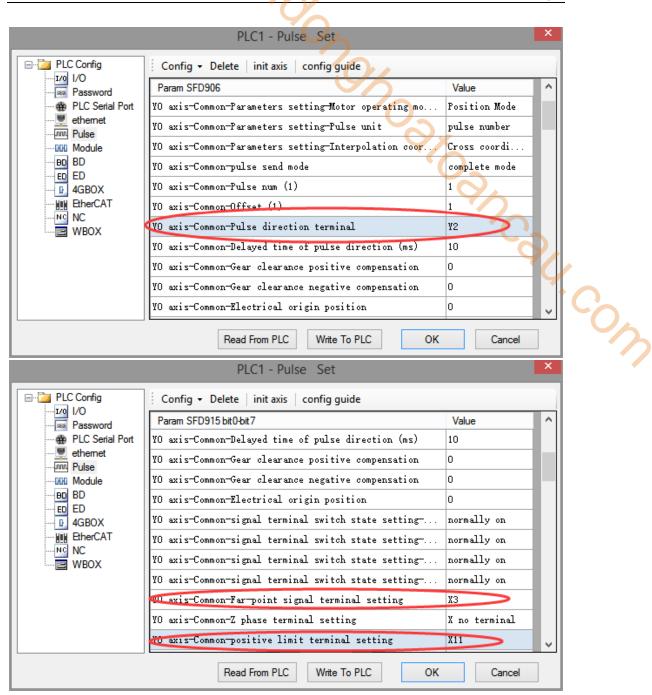
In the sample program, all the system parameters used in the pulse instructions (except DRVA, DRVI) are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

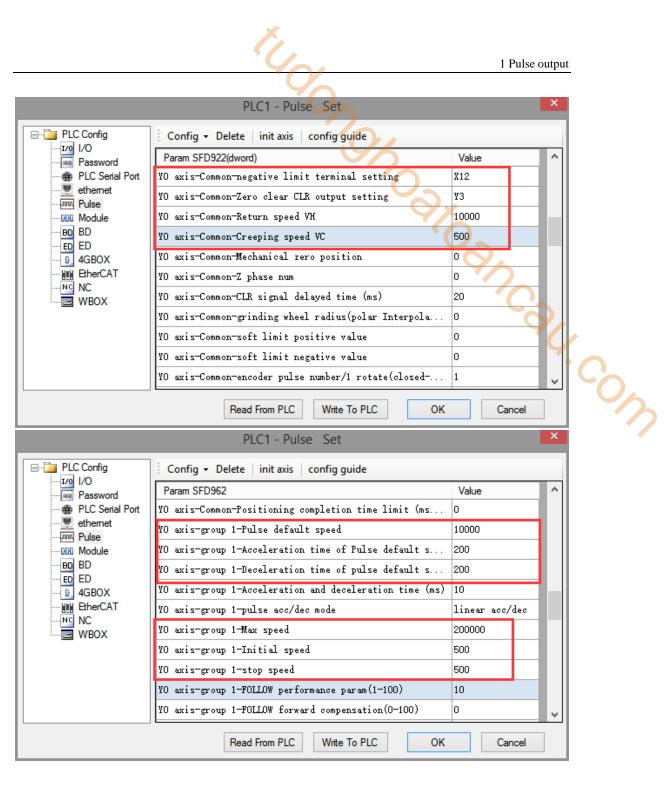
	U		U								
									Xinje PL	C Program Tool	
Ei	le <u>E</u> d	lit <u>S</u> earch	<u>V</u> iew	0 <u>n</u> line	<u>C</u> onfigur	Option Window Help					
						M 🖻 🗏 🖪 🚱 🐥					
Ę	H- K ns sI	ins Del	H₩H - sDel F5	+ -//- 5 F6	- ↑} ↓}- sF5 sF6	-< > -< R>< S> -{ } F7 sF8 sF7 F8 F11 sF11 F1	2 \$F12 ET 🕅 🚺 •	T • C • S	<u> </u>	Ld m0 💏	
Proj					4 ×	PLC1 - Ladder		•			
	Project				i						
	PLC										
	ė-D	Code				0			9	~	
		d Instructio				L					
		E Func Blo									
		Config B Sequence									
		Comment Ed					PLC1 - Pulse Set		×		
		Free Monitor					PLCT - Puise Set				
		Data Monitor				■ PLC Config Config ▼ D	elete init axis config guide				
	-	Set Reg Init V	√alue			Param	, ,	Value			
		PLC Config				Password Password Password Password		1000			
		1/0 VO				ethernet					
		Reserve				Pulse					
		PLC Seri ethernet			<u> </u>	BD BD					-On
		Pulse	-								
		DOD Module				B 4GBOX					
		BD BD				EtherCAT					
	-	ED ED				NC WBOX					
		B 4GBOX									
		EtherCA	т								
		PLC Status									
		CPU Deta	ail								
		AM Expansio						01	<u> </u>		
		BD Detai					Read From PLC Write To PLC	ОК	Cancel		
		ED Detai	ls		- II						
		🔆 Scan Cy									
		🔄 Clock De				formation					
		K Error De	tails			rror List Output					
	i	Record				output					

Click config, then select Y0 axis.

	PLC	C1 - Pulse Set		×
PLC Config	Config - Delete i	init axis 🛛 config guide		
I/O Password	Y0 axis		Value	
PLC Serial Port	Y1 axis			
ethemet	Y2 axis			
	Y3 axis			
BD BD	Y4 axis			
ED ED	Y5 axis			
EtherCAT	Y6 axis			
NC NC	Y7 axis			
WBOX	Y10 axis			
	Y11 axis			
	Read F	rom PLC Write To PLC	OK Cancel	

In the parameter configuration table, configure as follows (circled parameters need to be modified):





After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	14	1 Pulse output
,		
	LSR HD0 HD50 K1 Y0 PLSR Instruction Parameter Data Config]
∦ ⊫⊇ ∎⊇	Modify Reg Comment Ctrl+/ Add Row Comment Show Node Comment Cut Copy Paste	

In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is "relative"), as shown in the following figure:

		multi se	ction pu	Ilse output				C
data start address:	HD0	user params address:	HD50	system params:	K1	output:	Y0	
mode:	relative 🗸	start execute section count:	0	Config				
Add Delete	Jpwards D	ownwards						

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

mod			ecute section count:	0 Config		
A	dd Del	ete Upwards Downwar	ds			
i.		frequence	pulse count	wait condition	wait	jump
T	1	10000	50000	pulse sending complete	KO	KO
Þ	2	20000	100000	pulse sending complete	KO	KO

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

H		PLSR HD100 HD150 K1 Y0	
		PLSR Instruction Parameter Data Config	
		Modify Reg Comment Ctrl+/	
		Show Node Comment	
	Ж	Cut	
	È	Сору	7
	B	Paste	1

In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is "relative"), as shown in the following figure:

		multi se	ction pu	llse output				×	6
data start address:	HD100	user params address:	HD150	system params:	K1	output:	Y0		
mode:	relative 🗸	start execute section count:	0	Config					
Add Delete U	Jpwards Do	ownwards		·			·		

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of reverse rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

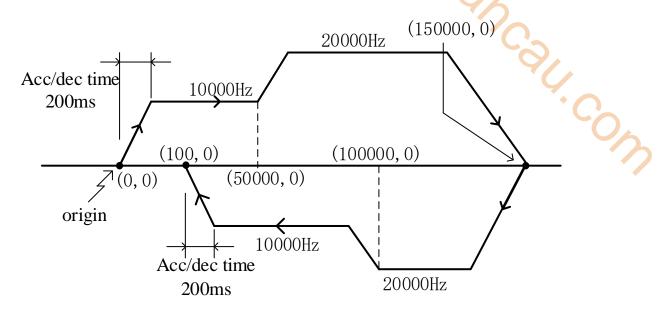
data start address: HD 100 user params address: HD 150 system params: K1 output: Y0 mode: relative start execute section count: 0 Config Config Add Delete Upwards Downwards frequence rulco moit condition register 1 20000 -50000 pulse sending complete K0 2 10000 -99900 pulse sending complete K0 K0	multi section pulse output								
frequence pulse count weit condition weit jump register register 1 20000 -50000 pulse sending complete KO KO									
1 20000 -50000 pulse sending complete KO KO	Add De	Add Delete Upwards Downwards							
1 20000 -50000 pulse sending complete KO KO	┃┏━━┿	fraguarda	pulso count	moit	condition				
▶ 2 10000 —99900 pulse sending complete KO KO	1	20000	-50000	pulse s	ending compl	ete			-
	▶ 2	10000	-99900	pulse s	ending compl	.ete	KO)	KO
used space: HD100-HD129,HD150-HD153 Read From PLC Write To PLC OK Cancel						T. 510			

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

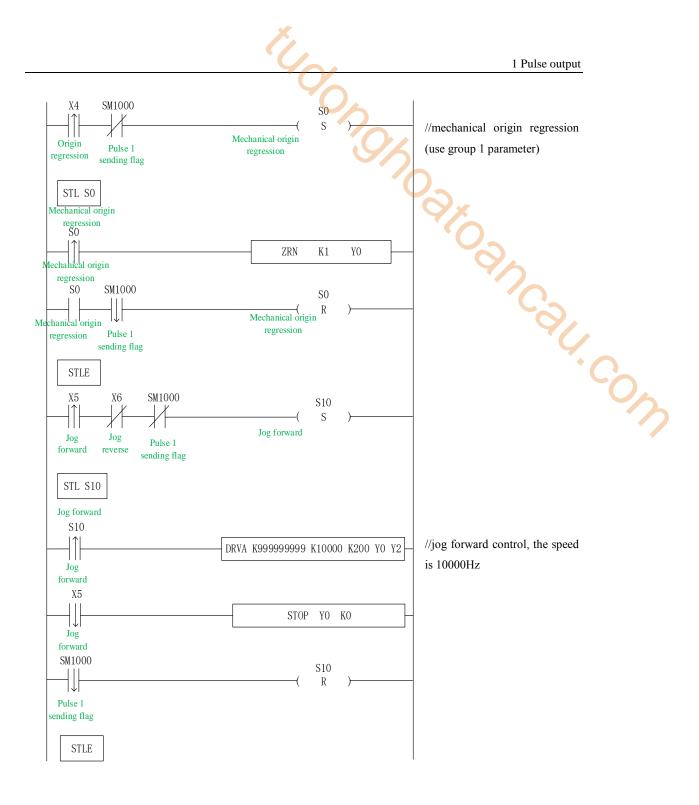
After downloading the program, power off the PLC and then re-energize it. Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

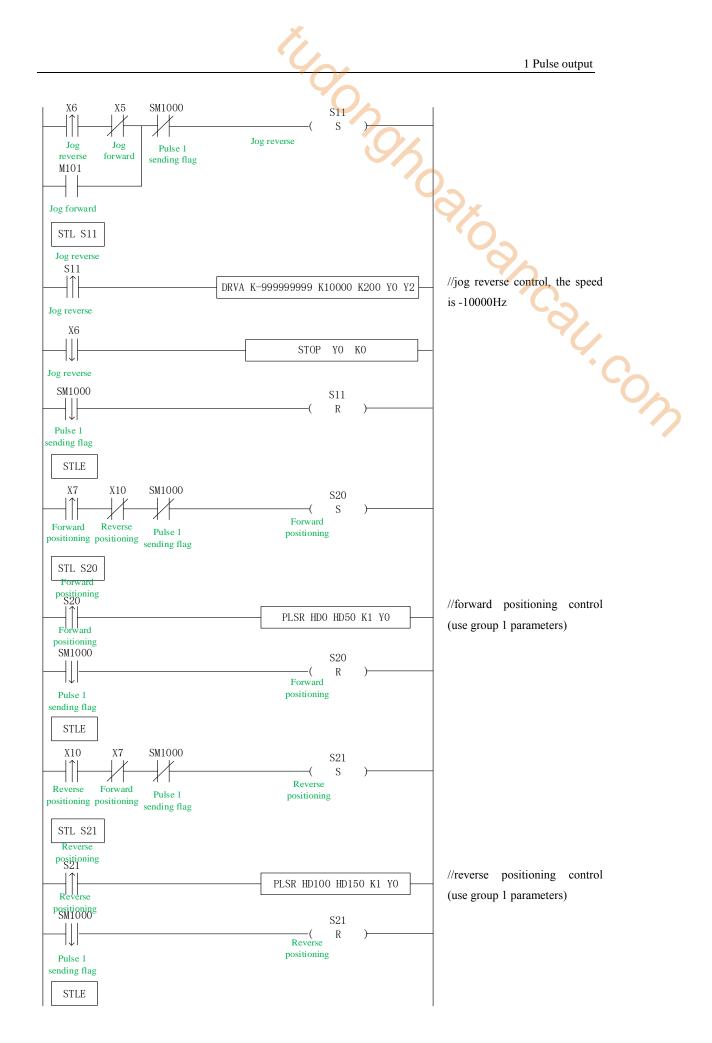
1-5-7. Forward and reverse rotation multi-segment process program **[**DRVI, DRVA, PLSR, ZRN**]**

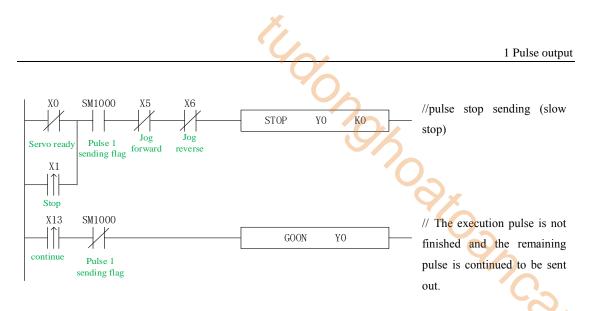
Example 1: According to the following figure, multi-segment absolute positioning mode is adopted.



Firstly, make the ladder chart as follows:







In the sample program, all the system parameters used in the pulse instructions (except DRVA, DRVI) are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

To a construction of the c		Xinje PLC Program Tool
<u>F</u> ile <u>E</u> dit <u>S</u> earch <u>V</u> iew O <u>n</u> line <u>C</u> onfigu	ure <u>O</u> ption <u>W</u> indow <u>H</u> elp	
) AN 🖻 🖻 🎒 🔍 🐣 🌺 🏠 🗖	
Ins sIns Del sDel F5 F6 sF5 sf	└ < > <r> <\$> {} - ; + ; + ; + ; + ; + ; + ; + ; + ; + ;</r>	🚺 · 👖 · 🖸 · 🛐 🔜 🍳 🔍 🧮 💷 🧱
Project 🛛 🗘 🛪	PLC1 - Ladder	
Project		
🖶 🗋 Code	0	
Ladder		
	[i	
Func Block		
Config Block		
Sequence Block		
Comment Editor	PLC1 - Pulse Set	t X
- Ree Monitor		
Data Monitor	🖃 📴 PLC Config 🗸 Config 🗸 Delete 🛛 init axis 🖉 config	guide
Set Reg Init Value	Param	Value
PLC Config	Param Password Param	Value
	ethemet	
Password	Pulse	
PLC Serial Port		
	BD BD	
Pulse	ED ED	
	- B 4GBOX	
BD BD	EtherCAT	
ED ED	NC WBOX	
- B 4GBOX	MBOX	
EtherCAT		
NC NC		
WBOX		
- D PLC Status		
- 😲 CPU Detail		
BOD Expansion Details	Read From PLC Write	e To PLC OK Cancel
HED BD Details	Neau FION FLC Will	C TO T LO
ED Details		
C Scan Cycle		
Clock Details		
	Information	
- D Record	Error List Output	

Click config, then select Y0 axis.

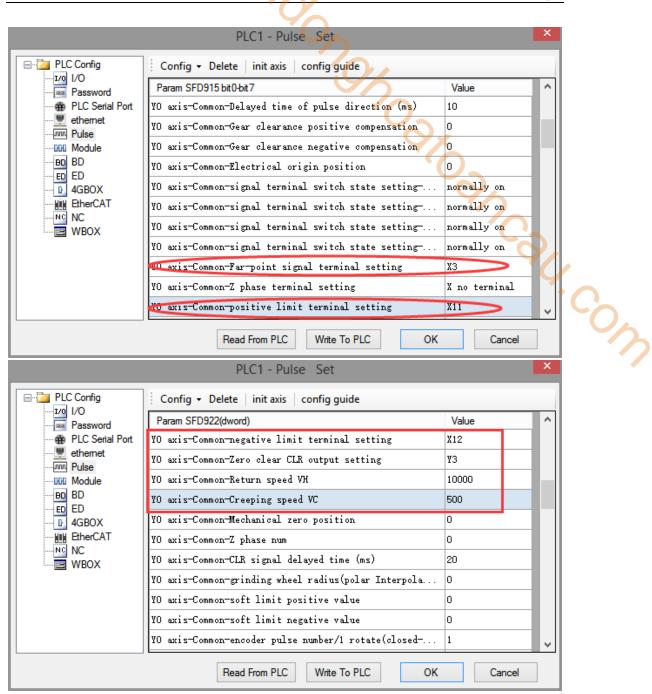
-on

PLC Config Image: PLC Serial Port Image: PLC Serial Port <th></th> <th>PLC1 - I</th> <th>Pulse Set</th> <th>1 Pulse output</th>		PLC1 - I	Pulse Set	1 Pulse output
	I/O Password PLC Serial Port ethemet Pulse BD BD ED ED L 4GBOX WN EtherCAT NC	Y0 axis Y1 axis Y2 axis Y3 axis Y4 axis Y5 axis Y6 axis Y6 axis Y7 axis Y10 axis	cis config guide	Value

In the parameter configuration table, configure as follows (circled parameters need to be modified):

.....

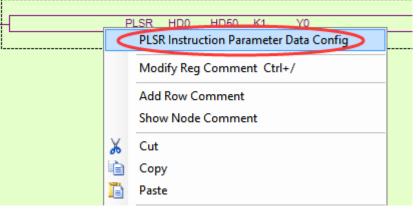
	PLC1 - Pulse Set		×
PLC Config	Config 👻 Delete init axis config guide		
Password	Param SFD906	Value	^
PLC Serial Port	YO axis-Common-Parameters setting Motor operating mo	Position Mode	
ethemet	YO axis-Common-Parameters setting-Pulse unit	pulse number	
- Mi Module	YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
BD BD	YO axis-Common-pulse send mode	complete mode	
B 4GBOX	YO axis-Common-Pulse num (1)	1	
EtherCAT	YO axis-Common-Offset (1)	1	
WBOX	VO axis-Common-Pulse direction terminal	¥2	
	YO axis-Common-Delayed time of pulse direction (ms)	10	
	YO axis-Common-Gear clearance positive compensation	0	
	YO axis-Common-Gear clearance negative compensation	0	
	YO axis-Common-Electrical origin position	0	_
	Read From PLC Write To PLC OK	Cancel	



	PLC1 - Pulse Set	1 Pulse output
PLC Config PLC Config PLC Serial Port PLC Serial Port PLS ethemet Pulse PLS ED ED ED ED AGBOX WBOX	Config - Delete init axis config guide Param SFD962 YO axis-Common-Positioning completion time limit (ms YO axis-group 1-Pulse default speed YO axis-group 1-Acceleration time of Pulse default s YO axis-group 1-Deceleration time of pulse default s YO axis-group 1-Acceleration and deceleration time (ms) YO axis-group 1-Pulse acc/dec mode YO axis-group 1-Max speed YO axis-group 1-Initial speed YO axis-group 1-stop speed YO axis-group 1-FOLLOW performance param(1-100)	Value 0 10000 200 200 10 10 11 11near_acc/dec 200000 500 500 10 10
	YO axis-group 1-FOLLOW forward compensation(0-100) Read From PLC Write To PLC OK	Cancel

After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":



In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

multi section pulse output					
data start address: HD0 mode: absolut ~	user params address: Start execute section count:	HD50 system params: 0 Config	K1 ou	tput: Y0	
Add Delete Upwards Defense	pulse count	wait condition	_	wait register	jump register

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

multi s	ection pulse output		×	
lata start address: HD0 user params address:	HD50 system params: K1	output: Y0		
node: absolut V start execute section count	0 Config	6.		
Add Delete Upwards Downwards		9		
frequence pulse count	wait condition	wait	iump	
		register	register	
1 10000 50000	pulse sending complete	KO	KO	
2 20000 150000	pulse sending complete	KO	ко	
				X
sed space: HD0-HD29,HD50-HD53	Read From PLC Write To PLC	ОК	Cancel	

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

i

	PLSR HD100 HD150 K1 Y0	
 <	PLSR Instruction Parameter Data Config	
	Modify Reg Comment Ctrl+/	
	Add Row Comment	
	Show Node Comment	
Ж	Cut	
è	Сору	
Þ	Paste	

In the open multi-segment pulse output configuration table, select "mode" as "absolute" (default is "relative"), as shown in the following figure:

		multi se	ction pu	lse output				×
data start address:	HD100	user params address:	HD150	system params:	K1	output:	YO	
mode:	absolut 🗸	start execute section count:	0	Config				
Add Delete U	Jpwards Do	ownwards		1	1		1	

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

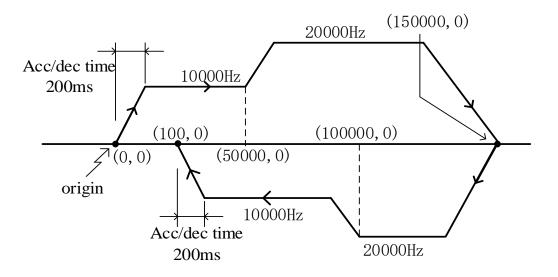
		and the second			X	
		multi sec	ction pulse output		~	
ata start a	ddress: HD100 user pa	rams address:	HD150 system params: K1	output: Y0		
iode:	absolut 👻 start ex	ecute section count:	0 Config	10.		
Add De	elete Upwards Downward	ds		9		
	frequence	pulse count	wait condition	wait register	jump	
1	20000	100000 pulse sending complete		ко к	KO	
2	10000	100	pulse sending complete	KO	KO	
						IC_
ed space:	HD100-HD129,HD150-HD	150	Read From PLC Write To PLC	ОК	Cancel	

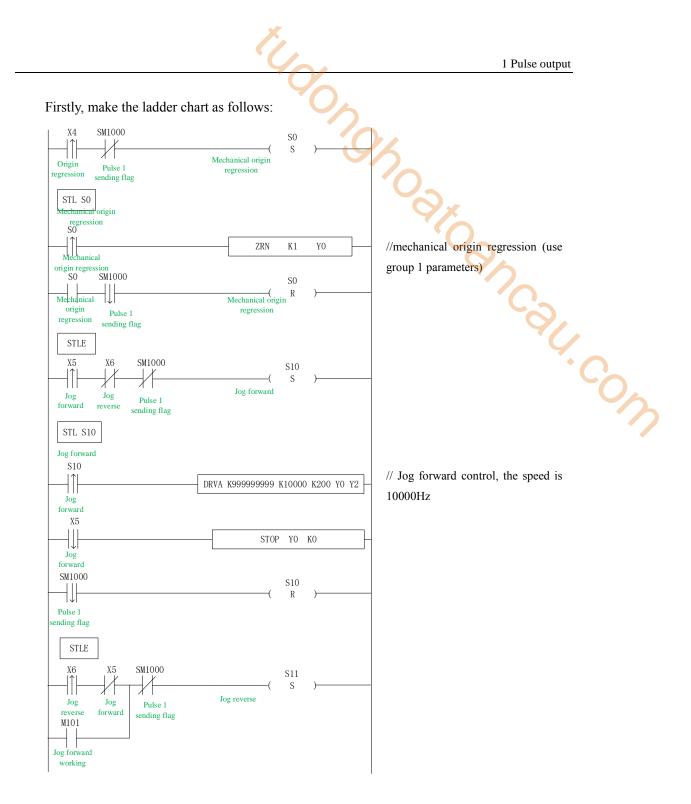
Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

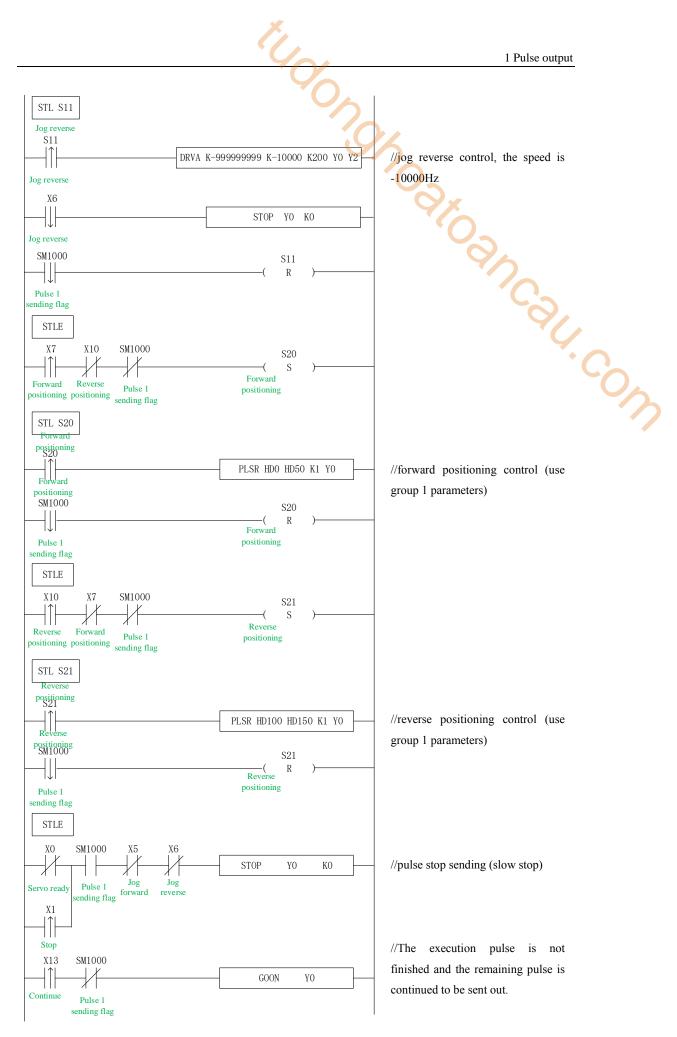
After downloading the program, power off the PLC and then re-energize it.

Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

Example 2: According to the following figure, multi-segment relative positioning method is used.







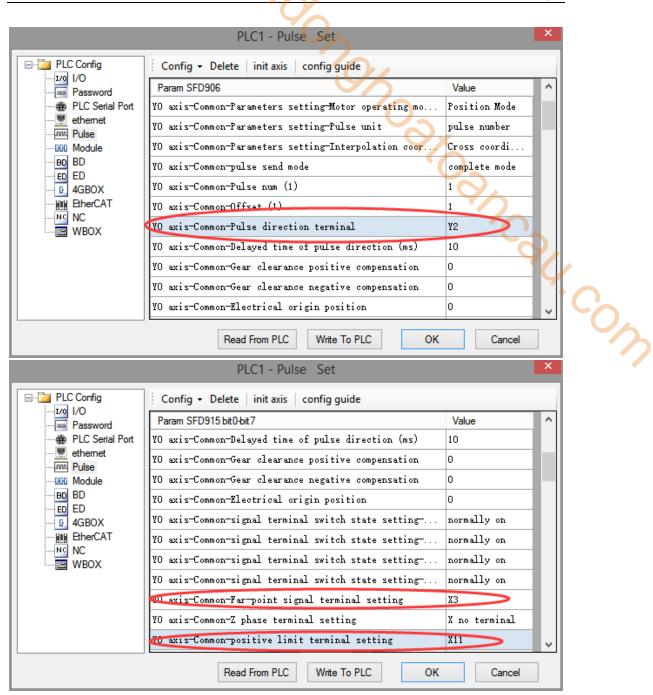
In the sample program, all the system parameters used in the pulse instructions (except DRVA, DRVI) are group 1 parameters. So, we click "pulse configuration parameters" in the PLC programming software, as follows:

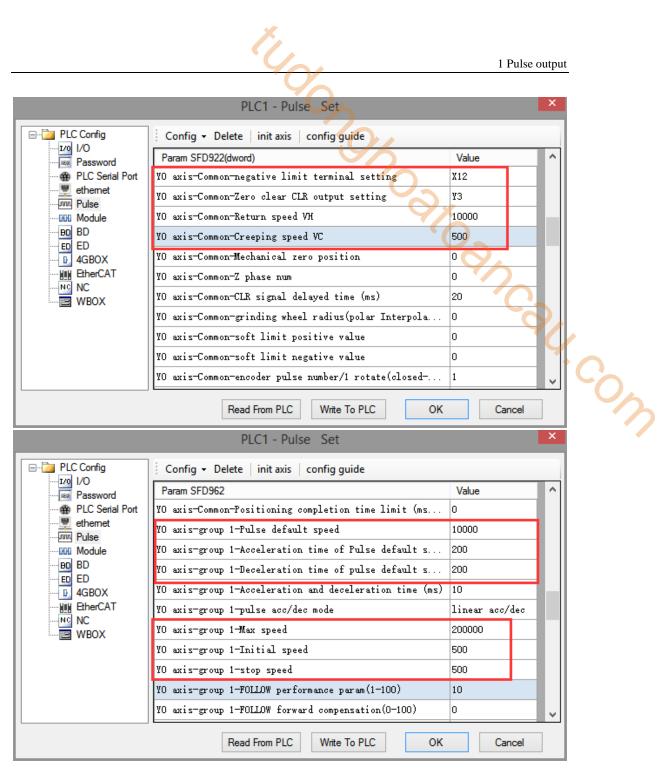
1	\mathcal{O}	0		,		
E					Xinje PLC Program Tool	
Eile	e <u>E</u> dit	<u>Search</u> <u>V</u> iew	O <u>n</u> line	<u>C</u> onfigur	e <u>O</u> ption <u>W</u> indow <u>H</u> elp	
					M 🖻 🖻 🦪 🍳 🐥 🐥 🗅 🛛 🔒 🍰 🖼 🔣 🔂 📟	
€ Ir	H LIIG Is sIns	₩HF HXH H Del sDel F	⊢ -∤/-	- ↑ ↓ - sF5 sF6	<;><₽><₽><₽><₽><₽><₽><₽><₽><₽<<₽><₽<<₽<<₽<	
Proje				4 ×	PLC1 - Ladder	
	Project			i i		
	ld. I <mark>C</mark> F <mark>T</mark> (e Ladder Instruction List Func Block Config Block Sequence Block			•	
		ment Editor			PLC1 - Pulse Set	
E	Free Data PLC PLC PLC PLC PLC PLC PLC PLC PLC PLC	e Monitor Monitor Reg Init Value Config VO Password PLC Serial Port ethernet Puise BD ED 440B0X EtherCAT NC		*	PLC Forlig Set PLC Set Ide Image: Set	Con
	960 E	Expansion Details BD Details ED Details Scan Cycle			Read From PLC Write To PLC OK Cancel	
		Clock Details		l		
		Error Details			Information	
	- D Reco	ord			Error List Output	

Click config, then select Y0 axis.

	PLC	1 - Pulse Set		×
PLC Config	Config 🗕 Delete i	nit axis 🛛 config guide		
Password	Y0 axis		Value	
PLC Serial Port	Y1 axis			
ethemet	Y2 axis			
	Y3 axis			
BD BD	Y4 axis			
ED ED	Y5 axis			
EtherCAT	Y6 axis			
NC NC	Y7 axis			
WBOX	Y10 axis			
	Y11 axis			
	Read Fr	om PLC Write To PLC	OK Cancel	

In the parameter configuration table, configure as follows (circled parameters need to be modified):





After configuring the parameters of the system parameter block, click the "Write to PLC" button to write the parameters into the PLC. Since the PLSR is used as the multi-segment pulse output instruction, we also need to configure the parameters of the pulse segment (the output frequency and the number of pulses per pulse segment).

Firstly, right-click on the forward positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

	14	1 Pulse output
,		
	LSR HD0 HD50 K1 Y0 PLSR Instruction Parameter Data Config]
∦ ⊫⊇ ∎⊇	Modify Reg Comment Ctrl+/ Add Row Comment Show Node Comment Cut Copy Paste	

In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is "relative"), as shown in the following figure:

		multi se	ction pu	Ilse output				C
data start address:	HD0	user params address:	HD50	system params:	K1	output:	Y0	
mode:	relative 🗸	start execute section count:	0	Config				
Add Delete	Jpwards D	ownwards						

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of forward rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

Add Dele	ete Upwards Downwar	ecute section count:	0 Config		
	frequence	pulse count	wait condition	wait	jump
1	10000	50000	pulse sending complete	KO	KO
▶ 2	20000	100000	pulse sending complete	KO	KO

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD0-HD29, and the range of system parameter block address is HD50-HD53, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

Then, right-click on the reverse positioning command PLSR and pop up the following options. Select the first "PLSR Instruction Parameter data Config":

H	1	PLSR HD100 HD150 K1 Y0	
	<	PLSR Instruction Parameter Data Config	
		Modify Reg Comment Ctrl+/	
		Add Row Comment	
		Show Node Comment	
	Ж	Cut	
	È	Сору	
	B	Paste	

In the open multi-segment pulse output configuration table, select "mode" as "relative" (default is "relative"), as shown in the following figure:

		multi se	ction pu	Ilse output				×	C'O
data start address:	HD100	user params address:	HD150	system params:	K1	output:	YO		
mode:	relative V	start execute section count:	0	Config					
Add Delete U	Jpwards Do	ownwards							

After choosing the mode, click the "Add" button in the configuration interface to add two continuous pulse parameters of reverse rotation; after configuring, click the "Write to PLC" button to write parameters into the PLC, as shown in the following figure:

		multi se	ction pulse o	utput				
data start add mode:		rams address: ecute section count:		m params: Config	K1	output:	Y0	
Add Dele	ete Upwards Downward	ls						
	fraguarda	pulse count	moit	andition		wa regi		jump register
1	20000	-50000	pulse se	nding comp	lete	K		KO
▶ 2	10000	-99900	pulse se	nding comp	lete	KO)	KO
used space:	HD100-HD129,HD150-HD	153	Read From P	LC Write	e To PLC	(ОК	Cancel

Note: Please note the range of real-time occupied registers displayed by "used space". Because the range of starting address of pulse parameter data of PLSR pulse instruction is HD100-HD129, and the range of system parameter block address is HD150-HD153, the range of real-time occupied registers address is not beyond the range. If the range exceeds, the error of pulse output will occur.

After downloading the program, power off the PLC and then re-energize it. Positive Limit (X11) and Negative Limit (X12) will play an important role in the execution of ZRN, PLSF, DRVI and DRVA instructions.

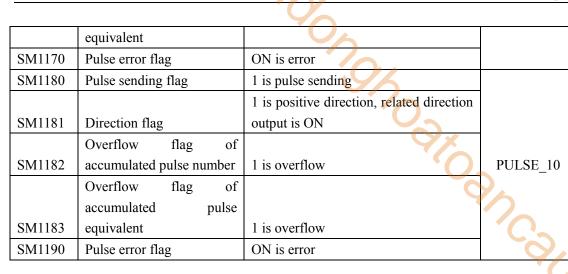
1-6. Pulse Output Coil and Register

Pulse output flag bit:

i uise outp	put mag bit.		
Coil	Function	Notes	
SM1000	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1001	Direction flag	output is ON	
	Overflow flag of		
SM1002	accumulated pulse number	1 is overflow	PULSE_1
	Overflow flag of		C
	accumulated pulse		
SM1003	equivalent	1 is overflow	
SM1010	Pulse error flag	ON is error	
SM1020	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1021	Direction flag	output is ON	
	Overflow flag of		
SM1022	accumulated pulse number	1 is overflow	PULSE_2
	Overflow flag of		
	accumulated pulse		
SM1023	equivalent	1 is overflow	
SM1030	Pulse error flag	ON is error	
SM1040	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1041	Direction flag	output is ON	
	Overflow flag of		
SM1042	accumulated pulse number	1 is overflow	PULSE_3
	Overflow flag of		
	accumulated pulse		
SM1043	equivalent	1 is overflow	
SM1050	Pulse error flag	ON is error	
SM1060	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1061	Direction flag	output is ON	
	Overflow flag of		
SM1062	accumulated pulse number	1 is overflow	PULSE_4
	Overflow flag of		
	accumulated pulse		
SM1063	equivalent	1 is overflow	
SM1070	Pulse error flag	ON is error	
	<i></i>		

125

		1.	
		· Co	1 Pulse output
SM1080	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1081	Direction flag	output is ON	
	Overflow flag of		
SM1082	accumulated pulse number	1 is overflow	PULSE_5
	Overflow flag of		
	accumulated pulse	· O.	
SM1083	equivalent	1 is overflow	
SM1090	Pulse error flag	ON is error	
SM1100	Pulse sending flag	1 is pulse sending	C.
		1 is positive direction, related direction	
SM1101	Direction flag	output is ON	'C
	Overflow flag of		*
SM1102	accumulated pulse number	1 is overflow	PULSE_6
	Overflow flag of		
	accumulated pulse		
SM1103	equivalent	1 is overflow	
SM1110	Pulse error flag	ON is error	
SM1120	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1121	Direction flag	output is ON	
	Overflow flag of		
SM1122	accumulated pulse number	1 is overflow	PULSE_7
	Overflow flag of		
	accumulated pulse		
SM1123	equivalent	1 is overflow	
SM1130	Pulse error flag	ON is error	
SM1140	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1141	Direction flag	output is ON	
	Overflow flag of		
SM1142	accumulated pulse number	1 is overflow	PULSE_8
	Overflow flag of		
	accumulated pulse		
SM1143	equivalent	1 is overflow	
SM1150	Pulse error flag	ON is error	
SM1160	Pulse sending flag	1 is pulse sending	
		1 is positive direction, related direction	
SM1161	Direction flag	output is ON	
	Overflow flag of		PULSE_9
SM1162	accumulated pulse number	1 is overflow	
	Overflow flag of		
SM1163	accumulated pulse	1 is overflow	



Pulse output related sepcial registers:

Pulse out	put related sepcial registe	ers:	*	0
Register	Function	Notes		
SD1000	Present segment (represents segment n)			
SD1001				
SD1002	Present pulse number low 16-bit (the unit is pulse number)			
SD1003	Present pulse number high 16-bit (the unit is pulse number)			
SD1004	Present pulse number low 16-bit (the unit is pulse equivalent)			
SD1005	Present pulse number high 16-bit (the unit is pulse equivalent)			
SD1006	Present pulse number low 16-bit (the unit is pulse number)		PULSE_1	
SD1007	Present pulse number high 16-bit (the unit is pulse number)			
SD1008	Present pulse number low 16-bit (the unit is pulse equivalent)			
SD1009	Present pulse number high 16-bit (the unit is pulse equivalent)			
SD1010	Pulse error information	 pulse data segment configuration error In equivalent mode, the number of pulses per rotation and the movement per rotation is 3: System parameter block number error 		

		E.	1 Pulse output	
			1 I uise output	
	Error pulse data block	4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC \geq VH 13: Origin regression signal error 15: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or>100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed		Con
SD1011	Error pulse data block number			
SD1020 SD1021	Present segment (represents segment n) Present pulse number low 16-bit (the unit is			
SD1022 SD1023	pulse number) Present pulse number high 16-bit (the unit is pulse number) Present pulse number		• PULSE_2	
SD1024	low 16-bit (the unit is pulse equivalent) Present pulse number			
SD1025	high 16-bit (the unit is pulse equivalent) Present pulse number			
SD1026	low 16-bit (the unit is pulse number)			

	Present pulse number			
	high 16-bit (the unit is			
SD1027	pulse number)			
	Present pulse number			
	low 16-bit (the unit is			
SD1028	pulse equivalent)	2		
	Present pulse number			
	high 16-bit (the unit is			
SD1029	pulse equivalent)		4	
		1: pulse data segment configuration error		
		2: In equivalent mode, the number of pulses	C	
		per rotation and the movement per rotation is	$\mathbf{Q}_{\mathbf{r}}$	
		0	ľ C	
		3: System parameter block number error	•	C
		4: Pulse parameter block number exceeding		
		maximum limit		COM
		5: Stop after encountering positive limit signal		
		6: Stop after meeting the negative limit signal		•
		10: No origin signal is set for origin regression		
		11:Velocity of origin regression VH is 0		
		12: Origin regression crawling speed VC is 0		
		or VC≥VH		
		13: Origin regression signal error		
		15:Follow Performance Parameters ≤ 0		
SD1030	Pulse error information	or >100		
		16:Follow Feedforward Compensation <0		
		or>100		
		17:Follow Multiplication Coefficient and		
		Division Coefficient Ratio ≤ 0 or >100		
		20: Interpolation Direction Terminal Not Set		
		or Set Error		
		21: The default maximum interpolation speed		
		is 0		
		22: Arc interpolation data error		
		23: Arc radius data error		
		24:Three-point Arc Data Error		
		25: In polar coordinate mode, the current		
		position is $(0, 0)$		
		26: Control block allocation failed		
	Error pulse data block		1	
SD1031	number			
			1	
	Present segment			
SD1040	(represents segment n)		DILGE 2	
SD1041			PULSE_3	
SD1042	Present pulse number			

		Č,		
		<u>`</u>	1 Pulse output	
T				
	low 16-bit (the unit is pulse number)			
	Present pulse number	.Oz		
	high 16-bit (the unit is			
-	pulse number)		-	
	Present pulse number low 16-bit (the unit is	Q×.		
	pulse equivalent)			
	Present pulse number	0		
	high 16-bit (the unit is		2	
	pulse equivalent)		C	
	Present pulse number low 16-bit (the unit is			
	pulse number)			
	Present pulse number		•	C
	high 16-bit (the unit is			U _A
	pulse number) Present pulse number			· ^
	low 16-bit (the unit is			
	pulse equivalent)		-	
	Present pulse number			
	high 16-bit (the unit is pulse equivalent)			
SD1049	puise equivalent)	1: pulse data segment configuration error	-	
		2: In equivalent mode, the number of pulses		
		per rotation and the movement per rotation is		
		0		
		3: System parameter block number error		
		4: Pulse parameter block number exceeding		
		maximum limit		
		5: Stop after encountering positive limit signal6: Stop after meeting the negative limit signal		
		10: No origin signal is set for origin regression		
		11:Velocity of origin regression VH is 0		
SD1050	Pulse error information	12: Origin regression crawling speed VC is 0		
		or VC \geq VH		
		13: Origin regression signal error		
		15:Follow Performance Parameters ≤ 0		
		or >100		
		16:Follow Feedforward Compensation <0		
		or>100 17:Follow Multiplication Coefficient and		
		Division Coefficient Ratio ≤ 0 or >100		
		20: Interpolation Direction Terminal Not Set		
		or Set Error		
1			1	

is 0 22: Are interpolation data error 23: Are radius data error 24: Three-point Are Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed SD1051 number			U.	1 Pulse output	
22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode the current position is (0, 0) 26: Control block allocation failed SD1051 number Present segment SD1060 Present segment SD1061 Present pulse number high 16-bit (the unit is SD1063 Present pulse number high 16-bit (the unit is SD1064 Present pulse number high 16-bit (the unit is SD1065 Present pulse number low 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number prese					
22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode the current position is (0, 0) 26: Control block allocation failed SD1051 number Present segment SD1060 Present segment SD1061 Present pulse number high 16-bit (the unit is SD1063 Present pulse number high 16-bit (the unit is SD1064 Present pulse number high 16-bit (the unit is SD1065 Present pulse number low 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number prese			is 0		
23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed SD1051 number Present SD1060 Present segment SD1061 Present pulse number low 16-bit (the unit is SD1062 Present pulse number low 16-bit (the unit is SD1063 Present pulse number low 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1063 Present pulse number low 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1066 present pulse number present pulse number Present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number present pulse number present pulse number present pulse number Present pulse					
24: Three-point Arc Data Error 25: In polar coordinate mode the current position is (0, 0) 26: Control block allocation failed SD1051 number Present segment SD1060 (represent segment n) SD1061 Present pulse number high 16-bit (the unit is SD1063 pulse number Present pulse number high 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1063 pulse number No 16-bit (the unit is SD1064 pulse quivalent) Present pulse number low 16-bit (the unit is SD1065 pulse quivalent) Present pulse number low 16-bit (the unit is SD1066 pulse quivalent) Present pulse number low 16-bit (the unit is SD1065 pulse number low 16-bit (the unit is SD1066 pulse quivalent Present pulse number low 16-bit (the unit is					
25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed SD1051 number Present segment SD1060 Present segment (represents segment n) SD1061 Present pulse number low 16-bit (the unit is SD1062 pulse number) Present pulse number low 16-bit (the unit is SD1063 pulse number) Present pulse number low 16-bit (the unit is SD1064 pulse quivalent) Present pulse number low 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse quivalent) Present pulse number low 16-bit (the unit is SD1066 pulse quivalent) Present pulse number low 16-bit (the unit is SD1067 pulse quivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent					
Image: position is (0, 0) 26: Control block allocation failed SD1051 number Present segment SD1060 (represents segment n) SD1061 Present pulse number low 16-bit (the unit is Present pulse number Present pulse number low 16-bit (the unit is Present pulse number SD1062 pulse number Present pulse number Present pulse number low 16-bit (the unit is SD1063 Present pulse number Present pulse number low 16-bit (the unit is SD1064 Present pulse number Present pulse number log 16-bit (the unit is SD1065 SD1065 pulse equivalent) Present pulse number Present pulse number log 16-bit (the unit is SD1067 SD1066 pulse number low 16-bit (the unit is SD1068 SD1068 pulse equivalent) Present pulse number Present pulse number low 16-bit (the unit is SD1068 SD1069 pulse equivalent) Present pulse number Present pulse number loy 16-bit (the unit is </td <td></td> <td></td> <td>24:Three-point Arc Data Error</td> <td></td> <td></td>			24:Three-point Arc Data Error		
26: Control block allocation failed SD1051 Error pulse data block number Present segment SD1060 (represents segment n) SD1061 Present pulse number low 16-bit (the unit is SD1062 pulse number now 16-bit (the unit is SD1063 pulse number present pulse number low 16-bit (the unit is SD1064 Present pulse number low 16-bit (the unit is SD1065 pulse quivalent) Present pulse number low 16-bit (the unit is SD1064 pulse number low 16-bit (the unit is SD1065 pulse quivalent) Present pulse number low 16-bit (the unit is SD1065 pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number low 16-bit (the unit is SD1068 pulse quivalent) Present pulse number low 16-bit (the unit is SD1069 pulse quivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number ligh 16-bit (the unit is SD1069 pulse equivalent) Present pulse number ligh 16-bit (the unit is <			25: In polar coordinate mode, the current		
SD1051 Error pulse data block number SD1061 Present SD1060 (represents segment low 16-bit (the unit is SD1061 Present pulse number low 16-bit (the unit is SD1062 pulse number) Present pulse number high 16-bit (the unit is SD1063 pulse number Present pulse number low 16-bit (the unit is SD1064 present pulse number low 16-bit (the unit is SD1065 pulse equivalent) Present pulse number high 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1068 pulse number low 16-bit (the unit is SD1069 pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error inf			position is $(0, 0)$		
SD1051 number Present segment SD1060 (represents segment n) SD1061 Present pulse number Nov 16-bit (the unit is segment SD1062 Present pulse number high 16-bit (the unit is segment SD1063 pulse number high 16-bit (the unit is segment SD1064 pulse number high 16-bit (the unit is segment SD1065 pulse number Present pulse number segment high 16-bit (the unit is segment SD1065 pulse number high 16-bit (the unit is segment SD1066 pulse number high 16-bit (the unit is segment SD1066 pulse number high 16-bit (the unit is segment configuration error SD1067 pulse number high 16-bit (the unit is segment configuration error SD1068 pulse equivalent) 1: pulse data segment configuration error Present pulse number sequivalent sequivalent pulse equivalent) 1: pulse data segment configuration error </td <td></td> <td></td> <td>26: Control block allocation failed</td> <td></td> <td></td>			26: Control block allocation failed		
SD1051 number Present segment SD1060 (represents segment n) SD1061 Present pulse number Nov 16-bit (the unit is segment SD1062 Present pulse number high 16-bit (the unit is segment SD1063 pulse number high 16-bit (the unit is segment SD1064 pulse number high 16-bit (the unit is segment SD1065 pulse number Present pulse number segment high 16-bit (the unit is segment SD1065 pulse number high 16-bit (the unit is segment SD1066 pulse number high 16-bit (the unit is segment SD1066 pulse number high 16-bit (the unit is segment configuration error SD1067 pulse number high 16-bit (the unit is segment configuration error SD1068 pulse equivalent) 1: pulse data segment configuration error Present pulse number sequivalent sequivalent pulse equivalent) 1: pulse data segment configuration error </td <td></td> <td>Error pulse data block</td> <td></td> <td></td> <td></td>		Error pulse data block			
Present segment SD1060 (represents segment n) SD1061 Present pulse number low 16-bit (the unit is Present pulse number low 16-bit (the unit is SD1063 pulse number Present pulse number low 16-bit (the unit is SD1064 pulse number low 16-bit (the unit is SD1065 pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1065 pulse number high 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1068 pulse quivalent) Present pulse number low 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent)	SD1051	-		5	
SD1060 (represents segment n) SD1061					
SD1060 (represents segment n) SD1061				C's	
SD1061 Present pulse number low 16-bit (the unit is SD1062 pulse number) Present pulse number high 16-bit (the unit is SD1064 pulse number Present pulse number low 16-bit (the unit is SD1065 pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number low 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number low 16-bit (the unit is SD1067 pulse number low 16-bit (the unit is SD1067 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is <td></td> <td>Present segment</td> <td></td> <td></td> <td></td>		Present segment			
SD1062 pulse number) Present pulse number high 16-bit (the unit is SD1063 pulse number Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent Present pulse number high 16-bit (the unit is SD1069 pulse equivalent Present pulse number high 16-bit (t	SD1060	(represents segment n)			
SD1062 pulse number) Present pulse number high 16-bit (the unit is SD1063 pulse number Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number low 16-bit (the unit is SD1067 pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent lipulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information <td>SD1071</td> <td></td> <td></td> <td></td> <td>\mathbf{O}</td>	SD1071				\mathbf{O}
SD1062 pulse number) Present pulse number high 16-bit (the unit is SD1063 pulse number Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent Present pulse number high 16-bit (the unit is SD1069 pulse equivalent Present pulse number high 16-bit (t	SD1061	Duranant in 1999 1		4	
SD1062 pulse number) Present pulse number high 16-bit (the unit is SD1063 pulse number Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent Present pulse number high 16-bit (the unit is SD1069 pulse equivalent Present pulse number high 16-bit (t		-			
Present pulse number high 16-bit (the unit is pulse number) Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number high 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) PULSE_4 Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) PULSE_4 Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) PULSE_4 Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number error	CD10/0	· ·			
high 16-bit (the unit is SD1063 pulse number) Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number low 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) I: pulse data segment configuration error SD1070 Pulse error information System parameter block number error	SD1062	• /		-	•
SD1063 pulse number) Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1067 pulse number high 16-bit (the unit is SD1067 pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) I: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information System parameter block number error 4: Pulse parameter block number error 4: Pulse parameter block number error 4: Pulse parameter block number exceeding maximum limit		-			
Present pulse number low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number high 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1067 pulse number) Present pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) I: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information SU1070 Pulse error information SU1070 Pulse error information	GD 10 (0				
low 16-bit (the unit is SD1064 pulse equivalent) Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number high 16-bit (the unit is SD1067 pulse number Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number exceeding maximum limit	SD1063			-	
SD1064 pulse equivalent)		-			
Present pulse number high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number high 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number low 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit	GD 1074				
high 16-bit (the unit is SD1065 pulse equivalent) Present pulse number low 16-bit (the unit is SD1066 pulse number) Present pulse number high 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) I : pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number error 4: Pulse parameter block number error	SD1064			-	
SD1065 pulse equivalent)		-			
Present pulse number low 16-bit (the unit is PULSE_4 SD1066 pulse number) Present pulse number high 16-bit (the unit is SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information SI System parameter block number exceeding maximum limit	CD10/7	•			
Iow 16-bit (the unit is pulse number) Present pulse number Present pulse number Present pulse number high 16-bit (the unit is Present pulse number Iow 16-bit (the unit is Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit	SD1065			-	
SD1066 pulse number) PULSE_4 Present pulse number high 16-bit (the unit is PULSE_4 SD1067 pulse number) Present pulse number Iow 16-bit (the unit is Present pulse number Present pulse number Iow 16-bit (the unit is Present pulse number Present pulse number Present pulse number Present pulse number Present pulse number high 16-bit (the unit is Present pulse number Present pulse number pulse equivalent) Present pulse number Present pulse number SD1069 pulse equivalent) Present pulse number Present pulse number SD1069 pulse equivalent 1: pulse data segment configuration error Present pulse number SD1069 pulse error information 1: pulse data segment configuration error Present pulse SD1070 Pulse error information 3: System parameter block number error Present pulse parameter block number exceeding maximum limit		-			
Present pulse number PULSE_4 SD1067 pulse number) Present pulse number Present pulse number low 16-bit (the unit is Present pulse number pulse equivalent) Present pulse number Present pulse number Present pulse number high 16-bit (the unit is Present pulse number pulse equivalent) Present pulse number Present pulse number 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit maximum limit	GD 10//				
Present pulse number - high 16-bit (the unit is SD1067 pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit	SD1066			PULSE 4	
SD1067 pulse number) Present pulse number low 16-bit (the unit is SD1068 pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) I: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit		-			
Present pulse number low 16-bit (the unit is pulse equivalent) Present pulse number high 16-bit (the unit is pulse equivalent) SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit	CD10/7				
Iow 16-bit (the unit is pulse equivalent) Present pulse number high 16-bit (the unit is SD1069 pulse equivalent) Image: SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit	SD106/			-	
SD1068 pulse equivalent) Image: space of the spa					
Present pulse number high 16-bit (the unit is pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 1000 maximum limit	SD10(0	,			
SD1069 high 16-bit (the unit is pulse equivalent) I: pulse equivalent) 1: pulse data segment configuration error I: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit	5D1008	· · ·		-	
SD1069 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit		-			
SD1070 Pulse error information Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit	SD1060				
 SD1070 Pulse error information SD1070 Pulse error information System parameter block number error 4: Pulse parameter block number exceeding maximum limit 	301009	puise equivalent)	1: pulse data segment configuration error	4	
SD1070Pulse error informationper rotation and the movement per rotation is 0SD1070Pulse error information3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit					
SD1070 Pulse error information 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit					
SD1070 Pulse error information 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit					
4: Pulse parameter block number exceeding maximum limit			0		
maximum limit	SD1070	Pulse error information	3: System parameter block number error		
maximum limit			4: Pulse parameter block number exceeding		
2. DOD unor encountering positive initit signal					
6: Stop after meeting the negative limit signal					

r	1		[1
		10: No origin signal is set for origin regression		
		11:Velocity of origin regression VH is 0		
		12: Origin regression crawling speed VC is 0		
		or VC≥VH		
		13: Origin regression signal error		
		15: Follow Performance Parameters ≤ 0		
		or >100		
		16:Follow Feedforward Compensation <0	6	
		or>100		
		17:Follow Multiplication Coefficient and		
		Division Coefficient Ratio ≤ 0 or >100		
		20: Interpolation Direction Terminal Not Set		
		or Set Error		
		21: The default maximum interpolation speed		C
		is 0		UA
		22: Arc interpolation data error		Con
		23: Arc radius data error		
		24:Three-point Arc Data Error		
		25: In polar coordinate mode, the current		
		position is (0, 0)		
		26: Control block allocation failed		
	Error pulse data block			
SD1071	number			
	Present segment			
SD1080	(represents segment n)			
SD1081				
	Present pulse number			
	low 16-bit (the unit is			
SD1082	pulse number)			
	Present pulse number			
	high 16-bit (the unit is			
SD1083	pulse number)			
	Present pulse number			
	low 16-bit (the unit is			
SD1084	pulse equivalent)			
	Present pulse number			
an 11-	high 16-bit (the unit is			
SD1085	pulse equivalent)			
	Present pulse number			
001007	low 16-bit (the unit is			
SD1086	pulse number)			
	Present pulse number			
GD 1007	high 16-bit (the unit is			
SD1087	pulse number)			
SD1088	Present pulse number		PULSE 5	
501000	resent pulse number	1	10101_7	l

		1.		
		· Con	1 Pulse output	
	low 16-bit (the unit is			
	pulse equivalent) Present pulse number	01		
	high 16-bit (the unit is			
SD1089	pulse equivalent)	<u> </u>		
		1: pulse data segment configuration error		
		2: In equivalent mode, the number of pulses		
		per rotation and the movement per rotation is		
		0 3: System parameter block number error		
		4: Pulse parameter block number exceeding	C ₂	
		maximum limit		
		5: Stop after encountering positive limit signal		
		6: Stop after meeting the negative limit signal		
		10: No origin signal is set for origin regression		6
		11:Velocity of origin regression VH is 0		
		12: Origin regression crawling speed VC is 0		
		or VC≥VH 13: Origin regression signal error		
		15:Follow Performance Parameters ≤ 0		
SD1090	Pulse error information	or >100		
		16:Follow Feedforward Compensation <0		
		or>100		
		17:Follow Multiplication Coefficient and		
		Division Coefficient Ratio ≤ 0 or >100		
		20: Interpolation Direction Terminal Not Set		
		or Set Error 21: The default maximum interpolation speed		
		is 0		
		22: Arc interpolation data error		
		23: Arc radius data error		
		24:Three-point Arc Data Error		
		25: In polar coordinate mode, the current		
		position is (0, 0)		
	E	26: Control block allocation failed		
SD1091	Error pulse data block number			
501071				
	Present segment			
SD1100	(represents segment n)			
SD1101	Present pulse number			
	low 16-bit (the unit is		PULSE_6	
SD1102	pulse number)			
	Present pulse number			
SD1103	high 16-bit (the unit is			

	pulse number)			
SD1104	Present pulse number low 16-bit (the unit is pulse equivalent)	9%		
SD1105	Present pulse number high 16-bit (the unit is pulse equivalent)	Q'X		
SD1106	Present pulse number low 16-bit (the unit is pulse number)			
SD1107	Present pulse number high 16-bit (the unit is pulse number)		90	
SD1108	Present pulse number low 16-bit (the unit is pulse equivalent)			CON
SD1109	Present pulse number high 16-bit (the unit is pulse equivalent)			
SD1110	Pulse error information	1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC \geq VH 13: Origin regression signal error 15: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or>100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error		

E.

		Č,		
			1 Pulse output	
		24:Three-point Arc Data Error		
		25: In polar coordinate mode, the current		
		position is (0, 0)		
		26: Control block allocation failed		
	F 1 1 / 11 1	20. Control block anocation failed		
SD1111	Error pulse data block			
SD1111	number			
	Dragant	• · · · · · · · · · · · · · · · · · · ·		
SD1120	Present segment			
SD1120 SD1121	(represents segment n)			
SD1121	Present pulse number	(
	low 16-bit (the unit is			
SD1122	pulse number)			
501122	Present pulse number			Con
	high 16-bit (the unit is			5
SD1123	pulse number)			U _A
	Present pulse number			
	low 16-bit (the unit is			
SD1124	pulse equivalent)			
	Present pulse number			
	high 16-bit (the unit is			
SD1125	pulse equivalent)			
	Present pulse number			
	low 16-bit (the unit is			
SD1126	pulse number)			
	Present pulse number			
	high 16-bit (the unit is			
SD1127	pulse number)			
	Present pulse number		PULSE_7	
	low 16-bit (the unit is		I ULSL_/	
SD1128	pulse equivalent)			
	Present pulse number			
GD1120	high 16-bit (the unit is			
SD1129	pulse equivalent)	1las data a succest a suffermentian survey		
		1: pulse data segment configuration error		
		2: In equivalent mode, the number of pulses		
		per rotation and the movement per rotation is		
		0		
		3: System parameter block number error		
		4: Pulse parameter block number exceeding		
SD1130	Pulse error information	maximum limit		
		5: Stop after encountering positive limit signal		
		6: Stop after meeting the negative limit signal		
		10: No origin signal is set for origin regression		
		11:Velocity of origin regression VH is 0		
		12: Origin regression crawling speed VC is 0		

		<i>K</i> .	
			1 Pulse output
			T T uise output
		13: Origin regression signal error	
		15:Follow Performance Parameters ≤ 0	
		or >100	
		16:Follow Feedforward Compensation <0	
		or>100	
		17:Follow Multiplication Coefficient and	
		Division Coefficient Ratio ≤ 0 or >100	
		20: Interpolation Direction Terminal Not Set	
		or Set Error	5
		21: The default maximum interpolation speed	0
		is 0	
		22: Arc interpolation data error	
		23: Arc radius data error	
		24:Three-point Arc Data Error	
		25: In polar coordinate mode, the current	
		position is $(0, 0)$	Cal
		26: Control block allocation failed	
	Error pulse data block		
SD1131	number		
DIIDI			
	Present segment		
SD1140	(represents segment n)		
SD1141			
	Present pulse number		
	low 16-bit (the unit is		
SD1142	pulse number)		
	Present pulse number		
	high 16-bit (the unit is		
SD1143	pulse number)		
	Present pulse number		
SD1144	low 16-bit (the unit is pulse equivalent)		
51/144	Present pulse number		1
	high 16-bit (the unit is		
SD1145	pulse equivalent)		
	Present pulse number		
	low 16-bit (the unit is		
SD1146	pulse number)		
	Present pulse number		
	high 16-bit (the unit is		
SD1147	pulse number)		
	Present pulse number		
	low 16-bit (the unit is		
SD1148	pulse equivalent)		
	Present pulse number		
SD1140	high 16-bit (the unit is		
SD1149	pulse equivalent)		PULSE_8

-	1		1	1
SD1150	Pulse error information	1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC \geq VH 13: Origin regression signal error 15: Follow Performance Parameters \leq 0 or >100 16: Follow Feedforward Compensation <0 or>100 17: Follow Multiplication Coefficient and Division Coefficient Ratio \leq 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed	Cau	
SD1151	Error pulse data block number			
SD1160 SD1161	Present segment (represents segment n)			
SD1162	Present pulse number low 16-bit (the unit is pulse number) Present pulse number		PULSE_9	
SD1163	high 16-bit (the unit is pulse number) Present pulse number low 16-bit (the unit is			
SD1164	pulse equivalent)			

SD1165 Present pulse number high 16-bit (the unit is SD1166 pulse equivalent) Present pulse number high 16-bit (the unit is SD1167 pulse number low 16-bit (the unit is SD1168 pulse equivalent) Present pulse number low 16-bit (the unit is SD1169 pulse equivalent) Present pulse number low 16-bit (the unit is SD1169 pulse equivalent) Present pulse number low 16-bit (the unit is SD1169 pulse equivalent) Present pulse number number of the unit is SD1169 pulse equivalent) Present pulse number 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number exceeding maximum limit Stop after mecuting positive limit signal 6: Stop after mecuting positive limit signal 10: No origin signal is set for origin regression VII is 0 12: Origin regression signal error 15:Follow Performance Parameters ≤ 0 or VC≥VH 13: Origin regression signal error 15:Follow Multiplication Coefficient and Division Coefficient Ratio ≈ 0 or >100 20: Interpolation Multiplication Coefficient and Division Coefficient Ratio ≈ 0 or >100 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 24: Three-point Are Data Error 25: In polar coordinate mode,					
SD1165 pulse equivalent) Present pulse number pulse equivalent) Present pulse number pulse error information		Present pulse number			
SD1165 pulse equivalent) Present pulse number pulse equivalent) Present pulse number pulse error information		high 16-bit (the unit is			
Present pulse number low 16-bit (the unit is present pulse number high 16-bit (the unit is source number high 16-bit (the unit is source number low 16-bit (the unit is source equivalent)Iteration is 	SD1165	•			
SD1166 pulse number) Present pulse number) Pulse equivalent) SD1169 Pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression rawling speed VC is 0 or VC ≥ VH 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 or >100 17:Follow Multiplication Coefficient and Division Coefficient and Division Coefficient Ratio ≪ 0 r>100 17:Follow Multiplication Set or Set Hror 21: The default maximum interpolation speed is 0 22: Arc interpolation data error <td></td> <td>Present pulse number</td> <td></td> <td>-</td> <td></td>		Present pulse number		-	
Present pulse number high 16-bit (the unit is pulse equivalent) Present pulse number low 16-bit (the unit is pulse equivalent) Present pulse number high 16-bit (the unit is pulse equivalent) 1: pulse data segnent configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1169 pulse equivalent) 1: pulse data segnent configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1169 pulse equivalent) 1: pulse data segnent configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 SD1160 pulse equivalent 1: pulse data segnent configuration error 2: System parameter block number error 4: Pulse parameter block number ercor 4: Pulse parameter block number ercor 4: Pulse parameter block number ercor 10: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression rawling speed VC is 0 or vC≥VH SD1170 Pulse error information 15: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or>100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≪0 or >100 20: Interpolation Direction Terminal Not Set or Set Hror 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0)		low 16-bit (the unit is			
SD1167 pulse number low 16-bit (the unit is s01168 pulse equivalent) Present pulse number high 16-bit (the unit is s01169 pulse equivalent) in unber is ulse equivalent) SD1169 pulse equivalent) in unber per rotation and the movement per rotation is o in unber is System parameter block number exceeding maximum limit Si System parameter block number exceeding maximum limit is System parameter block number exceeding maximum limit Si Cop after meeting the negative limit signal fo: Stop after meeting the negative limit signal io: No origin signal is set for origin regression 11: Velocity of origin regression erawling speed VC is 0 or VC≥VH 13: Origin regression reawling speed VC is 0 or VC≥VH 13: Origin regression crawling speed VC is 0 or >100 16:Follow Feedforward Compensation <0 or>100 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≪0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 23: Are radius data error 23: Are radius data error 23: Are radius data error 24:Three-point Are Data Error Stop if coordinate mode, the current position is (0, 0) 26: Control block allocation failed	SD1166	pulse number)	\sim		
SD1167 pulse number) Present pulse number high 16-bit (the unit is SD1168 pulse equivalent) Present pulse number high 16-bit (the unit is SD1169 pulse equivalent) I: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 4: Pulse parameter block number error 4: Dulse data segment configuration error 5: Stop after encountering positive limit signal 10: No origin regression rawling speed VC is 0 or VC≥VH 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0		Present pulse number			
Present pulse number low 16-bit (the unit is pulse equivalent)I: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VII is 0 12: Origin regression signal error 13: Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0 or >100 16:Follow Feedforward Compensation <0 or $>>100$ 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 24: Three-point Are Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed		high 16-bit (the unit is	· O_		
SD1168 low 16-bit (the unit is pulse equivalent) Present pulse number high 16-bit (the unit is pulse equivalent) Present pulse number high 16-bit (the unit is pulse equivalent) SD1169 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 6: Stop after meeting the negative limit signal 0: No origin signal is set for origin regression 11: Velocity of origin regression realming speed VC is 0 or VC≥VH SD1170 Pulse error information 15: Follow Performance Parameters ≤ 0 or >100 12: Origin regression signal error 15: Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 21: The default maximum interpolation speed is 0 22: Arc interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed 26: Control block allocation failed <td>SD1167</td> <td>pulse number)</td> <td>6</td> <td></td> <td></td>	SD1167	pulse number)	6		
SD1168 pulse equivalent) Image: number high 16-bit (the unit is pulse equivalent) SD1169 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after meeting the negative limit signal 6: Stop after meeting the negative limit signal 6: Stop after meeting the negative limit signal 10: No origin regression rawling speed VC is 0 0 or VC≥VH 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 16:Follow Feedforward Compensation <0		Present pulse number			
SD1169 Present pulse number high 16-bit (the unit is pulse equivalent) 1: pulse data segment configuration error 1: nulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after meeting the negative limit signal 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression signal error 13: Origin regression signal error 13: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or>100 10: TiFollow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed		low 16-bit (the unit is			
SD1169 high 16-bit (the unit is pulse equivalent) 1: pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 3: Durst Parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 10: No origin signal is set for origin regression 10: No origin regression crawling speed VC is 0 or VC ≥ VH 13: Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0	SD1168	pulse equivalent)			
SD1169 pulse equivalent) 1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per rotation and the movement per rotation is 0 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after meeting the negative limit signal 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression signal error 15: Follow Performance Parameters 0: Tiboliow Performance Parameters 0: Tiboliow Teedforward Compensation <0		Present pulse number			
SD1170Pulse error informationSolution and the information is 0SD1170Pulse error information3: System parameter block number exceeding maximum limit 5: Stop after necountering positive limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 16: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or >100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 23: Are radius data error 24: Three-point Are Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed		high 16-bit (the unit is			
SD1170Pulse error informationSolution and the information is 0SD1170Pulse error information3: System parameter block number exceeding maximum limit 5: Stop after necountering positive limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 16: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or >100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 23: Are radius data error 24: Three-point Are Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed	SD1169	pulse equivalent)		•	C'A
SD1170Pulse error informationSolution and the information is 0SD1170Pulse error information3: System parameter block number exceeding maximum limit 5: Stop after necountering positive limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 16: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or >100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 23: Are radius data error 24: Three-point Are Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			1: pulse data segment configuration error		U.
SD1170Pulse error informationSolution and the information is 0SD1170Pulse error information3: System parameter block number exceeding maximum limit 5: Stop after necountering positive limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 13: Origin regression signal error 16: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or >100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 23: Are radius data error 24: Three-point Are Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			2: In equivalent mode, the number of pulses		
SD1170Pulse error informationSD1170Pulse error informationSD1171 <t< td=""><td></td><td></td><td>per rotation and the movement per rotation is</td><td></td><td></td></t<>			per rotation and the movement per rotation is		
SD1170 Pulse error information SD1170 Pulse error information SD1170 Pulse error information A: Pulse error information 1: Velocity of origin regression velocity of origin regression velocity of origin regression velocity of origin regression velocity of or VC≥VH 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0 or >100 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 21: The default maximum interpolation speed is 0 22: Are interpolation data error 23: Are radius data error 23: Are radius data error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			0		
SD1170 Pulse error information Pulse error information 4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC≥VH 13: Origin regression signal error 15: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0			3: System parameter block number error		
SD1170Pulse error informationmaximum limit 5: Stop after encountering positive limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or $VC \ge VH$ 13: Origin regression signal error 15: Follow Performance Parameters ≤ 0 or >100 16: Follow Feedforward Compensation <0 or >100 17: Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc radius data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
SD1170Pulse error informationSD1170Pulse error informationSD1170Pulse error informationSD1170SD1170SD1170Pulse error informationSD1170SD1170SD1170Pulse error informationSD1170SUBSENCESUBSENCESUBSE					
SD1170 Pulse error information 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC≥VH 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0 or>100 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
SD1170 Pulse error information 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC≥VH 13: Origin regression signal error 15: Follow Performance Parameters ≤ 0 0r >100 16: Follow Feedforward Compensation <0					
SD1170Pulse error information11:Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC \geq VH 13: Origin regression signal error 15:Follow Performance Parameters \leq 0 or >100 16:Follow Feedforward Compensation <0 or>100 17:Follow Multiplication Coefficient and Division Coefficient Ratio \leq 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
SD1170 Pulse error information 12: Origin regression crawling speed VC is 0 or VC≥VH 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0 or>100 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
SD1170Pulse error informationor VC \geq VH 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0 or>100 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is $(0, 0)$ 26: Control block allocation failed					
SD1170 Pulse error information 13: Origin regression signal error 15:Follow Performance Parameters ≤ 0 0 or >100 16:Follow Feedforward Compensation <0					
SD1170 Pulse error information 15:Follow Performance Parameters ≤ 0 or >100 16:Follow Feedforward Compensation <0 or>100 0 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
SD1170 Pulse error information or >100 16:Follow Feedforward Compensation <0			6 6 6		
or >100 16:Follow Feedforward Compensation <0 or>100 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤ 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed	SD1170	Pulse error information	15:Follow Performance Parameters ≤ 0		
or>100 17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed	SD1170		or >100		
17:Follow Multiplication Coefficient and Division Coefficient Ratio ≤0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			16:Follow Feedforward Compensation <0		
Division Coefficient Ratio ≤ 0 or >10020: Interpolation Direction Terminal Not Set or Set Error21: The default maximum interpolation speed is 022: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is $(0, 0)$ 26: Control block allocation failed			or>100		
20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			17:Follow Multiplication Coefficient and		
or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			Division Coefficient Ratio ≤ 0 or >100		
or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			20: Interpolation Direction Terminal Not Set		
21: The default maximum interpolation speed is 022: Arc interpolation data error23: Arc radius data error24: Three-point Arc Data Error25: In polar coordinate mode, the current position is (0, 0)26: Control block allocation failed			-		
is 0 22: Arc interpolation data error 23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			21: The default maximum interpolation speed		
22: Arc interpolation data error 23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
23: Arc radius data error 24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
24:Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed			-		
25: In polar coordinate mode, the current position is (0, 0) 26: Control block allocation failed					
position is (0, 0) 26: Control block allocation failed			-		
26: Control block allocation failed			-		
SD1171 Error pulse data block			26: Control block allocation failed	-	
	SD1171	Error pulse data block			l

Un.

			1 I uise output	
	number			
-				
	Present segment	01		
SD1180	(represents segment n)			
SD1181	(
5D1101	Present pulse number			
	low 16-bit (the unit is			
SD1182	pulse number)			
5D1102	Present pulse number			
	-		6	
SD1183	high 16-bit (the unit is pulse number)			
501165	•		C'S	
	Present pulse number			
GD1104	low 16-bit (the unit is			
SD1184	pulse equivalent)		•	0
	Present pulse number			
00110-	high 16-bit (the unit is			Con
SD1185	pulse equivalent)			
	Present pulse number			
	low 16-bit (the unit is			
SD1186	pulse number)			
	Present pulse number			
	high 16-bit (the unit is			
SD1187	pulse number)			
	Present pulse number			
	low 16-bit (the unit is			
SD1188	pulse equivalent)		PULSE-	
	Present pulse number		_10	
	high 16-bit (the unit is			
SD1189	pulse equivalent)			
		1: pulse data segment configuration error		
		2: In equivalent mode, the number of pulses		
		per rotation and the movement per rotation is		
		0		
		•		
		3: System parameter block number error		
		4: Pulse parameter block number exceeding		
		maximum limit		
		5: Stop after encountering positive limit signal		
		6: Stop after meeting the negative limit signal		
SD1190	Pulse error information	10: No origin signal is set for origin regression		
		11:Velocity of origin regression VH is 0		
		12: Origin regression crawling speed VC is 0		
		or VC≥VH		
		13: Origin regression signal error		
		15:Follow Performance Parameters ≤ 0		
		or >100		
		16:Follow Feedforward Compensation <0		
		or>100		
		01/ 100		

Č,

Con



		17:Follow Multiplication Coefficient and	
		Division Coefficient Ratio ≤ 0 or >100	
		20: Interpolation Direction Terminal Not Set	
		or Set Error	
		21: The default maximum interpolation speed	
		is 0	
		22: Arc interpolation data error	
		23: Arc radius data error	•
		24:Three-point Arc Data Error	5
		25: In polar coordinate mode, the current	0
		position is (0, 0)	3.
		26: Control block allocation failed	
	Error pulse data block		
SD1191	number		

High speed pulse special data register HSD (power off memory)

Register	Function	Note	
	Low 16 bits of cumulative pulse (the unit is		
HSD0	pulse number)		
	High 16 bits of cumulative pulse (the unit is		
HSD1	pulse number)		
	Low 16 bits of cumulative pulse (the unit is		
HSD2	pulse equivalent)		
	High 16 bits of cumulative pulse (the unit is		
HSD3	pulse equivalent)		PULSE_1
	Low 16 bits of cumulative pulse (the unit is		
HSD4	pulse number)		
	High 16 bits of cumulative pulse (the unit is		
HSD5	pulse number)		
	Low 16 bits of cumulative pulse (the unit is		
HSD6	pulse equivalent)		
	High 16 bits of cumulative pulse (the unit is		
HSD7	pulse equivalent)		PULSE_2
	Low 16 bits of cumulative pulse (the unit is		
HSD8	pulse number)		
	High 16 bits of cumulative pulse (the unit is		
HSD9	pulse number)		
	Low 16 bits of cumulative pulse (the unit is		
HSD10	pulse equivalent)		
	High 16 bits of cumulative pulse (the unit is		
HSD11	pulse equivalent)		PULSE_3

	×		
		1 Pulse output	
-			
	Low 16 bits of cumulative pulse (the unit is		
HSD12	pulse number)		
	High 16 bits of cumulative pulse (the unit is		
HSD13	pulse number)		
	Low 16 bits of cumulative pulse (the unit is		
HSD14	pulse equivalent)		
	High 16 bits of cumulative pulse (the unit is		
HSD15	pulse equivalent)	PULSE_4	
	Low 16 bits of cumulative pulse (the unit is		
HSD16	pulse number)		
	High 16 bits of cumulative pulse (the unit is		•
HSD17	pulse number)	- 9	
	Low 16 bits of cumulative pulse (the unit is		Con
HSD18	pulse equivalent)	-	U _A
	High 16 bits of cumulative pulse (the unit is		
HSD19	pulse equivalent)	PULSE_5	
	Low 16 bits of cumulative pulse (the unit is		
HSD20	pulse number)	_	
HODAL	High 16 bits of cumulative pulse (the unit is		
HSD21	pulse number)	-	
110022	Low 16 bits of cumulative pulse (the unit is		
HSD22	pulse equivalent)	_	
HSD23	High 16 bits of cumulative pulse (the unit is pulse equivalent)	PULSE_6	
ПЗD25		PULSE_0	
HSD24	Low 16 bits of cumulative pulse (the unit is pulse number)		
115D24	High 16 bits of cumulative pulse (the unit is	-	
HSD25	pulse number)		
116025	Low 16 bits of cumulative pulse (the unit is	-	
HSD26	pulse equivalent)		
1100-0	High 16 bits of cumulative pulse (the unit is	-	
HSD27	pulse equivalent)	PULSE_7	
	Low 16 bits of cumulative pulse (the unit is		
HSD28	pulse number)		
	High 16 bits of cumulative pulse (the unit is	1	
HSD29	pulse number)		
	Low 16 bits of cumulative pulse (the unit is	1	
HSD30	pulse equivalent)		
	High 16 bits of cumulative pulse (the unit is		
HSD31	pulse equivalent)	PULSE_8	
	Low 16 bits of cumulative pulse (the unit is		
HSD32	pulse number)	PULSE_9	

1 Pulse output			
		High 16 bits of cumulative pulse (the unit is	
		pulse number)	HSD33
	6	Low 16 bits of cumulative pulse (the unit is	
		pulse equivalent)	HSD34
		High 16 bits of cumulative pulse (the unit is	
		pulse equivalent)	HSD35
	` О.	Low 16 bits of cumulative pulse (the unit is	
S A	C	pulse number)	HSD36
	· · · · · · · · · · · · · · · · · · ·	High 16 bits of cumulative pulse (the unit is	
C'S		pulse number)	HSD37
		Low 16 bits of cumulative pulse (the unit is	
'Çe		pulse equivalent)	HSD38
		High 16 bits of cumulative pulse (the unit is	
PULSE_10		pulse equivalent)	HSD39

0

2 Motion control

2-1. Motion control instruction list

Instruction	Function	Chapter					
DRV	Quick positioning	2-4-1					
DRVR	Quick positioning, polar coordinate mode (temporarily unavailable)	2-4-2					
LIN line	Linear interpolation						
LIN line VM	Linear interpolation, maximum speed can be specified separately	2-4-3					
LIN line VBEM	Linear interpolation, can specify the starting speed, terminal speed and maximum speed separately	2-4-3					
CW clockwise	Clockwise circular interpolation	2-4-4					
CW closewise VM	Clockwise circular interpolation, maximum speed can be specified separately	2-4-4					
CW closewise VBEM	Clockwise circular interpolation, can specify the starting speed, terminal speed and maximum speed separately	2-4-4					
CCW anticlockwise	Anticlockwise circular interpolation	2-4-5					
CCW anticlockwise VM	Anticlockwise circular interpolation, maximum speed can be specified separately	2-4-5					
CCW anticlockwise VBEM	Anticlockwise circular interpolation, can specify the starting speed, terminal speed and maximum speed separately	2-4-5					
CW_R closewise	Clockwise circular interpolation (Specified radius)	2-4-6					
CW_R closewise VM	Clockwise circular interpolation(Specified radius), maximum speed can be specified separately	2-4-6					
CW_R closewise VBEM	Clockwise circular interpolation(Specified radius), can specify the starting speed, terminal speed and maximum speed separately	2-4-6					
CCW_R anticlockwise	Anticlockwise circular interpolation(Specified radius)	2-4-7					
CCW_R anticlockwise VM	Anticlockwise circular interpolation(Specified radius), maximum speed can be specified separately	2-4-7					
CCW_R anticlockwise VBEM	Anticlockwise circular interpolation(Specified radius), can specify the starting speed, terminal speed and maximum speed separately	2-4-7					

The following motion control instructions are suitable for XDM, XDME, XLME series PLC.

ARC three points	Three points arc	2-4-8
ARC three point	Three points arc, maximum speed can be specified separately	2-4-8
VM		
ARC three point	Three points arc, can specify the starting speed, terminal speed	2-4-8
VBEM	and maximum speed separately	
FOLLOW	Single phase follow	2-4-9
FOLLOW_AB	AB phase follow	2-4-9

Note: All interpolation instructions have no stop when jumping, there is inflection point.

2-2. Writing method of motion control instruction

Except FOLLOW, other motion control instructions must be written in the BLOCK. The specific methods are as follows:

1. insert a sequence block

in the ladder chart, then insert G instruction.

Edit Sequence Block 1	×
Comment: Sequence Block1 Common Item Pulse Item Wait Item Read/Write Module(FROM/TO) G Item Read/Write SD Module	
ОК	Cancel

2. it will show the following window

		U.		2	Motion control
					×
_		Edit Sequence	BIOCK I		
Commer		G Instructio	on O		
Insert	Skip	Comment: fast posi	tion	2	
	DRV fast po	sition		· × v	
Index		Params	Register	Absolute	
	•	final position	DO	Absolute	
		final position	D2	Absolute	
		axis 1	YO	params	
		axis 2	¥1	params	
					· Co
					- On
			ОК	Cancel	
			L	UK	Cancel

3. click the dropdown menu, select the motion control instruction to

	Edit Sequence Block 1	×
Commer	G Instruction	×
	Skip Comment: clockwise VBEM	
; Inserf	CW_R clockwise VBEM V	
Index	DRV fast position DRVR fast position(polar) LIN line LIN line VM LIN line VBEM CW clockwise CW clockwise VM CW clockwise VBEM CCW anticlockwise CCW anticlockwise VM CCW anticlockwise VBEM CW_R clockwise VM_R clockwise VM CW_R anticlockwise VM CCW_R anticlockwise VBEM CCW_R anticlockwise VBEM ARC three point ARC three point VM ARC three point VM	Cancel

4. click the motion control instruction CW clockwise, it will show the instruction configuration window:

Skip	Comment: clock	wise	5	
CW clocky	vise		· ·	
	Params	Register	Absolute	
•	final position	DO	Absolute	
	final position	D2	Absolute	
	center position	D4	Relative	
	center position	D6	Relative	1°C
	axis 1	УО	params	
	axis 2	Υ1	params	

In the register list, double click the value can change the register address and axis output terminal. In the absolute list, double click the value can set the mode (relative/absolute).

Ċ,

Double click the parameters can set the direction, speed, acc/dec time of the two axes, please see the follows:

		G Instruc	tion		×		
						Config - Delete init axis config guide	
2	Skip	Comment: clock	wise		- 11	Param SFD901 bit0	Value
	CW clockwi	se		~		YO axis-Common-Parameters setting-Pulse direction logic	positive logic
		_				YO axis-Common-Parameters setting-enable soft limit	disable
		Params	Register	Absolute		YO axis-Common-Parameters setting-mechanical back to	negative
J.		final position	DO	Absolute		YO axis-Common-Parameters setting-Motor operating mo	Position Mode
			D2	Absolute		YO axis-Common-Parameters setting-Pulse unit	pulse number
			D4	Relative		YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
		center position	D6	Relative		YO axis-Common-pulse send mode	complete mode
	•	axis 1	YO	params		YO axis-Common-Pulse num (1)	1
		axis 2	¥1	params		YO axis-Common-Offset (1)	1
						YO axis-Common-Pulse direction terminal	Y no terminal
			ОК	Cancel		YO axis-Common-Delayed time of pulse direction (ms)	10
					-	Read From PLC Write To PLC OK	Cancel

Note:

(1) Different instructions require different system parameter blocks. See chapter 2-3-2 and instructions for details.

(2) See chapter 1-2-1 for system parameters.

5. Configuration is completed, click OK, and you can see the general situation of the generated instructions in the SBLOCK:

		Ľ,	~	2 Motion control
		Edit Sequend	ce Block 1	×
Comment: Seq	uence Block1		95	
Insert + Edit	Delete Up	wards Downwards	02.	
Index	Skip	Comment	Output	
1		clockwise	CW DO D10 D20 D30 YO Y1	
				YNCat CO
			ок	Cancel

6. A complete motion control instruction is completed by generating the motion control instructions in the ladder diagram and inputting the driving conditions.

PLC1 - La	adder							$\triangleleft \flat \times$
08	мо 						 Sequence D10 D20 D30 Y0 SBLOCKE	

7. Execute BLOCK once every time M0 rises.

8. Multiple motion control instructions can be inserted into BLOCK. Lines and arcs can be used to fulfill different interpolation requirements.

i.com

2-3. Pulse output terminal distribution and parameters

This section will introduce the distribution of the output port of each PLC pulse in XD series and the configuration of the parameters of each axis pulse.

2-3-1. Pulse output port distribution

In all transistor output terminals of XDM series PLC, the operation axes of axle 1 and axle 2 can be arbitrarily specified, and the corresponding direction terminals can also be arbitrarily specified.

XDM-24T4

Output	Y0~Y3	Y4~Y11
Function	Pulse output	Direction output

XDM-32T4, XLME-32T4

Output	Y0~Y3	Y4~Y15
Function	Pulse output	Direction output

XDM-60T4, XDM-60T4L, XDME-60T4, XDH-60T4

Output	Y0~Y3	Y4~Y27
Function	Pulse output	Direction output

XDM-60T10, XDME-60T10

Output	Y0~Y11	Y12~Y27
Function	Pulse output	Direction output

Note: Pulse output terminals that are not used can also be used as directional terminals.

2-3-2. Pulse output terminal parameters

In order to execute the motion control command, it is necessary to configure the pulse control parameters of axis 1 and axis 2. However, only part of the pulse parameters are used in the motion control command, and part of these parameters are common parameters of two axes (i.e. the parameters configurated in axis 1 are valid). As shown in the following figure:

	Pulse direction logic	Independent	Axis 1 and 2 need to be set
		parameter	
Common	Enable soft limit	Common	Only need to set axis 1
Common		parameter	
parameter	Pulse unit	Common	Only need to set axis 1
		parameter	
	Pulse number	Independent	Axis 1 and 2 need to be set

1.
· ()_

		parameter		
	Offset	Independent	Axis 1 and 2 need to be set	
		parameter		
	Pulse direction terminal	Independent	Axis 1 and 2 need to be set	
		parameter		
	Signal terminal switch state	Independent	Axis 1 and 2 need to be set	
	settingpositive limit	parameter	°O ₂	
	Signal terminal switch state	Independent	Axis 1 and 2 need to be set	
	settingnegative limit	parameter		
	Positive limit terminal	Independent	Axis 1 and 2 need to be set	
	setting	parameter		
	Negative limit terminal	Independent	Axis 1 and 2 need to be set	
	setting	parameter	· · O	
	Soft limit positive value	Independent	Axis 1 and 2 need to be set Axis 1 and 2 need to be set	•
		parameter		5
	Soft limit negative value	Independent	Axis 1 and 2 need to be set	7
		parameter		•
Group 2	Pulse default speed	Common	Only need to set axis 1	
parameters		parameter		
	Acceleration time of pulse	Common	Only need to set axis 1	
	default speed	parameter		
	Deceleration time of pulse	Common	Only need to set axis 1	
	default speed	parameter		
	Max speed	Common	Only need to set axis 1	
		parameter		
	Initial speed	Common	Only need to set axis 1	
		parameter		
	Stop speed	Common	Only need to set axis 1	
		parameter		

Note: The above table is applicable to all motion control instructions except DRV and DRVR.

DRV and DRVR instructions used parameters:

	Dity and Dity it instructions used parameters.			
	Pulse direction logic	Independent	Axis 1 and 2 need to be set	
		parameter		
	Enable soft limit	Common	Only need to set axis 1	
		parameter		
Common	Pulse unit	Common	Only need to set axis 1	
Common		parameter		
parameters	Pulse number	Independent	Axis 1 and 2 need to be set	
		parameter		
	Offset	Independent	Axis 1 and 2 need to be set	
		parameter		
	Pulse direction terminal	Independent	Axis 1 and 2 need to be set	

¢	7		

		parameter		
	Signal terminal switch state	Independent	Axis 1 and 2 need to be set	
	settingpositive limit	parameter		
	Signal terminal switch state	Independent	Axis 1 and 2 need to be set	
	settingnegative limit	parameter		
	Positive limit terminal setting	Independent	Axis 1 and 2 need to be set	
		parameter	°O _n	
	Negative limit terminal setting	Independent	Axis 1 and 2 need to be set	
		parameter		
	Soft limit positive value	Independent	Axis 1 and 2 need to be set	
		parameter		
	Soft limit negative value	Independent	Axis 1 and 2 need to be set	
		parameter	· · ·	
Group 1	Pulse default speed	Common	Axis 1 and 2 need to be set Axis 1 and 2 need to be set	
parameters		parameter	~^	
	Acceleration time of pulse	Common	Axis 1 and 2 need to be set	
	default speed	parameter		
	Deceleration time of pulse	Common	Axis 1 and 2 need to be set	
	default speed	parameter		
	Max speed	Common	Axis 1 and 2 need to be set	
		parameter		
	Initial speed	Common	Axis 1 and 2 need to be set	
		parameter		
	Stop speed	Common	Axis 1 and 2 need to be set	
		parameter		

Note: For a detailed description of the pulse parameters, please refer to the relevant content of Chapter 1.

, vo.

2-4. Motion control instruction

2-4-1. Quick positioning [DRV]

1. instruction overview

Quick positioning instructions. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Quick positi	oning [DRV]		5
16-bit	-	32-bit	DRV
instruction		instruction	
Execute	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. operand

Operand	Function	Туре
S0	The target position of axis 1	Double words, 32-bit
S1	The target position of axis 2	Double words, 32-bit
D0	Pulse output terminal of axis 1	Bit
D1	Pulse output terminal of axis 2	Bit

3. suitable soft component

Word	Operand		System							Constant	Mod	lule	
		D^*	FD	TĽ)*	CD*	DX	DY	DM*	DS^*	K/H	D	QD
	S0	•	•	•		•							
	S1	•	•	•		•							
Bit	Operand				Sys	stem							
		Х	Y	M*	S*	T*	C*	Dn.n	ı				
	D0		•										
	D1		•										

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

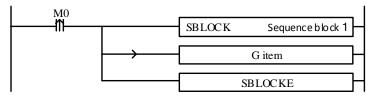
4. Parameter setting

Relative parameters	Settings	Note
Final position	Free to specify register address	Must set
Relative/ absolute	Relative: the above position as a reference;	Must set
	absolute: the origin as a reference	
Axis 1 pulse output	Free to specify pulse output terminal	Must set
port		
Axis 2 pulse output	Free to specify pulse output terminal	Must set

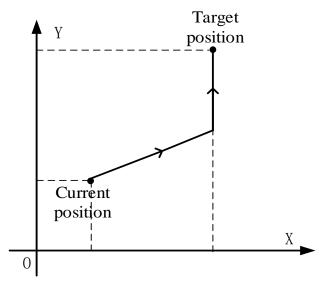
port		
Axis 1 direction port	Arbitrarily specify idle output points, set in system	Must set
	parameters	
Axis 2 direction port	Arbitrarily specify idle output points, set in system	Must set
	parameters	
Pulse unit	Setting in System Parameters of Axis 1	Must set
Pulse default speed	Specify in group 1 parameters of the system	Must set
	parameters of each axis	
Acceleration time	Specify in group 1 parameters of the system	No need to set
	parameters of each axis	· C ·
Deceleration time	Specify in group 1 parameters of the system	No need to set
	parameters of each axis	· · · ·
		•
	1	
Function and action		

Function and action

《Instruction format》



When the quick positioning DRV command is executed, the two axes will move rapidly from the current position to the target position at the default pulse speed set by their respective axes (when one axis is finished first, the other axis will continue to move at the default pulse speed, and then finish positioning after reaching the target position). As shown in the following figure:



DRV quick positioning



Jngh Double click G item, it will pop up the DRV configuration panel:

Skip	p ast position	G Instruction			
		Params	Register	Absolute	
•	S0	final position	DO	Absolute	
	S1	final position	D2	Absolute	
	DO	axis 1	ΥΟ	params	
	D1	axis 2	¥1	params	
			ОК	Cancel	

Command configuration

	PLC1 - Pulse Set			X
	Config 👻 Delete 🛛 init axis 🔷 config guide			
[Param SFD906	Value		^
	YO axis-Common-Parameters setting-Pulse direction logic	positive	logic	
	YO axis-Common-Parameters setting-enable soft limit	disable		
	YO axis-Common-Parameters setting-mechanical back to	negative		
	YO axis-Common-Parameters setting-Motor operating mo	Position	Mode	
	YO axis-Common-Parameters setting-Pulse unit	1 um		
IT	YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi	
	YO axis-Common-pulse send mode	complete	mode	
	YO axis-Common-Pulse num (1)	1		
	YO axis-Common-1um(revolve)	1		
	YO axis-Common-Pulse direction terminal	¥4		
	YO axis-Common-Delayed time of pulse direction (ms)	10		~
	Read From PLC Write To PLC OK		Cancel	

Y0 axis system parameters (1)

PLC1 - Pulse Set	×
Config - Delete init axis config guide	
Param SFD954	Value ^
YO axis-Common-Rated speed corresponding frequency (0
YO axis-Common-Positioning completion time limit (ms	0
YO axis-group 1-Pulse default speed	1000
YO axis-group 1-Acceleration time of Pulse default s	50
YO axis-group 1-Deceleration time of pulse default s	50
YO axis-group 1-Acceleration and deceleration time (ms)	10
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	100000
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0
YO axis-group 1-FOLLOW performance param(1-100)	10
Read From PLC Write To PLC OK	Cancel

Y0 axis system parameters (2)

PLC1 - Pulse Set		×
Config 🝷 Delete 🛛 init axis 🔷 config guide		
Param SFD1036	Value	^
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
V1 axis-Common-Parameters setting-enable soft limit	disable	
V1 axis-Common-Parameters setting-mechanical back to	negative	
V1 axis-Common-Parameters setting-Motor operating mo	Position	Mode
V1 axis-Common-Parameters setting-Pulse unit	1 um	
V1 axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
Y1 axis-Common-pulse send mode	complete	mode
Y1 axis-Common-Pulse num (1)	1	
Y1 axis=Common=1um(revolve)	1	
Y1 axis-Common-Pulse direction terminal	¥5	
Y1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Y1 axis system parameters (1)

Config - Delete init axis config guide	
Param SFD1084	Value
V1 axis-Common-Rated speed corresponding frequency (o de la companya de la
V1 axis-Common-Positioning completion time limit (ms	0
¥1 axis-group 1-Pulse default speed	1000
V1 axis-group 1-Acceleration time of Pulse default s	50
V1 axis-group 1-Deceleration time of pulse default s	50
Y1 axis-group 1-Acceleration and deceleration time (ms)	10
¥1 axis−group 1−pulse acc/dec mode	linear acc/dec
¥1 axis-group 1-Max speed	100000
V1 axis-group 1-Initial speed	0
V1 axis-group 1-stop speed	0
V1 axis-group 1-FOLLOW performance param(1-100)	10

Y1 axis system parameters (2)

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is set ON for the forward pulse and set OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 KHz$; Acceleration and deceleration time: $0 \sim 65535 ms$.
- Position movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 500, HSD6 = 1000, D0 = 5000, D10 = 2000, when M0 rises, execute DRV instructions and move to the target position with 1000 Hz, 50ms acceleration/deceleration time, if:

(1) If the final position is absolute mode, the target position is (5000,2000);

(2) When the final position is in the relative mode, the target position is (5500,3000).

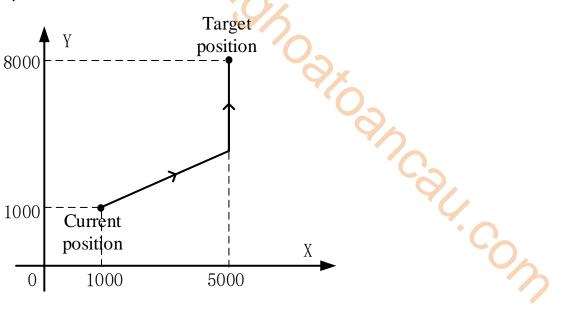
• When the DRV instruction is running, the pulse flag bit corresponding to the output port Y of the DRV instruction will be set on.

Note: DRV instructions are fixed using group 1 parameters!



As shown in the figure below, the current position coordinates of the worktable are (1000,1000) and the target coordinates are (5000,8000). The two axes are Y0 and Y1, respectively. The default pulse speeds are all 5000. The acceleration and deceleration slopes are changed by 1000Hz for 30ms, and the

pulse direction terminals are Y4 and Y5. Note: The above numerical units are pulse numbers.



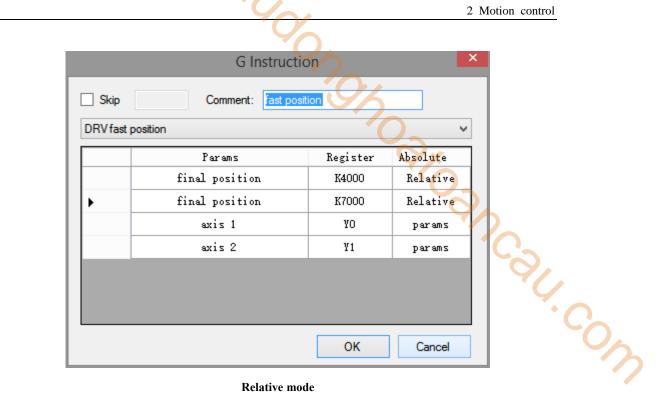
Ladder chart:

	SBLOCK	Sequence block 1
		G item
	S	BLOCKE

```
G item configurations:
```

	G Instructio	on	×
🗌 Skip	Comment: fast posit	ion	
DRV fast	t position		*
	Params	Register	Absolute
	final position	K5000	Absolute
	final position	K8000	Absolute
•	axis 1	УО	params
	axis 2	¥1	params
		ОК	Cancel

Absolute mode



Relative mode

Axis 1(Y0) parameters:

PLC1 - Pulse Set		×
Config 🝷 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting Motor operating mo	Position Mode	
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
YO axis-Common-pulse send mode	complete mode	
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	~
Read From PLC Write To PLC OK	Cancel	

×

E.	2 Motion control
PLC1 - Pulse Set	×
Config - Delete init axis config guide	
Param SFD906	Value ^
YO axis-Common-Gear clearance positive compensation 📃	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	0
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal
YO axis-Common-negative limit terminal setting	X no terminal
Read From PLC Write To PLC OK	Cancel

PLC1 - Pulse Set

PLCT - Puise Set		
Config 🗸 Delete init axis config guide		
Param SFD924(dword)	Value	^
YO axis-Common-negative limit terminal setting	X no terminal	
YO axis-Common-Zero clear CLR output setting	Y no terminal	
YO axis-Common-Return speed VH	0	1.1
YO axis-Common-Creeping speed VC	0	
YO axis-Common-Mechanical zero position	0	
YO axis-Common-Z phase num	0	
YO axis-Common-CLR signal delayed time (ms)	20	
YO axis-Common-grinding wheel radius(polar Interpola	0	
YO axis-Common-soft limit positive value	0	
YO axis-Common-soft limit negative value	0	
YO axis-Common-encoder pulse number/1 rotate(closed	1	~
Read From PLC Write To PLC OK	Cancel	

ty.	_2 M	otion	control
PLC1 - Pulse Set		X	
Config - Delete init axis config guide]
Param SFD963	Value	^	
YO axis-group 1-Pulse default speed	1000		
YO axis-group 1-Acceleration time of Pulse default s	30		
YO axis-group 1-Deceleration time of pulse default s	30		
YO axis-group 1-Acceleration and deceleration time (ms)	0		
YO axis-group 1-pulse acc/dec mode	linear acc/dec		
YO axis-group 1-Max speed	5000		b
YO axis-group 1-Initial speed	0		
YO axis-group 1-stop speed	0		
YO axis-group 1-FOLLOW performance param(1-100)	50		
YO axis-group 1-FOLLOW forward compensation(0-100)	0		
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	~	
Read From PLC Write To PLC OK	Cancel		

Axis 2 (Y1) parameters:

Config 🗸 Delete init axis config guide		
Param SFD1105 bit0-bit1	Value	^
Y1 axis-Common-Parameters setting-Pulse direction logic	positive logic	
Y1 axis-Common-Parameters setting-enable soft limit	disable	Ľ
Y1 axis-Common-Parameters setting-mechanical back to	negative	
Y1 axis-Common-Parameters setting-Motor operating mo	Position Mode	L
V1 axis-Common-Parameters setting-Pulse unit	1 นท	L
Y1 axis-Common-Parameters setting-Interpolation coor	Cross coordi	L
Y1 axis-Common-pulse send mode	complete mode	L
Y1 axis-Common-Pulse num (1)	1	L
Y1 axis-Common-1um(revolve)	1	L
V1 axis-Common-Pulse direction terminal	¥5	
Y1 axis-Common-Delayed time of pulse direction (ms)	10	١.
Read From PLC Write To PLC OK	Cancel	

X

Y	
PLC1 - Pulse Set	×
Config - Delete init axis config guide	
Param SFD1105 bit0-bit1	Value ^
¥1 axis-Common-Gear clearance positive compensation 🛛 🔨	0
¥1 axis-Common-Gear clearance negative compensation	0
Y1 axis-Common-Electrical origin position	0
Y1 axis-Common-signal terminal switch state setting	normally on
Y1 axis-Common-signal terminal switch state setting	normally on
Y1 axis-Common-signal terminal switch state setting	normally on
Y1 axis-Common-signal terminal switch state setting	normally on
Y1 axis-Common-Far-point signal terminal setting	X no terminal
Y1 axis-Common-Z phase terminal setting	X no terminal
Y1 axis-Common-positive limit terminal setting	X no terminal
V1 axis-Common-negative limit terminal setting	X no terminal
Read From PLC Write To PLC OK	Cancel

PLCT - Puise Set		
Config 🝷 Delete init axis config guide		
Param SFD1054(dword)	Value	^
Y1 axis-Common-negative limit terminal setting	X no terminal	
¥1 axis-Common-Zero clear CLR output setting	Y no terminal	
Y1 axis-Common-Return speed VH	0	
¥1 axis-Common-Creeping speed VC	0	
¥1 axis-Common-Mechanical zero position	0	Г
Y1 axis-Common-Z phase num	0	
Y1 axis-Common-CLR signal delayed time (ms)	20	
Y1 axis-Common-grinding wheel radius(polar Interpola	0	
¥1 axis-Common-soft limit positive value	0	
¥1 axis-Common-soft limit negative value	0	
Y1 axis-Common-encoder pulse number/1 rotate(closed	1	~
Read From PLC Write To PLC OK	Cancel	

Config 🝷 Delete init axis config guide		
Param SFD1093	Value ^	
Y1 axis-group 1-Pulse default speed	1000	
V1 axis-group 1-Acceleration time of Pulse default s	30	
Y1 axis-group 1-Deceleration time of pulse default s	30	
Y1 axis-group 1-Acceleration and deceleration time (ms)	10	
Y1 axis-group 1-pulse acc/dec mode	linear acc/dec	
Y1 axis-group 1-Max speed	5000	C
Y1 axis-group 1-Initial speed	0	
Y1 axis-group 1-stop speed	0	40
Y1 axis-group 1-FOLLOW performance param(1-100)	50	
Y1 axis-group 1-FOLLOW forward compensation(0-100)	0	
Y1 axis-group 1-Pulse frequency refresh time	1 ms refresh	•

Un.

2-4-2. Quick positioning (polar coordinates) [DRVR]

1. Instruction overview

Quick positioning (polar coordinates) instructions. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Quick positioning [DRVR]							
16-bit	-	32-bit	DRVR				
instruction		instruction					
Execute	Rise/fall edge of the coil	Suitable	XDM, XDME, XLME, XDH				
condition		model					
Firmware	V3.3 and above	Software	V3.3 and above				

2. Operand

Operand	Function	Туре
S0	Axis X target position	Double words, 32-bit
S1	Axis Y target position	Double words, 32-bit
D0	Pulse output port of axis X	Bit
D1	Pulse output port of axis Y	Bit

3. suitable soft component

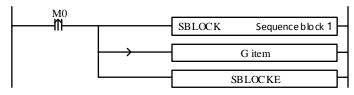
Word	Operand					Syst	em		1		Constant	Mod	lule
		D^*	FD	TD)*	CD*	DX	DY	DM*	DS*	КЛ	ID	QD
	S0	•	•	٠		•							
	S1	•	•	•		•					S ×		
Bit	Operand		System								1).	
		Х	Y	М*	S^*	T*	C*	Dnm	ı			C	
	D0		•										
	D1		•										Č
	•	· · · ·				•	•	•					

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

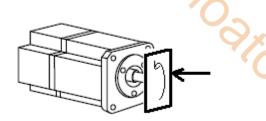
DS denotes DS DHS; M	denotes M HM SM; S denotes S HS; T denotes T HT; C denote	es C HC.
4. Parameter setting		
Related parameters	Setting	Note
Final position	Free to specify register address	Must set
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	Set in axis 1 system parameters	Must set
Default speed	Set in axis 1 group 1 parameters	Must set
Acceleration time	Set in axis 1 group 1 parameters	No need to set
Deceleration time	Set in axis 1 group 1 parameters	No need to set

Function and action

«instruction format»



Fast positioning (polar coordinates) instruction refers to the rotation axis of one axis, which rotates the workpiece on the rotating axis, and the forward and backward feed axis which is perpendicular to the rotating axis. When the rotating axis drives the workpiece to rotate, the feed axis processes the trajectory of the rotating workpiece through forward and backward processing. The trajectory of motion can include straight line and arc, and can be used in processing and grinding equipment.



Double click G item, it will pop up DRVR fast position(polar) instruction configuration panel, as shown below:

		G Instructio	on	×
Skip		Comment: fast posit	ion(polar)	
DRVR fa	st positio	on(polar)		¥
		Params	Register	Absolute
	S0	final position	DO	Absolute
	S1	final position	D10	Absolute
+	DO	axis 1	YO	params
	D1	axis 2	Ψ1	params
			ОК	Cancel

ion

2-4-3. Linear interpolation [LIN]

There are three modes of linear interpolation, the following will introduce one by one.

Mode 1: LIN line

1. Instruction overview

Linear interpolation instruction, operate according to the set default speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Linear interp	polation [LIN]		
16-bit	-	32-bit	LIN
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH 🔸
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

1		
Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
D0	Pulse output port of axis 1	Bit
D1	Pulse output port of axis 2	Bit

3. Suitable soft component

Word	Operand		System						Constant	Moc	lule		
		D^*	FD	TĽ)*	CD*	DX	DY	DM*	DS^*	K/H	D	QD
	S0	•	•	•		•							
	S1	•	•	•		•							
Bit	Operand		System										
		Х	Y	M*	S^*	T*	C *	Dnm	ı				
	D0		٠										
	D1		•										

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

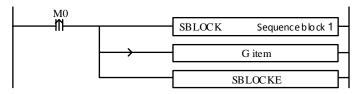
4. Parameter setting

Related parameters	Setting	Note	
Final position	Free to specify register address	Must set	
Relative/absolute	Must set		
	the origin as a reference		
Pulse output port of	Arbitrary specify pulse output point	Must set	

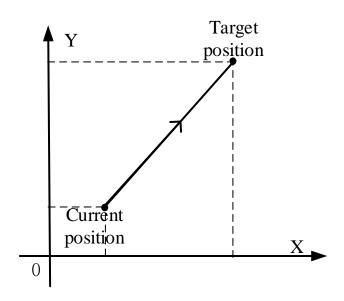
Arbitrary specify pulse output point	Must set
Arbitrarily specify idle output points, set in system	Must set
parameters	
Arbitrarily specify idle output points, set in system	Must set
parameters	
Set in axis 1 system parameters	Must set
The synthetic speed of two axes, set in axis 1 group 2	Must set
parameters	· C
Set in axis 1 group 2 parameters	No need to set
Set in axis 1 group 2 parameters	No need to set
	•
n	
	Arbitrarily specify idle output points, set in system parameters Arbitrarily specify idle output points, set in system parameters Set in axis 1 system parameters The synthetic speed of two axes, set in axis 1 group 2 parameters Set in axis 1 group 2 parameters

Function and action

《Instruction format》



When the LIN instruction of linear interpolation (mode 1) is executed, the two axes will move rapidly from the current position to the target position at the highest synthetic speed of the two axes (the default speed set in axis 1 group 2 parameters). As shown in the following figure:



LIN linear interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

		G Instruc	tion 6	×	
LIN line		Comment: line			
		Params	Register	Absolute	
	S0	final position	DO	Absolute	
	S1	final position	D10	Absolute	
•	D0	axis 1	УО	params	
	D1	axis 2	¥1	params	
					· Com
			ОК	Cancel	

Instruction configuration

PLC1 - Pulse Set			x
Config 🝷 Delete init axis config guide			
Param SFD906	Value		^
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic	
YO axis-Common-Parameters setting-enable soft limit	disable		
YO axis-Common-Parameters setting-mechanical back to	negative		
YO axis-Common-Parameters setting-Motor operating mo	Position	Mode	
YO axis-Common-Parameters setting-Pulse unit	1 um		
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi	
YO axis-Common-pulse send mode	complete	mode	
YO axis-Common-Pulse num (1)	1		
YO axis-Common-lum(revolve)	1		
YO axis-Common-Pulse direction terminal	¥4		
YO axis-Common-Delayed time of pulse direction (ms)	10		~
Read From PLC Write To PLC OK		Cancel	

Axis Y0 system parameters (1)

YO		
PLC1 - Pulse Set	×	
Config - Delete init axis config guide		
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	6
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

U~

Axis Y0 system parameters (2)

PLC1 - Pulse Set		×
Config 🝷 Delete init axis config guide		
Param SFD1036	Value	^
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
Y1 axis-Common-Parameters setting-enable soft limit	disable	
Y1 axis-Common-Parameters setting-mechanical back to	negative	2
V1 axis-Common-Parameters setting Motor operating mo	Position	n Mode
V1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	oordi
Y1 axis-Common-pulse send mode	complete	e mode
Y1 axis-Common-Pulse num (1)	1	
V1 axis-Common-1um(revolve)	1	
V1 axis-Common-Pulse direction terminal	¥5	
Y1 axis-Common-Delayed time of pulse direction (ms)	10	~
Read From PLC Write To PLC OK		Cancel

Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3

2017

for other optional ports.

- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 \text{KHz}$; Acceleration and deceleration time: $0 \sim 65535 \text{ms}$.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 500, HSD6 = 1000, D0 = 5000, D10 = 2000, when M0 rises, execute LIN command and move to the target position at the default speed of 1000Hz:
- (1) If the final position is absolute mode, the target position is (5000,2000);
- (2) When the final position is in the relative mode, the target position is (5500,3000).
- When the LIN instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 2: LIN line VM

1. Instruction overview

Linear interpolation instruction, operate according to the set maximum synthetic speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Linear interpolation [LIN]							
16-bit	-	32-bit	LIN				
instruction		instruction					
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH				
condition		model					
Firmware	V3.3 and above	Software	V3.3 and above				

2. Operand

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	maximum synthetic speed of axis 1 and 2	Double words, 32-bit
D0	Pulse output port of axis 1	Bit
D1	Pulse output port of axis 2	Bit

3

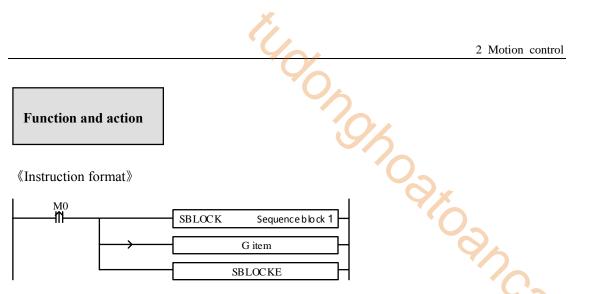
3. Suitable soft component

Word	Operand					Sys	tem		.(Constant	Moc	lule
		D^*	FD	П) *	CD^*	DX	DY	DM*	DS*	K/H	D	QD
	S0	•	•	•		•							
	S1	•	•	•		•							
	S2	•	•	•		•						5	
												~	
Bit	Operand				Sy	stem						9	5
		Х	Y	M^*	S^*	T*	C*	Dnn	ı				
	D0		•										C
	D1		•										
		<u> </u>			•	•		•					

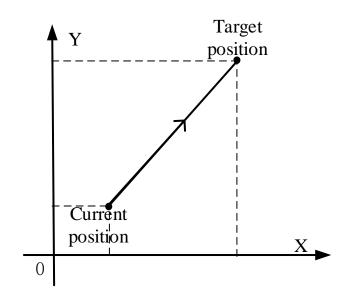
* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter setting

Related parameters	Setting	Note
Final position	Free to specify register address	Must set
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Max speed	Specify the maximum smooth running speed of the	Must set
	two-axis combination, and specify any address.	
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	No need to set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set



When the LIN instruction of linear interpolation (mode 2) is executed, the two axes will move rapidly from the current position to the target position at the set max synthetic speed. As shown in the following figure:



LIN linear interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows: -On

Skip	>	Comment: line VM	65		
.IN line	e VM		(~	
		Params	Register	Absolute]
	S0	final position	DO	Absolute	
	S1	final position	D10	Absolute	
	S2	max speed	D20		
•	DO	axis 1	УО	params	
	D1	axis 2	¥1	params	

Instruction configuration

PLC1 - Pulse Set		×			
Config 🝷 Delete 🛛 init axis 🔷 config guide					
Param SFD906	Value	>			
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic			
YO axis-Common-Parameters setting-enable soft limit	disable				
YO axis-Common-Parameters setting-mechanical back to negative					
YO axis-Common-Parameters setting Motor operating mo	Position	Mode			
YO axis-Common-Parameters setting-Pulse unit	1 um				
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi			
YO axis-Common-pulse send mode	complete	mode			
YO axis-Common-Pulse num (1)	1				
YO axis-Common-lum(revolve) 1					
YO axis-Common-Pulse direction terminal	¥4				
YO axis-Common-Delayed time of pulse direction (ms) 10					
Read From PLC Write To PLC OK		Cancel			

Axis Y0 system parameters (1)

		_
PLC1 - Pulse Set	×	
Config - Delete init axis config guide		
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	6
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Un.

Axis Y0 system parameters (2)

PLC1 - Pulse Set					
Config + Delete init axis config guide					
Param SFD1036	Value	1			
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	e logic			
Y1 axis-Common-Parameters setting-enable soft limit	disable				
Y1 axis-Common-Parameters setting-mechanical back to	negative	2			
V1 axis-Common-Parameters setting-Motor operating mo	Position	1 Mode			
V1 axis-Common-Parameters setting-Pulse unit	1 um				
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	oordi			
Y1 axis-Common-pulse send mode	complete	e mode			
V1 axis-Common-Pulse num (1) 1					
¥1 axis-Common-1um(revolve)	1				
V1 axis-Common-Pulse direction terminal	¥5				
Y1 axis-Common-Delayed time of pulse direction (ms) 10					
Read From PLC Write To PLC OK		Cancel			

Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the max speed.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3

2017

for other optional ports.

- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 \text{KHz}$; Acceleration and deceleration time: $0 \sim 65535 \text{ms}$.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 500, HSD6 = 1000, D0 = 5000, D10 = 2000, D20 = 2000, when M0 rises, execute LIN command and move to the target position at the speed of 2000Hz:
- (1) If the final position is absolute mode, the target position is (5000,2000);
- (2) When the final position is in the relative mode, the target position is (5500,3000).
- When the LIN instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 3: LIN line VBEM

1. Instruction overview

Linear interpolation instruction, operate according to the set maximum synthetic speed, start speed and stop speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Linear interpolation [LIN]							
16-bit	-	32-bit	LIN				
instruction		instruction					
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH				
condition		model					
Firmware	V3.3 and above	Software	V3.3 and above				

2. Operand

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S 1	Axis 2 target position	Double words, 32-bit
S2	Start speed of axis 1 and 2	Double words, 32-bit
S3	Stop speed of axis 1 and 2	Double words, 32-bit
S4	maximum synthetic speed of axis 1 and 2	Double words, 32-bit
D0	Pulse output port of axis 1	Bit
D1	Pulse output port of axis 2	Bit

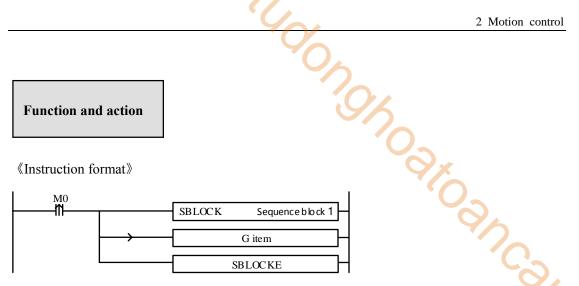
3. Suitable soft component

											1	-		
Word	Operand					Sys	tem				Constant	Mod	lule	
		D^*	FD	ΤL)*	CD^*	DX	DY	DM*	DS*	K/H	ID	QD	
	S0	•	•	٠		•								
	S1	•	•	٠		•					S			
	S2	•	•	٠		•						5		
	S3	•	•	٠		•						~		
	S4	•	•	•		•							5	
														7
Bit	Operand		System											1
Dit		Х	Y	M*	S^*	Τ*	C*	Dnn	ı					
	D0		•											
	D1		•											
	L						1							

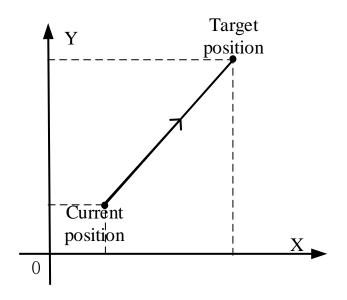
K.Com * Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter setting

Related parameters	Setting	Note
Final position	Free to specify register address	Must set
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Start speed	Start speed at the starting point of the two axes	Must set
Stop speed	Stop speed at the end point of the two axes	Must set
Max speed	Specify the maximum smooth running speed of the	Must set
	two-axis combination, and specify any address.	
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	No need to set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set



When the LIN instruction of linear interpolation (mode 3) is executed, the two axes will move rapidly from the current position to the target position at the set max synthetic speed, start speed and stop speed. As shown in the following figure:



LIN linear interpolation

The parameter configuration is shown in the following figure:

Double-click G item and pop up the configuration panel. Set it as follows:

27

		\mathbf{v}		2 Motion control
		0		
	G Instru	ction		×
Skip	Comment: line	VBEM	5	
LIN line VBEM		•	0	¥
	Params	Register	Absolute	^
S0	final position	DO	Absolute	
S1	final position	D10	Absolute	6
S2	begin speed	D20		
S3	end speed	D30		
S4	max speed	D40		
► DO	axis 1	УО	params	
D1	axis 2	¥1	params	✓
DI		ОК	Cancel	

Instruction configuration

Config 🗸 Delete 🛛 init axis 🔹 config guide		
Param SFD906	Value	
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Motor operating mo	Position	Mode
YO axis-Common-Parameters setting-Pulse unit	1um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)	1	
YO axis-Common-1um(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

YOU		
PLC1 - Pulse Set	×	
Config 🗸 Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	b
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

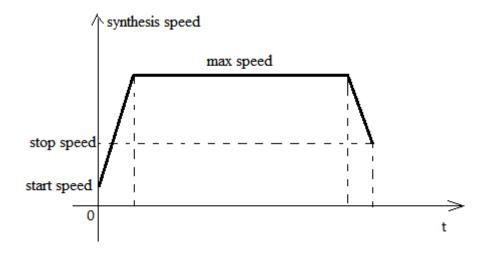
PLC1 - Pulse Set			×
Config • Delete init axis config guide			
Param SFD1036	Value		^
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	e logic	
Y1 axis-Common-Parameters setting-enable soft limit	disable		
Y1 axis-Common-Parameters setting-mechanical back to	negative	2	
Y1 axis-Common-Parameters setting Motor operating mo	Position	n Mode	
V1 axis-Common-Parameters setting-Pulse unit	1 um		
Y1 axis=Common=Parameters setting=Interpolation coor	Cross co	oordi	
Y1 axis-Common-pulse send mode	complete	e mode	
Y1 axis-Common-Pulse num (1)	1		
Y1 axis=Common=1um(revolve)	1		
V1 axis-Common-Pulse direction terminal	¥5		
¥1 axis-Common-Delayed time of pulse direction (ms)	10		v
Read From PLC Write To PLC OK		Cancel	

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the start speed, D30 specifies the stop speed, D40 specifies the max speed.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: 1Hz ~ 100KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
 - Assuming HSD2 = 500, HSD6 = 1000, D0 = 5000, D10 = 2000, D20 = 100, D30 = 50, D40 = 2000, when M0 rises, execute LIN command, accelerate from the starting point at 100Hz to 2000 Hz and stop at 50Hz after moving to the target position.
- (1) If the final position is absolute mode, the target position is (5000,2000);
- (2) When the final position is in the relative mode, the target position is (5500,3000).
- When the LIN instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Note: In this mode, the start speed (S2), the stop speed (S3) and the max speed (S4) are all expressed as the two-axis synthesis speed, as shown in the following figure:

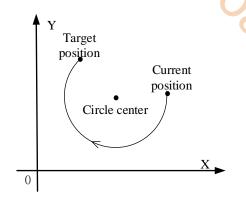


When there are multiple continuous linear/arc interpolation instructions and the speed between them needs to be constant and jump directly, the stop speed and maximum speed of the previous linear/arc interpolation can be set the same as the start speed and maximum speed of the next segment.

When the third mode is used, the initial and stop speed in the pulse parameter configuration tables of axis 1 and axis 2 are only effective for calculating the slope of pulse acceleration and deceleration.

2-4-4. Clockwise arc [CW]

CW interpolation mainly determines the arc through the current position of the arc, the target position and the coordinates of the center of the circle, as shown in the following figure:



itoancau.com From the above figure, we can see that when we need to draw a whole circle, we only need to set the target position to the current position. CW has three modes. The usage of CW is described below.

Mode 1: CW clockwise

1. Instruction overview

Clockwise arc interpolation instruction, operate according to the set default speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Clockwise arc interpolation [CW]						
16-bit	-	32-bit	CW			
instruction		instruction				
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH			
condition		model				
Firmware	V3.3 and above	Software	V3.3 and above			

2. Operand

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	Specify the center position of axis 1 (always	Double words, 32-bit
	relative to the starting coordinates)	
S3	Specify the center position of axis 2 (always	Double words, 32-bit
	relative to the starting coordinates)	
D0	Pulse output port of axis 1	Bit
D1	Pulse output port of axis 2	Bit

3. Suitable soft component

										_				
Word	Operand					System				Constant			Module	
		D^*	FD	T)*	CD*	DX	DY	DM*	DS*	K/H	ID	QD	
	S0	•	•	•		•								
	S1	•	•	•		•								
	S2	•	•	•		•						0		
	S3	•	•	•		•						い		
												4	5	
D:4	Operand		System					_						
Bit		Х	Y	M*	S^*	Τ*	C*	Dnm	ı				C	
	D0		•											
	D1		•											

 Bit
 X
 Y
 ...

 D0
 •
 •
 •

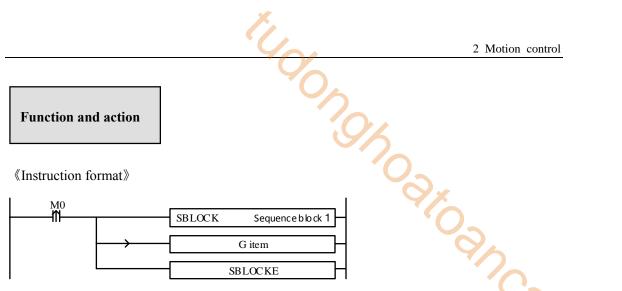
 D1
 •
 •
 •

 * Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM;
 •

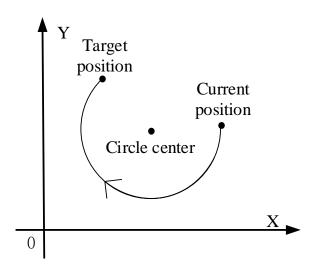
 DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

Related parameters	Setting	Note
Final position	Determine the end point position according to	Must set
	relative/absolute mode	
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Circle center	The position of the center is determined by the	Must set
position	position of the starting point and the end point	
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	Must set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set

4. Parameter setting



When the CW instruction of arc interpolation (mode 1) is executed, the two axes will run at the highest synthesis speed. As shown in the following figure:



CW clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows: ·com

		Ľ.		2	2 Motion control
		G Instructi	on		×
Skip	p ockwise	Comment: clockwi	se O		
		Params	Register	Absolute	1
	S0	final position	DO	Absolute	
	S1	final position	D10	Absolute	
	S2	center position	D20	Relative	
	S 3	center position	D30	Relative	
•	DO	axis 1	YO	params	- PL
	D1	axis 2	¥1	params	
			ОК	Cancel	· Con
		Instruction config	guration		_

Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting Motor operating mo	Position	Mode
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	~
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

YOU		
PLC1 - Pulse Set	×	
Config 🗸 Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	6
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

PLC1 - Pulse Set			×
Config • Delete init axis config guide			
Param SFD1036	Value		^
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	e logic	
Y1 axis-Common-Parameters setting-enable soft limit	disable		
Y1 axis-Common-Parameters setting-mechanical back to	negative	2	
Y1 axis-Common-Parameters setting Motor operating mo	Position	n Mode	
V1 axis-Common-Parameters setting-Pulse unit	1 um		
Y1 axis=Common=Parameters setting=Interpolation coor	Cross co	oordi	
Y1 axis-Common-pulse send mode	complete	e mode	
Y1 axis-Common-Pulse num (1)	1		
Y1 axis=Common=1um(revolve)	1		
V1 axis-Common-Pulse direction terminal	¥5		
¥1 axis-Common-Delayed time of pulse direction (ms)	10		v
Read From PLC Write To PLC OK		Cancel	

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle center of axis 1, D30 specifies the circle center of axis 2.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: 1Hz ~ 100KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, when M0 rises, execute CW command, move from the starting position (1000, 1000) to the target position at the default speed of 1000Hz.

(1) When the end point is in absolute mode, the target position is (5000,2000), the center position is (3000,1500), and D20 = 2000, D30 = 500.

(2) When the end point is in the relative mode, the target position is (6000,3000), the center position is (3500,2000), and D20 = 2500, D30 = 1000.

- When the CW instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 2: CW clockwise VM

1. Instruction overview

Clockwise arc interpolation instruction, operate according to the set maximum synthetic speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

LOND

Clockwise a	Clockwise arc interpolation [CW]						
16-bit	-	32-bit	CW				
instruction		instruction					
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH				
condition		model					
Firmware	V3.3 and above	Software	V3.3 and above				

2. Operand

 C_{1} 1

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	Specify the center position of axis 1 (always relative to the starting coordinates)	Double words, 32-bit
S3	Specify the center position of axis 2 (always relative to the starting coordinates)	Double words, 32-bit
S4	Max speed of the two axes	Double words, 32-bit
D0	Pulse output port of axis 1	Bit
D1	Pulse output port of axis 2	Bit

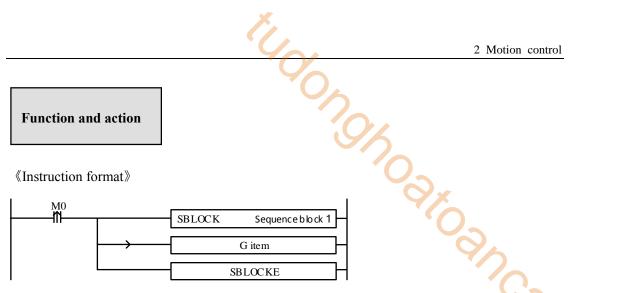
3. Suitable soft component

										_		•		
Word	Operand					Syst	tem		.(Constant	Mod	lule	
word		D^*	FD	TI) *	CD^*	DX	DY	DM*	DS*	K/H	ID	QD	
	S0	•	•	•		•								
	S1	•	•	•		•					S			
	S2	•	•	•		•						5		
	S3	•	•	•		•						~		
	S4	•	•	•		•							5	
Bit	Operand				Sy	stem							1	3
		Х	Y	M*	S *	T*	C *	Dnm	ı					\mathbf{Q}
	D0		•											
	D1		•											
					•	•	•		•					

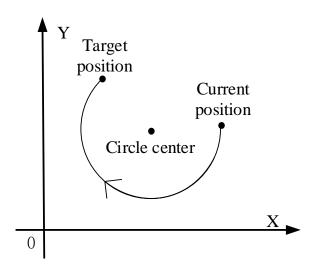
(·com * Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter setting

Related parameters	Setting	Note
Final position	Determine the end point position according to	Must set
	relative/absolute mode	
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Circle center	The position of the center is determined by the	Must set
position	position of the starting point and the end point	
Max speed	Specify maximum smooth running speed of two axes	Must set
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	No need to set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set



When the CW instruction of arc interpolation (mode 2) is executed, the two axes will run at the set max synthesis speed. As shown in the following figure:



CW clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

	G Instru	iction		×
🗌 Skij	p Comment: cloc	kwise VM	5	
CW clo	ockwise VM		0	¥
	Params	Register	Absolute	^
	SO final position	DO	Absolute	
	S1 final position	D10	Absolute	8
	S2 center position	D20	Relative	
	S3 center position	D30	Relative	
	S4 max speed	D40		
•	DO axis 1	УО	params	
	D1 axis 2	¥1	params	
	<i>B</i> 1	ОК	Cancel	
	Instruction co	onfiguration		/

Un.

Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting Motor operating mo	Position	Mode
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	~
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

YOU		
PLC1 - Pulse Set	×	
Config - Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

PLC1 - Pulse Set		>
Config - Delete init axis config guide		
Param SFD1036	Value	
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
¥1 axis-Common-Parameters setting-enable soft limit	disable	
V1 axis-Common-Parameters setting-mechanical back to	negative	
V1 axis-Common-Parameters setting Motor operating mo	Position	Mode
V1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
¥1 axis-Common-pulse send mode	complete	e mode
V1 axis-Common-Pulse num (1)	1	
V1 axis-Common-1um(revolve)	1	
V1 axis-Common-Pulse direction terminal	¥5	
¥1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle center of axis 1, D30 specifies the circle center of axis 2, D40 specifies the max speed.

Sol.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100$ KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 500Hz, when M0 rises, execute CW command, move from the starting position (1000, 1000) to the target position at the max speed of 500Hz.

(1) When the end point is in absolute mode, the target position is (5000,2000), the center position is (3000,1500), and D20 = 2000, D30 = 500.

(2) When the end point is in the relative mode, the target position is (6000,3000), the center position is (3500,2000), and D20 = 2500, D30 = 1000.

- When the CW instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 3: CW clockwise VBEM

1. Instruction overview

Clockwise arc interpolation instruction, operate according to the set maximum synthetic speed, start speed and stop speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Clockwise arc interpolation [CW]						
16-bit	-	32-bit	CW			
instruction		instruction				
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH			
condition		model				
Firmware	V3.3 and above	Software	V3.3 and above			

2. Operand

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	Specify the center position of axis 1 (always relative to the starting coordinates)	Double words, 32-bit
S3	Specify the center position of axis 2 (always relative to the starting coordinates)	Double words, 32-bit
S4	Specify the starting speed at the starting point of the two axes	Double words, 32-bit



S5	Specify the stop speed at the end point of the two	Double words, 32-bit		
	axes			
S6	Max speed of the two axes	Double words, 32-bit		
D0	Pulse output port of axis 1	Bit		
D1	Pulse output port of axis 2	Bit		

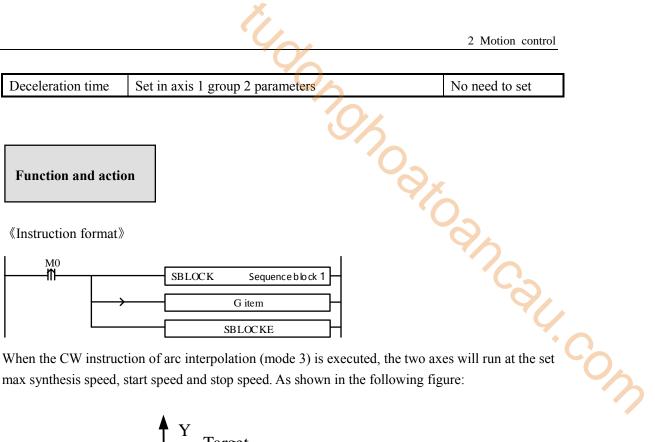
3. Suitable soft component

Ward	Operand		System								Constant	Mod	lule	
Word		D^*	FD	П)*	CD^*	DX	DY	DM*	DS^*	K/H	ID	QD	
	S0~S6	٠	•	•		•								
											-			
Bit	Operand System													
		Х	Y	M*	S^*	T*	C*	Dnn	ı					
	D0		•											
	D1		•											
	•							•						

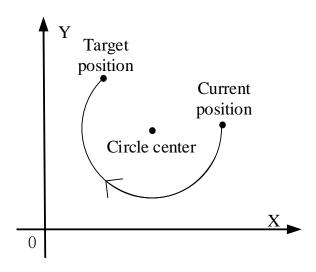
* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

Related parameters	Setting	Note			
Final position	Determine the end point position according to	Must set			
	relative/absolute mode				
Relative/absolute	Relative: the above position as a reference; absolute:	Must set			
	the origin as a reference				
Circle center	The position of the center is determined by the	Must set			
position	position of the starting point and the end point				
Max speed	Specify maximum smooth running speed of two axes	Must set			
Start speed	The start speed from the starting point	Must set			
Stop speed	The stop speed at the end point	Must set			
Pulse output port of	Arbitrary specify pulse output point	Must set			
axis 1					
Pulse output port of	Arbitrary specify pulse output point	Must set			
axis 2					
Direction port of	Arbitrarily specify idle output points, set in system	Must set			
axis 1	parameters				
Direction port of	Arbitrarily specify idle output points, set in system	Must set			
axis 2	parameters				
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set			
	axis 1 system parameters				
Default speed	set in axis 1 group 2 parameters	No need to set			
Acceleration time	Set in axis 1 group 2 parameters	No need to set			

4. Parameter setting



When the CW instruction of arc interpolation (mode 3) is executed, the two axes will run at the set max synthesis speed, start speed and stop speed. As shown in the following figure:



CW clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

	G Instrue	ction		×	
Skip	Comment: clock	cwise VBEM	5		
CW clockwise	VBEM	•	0	*	
	Params	Register	Absolute	^	
S0	final position	DO	Absolute		
S1	final position	D10	Absolute	6	
S2	center position	D20	Relative		
S3	center position	D30	Relative		
S4	begin speed	D40			
S5	end speed	D50			
56 56	max speed	D60		· ·	
50		ОК	Cance		う
	G Instru	ction		×	

Ų,

G Instruction					
Skip Comment: cloc	kwise VBEM				
CW clockwise VBEM			~		
Params	Register	Absolute	^		
center position	D30	Relative			
begin speed	D40				
end speed	D50				
max speed	D60				
▶ DO axis 1	YO	params			
D1 axis 2	¥1	params			
		·	~		
	ОК	Cance	4		

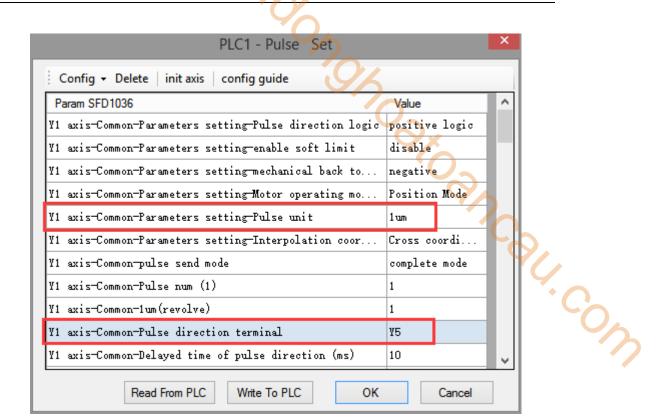
Instruction configuration

YO.			
PLC1 - Pulse Set		×	
Config - Delete init axis config guide			
Param SFD906	Value	^	
YO axis-Common-Parameters setting-Pulse direction logic	positive logic		
YO axis-Common-Parameters setting-enable soft limit	disable		
YO axis-Common-Parameters setting-mechanical back to	negative		
YO axis-Common-Parameters setting Motor operating mo	Position Mode		
YO axis-Common-Parameters setting-Pulse unit	1 um		
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi		0
YO axis-Common-pulse send mode	complete mode		
YO axis-Common-Pulse num (1)	1		
YO axis-Common-1um(revolve)	1		
YO axis-Common-Pulse direction terminal	¥4		
YO axis-Common-Delayed time of pulse direction (ms)	10	v	
Read From PLC Write To PLC OK	Cancel		

Axis Y0 system parameters (1)

PLC1 - Pulse Set		×
Config 🝷 Delete init axis config guide		
Param SFD974	Value	^
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	_
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)



Axis Y1 system parameters

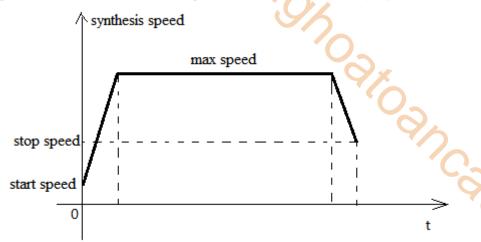
- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle center of axis 1, D30 specifies the circle center of axis 2, D40 specifies the start speed, D50 specifies the stop speed, D60 specifies the max speed.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100$ KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 50Hz, D50 = 20, D60 = 2000, when M0 rises, execute CW command, accelerate from the starting position (1000,1000) at speed 50Hz to the maximum speed (2000Hz), and stop at the end speed of 20Hz when moving to the target position.

(1) When the end point is in absolute mode, the target position is (5000,2000), the center position is (3000,1500), and D20 = 2000, D30 = 500.

(2) When the end point is in the relative mode, the target position is (6000,3000), the center position is (3500,2000), and D20 = 2500, D30 = 1000.

- When the CW instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Note: In this mode, the starting speed (S4), the ending speed (S5) and the maximum speed (S6) are all expressed as the two-axis synthesis speed, as shown in the following figure:

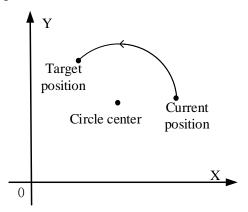


When there are multiple continuous linear/arc interpolation instructions and the speed between them needs to be constant and jump directly, the termination speed and maximum speed of the previous linear/arc interpolation can be set the same as the starting speed and maximum speed of the next segment.

When mode 3 is used, the starting and ending speed in the pulse parameter configuration tables of axis 1 and axis 2 are only effective for calculating the slope of pulse acceleration and deceleration.

2-4-5. Anticlockwise arc [CCW]

Anticlockwise arc interpolation CCW determines a section of arc mainly through the current position of arc, the target position and the counterclockwise coordinates of the center of the circle, as shown in the following figure:



With the above image, when you need to draw an entire circle, just set the target position to the current position. There are three modes of anticlockwise arc interpolation CCW, the usage of which is described below.

Mode 1: CCW anticlockwise arc

1. Instruction overview

Anticlockwise arc interpolation instruction, operate according to the set default speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Anticlockwi	se arc interpolation [CCW]		
16-bit	-	32-bit	CCW
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

Firmware	V3.3 and above	Software	V3.3 and above	
2. Operand				· · C
Operand	Function		Туре	
S0	Axis 1 target position		Double words, 32-bit	
S 1	Axis 2 target position		Double words, 32-bit	
S2	Specify the center position of axis relative to the starting coordinates)	s 1 (always	Double words, 32-bit	
S3	Specify the center position of axis relative to the starting coordinates)	s 2 (always	Double words, 32-bit	
D0	Pulse output port of axis 1		Bit	
D1	Pulse output port of axis 2		Bit	

3. Suitable soft component

Word	Operand		System						Constant	Mod	lule		
		D^*	FD	ΤI)*	CD*	DX	DY	DM*	DS^*	K/H	D	QD
	S0	•	•	•		•							
	S1	•	•	•		•							
	S2	•	•	•		•							
	S3	•	•	•		•							
D	Operand				Sys	stem							
Bit		Х	Y	М*	S *	T*	C*	Dnn	ı				
	D0		•										
	D1		•										

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

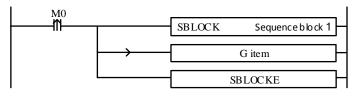


4. Parameter setting

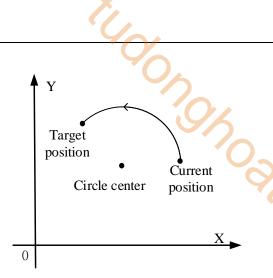
F. I arameter setting			
Related parameters	Setting	Note	
Final position	Determine the end point position according to	Must set	
	relative/absolute mode		
Relative/absolute	Relative: the above position as a reference; absolute:	Must set	
	the origin as a reference		
Circle center	The position of the center is determined by the	Must set	
position	position of the starting point and the end point		
Pulse output port of	Arbitrary specify pulse output point	Must set	
axis 1			
Pulse output port of	Arbitrary specify pulse output point	Must set	
axis 2			
Direction port of	Arbitrarily specify idle output points, set in system	Must set	0
axis 1	parameters		
Direction port of	Arbitrarily specify idle output points, set in system	Must set	5
axis 2	parameters		
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set	Ť
	axis 1 system parameters		
Default speed	set in axis 1 group 2 parameters	Must set	
Acceleration time	Set in axis 1 group 2 parameters	No need to set	
Deceleration time	Set in axis 1 group 2 parameters	No need to set	

Function and action

《Instruction format》



When the CCW instruction of arc interpolation (mode 1) is executed, the two axes will run at the highest synthesis speed. As shown in the following figure:



CCW clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

0 position • Circle center	Current position	२ २ २ २	Call. Com
CCW clockwise arc in	terpolation		- Al
ter configuration is shown in the following k G item and pop up the configuration pan	-	lows:	Y.C.
G Instructio		×	
Skip Comment: anticlock	wise		
CCW anticlockwise		*	
Params	Register	Absolute	
SO final position	DO	Absolute	
S1 final position	D10	Absolute	
S2 center position	D20	Relative	
S3 center position	D30	Relative	
► DO axis 1	ΥΟ	params	
D1 axis 2	¥1	params	
	ОК	Cancel	

Instruction configuration

YO.			
PLC1 - Pulse Set		×	
Config - Delete init axis config guide			
Param SFD906	Value	^	
YO axis-Common-Parameters setting-Pulse direction logic	positive logic		
YO axis-Common-Parameters setting-enable soft limit	disable		
YO axis-Common-Parameters setting-mechanical back to	negative		
YO axis-Common-Parameters setting Motor operating mo	Position Mode		
YO axis-Common-Parameters setting-Pulse unit	1 um		
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi		0
YO axis-Common-pulse send mode	complete mode		
YO axis-Common-Pulse num (1)	1		
YO axis-Common-1um(revolve)	1		
YO axis-Common-Pulse direction terminal	¥4		
YO axis-Common-Delayed time of pulse direction (ms)	10	v	
Read From PLC Write To PLC OK	Cancel		

Axis Y0 system parameters (1)

PLC1 - Pulse Set		×
Config 🝷 Delete init axis config guide		
Param SFD974	Value	^
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	~
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

i de la companya de la	2 Motion control
PLC1 - Pulse Set	×
Config - Delete init axis config guide	
Param SFD1036	Value
V1 axis-Common-Parameters setting-Pulse direction logic	positive logic
¥1 axis-Common-Parameters setting-enable soft limit	disable
V1 axis-Common-Parameters setting-mechanical back to	negative
Y1 axis-Common-Parameters setting Motor operating mo	Position Mode
V1 axis-Common-Parameters setting-Pulse unit	1 um
Y1 axis-Common-Parameters setting-Interpolation coor	Cross coordi
¥1 axis-Common-pulse send mode	complete mode
Y1 axis-Common-Pulse num (1)	1
¥1 axis-Common-1um(revolve)	1
¥1 axis-Common-Pulse direction terminal	¥5
Y1 axis-Common-Delayed time of pulse direction (ms)	10
Read From PLC Write To PLC OK	Cancel

Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle center of axis 1, D30 specifies the circle center of axis 2.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 \text{KHz}$; Acceleration and deceleration time: $0 \sim 65535 \text{ms}$.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, when M0 rises, execute CCW command, move from the starting position (1000, 1000) to the target position at the default speed of 1000Hz.

(1) When the end point is in absolute mode, the target position is (5000,2000), the center position is (3000,1500), and D20 = 2000, D30 = 500.

(2) When the end point is in the relative mode, the target position is (6000,3000), the center position is (3500,2000), and D20 = 2500, D30 = 1000.

- When the CCW instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 2: CCW anticlockwise VM

1. Instruction overview

Anticlockwise arc interpolation instruction, operate according to the set maximum synthetic speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Anticlockwi	se arc interpolation [CCW]		Q x
16-bit	-	32-bit	CCW
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

Firmware	V3.3 and above	Software	V3.3 and above	
			.4	
2. Operand			•	\mathbf{O}
Operand	Function		Туре	\sim
S0	Axis 1 target position		Double words, 32-bit	
S1	Axis 2 target position		Double words, 32-bit	
S2	Specify the center position of axis	1 (always	Double words, 32-bit	
	relative to the starting coordinates)			
S3	Specify the center position of axis	2 (always	Double words, 32-bit	
	relative to the starting coordinates)			
S4	Max speed of the two axes		Double words, 32-bit	
D0	Pulse output port of axis 1		Bit	
D1	Pulse output port of axis 2		Bit	

3. Suitable soft component

N 7 1	Operand				Constant	Module							
Word		D^*	FD	П)*	CD^*	DX	DY	DM*	DS^*	K/H	ID	QD
	S0	٠	•	•		•							
	S1	٠	•	•		•							
	S2	٠	•	•		•							
	S3	٠	•	•		•							
	S4	•	•	•		•							
Bit	Operand				Sys								
		Х	Y	M*	S^*	Τ*	C*	Dnm	1				
	D0		•										
	D1		•										

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.



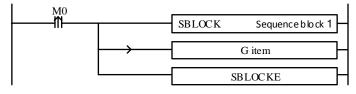
4. Parameter setting

Related parametersSettingNoteFinal positionDetermine the end point position according to relative/absolute modeMust setRelative/absoluteRelative: the above position as a reference; absolute: the origin as a referenceMust setCirclecenterThe position of the center is determined by the positionMust setMax speedSpecify maximum smooth running speed of two axesMust setPulse output port of axis 1Arbitrary specify pulse output pointMust setDirection port of axis 1Arbitrary specify pulse output points, set in system parametersMust setDirection port of axis 2parametersMust setDirection port of axis 1 system parametersThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to setDefault speedset in axis 1 group 2 parametersNo need to set	4.1 drameter setting			
relative/absolute modeRelative/absoluteRelative: the above position as a reference; absolute: the origin as a referenceMust setCirclecenterThe position of the center is determined by the positionMust setpositionposition of the starting point and the end pointMust setMax speedSpecify maximum smooth running speed of two axesMust setPulse output port of axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify pulse output pointMust setDirection port of axis 1parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Related parameters	Setting	Note	
Relative/absoluteRelative: the above position as a reference; absolute: the origin as a referenceMust setCircle positionThe position of the center is determined by the position of the starting point and the end pointMust setMax speedSpecify maximum smooth running speed of two axesMust setPulse output port of axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify pulse output pointMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system axis 1Must setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Final position	Determine the end point position according to	Must set	
the origin as a referenceCircle positionCincle centerThe position of the center is determined by the position of the starting point and the end pointMax speedSpecify maximum smooth running speed of two axesMust setPulse output port of axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify pulse output pointMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set		relative/absolute mode		
Circle positionCenterThe position of the center is determined by the position of the starting point and the end pointMust setMax speedSpecify maximum smooth running speed of two axesMust setPulse output port of axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify pulse output pointMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1The pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Relative/absolute	Relative: the above position as a reference; absolute:	Must set	
positionposition of the starting point and the end pointMax speedSpecify maximum smooth running speed of two axesMust setPulse output port of axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify pulse output pointMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1System parametersNo need to set		the origin as a reference		
Max speedSpecify maximum smooth running speed of two axesMust setPulse output port of axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify pulse output pointMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1System parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Circle center	The position of the center is determined by the	Must set	
Pulse output port of axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1System parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	position	position of the starting point and the end point		
axis 1Arbitrary specify pulse output pointMust setPulse output port of axis 2Arbitrary specify idle output points, set in systemMust setDirection port of axis 1Arbitrarily specify idle output points, set in systemMust setDirection port of axis 2Arbitrarily specify idle output points, set in systemMust setDirection port of axis 2Arbitrarily specify idle output points, set in systemMust setDirection port of axis 2Arbitrarily specify idle output points, set in systemMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Max speed	Specify maximum smooth running speed of two axes	Must set	
Pulse output port of axis 2Arbitrary specify pulse output pointMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Pulse output port of	Arbitrary specify pulse output point	Must set	
axis 2Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	axis 1			
Direction port of axis 1Arbitrarily specify idle output points, set in system parametersMust setDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Pulse output port of	Arbitrary specify pulse output point	Must set	
axis 1parametersDirection port of axis 2Arbitrarily specify idle output points, set in system parametersMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	axis 2		•	C
Direction port of axis 2Arbitrarily specify idle output points, set in system parametersMust setPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Direction port of	Arbitrarily specify idle output points, set in system	Must set	\sim
axis 2parametersPulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersDefault speedset in axis 1 group 2 parametersNo need to set	axis 1	parameters		5
Pulse unitThe pulse number or equivalent are acceptable. Set in axis 1 system parametersMust setDefault speedset in axis 1 group 2 parametersNo need to set	Direction port of	Arbitrarily specify idle output points, set in system	Must set	
axis 1 system parameters Default speed set in axis 1 group 2 parameters No need to set	axis 2	parameters		
Default speed set in axis 1 group 2 parameters No need to set	Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set	
		axis 1 system parameters		
Acceleration time Set in axis 1 group 2 parameters No need to set	Default speed	set in axis 1 group 2 parameters	No need to set	
	Acceleration time	Set in axis 1 group 2 parameters	No need to set	
Deceleration time Set in axis 1 group 2 parameters No need to set	Deceleration time	Set in axis 1 group 2 parameters	No need to set	

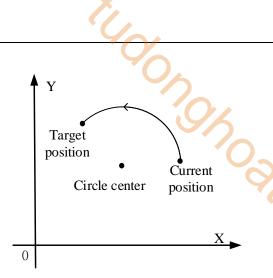
4

Function and action

《Instruction format》



When the CCW instruction of arc interpolation (mode 2) is executed, the two axes will run at the set max synthesis speed. As shown in the following figure:



CCW clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

position Circle cente	current r position	QX.	
0 CCW clockwise arc		<u>~</u>	× Alt. Con
ter configuration is shown in the followi k G item and pop up the configuration p G Instruc	anel. Set it as	follows:	×
	ockwise VM		
Params	Register	Absolute	^
SO final position	DO	Absolute	
S1 final position	D10	Absolute	
S2 center position	D20	Relative	
S3 center position	D30	Relative	
S4 max speed	D40		
► DO axis 1	YO	params	
D1 axis 2	¥1	params	¥
	ОК	Cancel	

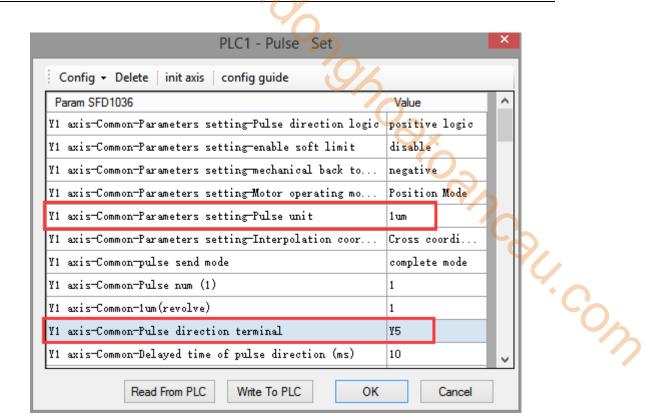
Instruction configuration

Y		
PLC1 - Pulse Set	×	
Config 🗸 Delete init axis config guide		
Param SFD906	Value ^	
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Motor operating mo	Position Mode	
YO axis-Common-Parameters setting-Pulse unit	lum	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	0
YO axis-Common-pulse send mode	complete mode	
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (1)

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD974	Value	^
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	~
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)



Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle center of axis 1, D30 specifies the circle center of axis 2, D40 specifies the max speed.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: 1Hz ~ 100KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 500Hz, when M0 rises, execute CCW command, move from the starting position (1000, 1000) to the target position at the max speed of 500Hz.

(1) When the end point is in absolute mode, the target position is (5000,2000), the center position is (3000,1500), and D20 = 2000, D30 = 500.

(2) When the end point is in the relative mode, the target position is (6000,3000), the center position is (3500,2000), and D20 = 2500, D30 = 1000.

- When the CCW instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 3: CCW anticlockwise VBEM

1. Instruction overview

Anticlockwise arc interpolation instruction, operate according to the set maximum synthetic speed, start speed and stop speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Anticlockwi	se arc interpolation [CCW]		
16-bit	-	32-bit	CCW
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

Firmware	V3.3 and above	Software	V3.3 and above	
			•	C
2. Operand				
Operand	Function		Туре	
S0	Axis 1 target position		Double words, 32-bit	
S1	Axis 2 target position		Double words, 32-bit	
S2	Specify the center position of axis	1 (always	Double words, 32-bit	
	relative to the starting coordinates)			
S3	Specify the center position of axis	2 (always	Double words, 32-bit	
	relative to the starting coordinates)			
S4	Specify the starting speed at the start	ing point of	Double words, 32-bit	
	the two axes			
S5	Specify the stop speed at the end poin	t of the two	Double words, 32-bit	
	axes			
S6	Max speed of the two axes		Double words, 32-bit	
D0	Pulse output port of axis 1		Bit	
D1	Pulse output port of axis 2		Bit	

3. Suitable soft component

land	Operand	Operand System									Constant	Module	
Word		D^*	FD	TI	D *	CD^*	DX	DY	DM*	DS^*	K/H	ID	QD
	S0~S6	٠	•	•		•							
Bit	Operand		System										
Dit		Х	Y	M^*	S^*	T*	C*	Dnn	ı				
	D0		•										
	D1		•										

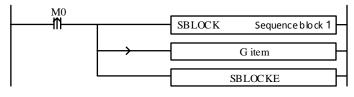
* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter	setting
--------------	---------

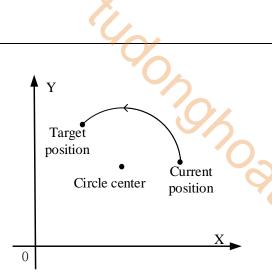
	U.	2 Motion control	
4. Parameter setting			1
Related parameters	Setting	Note	
Final position	Determine the end point position according to relative/absolute mode	Must set	
Relative/absolute	Relative: the above position as a reference; absolute: the origin as a reference	Must set	
Circle center position	The position of the center is determined by the position of the starting point and the end point	Must set	
Max speed	Specify maximum smooth running speed of two axes	Must set	
Start speed	The start speed from the starting point	Must set	
Stop speed	The stop speed at the end point	Must set	
Pulse output port of axis 1	Arbitrary specify pulse output point	Must set	
Pulse output port of axis 2	Arbitrary specify pulse output point	Must set	0
Direction port of axis 1	Arbitrarily specify idle output points, set in system parameters	Must set	
Direction port of axis 2	Arbitrarily specify idle output points, set in system parameters	Must set	
Pulse unit	The pulse number or equivalent are acceptable. Set in axis 1 system parameters	Must set	
Default speed	set in axis 1 group 2 parameters	No need to set	
Acceleration time	Set in axis 1 group 2 parameters	No need to set	
Deceleration time	Set in axis 1 group 2 parameters	No need to set	

Function and action

《Instruction format》



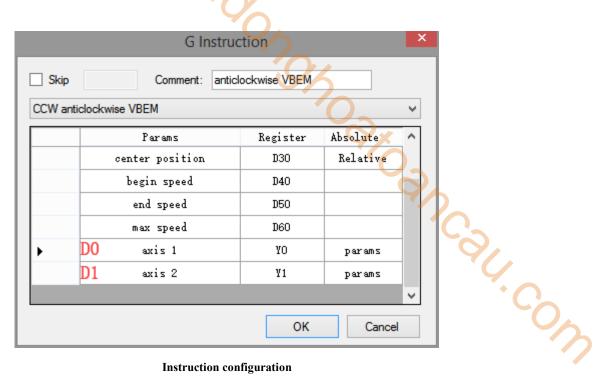
When the CCW instruction of arc interpolation (mode 3) is executed, the two axes will run at the set max synthesis speed, start speed and stop speed. As shown in the following figure:



CCW clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

	position Circle cente	position			Cal. Com
	0 CCW clockwise ar	c interpolation			Cal
•	uration is shown in the follow and pop up the configuration	panel. Set it as	follows:		· CO
Skip	G Instruction Comment: anticontext of the second se	ction lockwise VBEM		~	3
	Params	Register	Absolute	^	
	SO final position	DO	Absolute		
	S1 final position	D10	Absolute		
	S2 center position	D20	Relative		
	S3 center position	D30	Relative		
	S4 begin speed	D40			
	S5 end speed	D50			
	SG max speed	D60		~	
	00	ОК	Cance	4	



Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting Motor operating mo	Position	Mode
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

YOU		
PLC1 - Pulse Set	×	
Config - Delete init axis config guide		
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

PLC1 - Pulse Set		×
Config - Delete init axis config guide		
Param SFD1036	Value	^
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
Y1 axis-Common-Parameters setting-enable soft limit	disable	
V1 axis-Common-Parameters setting-mechanical back to	negative	2
Y1 axis-Common-Parameters setting Motor operating mo	Positior	n Mode
V1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	oordi
Y1 axis-Common-pulse send mode	complete	e mode
Y1 axis-Common-Pulse num (1)	1	
V1 axis-Common-1um(revolve)	1	
V1 axis-Common-Pulse direction terminal	¥5	
Y1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle center of axis 1, D30 specifies the circle center of axis 2, D40 specifies the start speed, D50 specifies the stop speed, D60 specifies the max

speed.

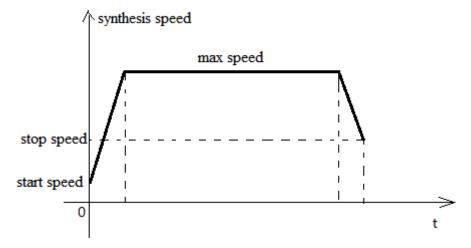
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: 1Hz ~ 100KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 50Hz, D50 = 20, D60 = 2000, when M0 rises, execute CCW command, accelerate from the starting position (1000,1000) at speed 50Hz to the maximum speed (2000Hz), and stop at the end speed of 20Hz when moving to the target position.

(1) When the end point is in absolute mode, the target position is (5000,2000), the center position is (3000,1500), and D20 = 2000, D30 = 500.

(2) When the end point is in the relative mode, the target position is (6000,3000), the center position is (3500,2000), and D20 = 2500, D30 = 1000.

- When the CCW instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Note: In this mode, the starting speed (S4), the ending speed (S5) and the maximum speed (S6) are all expressed as the two-axis synthesis speed, as shown in the following figure:

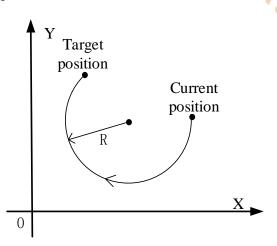


When there are multiple continuous linear/arc interpolation instructions and the speed between them needs to be constant and jump directly, the termination speed and maximum speed of the previous linear/arc interpolation can be set the same as the starting speed and maximum speed of the next segment.

When mode 3 is used, the starting and ending speed in the pulse parameter configuration tables of axis 1 and axis 2 are only effective for calculating the slope of pulse acceleration and deceleration.

2-4-6. Clockwise arc [CW_R]

Clockwise arc interpolation CW_R is mainly based on the current position of the arc, the target position and the length of the radius of the circle, clockwise to determine a section of the arc, as shown in the following figure: ancau.com



With the above figure, when the target position is set at the same position as the current one, the next circle can not be determined, so this mode can not draw a whole circle. There are three modes of CW_R. The usage of CW_R is described below.

Mode 1: CW R clockwise arc

1. Instruction overview

Clockwise arc interpolation instruction, operate according to the set default speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Clockwise a	rc interpolation [CW_R]		
16-bit	-	32-bit	CW_R
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	Specify the radius of the arc	Double words, 32-bit
D0	Pulse output port of axis 1	Bit
D1	Pulse output port of axis 2	Bit

3. Suitable soft component

Word	Operand					Syst	em		S.		Constant	Mod	lule
woru		D^*	FD	TĽ)*	CD*	DX	DY	DM*	DS*	K/H	D	QD
	S0	•	•	•		•							
	S1	•	•	•		•							
	S2	•	•	•		•							
	~ -												
		<u> </u>										Ç	
	Operand				Sys	stem		<u> </u>				Q	7
Bit	L	X	Y	M*	Sys S*	stem T*	<i>C</i> *	Dnn	n			0	2
Bit	L	X	Y •	M*		1	C*	Dnn	1			0	2

 Bit
 X
 Y
 M

 D0
 0
 0
 0

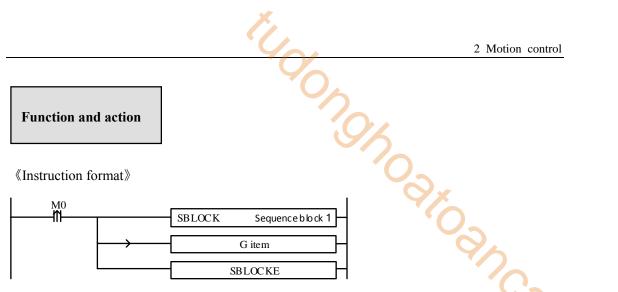
 D1
 0
 0
 0

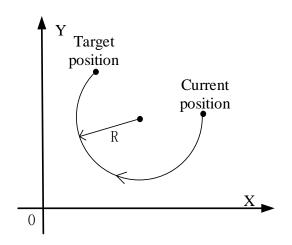
 * Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM;

 DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

Related parameters	Setting	Note
Final position	Determine the end point position according to	Must set
	relative/absolute mode	
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Radius	The path of an arc varies with its radius.	Must set
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	Must set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set

4. Parameter setting





CW_R clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

		G Instructio	n	×
Skip		Comment: clockwise	e	
CW_R do	ockwise			¥
		Params	Register	Absolute
	S0	final position	DO	Absolute
	S1	final position	D10	Absolute
	S2	radius	D20	
•	DO	axis 1	YO	params
	D1	axis 2	¥1	params
			ОК	Cancel



Instruction configuration

PLC1 - Pulse Set	×
Config - Delete init axis config guide	
Param SFD906	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to	negative
YO axis-Common-Parameters setting Motor operating mo	Position Mode
YO axis-Common-Parameters setting-Pulse unit	1 um
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete mode
YO axis-Common-Pulse num (1)	1
YO axis-Common-lum(revolve)	1
YO axis-Common-Pulse direction terminal	¥4
YO axis-Common-Delayed time of pulse direction (ms)	10 🗸
Read From PLC Write To PLC OK	Cancel

Axis Y0 system parameters (1)

PLC1 - Pulse Set		X
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD974	Value	^
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	~
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

Config - Delete init axis config guide	Value	
Y1 axis-Common-Parameters setting-enable soft limit	disable	
V1 axis-Common-Parameters setting-mechanical back to	negative	
V1 axis-Common-Parameters setting-Motor operating mo	Position Mode	
V1 axis-Common-Parameters setting-Pulse unit	1um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross coordi	
Y1 axis-Common-pulse send mode	complete mode	
Y1 axis-Common-Pulse num (1)	1	
Y1 axis-Common-1um(revolve)	1	
V1 axis-Common-Pulse direction terminal	УБ	
¥1 axis-Common-Delayed time of pulse direction (ms)	10	

Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle radius. The path of an arc varies with its radius.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 KHz$; Acceleration and deceleration time: $0 \sim 65535 ms$.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, when M0 rises, execute CW_R command, move from the starting position (1000, 1000) to the target position at the default speed of 1000Hz.
- (1) When the end point is in absolute mode, the target position is (5000,2000)

(2) When the end point is in the relative mode, the target position is (6000,3000)

- When the CW_R instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.
- When the radius is positive, the arc is inferior; when the radius is negative, it is major arc.

Mode 2: CW_R clockwise arc VM

1. Instruction overview

Clockwise arc interpolation instruction, operate according to the set maximum synthetic speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Clockwise a	rc interpolation [CW_R]		Y X
16-bit	-	32-bit	CW_R
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

Firmware	V3.3 and above	Software	V3.3 and above	
2. Operand			.0	
Operand	Function		Туре	
S0	Axis 1 target position		Double words, 32-bit	
S1	Axis 2 target position		Double words, 32-bit	
S2	Specify the radius of the arc		Double words, 32-bit	
S3	Max speed of the two axes		Double words, 32-bit	
D0	Pulse output port of axis 1		Bit	
D1	Pulse output port of axis 2		Bit	

3. Suitable soft component

Vord	Operand					Sys	tem				Constant	Mod	lule
		D^*	FD	П)*	CD^*	DX	DY	DM*	DS^*	K/H	D	QD
	S0	•	•	•		•							
	S1	٠	•	•		•							
	S2	٠	•	•		•							
	S3	•	•	•		•							
Bit	Operand				Sys	stem							
		Х	Y	M^*	S^*	T*	C*	Dn.m	L				
	D0		•										
	D1		•										

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter setting

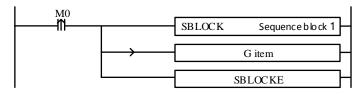
Related parameters				Settin	g			Note
Final position	Determine	the	end	point	position	according	to	Must set
	relative/abs	olute	mod	e				

Relative/absolute	Relative: the above position as a reference; absolute:	Must set	
	the origin as a reference		
Radius	The path of an arc varies with its radius.	Must set	
Max speed	Specify maximum smooth running speed of two axes	Must set	
Pulse output port of	Arbitrary specify pulse output point	Must set	
axis 1			
Pulse output port of	Arbitrary specify pulse output point	Must set	
axis 2		O _A	
Direction port of	Arbitrarily specify idle output points, set in system	Must set	
axis 1	parameters	C.	
Direction port of	Arbitrarily specify idle output points, set in system	Must set	
axis 2	parameters		
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set	\mathbf{C}
	axis 1 system parameters		
Default speed	set in axis 1 group 2 parameters	No need to set	
Acceleration time	Set in axis 1 group 2 parameters	No need to set	
Deceleration time	Set in axis 1 group 2 parameters	No need to set	

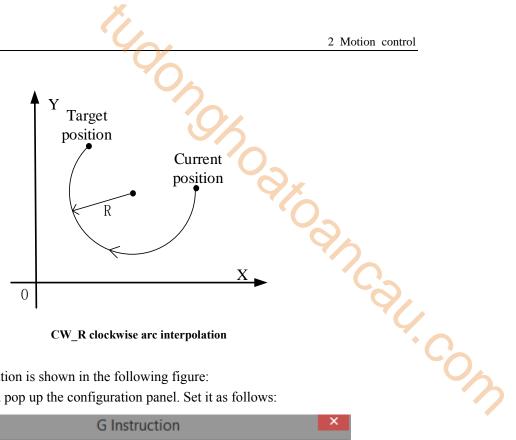
ĽL→

Function and action

《Instruction format》



When the CW_R instruction of arc interpolation (mode 2) is executed, the two axes will run at the set max synthesis speed. As shown in the following figure:



CW_R clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

	G Instructio	on	>
Skip	Comment: clockwis	e VM	
CW_R clos	ckwise VM		~
	Params	Register	Absolute
	SO final position	DO	Absolute
	S1 final position	D10	Absolute
	S2 radius	D20	
	53 max speed	D30	
	DO axis 1	ΥО	params
	D1 axis 2	¥1	params
		ОК	Cancel

Instruction configuration

YO.			
PLC1 - Pulse Set		×	
Config - Delete init axis config guide			
Param SFD906	Value	^	
YO axis-Common-Parameters setting-Pulse direction logic	positive logic		
YO axis-Common-Parameters setting-enable soft limit	disable		
YO axis-Common-Parameters setting-mechanical back to	negative		
YO axis-Common-Parameters setting Motor operating mo	Position Mode		
YO axis-Common-Parameters setting-Pulse unit	1 um		
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi		0
YO axis-Common-pulse send mode	complete mode		
YO axis-Common-Pulse num (1)	1		
YO axis-Common-1um(revolve)	1		
YO axis-Common-Pulse direction terminal	¥4		
YO axis-Common-Delayed time of pulse direction (ms)	10	v	
Read From PLC Write To PLC OK	Cancel		

Axis Y0 system parameters (1)

PLC1 - Pulse Set		×
Config 👻 Delete init axis config guide		
Param SFD974	Value	^
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	~
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

Config - Delete init axis config guide	
Param SFD1036	Value ^
V1 axis-Common-Parameters setting-Pulse direction logic	
Y1 axis-Common-Parameters setting-enable soft limit	disable
V1 axis-Common-Parameters setting-mechanical back to	negative
V1 axis-Common-Parameters setting-Motor operating mo	Position Mode
Y1 axis-Common-Parameters setting-Pulse unit	1 um
Y1 axis-Common-Parameters setting-Interpolation coor	Cross coordi
Y1 axis-Common-pulse send mode	complete mode
Y1 axis-Common-Pulse num (1)	1
Y1 axis-Common-1um(revolve)	1
V1 axis-Common-Pulse direction terminal	¥5
V1 axis-Common-Delayed time of pulse direction (ms)	10

Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the radius (the radius is different and the path is different), D30 specifies the max speed.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 \text{KHz}$; Acceleration and deceleration time: $0 \sim 65535 \text{ms}$.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 500Hz, when M0 rises, execute CW_R command, move from the starting position (1000, 1000) to the target position at the max speed of 500Hz.
- (1) When the end point is in absolute mode, the target position is (5000,2000)
- (2) When the end point is in the relative mode, the target position is (6000,3000)
- When the CW_R instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.
- When the radius is positive, the arc is inferior; when the radius is negative, it is major arc.

Mode 3: CW_R clockwise arc VBEM

1. Instruction overview

Clockwise arc interpolation instruction, operate according to the set maximum synthetic speed, start speed and stop speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Clockwise a	rc interpolation [CW_R]		
16-bit	-	32-bit	CW_R
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

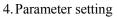
2. Operand

Firmware	V 3.3 and above S	onware	V 3.3 and above	
			•	· C.
2. Operand				
Operand	Function		Туре	
S0	Axis 1 target position		Double words, 32-bit	
S1	Axis 2 target position		Double words, 32-bit	
S2	Specify the radius of the arc		Double words, 32-bit	
S3	Specify the starting speed at the starting	ng point of	Double words, 32-bit	
	the two axes			
S4	Specify the stop speed at the end point	of the two	Double words, 32-bit	
	axes			
S5	Max speed of the two axes		Double words, 32-bit	
D0	Pulse output port of axis 1		Bit	
D1	Pulse output port of axis 2		Bit	

3. Suitable soft component

Vord	Operand		System									Mod	lule
voru		D^*	FD	TL)*	CD*	DX	DY	DM*	DS^*	K/H	ID	QD
	S0~S5	•	•	•		•							
										•			
	Operand				Svs	stem							
Bit	Operatio				J								
Bit	Operand	Х	Y	M*	S*	T*	C*	Dnm	1				
Bit	D0	X	Y •	M*	-	1	C*	Dn.m	1				

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

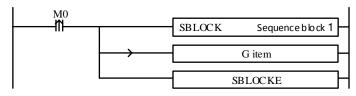


. Parameter setting		_	
Related parameters	Setting	Note	
Final position	Determine the end point position according to relative/absolute mode	Must set	
Relative/absolute	Relative: the above position as a reference; absolute: the origin as a reference	Must set	
radius	The radius is different and the path is different	Must set	
Max speed	Specify maximum smooth running speed of two axes	Must set	
Start speed	The start speed from the starting point	Must set	
Stop speed	The stop speed at the end point	Must set	
Pulse output port of axis 1	Arbitrary specify pulse output point	Must set	
Pulse output port of axis 2	Arbitrary specify pulse output point	Must set	CO.
Direction port of axis 1	Arbitrarily specify idle output points, set in system parameters	Must set	00
Direction port of axis 2	Arbitrarily specify idle output points, set in system parameters	Must set	
Pulse unit	The pulse number or equivalent are acceptable. Set in axis 1 system parameters	Must set	
Default speed	set in axis 1 group 2 parameters	No need to set	
Acceleration time	Set in axis 1 group 2 parameters	No need to set	
Deceleration time	Set in axis 1 group 2 parameters	No need to set	

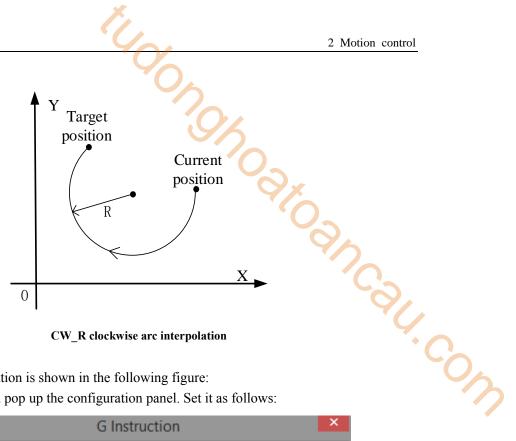
Ľ4

Function and action

《Instruction format》



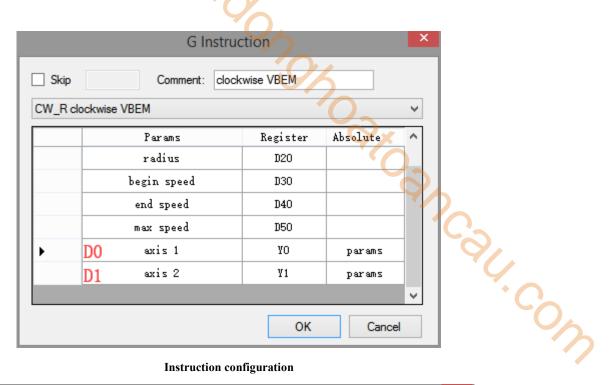
When the CW_R instruction of arc interpolation (mode 3) is executed, the two axes will run at the set max synthesis speed, start speed and stop speed. As shown in the following figure:



CW_R clockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

G Instruction			×	
Skip	Comment: cloc	kwise VBEM		
CW_R clockwi	se VBEM			~
	Params	Register	Absolute	^
S0	final position	DO	Absolute	
S1	final position	D10	Absolute	
S2	radius	D20		
S3	begin speed	D30		
S4	end speed	D40		
S5	max speed	D50		
•	axis 1	ΥΟ	params	~
		ОК	Cance	I



Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic		logic
YO axis-Common-Parameters setting-enable soft limit		
YO axis-Common-Parameters setting-mechanical back to		
YO axis-Common-Parameters setting Motor operating mo		Mode
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)		
YO axis-Common-lum(revolve)		
YO axis-Common-Pulse direction terminal		
YO axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

YO.		
PLC1 - Pulse Set	×	
Config - Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	b
YO axis-group 2-Max speed	100000	Y/,
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

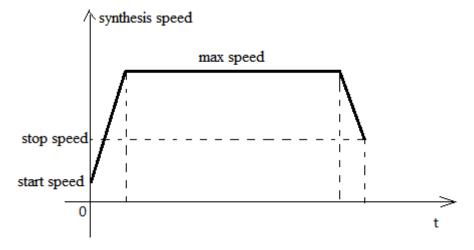
PLC1 - Pulse Set		
Config 🝷 Delete 🛛 init axis 📄 config guide		
Param SFD1036	Value	
V1 axis-Common-Parameters setting-Pulse direction logic		logic
V1 axis-Common-Parameters setting-enable soft limit		
Y1 axis-Common-Parameters setting-mechanical back to		2
Y1 axis-Common-Parameters setting Motor operating mo		n Mode
Y1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	oordi
¥1 axis-Common-pulse send mode		e mode
Y1 axis-Common-Pulse num (1)		
Y1 axis-Common-1um(revolve)		
V1 axis-Common-Pulse direction terminal		
Y1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the radius, D30 specifies the start speed, D40 specifies the stop speed, D50 specifies the max speed.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: 1Hz ~ 100KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 50Hz, D50 = 20, D60 = 2000, when M0 rises, execute CW_R command, accelerate from the starting position (1000,1000) at speed 50Hz to the maximum speed (2000Hz), and stop at the end speed of 20Hz when moving to the target position.
- (1) When the end point is in absolute mode, the target position is (5000,2000)
- (2) When the end point is in the relative mode, the target position is (6000,3000)
- When the CW_R instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.
- When the radius is positive, the arc is inferior; when the radius is negative, it is major arc.

Note: In this mode, the starting speed (S3), the ending speed (S4) and the maximum speed (S5) are all expressed as the two-axis synthesis speed, as shown in the following figure:

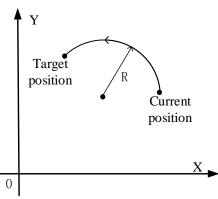


When there are multiple continuous linear/arc interpolation instructions and the speed between them needs to be constant and jump directly, the termination speed and maximum speed of the previous linear/arc interpolation can be set the same as the starting speed and maximum speed of the next segment.

When mode 3 is used, the starting and ending speed in the pulse parameter configuration tables of axis 1 and axis 2 are only effective for calculating the slope of pulse acceleration and deceleration.

2-4-7. Anticlockwise arc [CCW_R]

Anticlockwise arc interpolation CCW R is mainly based on the current position of the arc, the target position and the length of the radius of the circle, clockwise to determine a section of the arc, as shown in the following figure:



) i oancau. Gancau.com With the above figure, when the target position is set at the same position as the current one, the next circle can not be determined, so this mode can not draw a whole circle. There are three modes of CCW R. The usage of CCW R is described below.

Mode 1: CCW R anticlockwise arc

1. Instruction overview

Anticlockwise arc interpolation instruction, operate according to the set default speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Anticlockwise arc interpolation [CCW_R]									
16-bit	-	32-bit	CCW_R						
instruction		instruction							
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH						
condition		model							
Firmware	V3.3 and above	Software	V3.3 and above						

2. Operand

Operand	Function	Туре				
S0	Axis 1 target position	Double words, 32-bit				
S1	Axis 2 target position	Double words, 32-bit				
S2	Specify the radius of the arc	Double words, 32-bit				
D0	Pulse output port of axis 1	Bit				
D1	Pulse output port of axis 2	Bit				

1

3. Suitable soft component

Word	Operand	System							J.		Constant	Module		
		D^*	FD	TD	*	CD*	DX	DY	DM*	DS*	K/H	ID	QD	
	S0	•	•	•		•					5			
	S1	•	•	•		•								
	S2	•	•	•		•					· · (D.		
												Q		
D.'.	Operand				Sys	stem						Ĩ,		
Bit	Operand	X	Y	M*	Sys S*	stem T*	C*	Dnm	1				6	
Bit	Operand D0	X	Ү •	M*			C*	Dnm	1				10	

 Bit
 X
 Y
 M

 D0
 •
 •
 •

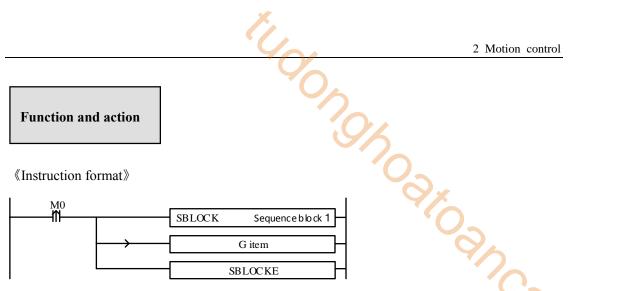
 D1
 •
 •
 •

 * Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM;

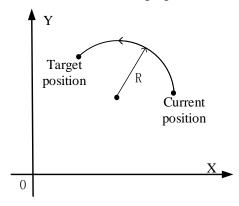
 DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

Related parameters	Setting	Note
Final position	Determine the end point position according to	Must set
	relative/absolute mode	
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Radius	The path of an arc varies with its radius.	Must set
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	Must set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set

4. Parameter setting



When the CCW_R instruction of arc interpolation (mode 1) is executed, the two axes will run at the highest synthesis speed. As shown in the following figure:



CCW_R anticlockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

G Instruction										
Skip Comment: anticlockwise CCW_R anticlockwise V										
		Params	Register	Absolute						
•	S0	final position	DO	Absolute						
	S1	final position	D10	Absolute						
	S2	radius	D20							
	DO	axis 1	YO	params						
	D1	axis 2	¥1	params						
			ОК	Cancel						

Instruction configuration

·com

YO.			
PLC1 - Pulse Set		×	
Config - Delete init axis config guide			
Param SFD906	Value	^	
YO axis-Common-Parameters setting-Pulse direction logic	positive logic		
YO axis-Common-Parameters setting-enable soft limit	disable		
YO axis-Common-Parameters setting-mechanical back to	negative		
YO axis-Common-Parameters setting Motor operating mo	Position Mode		
YO axis-Common-Parameters setting-Pulse unit	1 um		
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi		0
YO axis-Common-pulse send mode	complete mode		
YO axis-Common-Pulse num (1)	1		
YO axis-Common-1um(revolve)	1		
YO axis-Common-Pulse direction terminal	¥4		
YO axis-Common-Delayed time of pulse direction (ms)	10	v	
Read From PLC Write To PLC OK	Cancel		

Axis Y0 system parameters (1)

PLC1 - Pulse Set		×
Config 🝷 Delete init axis config guide		
Param SFD974	Value	^
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	~
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

Config - Delete init axis config guide		
Param SFD1036	Value	^
V1 axis-Common-Parameters setting-Pulse direction logic	positive logic	
V1 axis-Common-Parameters setting-enable soft limit	disable	
V1 axis-Common-Parameters setting-mechanical back to	negative	
V1 axis-Common-Parameters setting-Motor operating mo	Position Mode	
V1 axis-Common-Parameters setting-Pulse unit	1um	
V1 axis-Common-Parameters setting-Interpolation coor	Cross coordi	
V1 axis-Common-pulse send mode	complete mode	
Y1 axis-Common-Pulse num (1)	1	
Y1 axis=Common=1um(revolve)	1	
V1 axis-Common-Pulse direction terminal	¥5	
V1 axis-Common-Delayed time of pulse direction (ms)	10	~ I

Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the circle radius.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 KHz$; Acceleration and deceleration time: $0 \sim 65535 ms$.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, when M0 rises, execute CCW_R command, move from the starting position (1000, 1000) to the target position at the default speed of 1000Hz.
- (1) When the end point is in absolute mode, the target position is (5000,2000)

(2) When the end point is in the relative mode, the target position is (6000,3000)

- When the CCW_R instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.
- When the radius is positive, the arc is inferior; when the radius is negative, it is major arc.

Mode 2: CCW_R anticlockwise arc VM

1. Instruction overview

Anticlockwise arc interpolation instruction, operate according to the set maximum synthetic speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Anticlockwi	se arc interpolation [CCW_R]	Q x	
16-bit	-	32-bit	CCW_R
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

Firmware	V3.3 and above	Software	V3.3 and above				
2. Operand							
Operand	Function		Туре				
S0	Axis 1 target position		Double words, 32-bit				
S1	Axis 2 target position		Double words, 32-bit				
S2	Specify the radius of the arc		Double words, 32-bit				
S3	Max speed of the two axes		Double words, 32-bit				
D0	Pulse output port of axis 1		Bit				
D1	Pulse output port of axis 2		Bit				

3. Suitable soft component

Nord	Operand		System								Constant	Module		
		D^*	FD	Π)*	CD^*	DX	DY	DM*	DS^*	K/H	D	QD	
	S0	٠	•	•		•								
	S1	٠	•	•		•								
	S2	٠	•	•		•								
	S3	•	•	•		•								
Bit		1							· 					
Dit	Operand				Sys	stem								
		Х	Y	М*	S *	Τ*	C*	Dnm	l					
	D0		•											

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter setting

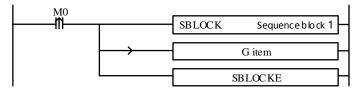
Related parameters		Note						
Final position	Determine	Determine the end point position according to						
	relative/abs	olute						

2003

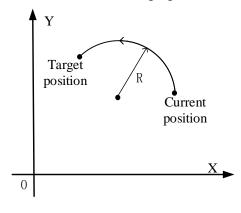
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Radius	The path of an arc varies with its radius.	Must set
Max speed	Specify maximum smooth running speed of two axes	Must set
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	No need to set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set

Function and action

《Instruction format》



When the CCW_R instruction of arc interpolation (mode 2) is executed, the two axes will run at the set max synthesis speed. As shown in the following figure:



CCW_R anticlockwise arc interpolation

The parameter configuration is shown in the following figure:

Double-click G item and pop up the configuration panel. Set it as follows:

Skip	G Instru comment: ant R anticlockwise VM	iclockwise VM		
	Params	Register	Absolute	i l
Þ	SO final position	DO	Absolute	
	S1 final position	D10	Absolute	
	S2 radius	D20		
	S3 max speed	D30		
	DO axis 1	УО	params	
	D1 axis 2	¥1	params	· · · ·
		ОК	Cancel	

Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	ш
YO axis-Common-Parameters setting-enable soft limit	disable	11
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Motor operating mo	Position Mode	11
YO axis-Common-Parameters setting-Pulse unit	1นm	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
YO axis-Common-pulse send mode	complete mode	Ш
YO axis-Common-Pulse num (1)	1	
YO axis-Common-1um(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	•
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (1)

YOU		
PLC1 - Pulse Set	×	
Config 🗸 Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	6
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

PLC1 - Pulse Set		
Config 🝷 Delete 🛛 init axis 📄 config guide		
Param SFD1036	Value	
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
Y1 axis-Common-Parameters setting-enable soft limit	disable	
Y1 axis-Common-Parameters setting-mechanical back to	negative	2
Y1 axis-Common-Parameters setting-Motor operating mo	Position	n Mode
Y1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	oordi
Y1 axis-Common-pulse send mode	complete	e mode
Y1 axis-Common-Pulse num (1)	1	
Y1 axis=Common=1um(revolve)	1	
Y1 axis-Common-Pulse direction terminal	¥5	
Y1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the radius (the radius is different and the path is different), D30 specifies the max speed.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100$ KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D30 = 500Hz, when M0 rises, execute CCW_R command, move from the starting position (1000, 1000) to the target position at the max speed of 500Hz.
- (1) When the end point is in absolute mode, the target position is (5000,2000)
- (2) When the end point is in the relative mode, the target position is (6000,3000)
- When the CCW_R instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.
- When the radius is positive, the arc is inferior; when the radius is negative, it is major arc.

Mode 3: CCW_R anticlockwise arc VBEM

1. Instruction overview

Anticlockwise arc interpolation instruction, operate according to the set maximum synthetic speed, start speed and stop speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Anticlockwi	se arc interpolation [CCW_R]		
16-bit	-	32-bit	CCW_R
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2.	Operand

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	Specify the radius of the arc	Double words, 32-bit
S3	Specify the starting speed at the starting point of	Double words, 32-bit
	the two axes	
S4	Specify the stop speed at the end point of the two	Double words, 32-bit
	axes	
S5	Max speed of the two axes	Double words, 32-bit

	ľ (2 Motion control
D0	Pulse output port of axis 1	Bit
D1	Pulse output port of axis 2	 Bit

Ľ,

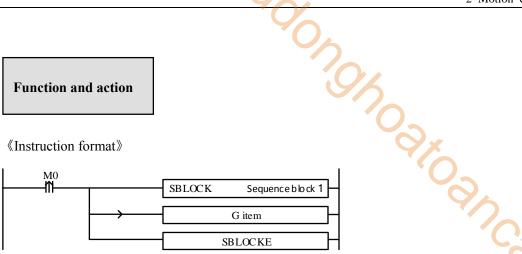
								C					
soft compo	onen	t								Θ.			
Operand					Syst	tem				Cons	tant	Moc	lule
	D^*	FD	П	D *	CD^*	DX	DY	DM*	DS^*	K/H	4	D	QD
S0~S5	•	•	•		•							~	
		•	•			•	•			•		Y	5
Operand				Sy	stem	_							
	Х	Y	M^*	S^*	T*	C *	Dnn	ı					
D0		•											
D1		•											
	Operand S0~S5 Operand	Operand D* S0~S5 • Operand X	$\begin{array}{ c c c c }\hline D^{*} & FD \\\hline S0 \sim S5 & \bullet & \bullet \\\hline \\ \hline Operand & \\\hline & X & Y \\\hline \end{array}$	Operand D^* FDIIS0~S5•••OperandXYM*	Operand D^* FD TD^* S0~S5•••OperandSyXYM*S*	OperandSystem D^* FD TD^* CD^* $S0~S5$ ••••OperandSystemSystemXYM*S*T*	OperandSystem D^* FD TD^* CD^* DX $S0~S5$ ••••OperandSystemXYM*S*T*C*	OperandSystem D^* FD TD^* CD^* DXDY $S0~S5$ •••••OperandSystemXYM*S*T*C*Dnn	OperandSystem D° FD TD° CD° DXDYDM^{\circ}S0~S5•••••••OperandSystemXYM^{\circ}S^{\circ}T^{\circ}C^{\circ}Dnm	OperandSystem D^* FD TD^* CD^* DX DY DM^* DS^* $S0~S5$ •••••••OperandSystemXY M^* S^* T*C*Dnm		Operand System Constant D^* FD ID^* CD^* DX DY DM^* DS^* K/H S0~S5 • • • • • • • • Operand System X Y M^* S^* T* C* Dnm	$ \begin{array}{ c c c c c c c c } \hline Operand & & & & & & & & & & & & & & & & & & &$

· com * Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

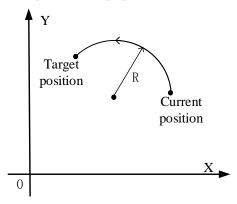
4. Parameter setting

Related parameters	Setting	Note
Final position	Determine the end point position according to	Must set
	relative/absolute mode	
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
radius	The radius is different and the path is different	Must set
Max speed	Specify maximum smooth running speed of two axes	Must set
Start speed	The start speed from the starting point	Must set
Stop speed	The stop speed at the end point	Must set
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	No need to set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set

Com



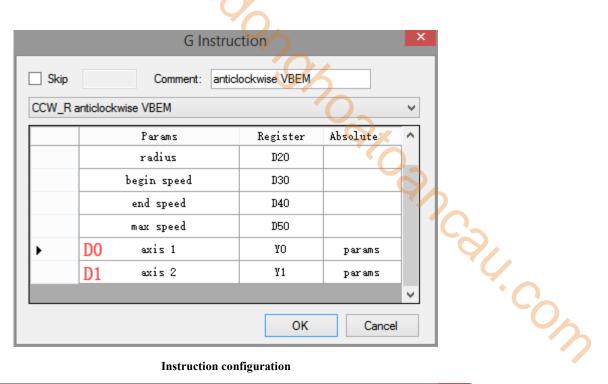
When the CCW_R instruction of arc interpolation (mode 3) is executed, the two axes will run at the set max synthesis speed, start speed and stop speed. As shown in the following figure:



CCW_R anticlockwise arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

		G Instr	uction		
Skip		Comment: and	ticlockwise VBEM		
CCW_R	anticlo	kwise VBEM			¥
		Params	Register	Absolute	^
	S0	final position	DO	Absolute	
	S1	final position	D10	Absolute	
	S2	radius	D20		
	S 3	begin speed	D30		
	S 4	end speed	D40		
	S5	max speed	D50		
•	-	axis 1	ΥΟ	params	~
			ОК	Cance	1



Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting Motor operating mo	Position	Mode
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

YOU		
PLC1 - Pulse Set	×	
Config 🗸 Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	6
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

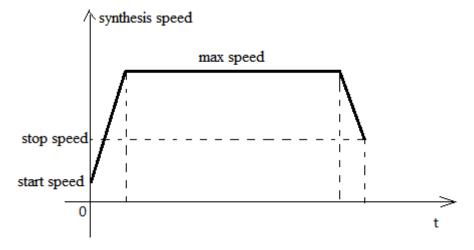
PLC1 - Pulse Set		
Config 🝷 Delete 🛛 init axis 📄 config guide		
Param SFD1036	Value	
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
Y1 axis-Common-Parameters setting-enable soft limit	disable	
Y1 axis-Common-Parameters setting-mechanical back to	negative	2
Y1 axis-Common-Parameters setting-Motor operating mo	Position	n Mode
Y1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	oordi
Y1 axis-Common-pulse send mode	complete	e mode
Y1 axis-Common-Pulse num (1)	1	
Y1 axis=Common=1um(revolve)	1	
Y1 axis-Common-Pulse direction terminal	¥5	
Y1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the radius, D30 specifies the start speed, D40 specifies the stop speed, D50 specifies the max speed.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: 1Hz ~ 100KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D30 = 50Hz, D40 = 20, D50 = 2000, when M0 rises, execute CCW_R command, accelerate from the starting position (1000,1000) at speed 50Hz to the maximum speed (2000Hz), and stop at the end speed of 20Hz when moving to the target position.
- (1) When the end point is in absolute mode, the target position is (5000,2000)
- (2) When the end point is in the relative mode, the target position is (6000,3000)
- When the CCW_R instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.
- When the radius is positive, the arc is inferior; when the radius is negative, it is major arc.

Note: In this mode, the starting speed (S3), the ending speed (S4) and the maximum speed (S5) are all expressed as the two-axis synthesis speed, as shown in the following figure:



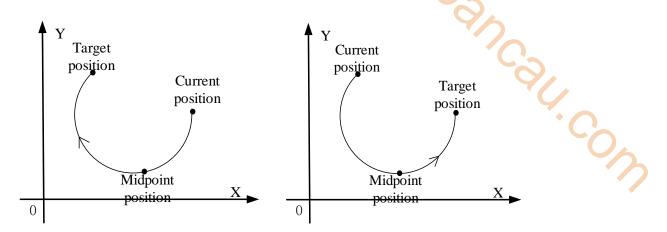
When there are multiple continuous linear/arc interpolation instructions and the speed between them needs to be constant and jump directly, the termination speed and maximum speed of the previous linear/arc interpolation can be set the same as the starting speed and maximum speed of the next segment.

When mode 3 is used, the starting and ending speed in the pulse parameter configuration tables of axis 1 and axis 2 are only effective for calculating the slope of pulse acceleration and deceleration.

2-4-8. Three points arc [ARC]

Three-point arc interpolation ARC mainly determines a section of arc clockwise or counter-clockwise through the current position of the arc, the target position and a midpoint position on the arc.

Note: The midpoint position on the arc refers to any point position between the current position and the target position on the drawn arc. As shown in the following figure:



When the target position is set to the same position as the current position (that is, two points become a point), the next circle can not be determined by two points (in three points, as long as two points coincide or three points are in a straight line, it can not form an arc), so this mode can not draw a whole circle. Three-point arc interpolation ARC has three modes, the following will be used one by one.

Mode 1: ARC three-point arc

1. Instruction overview

Three-point arc interpolation instruction, operate according to the set default speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Three-point	arc interpolation [ARC]		
16-bit	-	32-bit	ARC
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

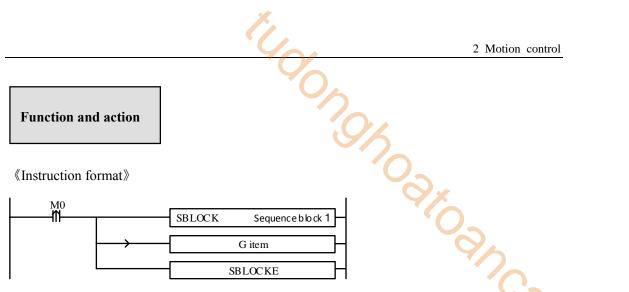
Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	Axis 1 midpoint position	Double words, 32-bit
S3	Axis 2 midpoint position	Double words, 32-bit
D0	Pulse output port of axis 1	Bit

						(× (2 Mot	tion con	trol
D1	Pulse o	utpu	t por	t of a	ixis	2		6			Bit				
Suitable	e soft comp		_						3						
	^										0				
Word	Operand					Sys	tem				Constant	Mod	dule]	
word		D^*	FD	Π)*	CD^*	DX	DY	DM*	DS^*	К/Н	D	QD		
	S0	•	•	•		•) (ノ.			
	S1	•	•	•		•						C			
	S2	•	•	•		•									
	S 3	•	•	•		•									
	Operand				Sy	stem								9	
Bit		Х	Y	M*	S*	T*	C*	Dnn	n						1
	D0		•												
	D1		•												

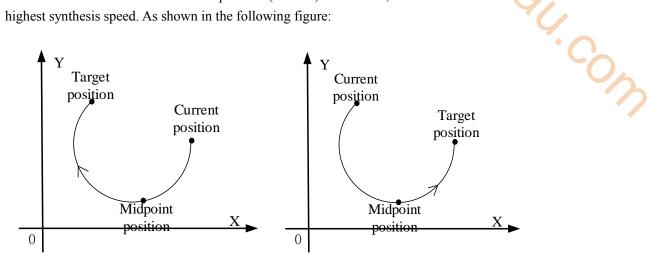
* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter	setting
--------------	---------

Related parameters	Setting	Note
Final position	Determine the end point position according to	Must set
	relative/absolute mode	
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	
Midpoint position	Determining the position of the midpoint of an arc	Must set
	according to its path	
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	Must set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set



When the ARC instruction of arc interpolation (mode 1) is executed, the two axes will run at the highest synthesis speed. As shown in the following figure:



ARC arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

	G Instructio	on	×
Skip	Comment: three poi	nt	
ARC three point			*
	Params	Register	Absolute
S0	final position	DO	Absolute
► S1	final position	D10	Absolute
S2	middle position	D20	Absolute
S3	middle position	D30	Absolute
DO	axis 1	YO	params
D1	axis 2	¥1	params
		ОК	Cancel



Instruction configuration

PLC1 - Pulse Set	×
Config - Delete init axis config guide	
Param SFD906	Value
YO axis-Common-Parameters setting-Pulse direction logic	positive logic
YO axis-Common-Parameters setting-enable soft limit	disable
YO axis-Common-Parameters setting-mechanical back to	negative
YO axis-Common-Parameters setting-Motor operating mo	Position Mode
YO axis-Common-Parameters setting-Pulse unit	1 um
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi
YO axis-Common-pulse send mode	complete mode
YO axis-Common-Pulse num (1)	1
YO axis-Common-lum(revolve)	1
YO axis-Common-Pulse direction terminal	Y4
YO axis-Common-Delayed time of pulse direction (ms)	10 🗸
Read From PLC Write To PLC OK	Cancel

Axis Y0 system parameters (1)

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD974	Value	^
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0	~
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

Config 🗸 Delete init axis config guide	
Param SFD1036	Value
Y1 axis-Common-Parameters setting-Pulse direction logic	positive logic
V1 axis-Common-Parameters setting-enable soft limit	disable
V1 axis-Common-Parameters setting-mechanical back to	negative
Y1 axis-Common-Parameters setting Motor operating mo	Position Mode
V1 axis-Common-Parameters setting-Pulse unit	11um
V1 axis-Common-Parameters setting-Interpolation coor	Cross coordi
Y1 axis-Common-pulse send mode	complete mode
Y1 axis-Common-Pulse num (1)	1
Y1 axis-Common-1um(revolve)	1
V1 axis-Common-Pulse direction terminal	¥5
V1 axis-Common-Delayed time of pulse direction (ms)	10

Axis Y1 system parameters

- As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the midpoint of axis 1 and D30 specifies the midpoint of axis 2.
- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100 KHz$; Acceleration and deceleration time: $0 \sim 65535 ms$.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, when M0 rises, execute ARC command, move from the starting position (1000, 1000) to the target position at the default speed of 1000Hz.
- (1) When the end point is in absolute mode, the target position is (5000,2000)
- (2) When the end point is in the relative mode, the target position is (6000,3000)
- When the ARC instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 2: ARC three-point arc VM

1. Instruction overview

Three-point arc interpolation instruction, operate according to the set maximum synthetic speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Three-point	arc interpolation [ARC]		Q x
16-bit	-	32-bit	ARC
instruction		instruction	
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

condition		model		
Firmware	V3.3 and above	Software	V3.3 and above	
2. Operand			•	\sim
Operand	Function		Туре	\sim
S0	Axis 1 target position		Double words, 32-bit	
S1	Axis 2 target position		Double words, 32-bit	
S2	Specify the midpoint of axis 1		Double words, 32-bit	
S3	Specify the midpoint of axis 2		Double words, 32-bit	
S4	Max speed of the two axes		Double words, 32-bit	
D0	Pulse output port of axis 1		Bit]
D1	Pulse output port of axis 2		Bit	

3. Suitable soft component

Word	Operand					Syst	em				Constant	Mod	lule
		D^*	FD	TD)*	CD^*	DX	DY	DM*	DS^*	K/H	D	QD
	S0~S4	٠	•	•		•							
		-											
	Operand				Sy	stem		_					
Bit		Х	Y	M^*	S^*	Τ*	C*	Dn.n	1				
	D0		•										
	D1		•										

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

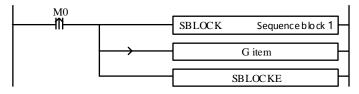
4. Parameter setting

Related parameters	Setting	Note
Final position	Determine the end point position according to	Must set
	relative/absolute mode	
Relative/absolute	Relative: the above position as a reference; absolute:	Must set
	the origin as a reference	

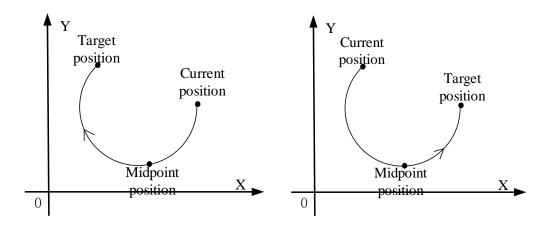
Midpoint position	Determining the midpoint position according to the	Must set
	arc path	
Max speed	Specify maximum smooth running speed of two axes	Must set
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2	· · · · · · · · · · · · · · · · · · ·	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	•
Default speed	set in axis 1 group 2 parameters	No need to set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set

Function and action

《Instruction format》



When the ARC instruction of arc interpolation (mode 2) is executed, the two axes will run at the set max synthesis speed. As shown in the following figure:



ARC arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

Sk	ip Comment: three	e point VM	<u> </u>		
RC t	hree point VM			~	
	Params	Register	Absolute		
	SO final position	DO	Absolute	M	
	S1 final position	D10	Absolute		
	S2 middle position	D20	Absolute		0,
	S3 middle position	D30	Absolute		
	S4 max speed	D40			· · C
•	DO axis 1	YO	params		
	D1 axis 2	Υ1	params	\checkmark	

Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Motor operating mo	Position	Mode
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	~
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

YO.		
PLC1 - Pulse Set	×	
Config - Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec	b
YO axis-group 2-Max speed	100000	Y/,
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

PLC1 - Pulse Set		
Config 🝷 Delete 🛛 init axis 📄 config guide		
Param SFD1036	Value	
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
Y1 axis-Common-Parameters setting-enable soft limit	disable	
Y1 axis-Common-Parameters setting-mechanical back to	negative	2
Y1 axis-Common-Parameters setting-Motor operating mo	Position	n Mode
Y1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	oordi
Y1 axis-Common-pulse send mode	complete	e mode
Y1 axis-Common-Pulse num (1)	1	
Y1 axis=Common=1um(revolve)	1	
Y1 axis-Common-Pulse direction terminal	¥5	
Y1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the midpoint of axis 1 and D30 specifies the midpoint of axis 2, D40 specifies the max speed.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: $1Hz \sim 100$ KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 500Hz, when M0 rises, execute ARC command, move from the starting position (1000, 1000) to the target position at the max speed of 500Hz.
- (1) When the end point is in absolute mode, the target position is (5000,2000)
- (2) When the end point is in the relative mode, the target position is (6000,3000)
- When the ARC instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Mode 3: ARC three-point arc VBEM

1. Instruction overview

Three-point arc interpolation instruction, operate according to the set maximum synthetic speed, start speed and stop speed. This instruction can only be used in BLOCK. See Section 2-2 for specific usage.

Three-point	Three-point arc interpolation [ARC]							
16-bit	-	32-bit	ARC					
instruction		instruction						
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH					
condition		model						
Firmware	V3.3 and above	Software	V3.3 and above					

2.	Operand
----	---------

Operand	Function	Туре
S0	Axis 1 target position	Double words, 32-bit
S1	Axis 2 target position	Double words, 32-bit
S2	Axis 1 midpoint position	Double words, 32-bit
S3	Axis 2 midpoint position	Double words, 32-bit
S4	Specify the starting speed at the starting point of	Double words, 32-bit
	the two axes	
S5	Specify the stop speed at the end point of the two	Double words, 32-bit
	axes	
S6	Max speed of the two axes	Double words, 32-bit

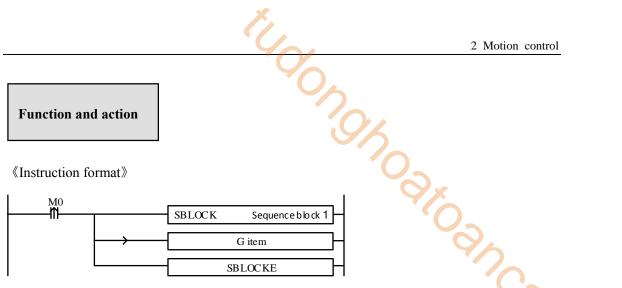
		U.	2 Motion control
D0	Pulse output port of axis 1		Bit
D1	Pulse output port of axis 2		Bit

. Suitable	e soft comp	onen	t						C	6					
	Operand					Syst	tem				Cons	stant	Мос	lule	
Word		D^*	FD	T	D*	CD^*	DX	DY	DM*	DS^*	K/H	1	D	QD	
	S0~S6	•	•	•		•							1		
Bit	Operand				Sy	stem								7	
Dit		Х	Y	M*	S^*	T*	C*	Dn.n	n						-
	D0		٠												
	D1		٠												
			ı	ı	1				I						

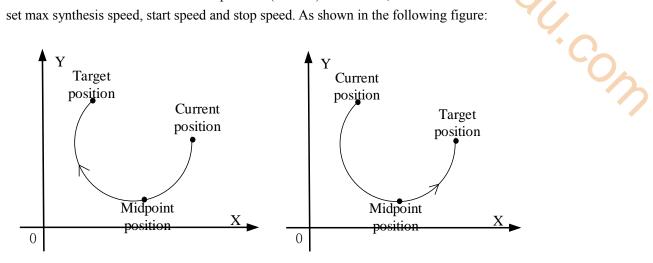
· com * Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter setting

Related parameters	Setting	Note
Final position	Determine the end point position according to relative/absolute mode	Must set
Relative/absolute	Relative: the above position as a reference; absolute: the origin as a reference	Must set
Midpoint position	Determine the midpoint position according to the shape of the arc	Must set
Max speed	Specify maximum smooth running speed of two axes	Must set
Start speed	The start speed from the starting point	Must set
Stop speed	The stop speed at the end point	Must set
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 1		
Pulse output port of	Arbitrary specify pulse output point	Must set
axis 2		
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 1	parameters	
Direction port of	Arbitrarily specify idle output points, set in system	Must set
axis 2	parameters	
Pulse unit	The pulse number or equivalent are acceptable. Set in	Must set
	axis 1 system parameters	
Default speed	set in axis 1 group 2 parameters	No need to set
Acceleration time	Set in axis 1 group 2 parameters	No need to set
Deceleration time	Set in axis 1 group 2 parameters	No need to set



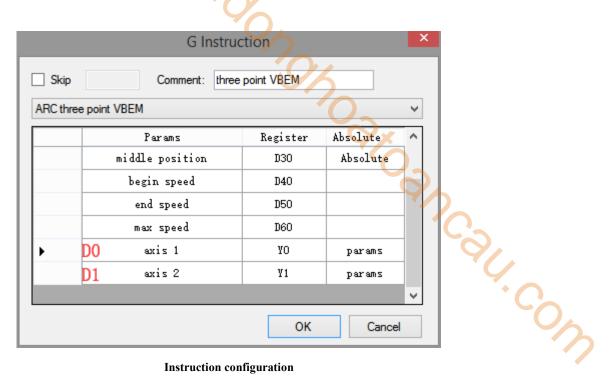
When the ARC instruction of arc interpolation (mode 3) is executed, the two axes will run at the set max synthesis speed, start speed and stop speed. As shown in the following figure:



ARC arc interpolation

The parameter configuration is shown in the following figure: Double-click G item and pop up the configuration panel. Set it as follows:

G Instruction							
Skip	Comment: three	point VBEM					
ARC three poin	t VBEM			~			
	Params	Register	Absolute	^			
S0	final position	DO	Absolute				
S1	final position	D10	Absolute				
S2	middle position	D20	Absolute				
S3	middle position	D30	Absolute				
S4	begin speed	D40					
S5	end speed	D50					
56	max speed	D60		~			
50		OK	Cance	I			



Instruction configuration

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive	logic
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting Motor operating mo	Position	Mode
YO axis-Common-Parameters setting-Pulse unit	1 um	
YO axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
YO axis-Common-pulse send mode	complete	mode
YO axis-Common-Pulse num (1)	1	
YO axis-Common-lum(revolve)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

Axis Y0 system parameters (1)

PLC1 - Pulse Set	×	
Config - Delete init axis config guide]
Param SFD974	Value ^	
YO axis-group 1-Pulse frequency refresh time	1 ms refresh	
YO axis-group 2-Pulse default speed	1000	
YO axis-group 2-Acceleration time of Pulse default s	50	
YO axis-group 2-Deceleration time of pulse default s	50	
YO axis-group 2-Acceleration and deceleration time (ms)	10	
YO axis-group 2-pulse acc/dec mode	linear acc/dec 🤟	6
YO axis-group 2-Max speed	100000	
YO axis-group 2-Initial speed	0	
YO axis-group 2-stop speed	0	
YO axis-group 2-FOLLOW performance param(1-100)	10	
YO axis-group 2-FOLLOW forward compensation(0-100)	0 🗸	
Read From PLC Write To PLC OK	Cancel	

Axis Y0 system parameters (2)

PLC1 - Pulse Set		>
Config - Delete init axis config guide		
Param SFD1036	Value	
Y1 axis-Common-Parameters setting-Pulse direction logic	positive	logic
¥1 axis-Common-Parameters setting-enable soft limit	disable	
V1 axis-Common-Parameters setting-mechanical back to	negative	
V1 axis-Common-Parameters setting Motor operating mo	Position	Mode
V1 axis-Common-Parameters setting-Pulse unit	1 um	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	ordi
¥1 axis-Common-pulse send mode	complete	e mode
V1 axis-Common-Pulse num (1)	1	
V1 axis-Common-1um(revolve)	1	
V1 axis-Common-Pulse direction terminal	¥5	
¥1 axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK		Cancel

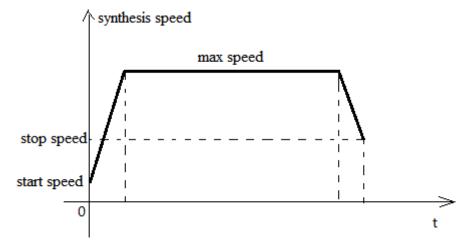
Axis Y1 system parameters

• As shown in the figure, D0 specifies the final position of axis 1 and D10 specifies the final position of axis 2, D20 specifies the midpoint position of axis 1, D30 specifies the midpoint position of axis 2, D40 specifies the start speed, D50 specifies the stop speed, D60 specifies the

max speed.

- Y0 is the pulse output port of axis 1 and Y1 is the pulse output port of axis 2. See Sections 2-3 for other optional ports.
- The directional terminals are Y4 and Y5, it is ON for the forward pulse and OFF for the reverse pulse.
- Pulse frequency range: 1Hz ~ 100KHz; Acceleration and deceleration time: $0 \sim 65535$ ms.
- Location movement can be viewed in equivalent cumulative registers HSD2 and HSD6.
- Assuming HSD2 = 1000, HSD6 = 1000, D0 = 5000, D10 = 2000, D40 = 50Hz, D50 = 20, D60 = 2000, when M0 rises, execute ARC command, accelerate from the starting position (1000,1000) at speed 50Hz to the maximum speed (2000Hz), and stop at the end speed of 20Hz when moving to the target position.
- (1) When the end point is in absolute mode, the target position is (5000,2000)
- (2) When the end point is in the relative mode, the target position is (6000,3000)
- When the ARC instruction is running, the pulse flag bit corresponding to its output port Y will be set on.
- The completion of the interpolation instruction can be judged by BLOCK executing flag bit. For example, the flag bit of BLOCK1 is SM300, when SM300 changes from ON to OFF, it means that BLOCK1 has finished executing.

Note: In this mode, the starting speed (S4), the ending speed (S5) and the maximum speed (S6) are all expressed as the two-axis synthesis speed, as shown in the following figure:



When there are multiple continuous linear/arc interpolation instructions and the speed between them needs to be constant and jump directly, the termination speed and maximum speed of the previous linear/arc interpolation can be set the same as the starting speed and maximum speed of the next segment.

When mode 3 is used, the starting and ending speed in the pulse parameter configuration tables of axis 1 and axis 2 are only effective for calculating the slope of pulse acceleration and deceleration.



ion,

2-4-9. Follow [FOLLOW] [FOLLOW_AB]

Follow-up instructions are divided into single-phase incremental follow-up [FOLLOW] and AB phase follow-up [FOLLOW_AB], which will be described in detail below.

1. Instruction overview

Single-phase/AB-phase high-speed counter follow instructions. The instructions can be written directly in the main program or process.

Follow instr	uction [FOLLOW] [FOLLOW_AB]		
16-bit	FOLLOW, FOLLOW_AB	32-bit	-
instruction		instruction	Č,
Execution	Rise/fall edge of coil	Suitable	XDM, XDME, XLME, XDH
condition		model	
Firmware	V3.3 and above	Software	V3.3 and above

2. Operand

Operand	Function	Туре
S0	Single-phase/AB phase high speed counter	Double words, 32-bit
S1	Register address of multiplication coefficient	Single word, 16-bit
S2	Register address of division coefficient	Single word, 16-bit
S3	System parameter block number	Single word, 16-bit
D	Pulse output port	Bit

3. Suitable soft component

Word	Operand		System Constant Module						lule				
		D^*	FD	Π)*	CD^*	DX	DY	DM*	DS^*	K/H	D	QD
	SO	Onl	y can	be Hi	igh s	peed c	ounter						
	S1	٠	•	•		•						•	•
	S2	•	•	•		•						•	•
	S3	•	•	•		•					•	•	•
	Operand				Sys	stem							
Bit		Х	Y	M^*	S^*	Τ*	C*	Dn.m	ı				
	D		•										

* Note: D denotes D HD; TD denotes TD HTD; CD denotes CD HCD HSCD HSD; DM denotes DM DHM; DS denotes DS DHS; M denotes M HM SM; S denotes S HS; T denotes T HT; C denotes C HC.

4. Parameter setting

4. Parameter setting			
Related parameters	Settings	Note	
	The high-speed counter corresponding to FOLLOW	Must set	
High speed counter	must be single-phase incremental mode		
ringh speed counter	The high-speed counter corresponding to FOLLOW_AB		
	must be AB phase mode.		
	Range: -1000~1000 and not equal to 0 (follow-up	Must set	
Multiplication	instructions will not be executed when out of range).		
coefficient/division	The multiplication coefficient/division coefficient is	2	
coefficient	negative to indicate the positive count and send the	C.	
coefficient	reverse pulse. Dynamic modifications can take effect		
	immediately.		
System parameter	System parameters corresponding to pulse output axis,	Must set 🔦	\mathbf{O}
block number	the range is 1~4		
Pulse output port	Arbitrary designated pulse output point	Must set	6
Pulse direction	It can be set in the selected system parameter block or	Must set	
	set separately.		•
Pulse unit	Must set to pulse number, please set in the system	Must set	
	parameter of the output axis		
FOLLOW	1~100 (report error when out of range), default value is	No need to	
performance	50	set	
parameter			
FOLLOW	0~100 (report error when out of range), default value is	No need to	
feedforward	0	set	
compensation			
Positive/negative	Hard limit can be set in system parameters of output axis	No need to	
limit		set	
Positive/negative	Soft limit can be set in system parameters of output axis	No need to	
value of soft limit		set	

Function and action

《Instruction format》

For single-phase incremental mode high speed counter:

For AB-phase mode high speed counter:

M0		<u>(S0)</u>	<u>(S1)</u>	<u>(S2</u>)	<u>(S3)</u>	\bigcirc	
	FOLLOW_AB	HSC0	HD0	HD1	D0	Y0	-

- FOLLOW/FOLLOW_AB instruction is a serve function. Through the pulse feedback of encoder or hand pulse generator, the frequency and number of input pulses are measured by PLC in real time. Through the proportional relationship between multiplication coefficient and division coefficient, the corresponding pulse frequency and the number of pulses are output to control the stepping or serve motor.
- This instruction is generally used for manual adjustment of CNC system, and it is used for advancing and retreating of the operating table of the pulse generator by hand. It can also be used in some special projects where precise synchronous control is needed.
- Pulse output is based on the variation of HSC0, that is to say, in 4-time mode, if the multiplier/divider coefficient is 1, the output of the pulse is equal to 4 times the input of the pulse. The number of pulses at the output port is stored in the pulse cumulative register, namely HSD0 (double word), HSD4 (double word)... And so on.
- For FOLLOW instructions, the high-speed counter inputs a single-phase pulse, so the number of Y-port pulses is increasing regardless of the input inversion, and the corresponding pulse direction terminal is always ON, which will not be OFF when inversion occurs.
- For FOLLOW_AB instruction, the input of high-speed counter is AB phase pulse. Y port will increase and decrease with the increase of input pulse, and the direction is the same as that of high-speed counter input.
- The forward and reverse flag bit of the follow-up instruction is the direction flag bit of the high-speed counter.
- When the Y0 port outputs the pulse, the SM1000 will be set on.
- Follow-up instruction supports hard limit, soft limit, emergency stop and slow stop functions. See the description of the parameters of the pulse system.
- XDM-24/32 supports 4 channels, XDM-60T10 supports 10 FOLLOW instructions, and can execute 4 or 10 FOLLOW instructions simultaneously.

Note:

- (1) During operation, the corresponding HSCD and HSD can not be changed arbitrarily. If it needs to be cleared, it must be cleared at the same time.
- (2) If the high-speed counter needs to be cleared, the clearing instruction must be executed after the condition of FOLLOW or FOLLOW_AB is disconnected and at least two scanning cycles are spaced.

For example, after disconnecting the condition X2, a short delay is made, and the clearing instruction is executed after the time is up.

X2	FOLLOW_AB	HSC0 D2:	3 D25 K1 Y0	ป
×2				1
× /	TMR T0	K1	K100	Н
то				
↑├	DMOV	K0 I	HSC0	Н

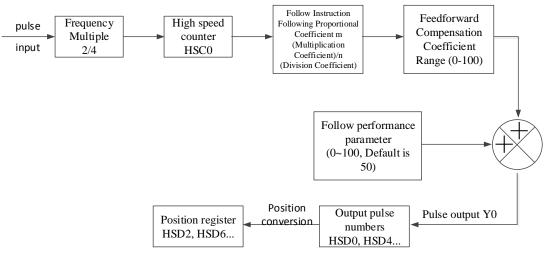
(3) It is forbidden to write two (or more) follow-up instructions to the same high-speed counter

CON

in the program.

- (4) It is forbidden to have both FOLLOW (or FOLLOW_AB) and CNT (or CNT_AB) instructions for the same high-speed counter in the program.
- (5) The follow-up instruction can be executed simultaneously with the interpolation instruction, but the output port can not overlap.
- (6) High-speed counting must be given pulse input by external input terminal, and can not be used by HSCW writing mode.
- (7) Follow-up instructions cannot use the same high-speed counter as high-speed counting read-write instructions. When FOLLOW instructions need to write multiple instructions from the same high-speed counting source, they can be written in different processes, and only one process can be conducted at the same time.
- (8) FOLLOW instruction resource conflict is corresponding to AB phase high-speed counting resource conflict.

The following is instruction diagram of FOLLOW/ FOLLOW_AB(take Y0 as an example):



The relationship between follow-up instructions and motion control instructions:

(1) The follow-up command can be used separately from the motion control command. However, when manual pulse generator is needed to adjust the coordinate position, it is necessary to establish the relationship between follow-up and motion control.

(2) When the pulse mode is equivalent, the change of the number of pulses is converted to the change of the position of the corresponding output axis, which is reflected in the HSD2 (double-word) register, so that the follow-up instructions and the motion control system constitute an organic whole. Therefore, the following changes can be directed either to axis 1 or to axis 2.

(3) The change of position is consistent with the change of pulse, which can only increase but not decrease.

FOLLOW performance parameters:

The function of this parameter is similar to the rigidity function of servo driver. The smaller the setting value of this parameter is, the smaller the servo rigidity will be (the greater the delay); the larger the setting value of this parameter is, the greater the servo rigidity will be (the smaller the delay will be). Setting range: $1 \sim 100$ (error will be reported if exceeding range), default setting is 50.

FOLLOW feedforward compensation:

(1) There is always a certain delay between receiving and sending out pulses in PLC. In order to reduce the lag effect, the feedforward compensation parameters can be modified to compensate for the lag effect, so that the pulse output has a certain advance, to offset the lag effect. However, if the feedforward parameters are set large, it may lead to entering the compensation cycle, which will lead to the continuous jitter of the motor at the end of the follow-up. Setting range: 0-100 (error will be reported when exceeding the range), default is 0, equivalent to no feedforward compensation.

(2) Normally, this parameter does not need to be set.

Limit bit description (fit for all motion instructions):

(1) When the positive motion is detected, the rising edge of the positive limit is detected, and the deceleration begins until it stops. At this time, only the negative motion can be achieved. In the process of negative motion, only when the descending edge of positive limit is detected, can two-way motion be achieved.

(2) When the negative motion is detected, the rising edge of the negative limit is detected, and the deceleration begins until it stops. At this time, only the positive motion can be achieved. In the process of positive motion, only after the negative limit drop edge is detected, can the two-way motion be achieved.

(3) When the instruction starts to execute, it can only move negatively if it is in the positive limit. If it is in the negative limit, it can only move forward.

2-5. Hardware wiring and precautions

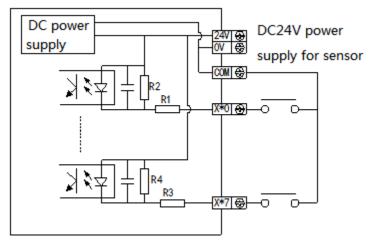
2-5-1. Input wiring

XD series PLC input is divided into NPN and PNP modes (XL series only supports NPN type wiring). The internal structure and wiring mode of the two modes are introduced below. JE.

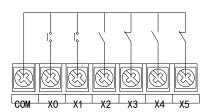
2-5-1-1. XD series PLC input wiring

NPN mode

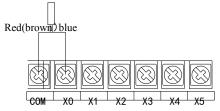
DC24V±10%
7mA/DC24V
Below 4.5mA
Below 1.5mA
About 10ms
Contact input or NPN open collector
transistor
Photoelectric coupled insulation
LED lights when input is ON



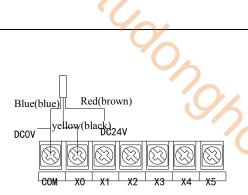
XD series NPN wiring example



Switch button wiring



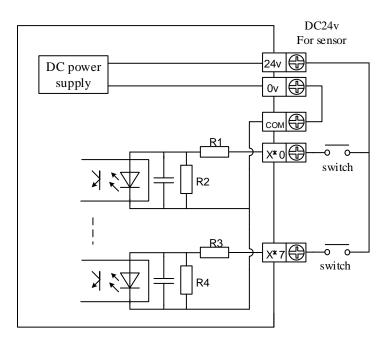
two-wire (NO or NC) proximity switch wiring

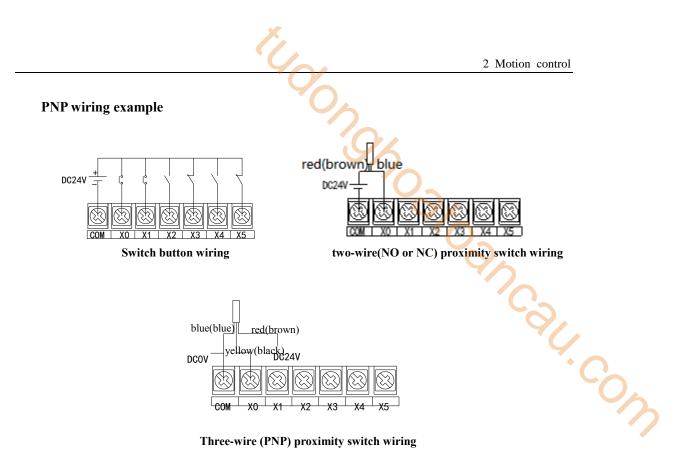


Three-wire (NPN) proximity switch wiring

PNP mode

	$\begin{array}{c c} Blue(blue) & Red(brown) \\ \hline \\ DCOV & yellow(black) \\ \hline \\ $	2×
	Three-wire (NPN) proximity switch wiring	· ancau
PNP mode		C
Input signal	DC24V±10%	
voltage		
Input signal	7mA/DC24V	
current		Ŭ,
Input ON current	Below 4.5mA	0
Input OFF current	Below 1.5mA	
Input response	About 10ms	
time		
Input signal mode	Contact input or PNP open collector	
mput signal mode	transistor	
Circuit insulation	Photoelectric coupled insulation	
Input action	LED lights when input is ON	
display		





2-5-1-2. XL series PLC input wiring

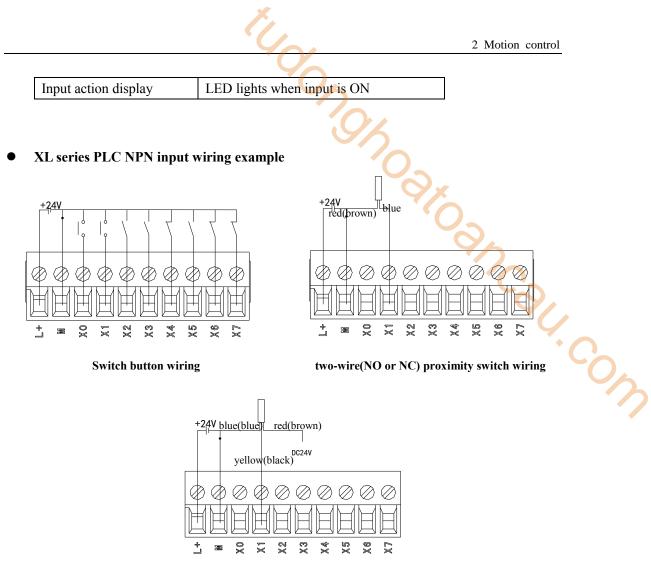
• Input specifications (NPN mode)

XL general models:

Input signal voltage	DC24V±10%
Input signal current	7mA/DC24V
Input ON current	Below 4.5mA
Input OFF current	Below 1.5mA
Input response time	About 10ms
Innut signal made	Contact input or NPN open collector
Input signal mode	transistor
Circuit insulation	Photoelectric coupled insulation
Input action display	LED lights when input is ON

XL5E-64T6:

Input signal voltage	$DC24V\pm10\%$		
Input signal current	7mA/DC24V		
Input ON voltage	Below 9V		
Input OFF voltage	Above 19V		
Input response time	About 10ms		
Innut signal made	Contact input or NPN open collector		
Input signal mode	transistor		
Circuit insulation	Photoelectric coupled insulation		



Three-wire (NPN) proximity switch wiring

2-5-1-3. Attentions for connection of input points

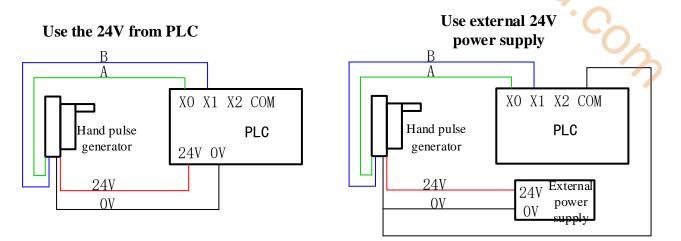
- The input type must be OC signal (collector open circuit signal).
- DC24 does not need to connect DC0V to COM of input point if it uses DC24V provided by PLC body; if it uses external power supply, it must be connected.

2-5-1-4. Hand pulse generator connection

Hand pulse generator is also known as hand artery impulse generator, hand pulse, electronic handwheel and so on. It is used to zero correction and signal segmentation for CNC machine tools, printing machinery, etc. It works like an encoder.



The output signal of the hand pulse generator must be OC (collector open circuit signal) DC24V type. Generally, there will be five wires, three signal wires (A, B, Z), two power wires (24V, 0V), signal wires connected with the corresponding high-speed counting input port of the PLC. The power supply can be supplied by the output 24V of the PLC or by the switching power supply.



Note: When using external switching power supply, the COM of PLC input should be short connected with 0V.

2-5-2. Output wiring

For XD/XL series PLC, the output terminal of motion control command needs high-speed pulse output terminal. Other transistors are ordinary optocouplers. For specifications and introduction, please refer to "XD/XL Series PLC Hardware User Manual".

Model		XDM-24T4/32T4/60T4/60T4L	XDM-60T10, XDME-60T10
		XDM-60T4, XDH-60T4,	
		XLME-32T4	
High speed	pulse	Y0~Y3	Y0~Y11
output port			

2-5-2-1. High speed pulse output specification parameters

	2 Motion control
External power supply	DC5~30V
Action display	LED light
Max current	50mA
Pulse max output	100KHz
frequency	

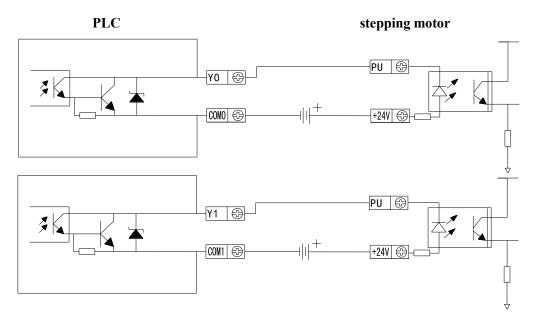
Note: PLC can output 100KHz ~ 200KHz pulses, but it can not guarantee the normal operation of all servos. Please connect about 500Ω resistance between the output and 24V power supply.

2-5-2-2. Cautions for output point connection

If it is XDM-60T10-E or XDME-60T10-E, the output point Y12-Y27 should be used when the output point of the photocoupler is connected with the power load.

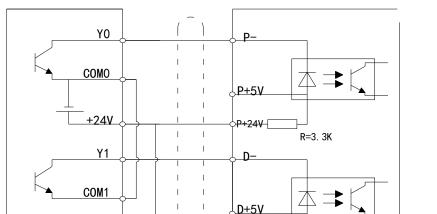
2-5-2-3. Connecting with stepping driver/servo driver

Below is the diagram of the connection between the T-type output terminal and the stepper motor driver.



Note: If the pulse and direction terminals of the stepper motor are driven by DC5V, please connect $2.2K \Omega$ resistance behind the pulse and direction terminals.

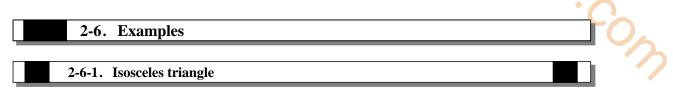
Below is the diagram of the connection between the T-type output terminal and XINJE servo motor driver.



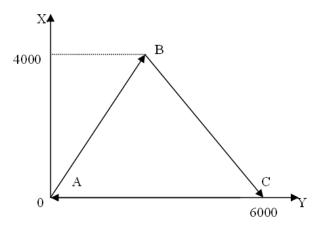
Juc.

Note: Please suspend P+5V and D+5V.

tonghoatoancat Detailed hardware wiring diagram refers to "XD/XL Series PLC Hardware User Manual.



Step out of an isosceles triangle with a side length of 5000 and a bottom of 6000. The starting point is A (0, 0), from A (0, 0) to B (3000, 4000), then from B (3000, 4000) to C (6000, 0), and finally from C (6000, 0) back to the starting point A (0, 0), as shown in the figure:



Explain:

The two axes are designated Y0 (Y axis) and Y1 (X axis). The corresponding directional terminals are Y4 and Y5. The coordinates of B point are (D0, D10), C point are (D2, D12), A point is (D4, D14), the speed is 1000Hz, and the acceleration and deceleration time are 50ms. The relevant parameters are set as follows:

coordinates	X axis	X axis set	ting value	Y axis	Y axis set	ting value
coordinates	address	absolute	relative	address	absolute	relative
B point	D0	3000	3000	D10	4000	4000
C point	D2	6000	3000	D12	0	-4000
A point	D4	0	-6000	D14	0	0
Default sp	eed (Hz)	1000				

	2 Motion control
Acceleration/deceleration time (ms)	50
X axis	Y0-pulse; Y4-direction
Y axis	Y1-pulse; Y5-direction

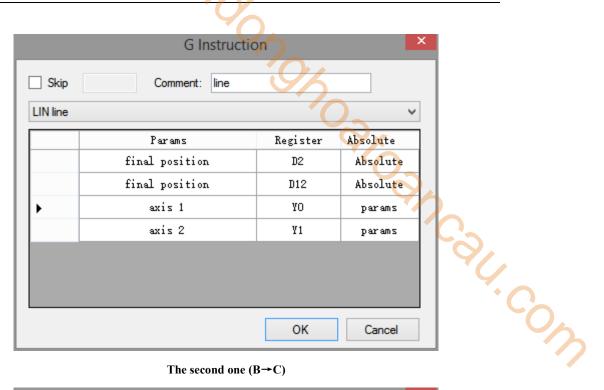
Program I (absolute mode): Add the G item in BLOCK, add three LIN instructions in it, as shown below:

		Edit Seq	uence Block 1	×
Comment: S	equence Block	1		
Insert + E	dit Delete	Upwards Downw	ards	1 Co
Index	Skip	Comment	Output	
1		line	LIN DO DIO YO YI	
2		line	LIN D2 D12 YO Y1	
3		line	LIN D4 D14 YO Y1	
			ОК	Cancel

The configuration of the three instructions:

	G Instruction					
Skip	Comment: line					
LIN line			¥			
	Params	Register	Absolute			
	final position	DO	Absolute			
	final position	D10	Absolute			
+	axis 1	УО	params			
	axis 2	¥1	params			
		ОК	Cancel			

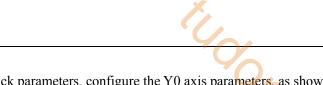
The first one (A→B)



The second one $(B \rightarrow C)$

	G Instruction					
Skip	Comment: line					
LIN line			¥			
	Params	Register	Absolute			
	final position	D4	Absolute			
	final position	D14	Absolute			
•	axis 1	УО	params			
	axis 2	¥1	params			
		ОК	Cancel			

The third one $(C \rightarrow A)$



Double click parameters, configure the Y0 axis para	meter	rs, as shown below:
---	-------	---------------------

	G Instructio	on	×	
Skip	Comment: line			
LIN line			· × v	
	Params	Register	Absolute	
	final position	DO	Absolute	
	final position	D10	Absolute	
•	axis 1	ΥО	params	
	axis 2	¥1	params	
				14
				1 Co
		ОК	Cancel	
		<u> </u>		

PLC1 - Pulse Set		×
Config 👻 Delete 🛛 init axis 🔹 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	
YO axis-Common-Parameters setting-enable soft limit	disable	Ľ
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Motor operating mo	Position Mode	L
YO axis-Common-Parameters setting-Pulse unit	pulse number	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
YO axis-Common-pulse send mode	complete mode	L
YO axis-Common-Pulse num (1)	1	
YO axis-Common-Offset (1)	1	L
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	v
Read From PLC Write To PLC OK	Cancel	

Y0 axis pulse direction terminal is set to Y4

		2 Motion	control
PLC1 - Pulse Set		×	
Config + Delete init axis config guide			1
Param SFD974	Value	^	
YO axis-group 1-Initial speed	0		
YO axis-group 1-stop speed	0		
YO axis-group 1-FOLLOW performance param(1-100)	10		1
YO axis-group 1-FOLLOW forward compensation(0-100)	0		
YO axis-group 1-Pulse frequency refresh time	1 ms refres	h	
YO axis-group 2-Pulse default speed	1000		
YO axis-group 2-Acceleration time of Pulse default s	50		
YO axis-group 2-Deceleration time of pulse default s	50		
YO axis-group 2-Acceleration and deceleration time (ms)	10		
YO axis-group 2-pulse acc/dec mode	linear acc/	dec	
YO axis-group 2-Max speed	100000		

Y0 axis pulse default speed is set to 1000, acc/dec time is 50ms

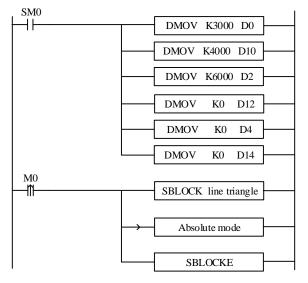
Double click parameters, configure the parameters of Y1 axis, as shown below:

	G Instructio	on	×
Skip	Comment: line		
LIN line			*
	Params	Register	Absolute
	final position	DO	Absolute
	final position	D10	Absolute
•	axis 1	ΥΟ	params
	axis 2	¥1	params
		ОК	Cancel

E.	2 Motion contr	ol
100	2	
PLC1 - Pulse Set	×	
Config - Delete init axis config guide		
Param SFD1036	Value ^	
¥1 axis-Common-Parameters setting-Pulse direction logic	positive logic	
¥1 axis-Common-Parameters setting-enable soft limit	disable	
Y1 axis-Common-Parameters setting-mechanical back to	negative	
Y1 axis-Common-Parameters setting Motor operating mo	Position Mode	
Y1 axis-Common-Parameters setting-Pulse unit	pulse number	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross coordi	
Y1 axis-Common-pulse send mode	complete mode	
Y1 axis-Common-Pulse num (1)	1	
Y1 axis-Common-Offset (1)	1	C'
V1 axis-Common-Pulse direction terminal	¥5	9
Y1 axis-Common-Delayed time of pulse direction (ms)	10 🗸	
Read From PLC Write To PLC OK	Cancel	

Y1 axis pulse direction terminal is set to Y5

After setting up, click OK to generate the program shown in the following figure in the ladder diagram. Write the set values in D0, D2, D4, D10, D12, D14. When M0 is turned on once, perform BLOCK once, and take a triangular route.



Program II (relative mode):

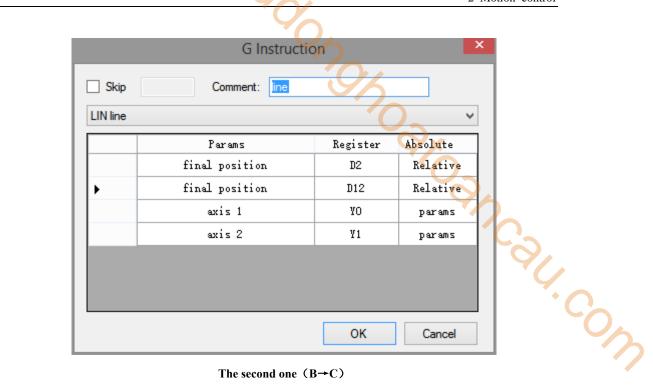
Three linear interpolation instructions [LIN] are added to the BLOCK by using the relative mode, as shown in the following figure:

		Edit Sequence	ce Block 1
Comment:	Sequence Block1		
Insert +	Edit Delete Up	wards Downwards	
Index	Skip	Comment	Output
1		line	
2		line	LIN D2 D12 YO Y1
3		line	LIN D4 D14 YO Y1
			OK Cancel
			Cancer

The three instructions are shown as below:

>
¥
e
ve
ve
s
s
el

First one (A→B)



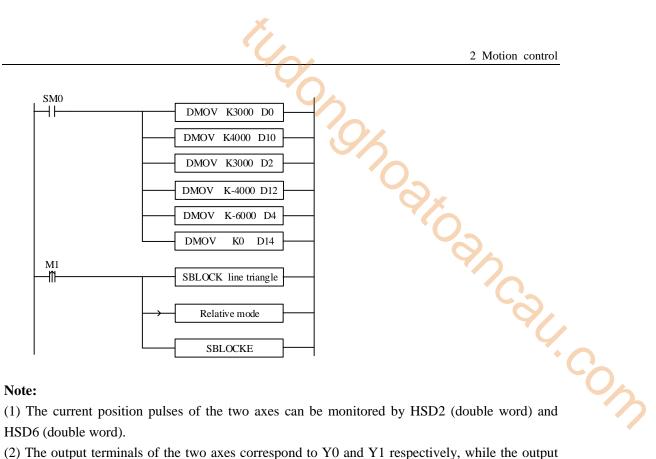
The second one $(B \rightarrow C)$

	G Instruct	ion	×
Skip	Comment: ine		
LIN line			~
	Params	Register	Absolute
	final position	D4	Relative
•	final position	D14	Relative
	axis 1	YO	params
	axis 2	¥1	params
		ОК	Cancel

The third one $(C \rightarrow A)$

Double-click "parameters" to configure parameters of Y0 and Y1 axis [pulse direction terminal], [group 2 parameters - pulse default speed (Hz)], [group 2 parameters - pulse default speed acceleration time (ms)], [group 2 parameters - pulse default speed deceleration time (ms)] in the same absolute mode, which will not be described here.

After setting up, click OK to generate the program shown in the following figure in the ladder diagram. Assuming that the current values of HSD2 (double word) and HSD6 (double word) are all 0, the set values are written in D0, D2, D4, D10, D12 and D14. When M1 is set ON once, BLOCK is executed once, and a triangular line is taken.



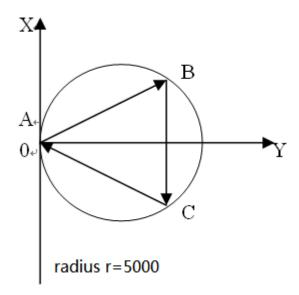
Note:

(1) The current position pulses of the two axes can be monitored by HSD2 (double word) and HSD6 (double word).

(2) The output terminals of the two axes correspond to Y0 and Y1 respectively, while the output terminals of the direction correspond to Y4 and Y5 respectively.

2-6-2. Circle + inscribed triangle

First step out of a circle with radius R = 5000 clockwise, and then follow the pattern of the inner regular triangle of the circle. The starting point is A (0, 0). First, follow the order of A (0, 0) \rightarrow B $(7500, 4285) \rightarrow C (7500, -4285) \rightarrow A (0, 0)$ to form the circle, then from A(0, 0) to B (7500, 4285), and then from B (7500, 4285) to C(7500, -4285) points, and finally returns from C (7500, -4285) points to the starting point A (0, 0) and completes an inner regular triangle of a circle, as shown in the figure.



Note:

Two axes are designated as Y0 and Y1 axis, corresponding direction terminals are Y4 and Y5, B point coordinates are (D20, D22), C point coordinates are (D30, D32), A point coordinates are (D40, D42), starting speed is 50 Hz, stop speed is 50 Hz, maximum speed is 2000 Hz, default speed is 1000 Hz, acceleration and deceleration time is 50 ms, the specific parameters are set as follows:

Function	Register or coil address	Value]
Endpoint coordinates	, C		
of circular arcs	D0	0	
		· · · · · · · · · · · · · · · · · · ·	
Center coordinates	D4	5000	- AL
	D6	0	
B point coordinates	D20	7500	
	D22	4285	
C point coordinates	D30	7500	U C
	D32	-4285	· Con
A point coordinates	D40	0	
	D42	0	
Starting speed (Hz)	D8	50	
Stop speed (Hz)	D10	50	
Max speed (Hz)	D12	2000	
Default speed (Hz)	-	1000	
Acc/dec time (ms)	-	50	
X aixs	Y0 pulse, Y4 direction		
Y axis	Y1 pulse, Y5 direction		

Program (absolute mode):

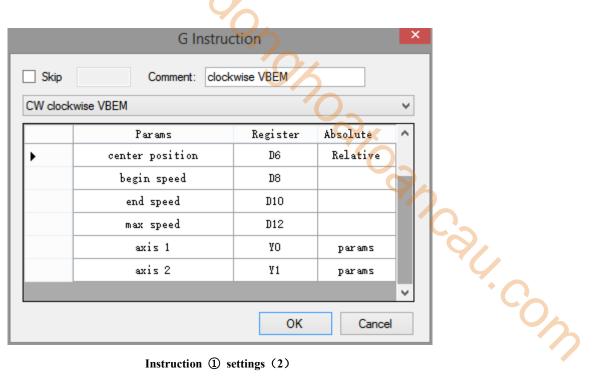
Because of the coincidence of the starting point and the end point, the command "CW clockwise arc VBEM" is chosen here, and the command "LIN line VBEM" is used in the triangle. Insert G instruction into BLOCK and write four interpolation instructions, as shown in the following figure:

		U.			2 Motion of	control
		Ç	6			
		Edit Sequen	ce Block 1			×
Comment:	Sequence Block1		0	5		
Insert +	Edit Delete U	owards Downwards	•	03.		
Index	Skip	Comment	Output			
1		clockwise VBEM	CW DO D2 D4	D6 D8 D10 D14	2 YO ¥1	
2		line VBEM	LIN D20 D22	D8 D10 D12 ¥0) ¥1	
3		line VBEM	LIN D30 D32	D8 D10 D12 ¥0) ¥1	
4		line VBEM	LIN D40 D42	D8 D10 D12 ¥0) ¥1	
						10

The four instructions are shown as below:

	G Instru	ction		×
Skip	Comment: clock	cwise VBEM		
CW clocky	wise VBEM			
	Params	Register	Absolute	^
	final position	DO	Absolute	
	final position	D2	Absolute	
	center position	D4	Relative	
+	center position	D6	Relative	
	begin speed	D8		
	end speed	D10		
	max speed	D12		~
		ОК	Cance	I

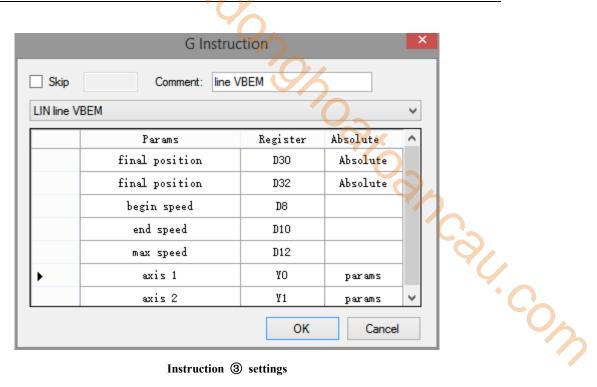
Instruction ① settings (1)



Instruction ① settings (2)

	G Instru	uction		
Skip	Comment: line	VBEM		
LIN line VBEM				~
	Params	Register	Absolute	^
	final position	D20	Absolute	
	final position	D22	Absolute	
	begin speed	D8		
	end speed	D10		
	max speed	D12		
•	axis 1	ΥО	params	
	axis 2	Ψ1	params	~
		ОК	Cance	<u> </u>

Instruction ⁽²⁾ settings

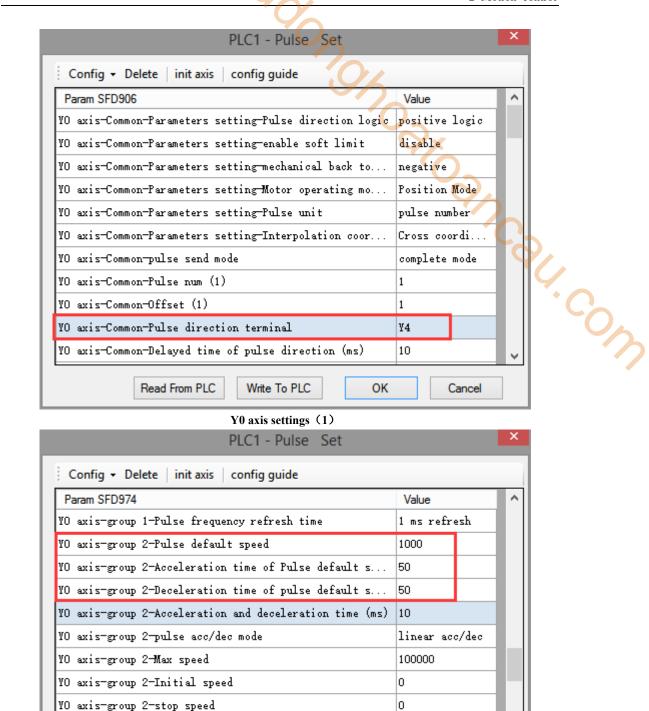


Instruction ③ settings

	G Instru	ction		×
Skip	Comment: line	VBEM		
LIN line VBEN	4			~
	Params	Register	Absolute	^
	final position	D40	Absolute	
	final position	D42	Absolute	
	begin speed	D8		
	end speed	D10		
	max speed	D12		
•	axis 1	УО	params	
	axis 2	¥1	params	~
		ОК	Cance	1

Instruction ④ settings

Double-click the "parameters" to configure the parameters of Y0 and Y1 axis [pulse direction terminal], [group 2 parameters - pulse default speed (Hz)], [group 2 parameters - pulse default speed acceleration time (ms)], [group 2 parameters - pulse default speed deceleration time (ms)], as follows:



Y0 axis settings (2)

Write To PLC

10 0

Cancel

OK

YO axis-group 2-FOLLOW performance param(1-100)

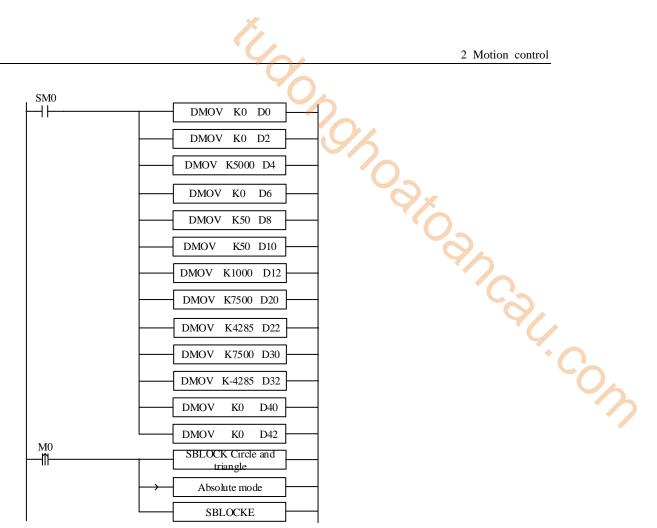
Read From PLC

YO axis-group 2-FOLLOW forward compensation(0-100)

	2 Motion control
PLC1 - Pulse Set	×
Config 🗸 Delete init axis config guide	
Param SFD1036	Value
V1 axis-Common-Parameters setting-Pulse direction logic	positive logic
¥1 axis-Common-Parameters setting-enable soft limit	disable
Y1 axis-Common-Parameters setting-mechanical back to	negative
Y1 axis-Common-Parameters setting-Motor operating mo	Position Mode
Y1 axis-Common-Parameters setting-Pulse unit	pulse number
Y1 axis-Common-Parameters setting-Interpolation coor	Cross coordi
¥1 axis-Common-pulse send mode	complete mode
Y1 axis-Common-Pulse num (1)	1
¥1 axis-Common-Offset (1)	1
¥1 axis-Common-Pulse direction terminal	¥5
Y1 axis-Common-Delayed time of pulse direction (ms)	10
Read From PLC Write To PLC OK	Cancel

Y1 axis settings (1)

After setting up, click OK to generate the program shown in the following figure in the ladder diagram. Assuming that the current values of HSD2 (double-word) and HSD6 (double-word) are all 0, write the set values in the relevant registers. When M0 is turned on once, perform BLOCK once and take a triangle line once.



Note:

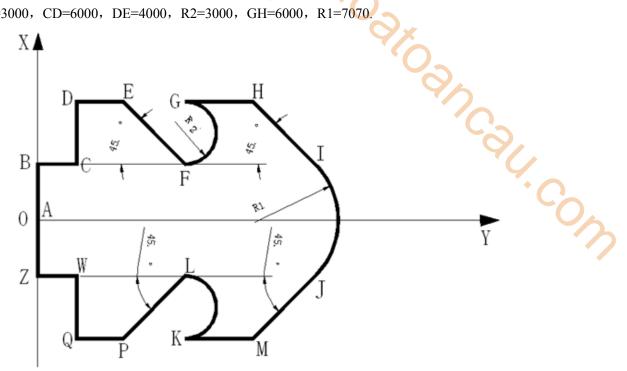
(1) The current position pulses of the two axes can be monitored by HSD2 (double word) and HSD6 (double word).

(2) The output terminals of the two axes correspond to Y0 and Y1 respectively, while the output terminals of the direction correspond to Y4 and Y5 respectively.

(3) When there are many points to go (if there are 1000 points), the ladder chart we write according to the above method will be very long, which is not conducive to the optimization of the program; therefore, we can use HMI to modify the values in the linear interpolation register to execute multiple linear interpolation instructions, in order to improve the readability of the program, optimize and reduce the scanning cycle of the program. The coordinates of each point can be set in the power-off retention register (the setting value of HMI register can be set by recipe function).

2-6-3. Line + Arc symmetric figure

As shown in following figure: starting from origin A (0, 0), and pass point $B \rightarrow C \rightarrow D \rightarrow E \rightarrow F \rightarrow G \rightarrow H \rightarrow I \rightarrow J \rightarrow M \rightarrow K \rightarrow L \rightarrow P \rightarrow Q \rightarrow W \rightarrow Z \rightarrow A$, the figure is symmetric with Y axis, AB=5000, BC=3000, CD=6000, DE=4000, R2=3000, GH=6000, R1=7070.



Note:

The two axes are designated as Y0 and Y1 axis, the corresponding directional terminals are Y4 and Y5, the default speed is 1000Hz, and the acceleration and deceleration time is 50ms, respectively. It is convenient to select the relative position mode according to the figure, so the specific parameters are set as follows:

Function	Address	Value	Function	Address	Value
		(relative)			(relative)
B point coordinates	HD0	0	C point coordinates	HD4	3000
	HD2	5000		HD6	0
D point coordinates	HD8	0	E point coordinates	HD12	4000
	HD10	6000		HD14	0
F point coordinates	HD16	6000	G point coordinates	HD20	0
	HD18	-6000		HD22	6000
H point coordinates	HD24	6000	I point coordinates	HD28	6000
	HD26	0		HD30	-6000
J point coordinates	HD32	0	M point coordinates	HD36	-6000
	HD34	-10000		HD38	-6000
K point coordinates	HD40	-6000	L point coordinates	HD44	0
	HD42	0		HD46	6000
P point coordinates	HD48	-6000	Q point coordinates	HD52	-4000
	HD50	-6000		HD54	0

う

W point coordinates	HD56	0	Z point coordinates	HD60	-3000
	HD58	6000		HD62	0
A point coordinates	HD64	0	R2 radius	HD68	3000
	HD66	5000	R1 radius	HD70	7070
Default speed	1000Hz			3	
Acc/dec time	50ms			~/	
X axis	Y0 pulse, Y	4 direction		·O.	
Y axis	Y1 pulse, Y	75 direction		0	

Program (relative mode):

Since the figure is mainly composed of straight lines and arcs, the "LIN line" instruction is chosen here, and the "CCW_R anticlockwise arc" and "CW_R clockwise arc" instruction are used for arcs. Insert G instruction into BLOCK and write 17 interpolation instructions, as shown in the following figure:

		Edit Seque	nce Block 1	×
Comment: S	equence Block1			
insert + E	dit Delete U	pwards Downward	s	
Index	Skip	Comment	Output	^
1		line	LIN HDO HD2 YO Y1	
2		line	LIN HD4 HD6 YO Y1	
3		line	LIN HD8 HD10 Y0 Y1	
4		line	LIN HD12 HD14 YO Y1	
5		line	LIN HD16 HD18 YO Y1	
6		anticlockwise	CCW_R HD20 HD22 HD68 YO Y1	
7		line	LIN HD24 HD26 YO Y1	
8		line	LIN HD28 HD30 Y0 Y1	v
			OK Canc	el

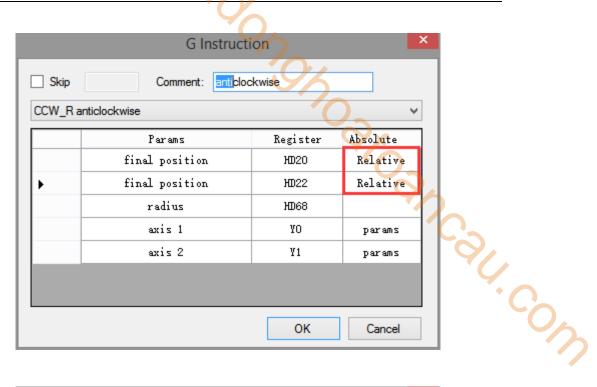
instruction (1) \sim (8)

		U.	2 Motion control
		- C	a Plack 1
		Edit Sequence	ce Block 1
Comment:	Sequence Block1		
Insert +	Edit Delete Up	wards Downwards	
Index	Skip	Comment	Output
9		clockwise	СW_R HD32 HD34 HD70 Y0 ¥1
10		line	LIN HD36 HD38 VO V1
11		line	LIN HD40 HD42 Y0 Y1
12		anticlockwise	CCW_R HD44 HD46 HD68 YO Y1
13		line	LIN HD48 HD50 V0 V1
14		line	LIN HD52 HD54 VO V1
15		line	ЦІЙ НО56 НО58 УО У1
16		line	ЦІМ НД60 НД62 V0 V1
		·	LIN HD56 HD58 YO Y1 LIN HD60 HD62 YO Y1 OK Cancel
		Instruction (9	<i>(16)</i> ~ (16)
17		line	LIN HD64 HD66 YO Y1 🗸
			OK Cancel

instruction (17)

The endpoint position of all the above instructions must be set to "relative mode", as shown in the following figure:

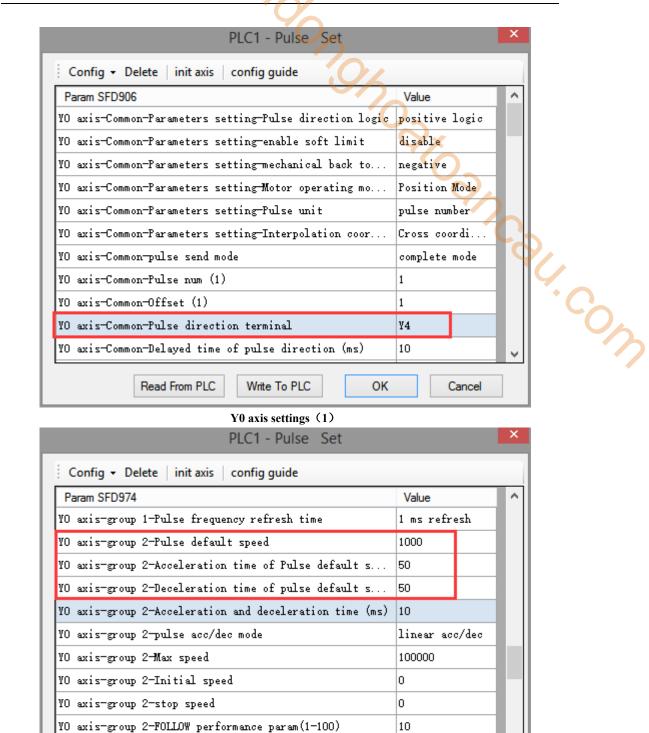
	G Instruct	tion	×
Skip	Comment: line		
LIN line			~
	Params	Register	Absolute
	final position	Ю	Relative
•	final position	HD2	Relative
	axis 1	УО	params
	axis 2	¥1	params
		ОК	Cancel



	G Instruct	ion	×
Skip	Comment: clockw	ise	
CW_R de	ockwise		~
	Params	Register	Absolute
	final position	HD32	Relative
+	final position	HD34	Relative
	radius	НД 70	
	axis 1	УО	params
	axis 2	¥1	params
		ОК	Cancel

Note: The radius of the clockwise and anticlockwise arcs can only be absolute mode, and can not be modified!

Double-click the "parameters" to configure the parameters of Y0 and Y1 axis [pulse direction terminal], [group 2 parameters - pulse default speed (Hz)], [group 2 parameters - pulse default speed acceleration time (ms)], [group 2 parameters - pulse default speed deceleration time (ms)], as follows:



Y0 axis settings (2)

Write To PLC

YO axis-group 2-FOLLOW forward compensation(0-100)

Read From PLC

0

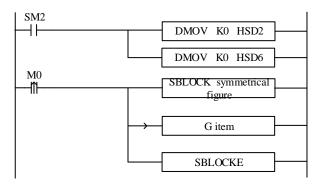
Cancel

OK

i de la companya de	2 Motion control
PLC1 - Pulse Set	×
Config 🗸 Delete init axis config guide	
Param SFD1036	Value
¥1 axis-Common-Parameters setting-Pulse direction logic	positive logic
¥1 axis-Common-Parameters setting-enable soft limit	disable
Y1 axis-Common-Parameters setting-mechanical back to	negative
Y1 axis-Common-Parameters setting-Motor operating mo	Position Mode
Y1 axis-Common-Parameters setting-Pulse unit	pulse number
Y1 axis-Common-Parameters setting-Interpolation coor	Cross coordi
Y1 axis-Common-pulse send mode	complete mode
Y1 axis-Common-Pulse num (1)	1
¥1 axis-Common-Offset (1)	1
¥1 axis-Common-Pulse direction terminal	УБ
¥1 axis-Common-Delayed time of pulse direction (ms)	10
Read From PLC Write To PLC OK	Cancel

Y1 axis settings (1)

After setting up, click OK and write a complete program in the ladder diagram. As shown in the following figure, write the set value in the relevant register. When M0 is turned on once, execute BLOCK once, and walk the figure in this example once.



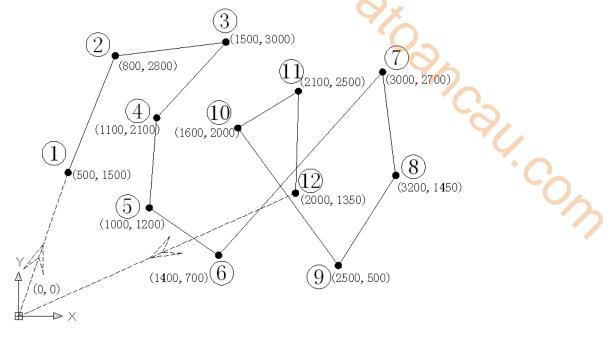
Note:

(1) The current position pulses of the two axes can be monitored by HSD2 (double word) and HSD4 (double word).

(2) The output terminals of the two axes correspond to Y0 and Y1 respectively, while the output terminals of the direction correspond to Y4 and Y5 respectively.

2-6-4. Disorder line segments

As shown in the figure, in the plane consisting of X-axis and Y-axis, the positioning of the equipment starts from the origin (0, 0), moves rapidly in the order of digital labeling (1-12) in the figure, and finally returns to the origin (0, 0) from the position of the 12th point (2000, 1350).



2 Motion control

Note:

In this example, as the coordinates of each point are disorderly, so the lines connected sequentially by each point are slopes of arbitrary slope, so they can only be realized by the function of linear interpolation. From the graphics in the example, the coordinates of each point have been determined, so it is easier to choose absolute mode than relative mode.

The two axes are designated Y0 (X axis) and Y1 (Y axis), the corresponding direction terminals are Y4 and Y5, the default speed is 1000Hz, the acceleration and deceleration time is 50ms, and all coordinate points are in absolute mode. Therefore, the specific parameters are set as follows:

Daint	X axis	X axis setting	Y axis	Y axis setting
Point	address	value(absolute)	address	value(absolute)
Point 1	HD0	500	HD2	1500
Point 2	HD4	800	HD6	2800
Point 3	HD8	1500	HD10	3000
Point 4	HD12	1100	HD14	2100
Point 5	HD16	1000	HD18	1200
Point 6	HD20	1400	HD22	700
Point 7	HD24	3000	HD26	2700
Point 8	HD28	3200	HD30	1450
Point 9	HD32	2500	HD34	500
Point 10	HD36	1600	HD38	2000
Point 11	HD40	2100	HD42	2500



2000 HD46	1350
1000	
50	
Y0-pulse; Y4-direction	
Y1-pulse; Y5-direction	
	1000 50 Y0-pulse; Y4-direction

Program (absolute mode):

Because the graphics are mainly composed of straight lines, the "LIN line" instruction is chosen here. Insert G instruction into BLOCK and write 12 interpolation instructions, as shown in the following figure:

		Edit Seq	uence Block 1	×
Comment:	Sequence Block	1		
Insert +	Edit Delete	Upwards Downw	vards	1
Index	Skip	Comment	Output	^
1		line	LIN HOO HO2 YO YI	
2		line	LIN HD4 HD6 YO Y1	
3		line	LIN HD8 HD10 Y0 Y1	
4		line	LIN HD12 HD14 YO Y1	
5		line	LIN HD16 HD18 YO Y1	
6		line	LIN HD20 HD22 YO Y1	

Instruction (1) \sim (6)

		Edit Seq	uence Block 1	×
Comment:	equence Block	1		
i Insert + E	dit Delete	Upwards Downw	ards	
Index	Skip	Comment	Output	^
7		line	LIN HD24 HD26 YO Y1	
8		line	LIN HD28 HD30 YO Y1	
9		line	LIN HD32 HD34 YO Y1	
10		line	LIN HD36 HD38 YO Y1	
11		line	LIN HD40 HD42 YO Y1	
12		line	LIN HD44 HD46 YO Y1	

Instruction (7) \sim (12)

The endpoint position of all the above instructions must be set to "absolute mode", as shown in the following figure:

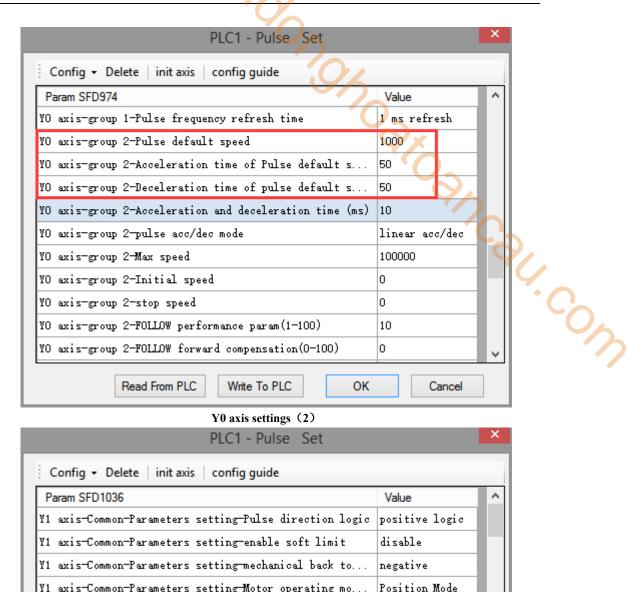
Skip	G Instruct	01		
LIN line	Comment: line	-7	~	
	Params	Register	Absolute	
	final position	Ю	Absolute	
•	final position	HD2	Absolute	
	axis 1	УО	params	
	axis 2	¥1	params	10-
				9,

Ž)

Double-click the "parameters" to configure the parameters of Y0 and Y1 axis [pulse direction terminal], [group 2 parameters - pulse default speed (Hz)], [group 2 parameters - pulse default speed acceleration time (ms)], [group 2 parameters - pulse default speed deceleration time (ms)], as follows:

PLC1 - Pulse Set		X
Config 🝷 Delete init axis config guide		
Param SFD906	Value	>
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	
YO axis-Common-Parameters setting-enable soft limit	disable	
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting Motor operating mo	Position Mode	
YO axis-Common-Parameters setting-Pulse unit	pulse number	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
YO axis-Common-pulse send mode	complete mode	
YO axis-Common-Pulse num (1)	1	
YO axis-Common-Offset (1)	1	
YO axis-Common-Pulse direction terminal	¥4	
YO axis-Common-Delayed time of pulse direction (ms)	10	~
Read From PLC Write To PLC OK	Cancel	

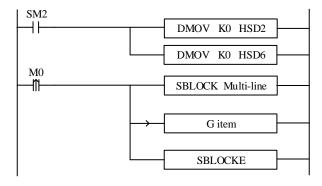
Y0 axis settings (1)



· · · · · · · · · · · · · · · · ·			
Param SFD1036	Value		^
V1 axis-Common-Parameters setting-Pulse direction logic	positive	logic	
¥1 axis-Common-Parameters setting-enable soft limit	disable		17
V1 axis-Common-Parameters setting-mechanical back to	negative		
¥1 axis-Common-Parameters setting-Motor operating mo	Position	Mode	
¥1 axis-Common-Parameters setting-Pulse unit	pulse nu	mber	
Y1 axis-Common-Parameters setting-Interpolation coor	Cross co	ordi	
¥1 axis-Common-pulse send mode	complete	mode	
Y1 axis-Common-Pulse num (1)	1		
¥1 axis-Common-Offset (1)	1		
¥1 axis-Common-Pulse direction terminal	¥5		
¥1 axis-Common-Delayed time of pulse direction (ms)	10		~
Read From PLC Write To PLC OK		Cancel	

Y1 axis settings (1)

After setting up, click OK and write a complete program in the ladder diagram. As shown in the following figure, write the set value in the relevant register. When M0 is turned on once, execute BLOCK once, and walk the figure in this example once.



Note:

When there are many points to go (if there are 1000 points), the ladder chart we write according to the above method will be very long, which is not conducive to the optimization of the program; therefore, we can implement multiple linear interpolation instructions by modifying the values in the linear interpolation register to improve the readability, optimize and reduce the scanning cycle of the program. For example, the user can set the coordinates of each point in the power-off retentive register through the HMI, as shown in the following table:

Point	X axis register	X axis setting value	Y axis register	Y axis setting value
Point 1	D4000	500	D4100	1500
Point 2	D4002	800	D4102	2800
Point 3	D4004	1500	D4104	300
Point 4	D4006	1100	D4106	2100
Point 5	D4008	1000	D4108	200
Point 6	D4010	1400	D4110	700
Point 7	D4012	3000	D4112	2700
Point 8	D4014	3200	D4114	1450
Point 9	D4016	2500	D4116	500
Point 10	D4018	1600	D4118	2000
Point 11	D4020	2100	D4120	2500
Point 12	D4022	2000	D4122	1350

Note: HMI register setting value (can be set by HMI recipe function).

3 Application examples

In this chapter, some main instructions with more usage are introduced in depth in the form of program examples. These programs focus on pulse output instructions and motion control instructions.

3-1. Application of pulse output

Example: Now we are going to send three consecutive pulses, the pulse terminal is Y0 and the pulse direction terminal is Y2. The pulse frequency, pulse number and acceleration and deceleration of each segment are shown in the table below.

Pulse	Frequency setting value (Hz)	Pulse number setting value
Segment 1	3000	1000
Segment 2	800	2000
Segment 3	6000	8000
Acc/dec time	Frequency changes 1000Hz eve	ry 100ms

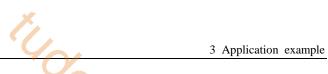
Address	Notes	Value
HD0	Pulse total segments (1 to 100)	3
(double word)		_
HD2 (8 words)	Reserved	0
HD10	Pulse frequency (#1)	3000
(double words)	Turse nequency (#1)	5000
HD12 (double	Pulse number (#1)	1000
word)		1000
	bit15~bit8: waiting condition (#1)	
	H00: pulse sending completion	
	H01: wait time	
	H02: wait signal	
HD14	H03: ACT time	0
ПD14	H04: EXT signal	0
	H05: EXT signal or pulse sending completion	
	bit7~bit0: waiting condition register type	
	H00: constant	
	H01: D	

Pulse data address assignment is as follows:

	H02: HD		
	H03: FD		
	H04: X		
	H05: M		
	Н06: НМ		
HD15	Constant value/ register no. (for waiting condition) (#1)	0	
(double word)	Constant value/ register no. (for waiting condition)(#1)	0	
	bit7~bit0: jump register type		
	H00: constant value	2	
HD17	H01: D	0	
	H02: HD		
	H03: FD		0
HD+18		•	
(double word)	Constant value/register no. (for jump register)(#1)	0	
HD+20		200	~Or
(double word)	Pulse frequency (#2)	800	
HD+22	Pulse number (#2)	2000	
(double word)			
HD+24	Waiting condition, waiting condition register type (#2)	0	
HD+25		0	
(double word)	Constant value or register no. (for waiting condition) (#2)	0	
HD+27	Jump type, jump register type (#2)	0	
HD+28		0	
(double word)	Constant value or register no. (for jump register) (#2)	0	
HD+30		(000	
(double word)	Pulse frequency (#3)	6000	
HD+32		0000	
(double word)	Pulse number (#3)	8000	
HD+34	Waiting condition, waiting condition register type (#3)	0	
HD+35		_	
(double word)	Constant value or register no. (for waiting condition) (#3)	0	
HD+37	Jump type, jump register type (for waiting condition) (#3)	0	
HD+38		0	
(double word)	Constant value or register no. (for jump register) (#3)	0	

System parameters

		3 App	lication ex	ample	
				<u> </u>	
SFD900	Pulse parameter setting	Bit 1: pulse direction logic 0: positive logic 1: negative logic, default is 0 Bit 2: use soft limit function 0: not use 1: use default is 0 Bit 3: mechanical return to origin direction 0: negative direction 1: positive direction default is 0 Bit 10~8: pulse unit Bit8: 0: pulse number 1: equivalent 000: pulse number 001: 1 um 011: 0.01mm 101: 0.1mm 111: 1 mm Default is 000 Bit15: interpolation coordinate mode 0: cross coordinate 1: polar coordinate Default is 0	0	Common parameter	
SFD901	Pulse sending mode	Bit 0: pulse sending mode 0: complete mode 1: subsequence mode, default is 0	0		
SFD902	Pulse number/1 rotation low 16 bits		0		
SFD903	Pulse number/1 rotation high 16 bits		0		
SFD904	Motion quantity/1 rotation low 16 bits		0		
SFD905	Motion quantity/1 rotation high 16 bits		0		
SFD906	Pulse direction terminal	Y terminal no., 0xFF is no terminal	2		
SFD907	Direction delay time	Default is 20, unit: ms	20		
SFD908	Gear clearance positive compensation		0		
SFD909	Gear clearance negative compensation		0		
SFD910	Electrical origin low 16 bits		0		
SFD911	Electrical origin high 16 bits		0		

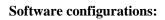


SFD912	Signal terminal state setting	Bit0: origin signal switch state Bit1: Z phase switch state Bit2: positive limit switch state Bit3: negative limit switch state 0: normally open(positive logic) 1: normally close(negative logic) default is 0	0		
SFD913	Close point signal	Bit0~bit7: set X terminal, 0xFF is no terminal(interruption)	0xFF		
SFD914	Z phase terminal setting	Bit0~bit7: set X terminal, 0xFF is no terminal(interruption)	0xFF	9,	
SFD915	Limit terminal setting	Bit7~bit0: X terminal of positive limit, 0xFF is no terminal Bit15~bit8: X terminal of negative limit, 0xFF is no terminal	FFFF	Ģ	CON
SFD917	Clear signal CLR output terminal	Bit0~Bit7: Y terminal, 0xFF is no terminal	0xFF		
SFD918	Returning speed VH low 16 bits		0		
SFD919	Returning speed VH high 16 bits		0		
SFD922	Crawling speed VC low 16 bits		0		
SFD923	Crawling speed VC high 16 bits		0		
SFD924	Mechanical origin position low 16 bits		0		
SFD925	Mechanical origin position high 16 bits		0		
SFD926	Z phase numbers		0		
SFD927	CLR signal delay time	Default 20, unit: ms	20		
SFD928	Grinding wheel radius(polar	Low 16 bits	0		
SFD929	coordinate)	High 16 bits	0		
SFD930		Low 16 bits	0		
SFD931	Soft limit positive limit value	High 16 bits	0		
SFD932	Soft limit negative limit	Low 16 bits	0		
SFD933	value	High 16 bits	0		
SFD950	Pulse default speed low 16 bits		1000	Group 1	
SFD951	Pulse default speed high 16 bits	It will send pulse with default speed when the speed is 0.	0	p 1	

		3 Appl	lication examp	le
SFD952	Pulse default speed acceleration time	00	100	
SFD953	Pulse default speed deceleration time	07	100	
SFD954	Acceleration and deceleration time	Q×.	0	
SFD955	Pulse acceleration and deceleration mode	Bit 1~0: acc/dec mode 00: line 01: S curve 10: sine curve 11: reserved Bit 15~2: reserved	NCQ2	
SFD956	Max speed limit low 16 bits		3392	•
SFD957	Max speed limit high 16 bits		3	
SFD958	Initial speed low 16 bits		0	
SFD959	Initial speed high 16 bits		0	
SFD960	Stop speed low 16 bits		0	
SFD961	Stop speed high 16 bits		0	
SFD962	Follow performance parameters	$1\sim100$, 100 means the time constant is one tick, 1 means the time constant is 100 tick.		
SFD963	Follow feedforward compensation	0~100, percentage		

Pulse instruction:

M0	PLSR	HD0	HD100	К1	YO
SM1000	RST	MO]		



		(·1-
			YO Y	3 Applicat	ion example
	P		YO.		
tware co	onfiguration	3:			
\triangleright	Pulse con	-			
		multi se	ection pulse output		×
lata start addi	ress: HD0		HD100 system params: K1	output: Y0	
ata start addi		user params address:	HD100 system params: K1	output: Y0	
iode:	relative 🗸	start execute section count:	0 Config	7 ×	
Add Delet	te Upwards D	ownwards	1 1	0	
	frequence	pulse count	wait condition	wait register re	jump gister
1 3000 1000		1000	pulse sending complete	ко	KO
1			1 1 1.	KO	770
1	800	2000	pulse sending complete	<u>и</u>	KD
-	800 6000	2000	pulse sending complete	KO	KO
2					

Pulse system parameters ۶

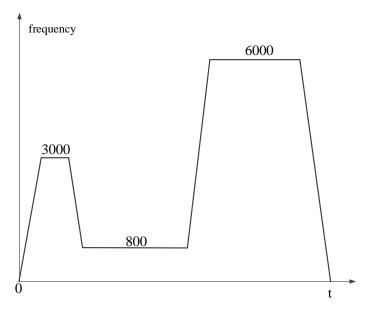
PLC1 - Pulse Set		×
Config 🝷 Delete 🛛 init axis 🔷 config guide		
Param SFD906	Value	^
YO axis-Common-Parameters setting-Pulse direction logic	positive logic	
YO axis-Common-Parameters setting-enable soft limit	disable	Ľ
YO axis-Common-Parameters setting-mechanical back to	negative	
YO axis-Common-Parameters setting-Motor operating mo	Position Mode	
YO axis-Common-Parameters setting-Pulse unit	pulse number	
YO axis-Common-Parameters setting-Interpolation coor	Cross coordi	
YO axis-Common-pulse send mode	complete mode	L
YO axis-Common-Pulse num (1)	1	
YO axis-Common-Offset (1)	1	
YO axis-Common-Pulse direction terminal	¥2	
YO axis-Common-Delayed time of pulse direction (ms)	10	
Read From PLC Write To PLC OK	Cancel	

YO	
PLC1 - Pulse Set	×
Config 🝷 Delete init axis config guide	
Param SFD906	Value ^
YO axis-Common-Gear clearance positive compensation 🛛 🔨	0
YO axis-Common-Gear clearance negative compensation	0
YO axis-Common-Electrical origin position	
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-signal terminal switch state setting	normally on
YO axis-Common-Far-point signal terminal setting	X no terminal
YO axis-Common-Z phase terminal setting	X no terminal
YO axis-Common-positive limit terminal setting	X no terminal
YO axis-Common-negative limit terminal setting	X no terminal
Read From PLC Write To PLC OK	Cancel

PLC1 - Pulse Set		>
Config 👻 Delete 🛛 init axis 🔷 config guide		
Param SFD924(dword)	Value	1
YO axis-Common-positive limit terminal setting	X no terminal	
YO axis-Common-negative limit terminal setting	X no terminal	
YO axis-Common-Zero clear CLR output setting	Y no terminal	
YO axis-Common-Return speed VH	0	
YO axis-Common-Creeping speed VC	0	
YO axis-Common-Mechanical zero position	0	
YO axis-Common-Z phase num	0	
YO axis-Common-CLR signal delayed time (ms)	20	
YO axis-Common-grinding wheel radius(polar Interpola	0	
YO axis-Common-soft limit positive value	0	
YO axis-Common-soft limit negative value	0	
Read From PLC Write To PLC OK	Cancel	

E.	3 Application example
PLC1 - Pulse Set	×
Config 🗸 Delete init axis config guide	
Param SFD963	Value ^
YO axis-group 1-Pulse default speed	1000
YO axis-group 1-Acceleration time of Pulse default s	100
YO axis-group 1-Deceleration time of pulse default s	100
YO axis-group 1-Acceleration and deceleration time (ms)	10
YO axis-group 1-pulse acc/dec mode	linear acc/dec
YO axis-group 1-Max speed	200000
YO axis-group 1-Initial speed	0
YO axis-group 1-stop speed	0
YO axis-group 1-FOLLOW performance param(1-100)	50
YO axis-group 1-FOLLOW forward compensation(0-100)	0
YO axis-group 1-Pulse frequency refresh time	1 ms refresh
Read From PLC Write To PLC OK	Cancel

Pulse sending oscillogram ۶





3-2. Application of motion control in arc saw machining system

1. Introduction of arc saw technology

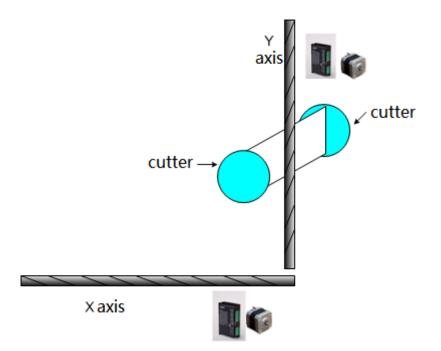
The arc saw is a machine used to cut arc boards. The mechanical characteristics are that the arc radius is large and the motor load is large.

2. Products applied in this system

oducts applied in Product name	Model	Number	
PLC	XDM-32T4-E	1	C
HMI	OP320-A	1	
Stepper driver	DP-21P5	2	

3. Composition of control system

(1) The composition of system hardware



As shown in the figure, two stepper motors control X and Y axis respectively, and use the arc interpolation instruction of XINJE XDM PLC to make X and Y axis coordinate and get out of the circular arc track. The relative distance of the cutter installed on the workbench determines the width of the plate cut by the cutter.

(2) Technical difficulties

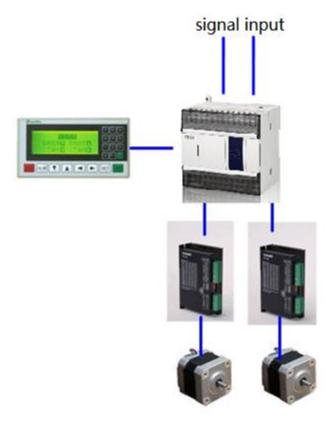
- The processing arc radius is large, the pitch of the XY axis screw is large, the number of • pulse and the amount of movement are difficult to configure, if the setting is not appropriate, the data calculation is easy to overflow.
- Due to the heavy load of the motor, it is easy to lose step or overshoot.

- The speed of returning to the mechanical origin should not be too fast.
- Owing to the ellipse of the processed arc board, the ellipse can not be cut directly by arc interpolation, otherwise the board can not be sawn through.

(3) Control scheme

This scheme adopts the motion-controlled PLC XDM, which has high-speed command operation, built-in four 100KHz high-speed pulse output, support motion control command arc interpolation, RS232, RS485 serial ports, convenient for various upper computer monitoring, powerful external interrupt function, greatly saves the electrical cost for customers.

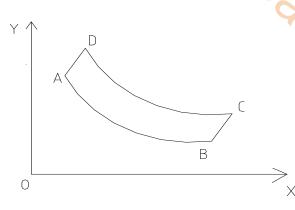
In view of the above difficulties, we adopt the method of reducing the ratio of the number of pulses and the amount of movement to reduce the calculation value and prevent the calculation overflow. (For example, the number of pulses is 2400 and the amount of movement is 10000. When setting parameters, the amount of movement is reduced by 10 times to 1000, so the number of pulses per unit is increased by 10 times. When setting physical quantities, we will reduce by 10 times accordingly. For example, when setting 1000 millimeters, we only need to set 100 in the corresponding registers.) In order to ensure that the motor is not out of step or overshoot, it is necessary to set the acceleration and deceleration time a little longer and increase the driver current (note that the motor is easy to heat if the current is too large). Before the arc interpolation, the straight line cutting is carried out, and then the arc cutting is carried out, which solves the problem that the direct arc cutting can not be cut through.



In positioning motion control, returning to mechanical origin is very important for control accuracy. However, some mechanical motors have a large load and only one origin signal. The control object is a stepper motor. There is no Z-phase signal output, and the requirement of

returning to the origin is fast. In this case, we use the ZRN instruction in XD to configure the internal acceleration and deceleration time settings. The problem has been solved.

(4) The operation diagram of the interpolation instructions in the system is as follows:



Jancau.com The coordinates of the points in the figure are as follows: O(HD0, HD2), A(HD4, HD6), B(HD8, HD10), C(HD12, HD14), C(HD16, HD18), the midpoint coordinates of the AB arc are (HD20, HD22), the midpoint coordinates of the CD arc are (HD24, HD26). Motion path: $O \rightarrow A \rightarrow B \rightarrow C \rightarrow D \rightarrow A \rightarrow O$.

5. The interpolation instructions in the system are as follows:

Insert 👻 Ed	it Delete Up	wards Downward	ls
Index	Skip	Comment	Output
1	OA	fast position	DRV HD4 HD6 Y0 Y1
2	AB	three point	ARC HD8 HD10 HD20 HD22 YO Y1
3	BC	line	LIN HD12 HD14 YO Y1
4	CD	three point	ARC HD16 HD18 HD24 HD26 VO V1
5	DA	line	LIN HD4 HD6 YO Y1
6	AO	fast position	DRV HDO HD2 YO Y1

07



3-3. Application of motion control in hair planting machine

1. Process introduction

At present, the electric control system structure of hair planting machine is mainly divided into single chip computer control system or CNC numerical control system. Among them, the single-chip computer control system is based on the integrated service of automation system manufacturer, supplemented by the independent research and development of toothbrush equipment manufacturer.

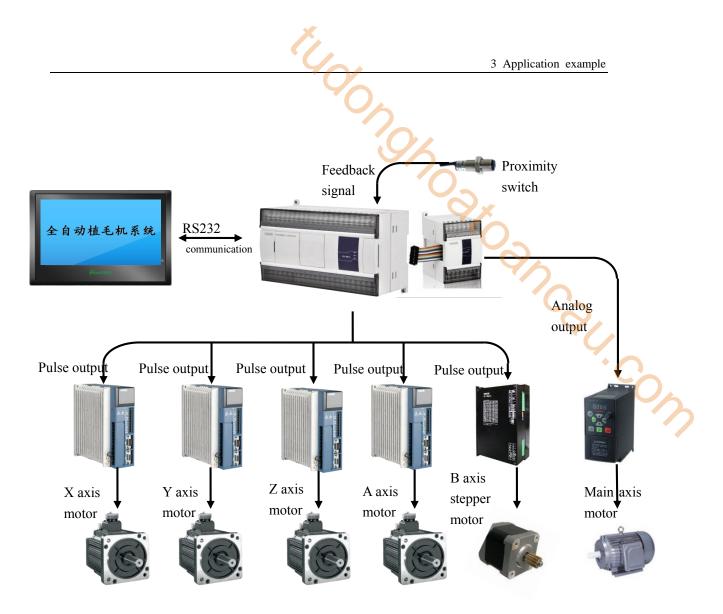
The drive structure of high-speed toothbrush hair planter is composed of main drive shaft and four servo drive shaft systems. The four servo axes are horizontal X-axis, vertical Y-axis, hair changing Z-axis and rotary A-axis. The position of the toothbrush hole is determined by the coordinates of the XY two axes. The A axis play the role of replacing the next toothbrush and the Z axis play the role of replacing the brush color. When the main shaft motor (frequency converter control) runs, the four electronically controlled servo shafts will run, while the other four shafts will stop when the main shaft stops. The speed of the main axis determines the speed of hair planting. The response of the four servo shafts need coordinated driving, otherwise, hair removal or hair irregularity will occur.

Product name	Model	Quantity
PLC	XDM-60T4-E	1
Extension module	XD-E2DA	1
HMI	TG865-MT (U)	1
Servo drive	DS3-20P7-PQA	3
Servo drive	DS3-20P4-PQA	1

2. the products required in the application

3. Composition of Control System

(1) The Composition of System Hardware



(2) Finished toothbrush products



(3) Technological difficulties

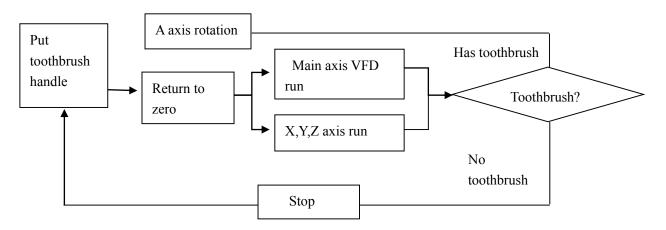
The difficulty of developing servo solution is the joint debugging of electromechanical system, in which the adjustment of servo gain and the cooperation of PLC triangular function curve are the main problems. Among the four servo shafts, the mechanical inertia of X-axis and Y-axis is relatively stable due to the screw drive structure, and it is easy to debug, so it is possible to modify the speed gain. The Z-axis of the turning plate is a rotating axis. There is centrifugal force in high-speed rotation. If the gain of the turning plate is set very high, the motor will vibrate when it starts and stops. At this time, the position filtering time parameters can be modified to eliminate

the vibration. Comparatively speaking, the structure of cam mechanism for changing hair U-axis makes debugging more difficult. In addition, the mechanical rigidity of U-axis is not good. When the motor runs, the inertia ratio varies greatly, the output current of the motor varies greatly, and the parameters can not be adjusted properly. When the motor runs around, the shaft either vibrates or screams, or reacts slowly. When the parameters are adjusted, the gain of the speed loop and the filtering time parameters and position loop gain need to be adjusted accordingly.

(4) Control solution

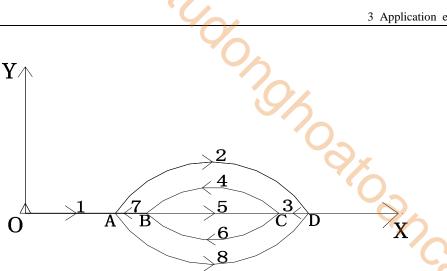
Mainly control axis pulse command signal to achieve servo drive, usually four-axis control output. The motion control type of PLC XDM-60T4-E is chosen. It has a response speed of 0.1ms and four high-speed pulses, which can realize the two-axis interpolation operation required by the toothbrush hair planter. The four sets of servo drivers are DS3 series AC servo system with power of 400W~750W. The driver has many functions, such as strong overload ability, strong anti-load disturbance ability, large starting moment, high dynamic response speed and short positioning time. The main axis motor frequency converter model is Xinje VB5N series, the power is 400 W.

(5) action order



Action process: The clip holds the toothbrush handle from Y axis direction \rightarrow 90 degrees positioning to Z axis direction \rightarrow platform drives the clip to do X Y axis movement enables the brush hair to be hit into the hole of the toothbrush head \rightarrow hair planting completes, the clip rotates downward 90 degrees \rightarrow the clip loosens, and a toothbrush is produced. The application of Xinje XDM series PLC and DS5 servo system can achieve 900 times/minute hair planting speed. And at the same time of high-speed start and stop, the stability and softness of the overall movement is particularly prominent. Through the application of self-made pulse S curve in PLC, we can achieve hole skipping hair planting. When skipping, the machine is almost as smooth as usual without obvious jitter while ensuring the accuracy of skipping.

4. The operation diagram of the interpolation instructions in the system is as follows.



The coordinates of the points in the figure are as follows: O (HD0, HD2), A (HD4, HD6), B (HD8, HD10), C (HD12, HD14), D (HD16, HD18), the midpoint coordinates of the clockwise arc of AD segment (HD20, HD22), the midpoint coordinates of the anticlosewise arc of AD segment (HD32, HD34), the midpoint coordinates of the clockwise arc of BC segment (HD28, HD30), and the midpoint coordinates of the anticlockwise arc of BC segment (HD24, HD26). Path of particle: $O {\rightarrow} A {\rightarrow} D {\rightarrow} C {\rightarrow} B {\rightarrow} C {\rightarrow} B {\rightarrow} A {\rightarrow} D {\rightarrow} O.$

Sequence Block1			
Edit Delete l	Jpwards Downward	ls	
Skip	Comment	Output	^
	fast position	DRV HD4 HD6 YO Y1	
	three point	ARC HD16 HD18 HD20 HD22 YO Y1	
	line	LIN HD12 HD14 YO Y1	
	three point	ARC HD8 HD10 HD24 HD26 Y0 Y1	
	line	LIN HD12 HD14 YO Y1	
	three point	ARC HD8 HD10 HD28 HD30 Y0 Y1	
	line	LIN HD4 HD6 YO Y1	
	three point	ARC HD16 HD18 HD32 HD34 YO Y1	
	Edit Delete	Skip Comment fast position three point line three point line three point line line line line line	Edit Delete Upwards Downwards Skip Comment Output fast position DRV HD4 HD6 Y0 Y1 fast position DRV HD4 HD6 Y0 Y1 three point ARC HD16 HD18 HD20 HD22 Y0 Y1 line LIN HD12 HD14 Y0 Y1

5. The interpolation instructions in the system.

		- 4	3 Application example
		Edit Sequen	ce Block 1
Comment: Se	equence Block1		97
Insert - Ec	lit Delete U	pwards Downwards	
Index	Skip	Comment	Output ^
2		three point	ARC HD16 HD18 HD20 HD22 V0 V1
3		line	LIN HD12 HD14 YO Y1
4		three point	ARC HD8 HD10 HD24 HD26 Y0 Y1
5		line	LIN HD12 HD14 YO Y1
6		three point	ARC HD8 HD10 HD28 HD30 Y0 Y1
7		line	LIN HD4 HD6 YO Y1
		three point	ARC HD16 HD18 HD32 HD34 YO Y1
8		line	LIN HDO HD2 YO Y1
8			
-			

Appendix Special soft element list

Appendix mainly introduces the functions of XD/XL series PLC special soft element, data register, FlashROM and the address distribution of expansions for users to search.

Appendix 1. Special auxiliary relay

Appendix 1. Special auxiliary relay					
Initial Status (SM0-SM7)					
ID	Function	Descripti	on		
SM000	Coil ON when running		SM000 keeps ON when PLC running		
SM001	Coil OFF when running		SM001 keeps OFF when PLC running		
SM002	Initial positive pulse coil		SM002 is ON in first scan cycle		
SM003	Initial negative pulse coil	SMB 	SM003 is OFF in first scan cycle		
SM004	PLC running error	When SM4 sets ON, it indicate the operation of PLC. (Firmware version V3.4.5 and ab by PLC)			
SM005	Battery low alarm coil	When the battery voltage is less ON (at this time, please replace possible, otherwise the data will	the battery as soon as		
SM007	Power-off memory data error				



Clock (SM11-SM14)

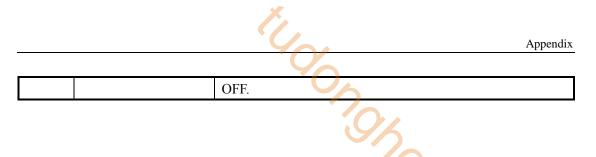
_			_
ID	Function	Description	
SM011	10ms frequency cycle	5ms 5ms 5ms	
SM012	100ms frequency cycle	K 50ms X	
SM013	1s frequency cycle		-On
SM014	1min frequency cycle	$ \begin{array}{c} $	

Mark (SM20-SM22)

ID	Function	Description
SM020	Zero bit	SM020 is ON when plus/minus operation result is 0
SM021	Borrow bit	SM021 is ON when minus operation overflows
SM022	Carry bit	SM022 is ON when plus operation overflows

PC Mode (SM32-SM34)

ID	Function	Description	
SM032	Retentive register	When SM032 is ON, ON/OFF mapping memory of HM, HS	
510052	reset	and current values of HT, HC, HD will be reset.	
SM033	Clear user's program	When SM033 is ON, all PLC user's program will be cleared.	
SM034	All output forbidden	When SM034 is ON, all PLC external contacts will be set	



Stepping Ladder

ID	Function	Description
SM040	The process is running	Set ON when the process is running

Interruption ban (SM50-SM90)

SM040	The process is running		Set ON when the	e process is running	
		Interruptio	on ban (SM50-SI	M90)	Con
ID	Address	Fu	nction	Description	
SM050	10000/10001	Forbid input in	nterruption 0		
SM051	I0100/I0101	Forbid input in	terruption 1	After executing EI instruction,	
SM052	I0200/I0201	Forbid input in	terruption 2	the input interruption couldn't act independently when M acts,	
SM053	I0300/I0301	Forbid input in	terruption 3	even if the interruption is	
SM054	I0400/I0401	Forbid input in	nterruption 4	E.g.: When SM030 IS ON,	
				I0000/I0001 is forbidden.	
SM069	I1900/I1901	Forbid input in	terruption 19		
SM070	I40**	Forbid timing	interruption 0		
SM071	I41**	Forbid timing	interruption 1	After executing EI instruction,	
SM072	I42**	Forbid timing	interruption 2	the timing interruption couldn't act independently when M acts,	
SM073	I43**	Forbid timing	interruption 3	even if the interruption is	
SM074	I44**	Forbid timing	interruption 4	allowed.	
SM089	I59**	Forbid timing	interruption 19		
SM090		Forbid all inte	rruptions	Forbid all interruptions	

High Speed Ring Counter (SM99)

address	Function	Note
SM099		SM99 set ON, SD99 add one
	High Speed Ring Counting enable	per 0.1ms, cycle between 0 and
		32767

Address	Function	Note
SM100	HSC0 count complete flag (100 segments)	
SM101	HSC2 count complete flag (100 segments)	
SM102	HSC4 count complete flag (100 segments)	
SM103	HSC6 count complete flag (100 segments)	°O ₂
SM104	HSC8 count complete flag (100 segments)	
SM105	HSC10 count complete flag (100 segments)	
SM106	HSC12 count complete flag (100 segments)	· C -
SM107	HSC14 count complete flag (100 segments)	0,
SM108	HSC16 count complete flag (100 segments)	
SM109	HSC18 count complete flag (100 segments)	

High speed count complete (SM100-SM109)

High speed counter direction (SM110-SM119)

SM107	HSC14 count complete flag (100 segments)	
SM108	HSC16 count complete flag (100 segments)	· C
SM109	HSC18 count complete flag (100 segments)	
	High speed counter direction (SM1)	10-SM119)
Address	Function	Note
SM110	HSC0 direction flag	
SM111	HSC2 direction flag	
SM112	HSC4 direction flag	
SM113	HSC6 direction flag	
SM114	HSC8 direction flag	
SM115	HSC10 direction flag	
SM116	HSC12 direction flag	
SM117	HSC14 direction flag	
SM118	HSC16 direction flag	
SM119	HSC18 direction flag	

High speed counter error (SM120-SM129)

address	Function	Note
SM120	HSC0 error flag	
SM121	HSC2 error flag	
SM122	HSC4 error flag	
SM123	HSC6 error flag	
SM124	HSC8 error flag	
SM125	HSC10 error flag	
SM126	HSC12 error flag	
SM127	HSC14 error flag	
SM128	HSC16 error flag	
SM129	HSC18 error flag	



//

	Address	Function	Note
Serial	SM140	Modbus instruction execution flag	When the instruction starts to
port 0			execute, set ON
-			When execution is complete, set
			OFF
	SM141	X-NET instruction execution flag	When the instruction starts to
			execute, set ON
			When execution is complete, set
			OFF
	SM142	Free format communication	When the instruction starts to
		sending flag	execute, set ON
			When execution is complete, set
			OFF
	SM143	Free format communication	When receiving a frame of data or
		receive complete flag	receiving data timeout, set ON.
			Require user program to set OFF
Serial	SM150	Modbus instruction execution flag	Same to SM140
port 1	SM151	X-NET instruction execution flag	Same to SM141
	SM152	Free format communication	Same to SM142
		sending flag	
	SM153	Free format communication	Same to SM143
		receive complete flag	
	SM160	Modbus instruction execution flag	Same to SM140
Serial	SM161	X-NET instruction execution flag	Same to SM141
port 2	SM162	Free format communication	Same to SM142
		sending flag	
	SM163	Free format communication	Same to SM143
		receive complete flag	
Serial	SM170	Modbus instruction execution flag	Same to SM140
port 3	SM171	X-NET instruction execution flag	Same to SM141
	SM172	Free format communication	Same to SM142
		sending flag	
	SM173	Free format communication	Same to SM143
	<u> </u>	receive complete flag	
Serial	SM180	Modbus instruction execution flag	Same to SM140
port 4	SM181	X-NET instruction execution flag	Same to SM141
	SM182	Free format communication	Same to SM142
		sending flag	
	SM183	Free format communication	Same to SM143
	<u> </u>	receive complete flag	
Serial	SM190	Modbus instruction execution flag	Same to SM140



5 SM191	X-NET instruction execution flag Same to SM141
SM192	Free format communication Same to SM142
	sending flag
SM193	Free format communication Same to SM143
	receive complete flag
	SM192

Sequence Function BLOCK (SM240-SM349)

	receive complete	flag	
	Sequence Function BL	.OCK (SM240-SM349)	
ID	Function	Description	
SM300	BLOCK1 running flag	SM300 will be ON when block1 is running	
SM301	BLOCK2 running flag	SM301 will be ON when block2 is running	
SM302	BLOCK3 running flag	SM302 will be ON when block3 is running	
SM303	BLOCK4 running flag	SM303 will be ON when block4 is running	
SM304	BLOCK5 running flag	SM304 will be ON when block5 is running	5
SM305	BLOCK6 running flag	SM305 will be ON when block6 is running	
SM346	BLOCK47 running flag	SM346 will be ON when block47is running	
SM347	BLOCK48 running flag	SM347 will be ON when block48 is running	
SM348	BLOCK49 running flag	SM348 will be ON when block49 is running	
SM349	BLOCK50 running flag	SM349 will be ON when block50 is running	

Error check (SM400-SM413)

ID	Function	Description
		ERR LED keeps ON, PLC don not run and output, check when
SM400	I/O error	power on
SM401	Expansion module communication error	
	BD communication	
SM402	error	
SM405	No user program	Internal code check wrong
SM406	User program error	Implement code or configuration table check wrong
		ERR LED keeps ON, PLC don not run and output, check when
SM407	SSFD check error	power on
SM408	Memory error	Can not erase or write Flash
SM409	Calculation error	
SM410	Offset overflow	Offset exceeds soft element range
SM411	FOR-NEXT	Reset when power on or users can also reset by hand.

	overflow	2
		When offset of register overflows, the return value will be
SM412	Invalid data fill	SM372 value

Q,

Error Message (SM450-SM452)

ID	Function	Description	
SM450	System error check		
SM451	Hardfault interrupt flag		
SM452			
SM453	SD card error		
SM454	Power supply is cut off		*0
SM460	Extension module ID not match		
SM461	BD/ED module ID not match		
SM462	Extension module communication overtime		
SM463	BD/ED module communication overtime		

Expansion Modules, BD Status (SM500)

ID	Function	Description
SM500	Module status read is finished	

High speed pulse (SM1000-SM1190)

ID	Function	Explanation	Output point
SM1000	Pulse sending flag	ON: Pulse is sending	
		1 is positive direction, related direction	
SM1001	Direction flag	signal is ON	
	Accumulated pulse		
SM1002	number overflow flag	1 is overflow	
	Accumulated pulse		
SM1003	equivalent overflow flag	1 is overflow	Y0
SM1004			
SM1005			
SM1006			
SM1007			
SM1008			
SM1009			

Appendix

Pulse error flag	ON: error		
Pulse sending flag	ON: Pulse is sending		
	1 is positive direction, related direction		
Direction flag	signal is ON		
Accumulated pulse			
number overflow flag	1 is overflow		
Accumulated pulse	S C		
equivalent overflow flag	1 is overflow	371	
		ΎΙ	
		C.	
		•	$\mathbf{\cap}$
Pulse error flag	ON: error		
Pulse sending flag	ON: Pulse is sending		
	1 is positive direction, related direction		•
Direction flag	signal is ON		
Accumulated pulse			
number overflow flag	1 is overflow		
Accumulated pulse			
equivalent overflow flag	1 is overflow	370	
		¥2	
Pulse error flag	ON: error		
Pulse sending flag	ON: Pulse is sending		
	1 is positive direction, related direction		
Direction flag	signal is ON		
Accumulated pulse			
number overflow flag	1 is overflow		
Accumulated pulse			
equivalent overflow flag	1 is overflow	370	
		¥ 3	
	Pulse sending flag Direction flag Accumulated pulse number overflow flag Accumulated pulse equivalent overflow flag Accumulated pulse equivalent overflow flag Pulse	Pulse sending flagON: Pulse is sendingDirection flag1 is positive direction, related directionAccumulatedpulsenumber overflow flag1 is overflowAccumulatedpulseequivalent overflow flag1 is overflowa1b1a1 <td>Pulse sending flag ON: Pulse is sending 1 is positive direction, related direction Direction flag Accumulated pulse equivalent overflow flag 1 is overflow Accumulated pulse equivalent overflow flag 1 is overflow Accumulated pulse equivalent overflow flag 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 is positive direction, related direction signal is ON Accumulated pulse number overflow flag 1 is overflow 1 0 0 0 0 0 0</td>	Pulse sending flag ON: Pulse is sending 1 is positive direction, related direction Direction flag Accumulated pulse equivalent overflow flag 1 is overflow Accumulated pulse equivalent overflow flag 1 is overflow Accumulated pulse equivalent overflow flag 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 is positive direction, related direction signal is ON Accumulated pulse number overflow flag 1 is overflow 1 0 0 0 0 0 0

14 miles

SM1080	Pulse sending flag	ON: Pulse is sending		
		1 is positive direction, related direction		
SM1081	Direction flag	signal is ON		
	Accumulated pulse			
SM1082	number overflow flag	1 is overflow		
	Accumulated pulse	4.		
SM1083	equivalent overflow flag	1 is overflow	Y4	
SM1084				
SM1085				
SM1086			C.	
SM1087			Q ,	
SM1088				
SM1089			•	C
SM1090	Pulse error flag	ON: error	PCZU.	\sim
SM1100	Pulse sending flag	ON: Pulse is sending		
		1 is positive direction, related direction		
SM1101	Direction flag	signal is ON		
	Accumulated pulse			
SM1102	number overflow flag	1 is overflow		
	Accumulated pulse			
SM1103	equivalent overflow flag	1 is overflow	Y5	
SM1104			13	
SM1105				
SM1106				
SM1107				
SM1108				
SM1109				
M1110	Pulse error flag	ON: error		
SM1120	Pulse sending flag	ON: Pulse is sending		
		1 is positive direction, related direction		
SM1121	Direction flag	signal is ON		
	Accumulated pulse			
SM1122	number overflow flag	1 is overflow		
	Accumulated pulse			
SM1123	equivalent overflow flag	1 is overflow	Y6	
SM1124			10	
SM1125				
SM1126				
SM1127				
SM1128				
SM1129				
SM1130	Pulse error flag	ON: error		
SM1140	Pulse sending flag	ON: Pulse is sending	Y7	

Un.

SM1141Direction flag1 is positive direction, related direction signal is ONAccumulatedpulseSM1142number overflow flagAccumulatedpulseAccumulatedpulseequivalent overflow flag1 is overflowSM1143equivalent overflow flagSM1144I is overflow	
Accumulated pulse SM1142 number overflow flag 1 is overflow Accumulated pulse SM1143 equivalent overflow flag 1 is overflow	
SM1142 number overflow flag 1 is overflow Accumulated pulse SM1143 equivalent overflow flag 1 is overflow	
AccumulatedpulseSM1143equivalent overflow flag1 is overflow	
SM1143 equivalent overflow flag 1 is overflow	
SM1144	
SM1145	
SM1146	
SM1147	96
SM1148	$\mathbf{O}_{\mathbf{A}}$
SM1149	
SM1150 Pulse error flag ON: error	· · O
SM1160Pulse sending flagON: Pulse is sending	
1 is positive direction, related direction	
SM1161Direction flagsignal is ON	
Accumulated pulse	
SM1162 number overflow flag 1 is overflow	
Accumulated pulse	
SM1163 equivalent overflow flag 1 is overflow	10
SM1164	10
SM1165	
SM1166	
SM1167	
SM1168	
SM1169	
SM1170 Pulse error flag ON: error	
SM1180Pulse sending flagON: Pulse is sending	
1 is positive direction, related direction	
SM1181 Direction flag signal is ON	
Accumulated pulse	
SM1182number overflow flag1 is overflow	
Accumulated pulse	
SM1183 equivalent overflow flag 1 is overflow	11
SM1184	11
SM1185	
SM1186	
SM1187	
SM1188	
SM1189	
SM1190Pulse error flagON: error	

Un



Appendix 2. Special data reigster list

Battery (SD5~SD7)

ID	Function	Description	
SD005	Battery register	It will display 100 when the battery voltage is 3V, if the battery voltaeg is lower than 2.5V, it will display	
50005	Battery register	0, it means please change new battery at once,	
		otherwise the data will lose when PLC power off.	
SD007	Power-off memory data error		
50007	type		
			C
	Clo	ck (SD10-SD019)	-07
ID	Function	Description	

Clock (SD10-SD019)

ID	Function	Description
SD010	Current scan cycle	100us, us is the unit
SD011	Min scan time	100us, us is the unit
SD012	Max scan time	100us, us is the unit
SD013	Second (clock)	0~59 (BCD code)
SD014	Minute (clock)	0~59 (BCD code)
SD015	Hour (clock)	0~23 (BCD code)
SD016	Day (clock)	0~31 (BCD code)
SD017	Month (clock)	0~12 (BCD code)
SD018	Year (clock)	2000~2099 (BCD code)
SD019	Week (clock)	0(Sunday)~6(Saturday)(BCD code)

Flag (SD020-SD031)

ID	Function	Note
SD020	Model type	
SD021	model (low-8) series (high-8)	
SD022	Compatiable system version (low) system version (high)	
SD023	Compatiable model version (low) model version (high)	
SD024	Model info	
SD025	Model info	
SD026	Model info	
SD027	Model info	
SD028	Suitable software version	
SD029	Suitable software version	
SD030	Suitable software version	
SD031	Suitable software version	

Step ladder (SD040)

ID	Function	Description
SD40	Flag of the executing process S	

High Speed Counting (SD100-SD109)

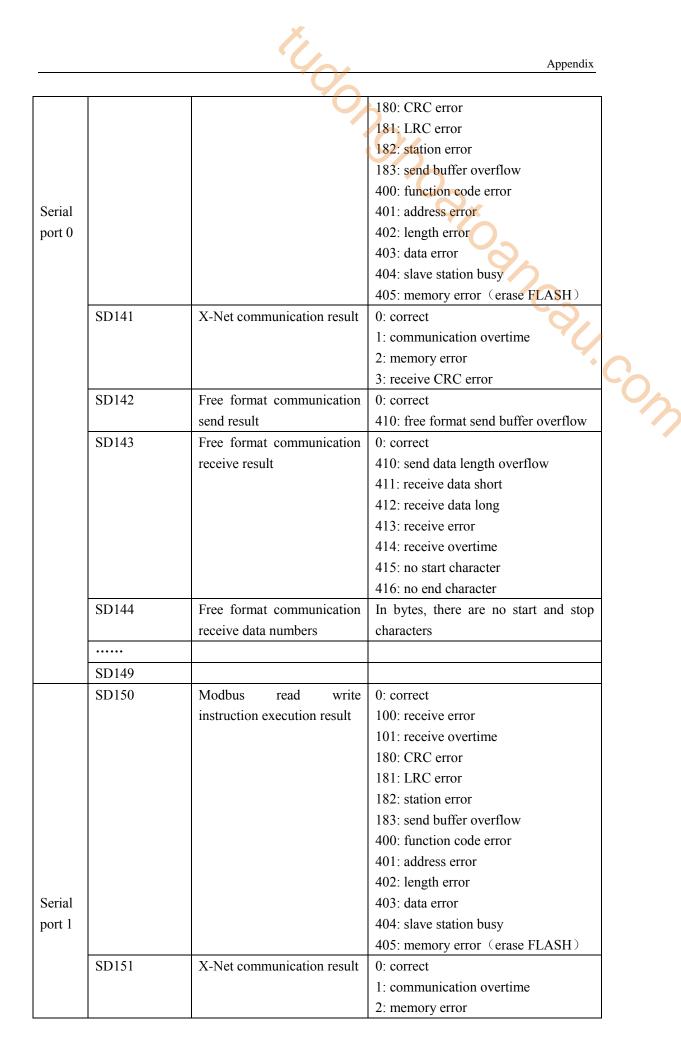
ID	Function	Description	C.	
SD100	Current segment (No. n segment)		HSC00	
SD101	Current segment (No. n segment)		HSC02	
SD102	Current segment (No. n segment)		HSC04	C
SD103	Current segment (No. n segment)		HSC06	\sim O.
SD104	Current segment (No. n segment)		HSC08	
SD105	Current segment (No. n segment)		HSC10	
SD106	Current segment (No. n segment)		HSC12	
SD107	Current segment (No. n segment)		HSC14	
SD108	Current segment (No. n segment)		HSC16	
SD109	Current segment (No. n segment)		HSC18	

High speed counter error (SD120-SD129)

ID	Function Note	
SD120	HSC0 error info	
SD121	HSC2 error info	
SD122	HSC4 error info	
SD123	HSC6 error info	
SD124	HSC8 error info	
SD125	HSC10 error info	
SD126	HSC12 error info	
SD127	HSC14 error info	
SD128	HSC16 error info	
SD129	HSC18 error info	

communication (SD140~SD199)

ID	Function	Note
SD140	Modbus read write	0: correct
	instruction execution result	100: receive error
		101: receive overtime



K.	

SD152		-3: receive CRC error	
SD152			
	Free format communication	0: correct	
	send result	410: free format send buffer overflow	
SD153	Free format communication	0: correct	
	receive result	410: send data length overflow	
		411: receive data short	
		412: receive data long	
		413: receive error	
		414: receive overtime	
		415: no start character	
		416: no end character	
SD154	Free format communication	In bytes, there are no start and stop	
	receive data numbers	characters	
•••••			
SD159			
SD160	Modbus read write	0: correct	
	instruction execution result	100: receive error	•
		101: receive overtime	
		180: CRC error	
		181: LRC error	
		182: station error	
		183: send buffer overflow	
		400: function code error	
		401: address error	
		402: length error	
		403: data error	
		404: slave station busy	
		-	
SD161	X-Net communication result	0: correct	
		1: communication overtime	
		2: memory error	
		3: receive CRC error	
SD162	Free format communication	0: correct	
	send result	410: free format send buffer overflow	
SD163	Free format communication	0: correct	
	receive result	410: send data length overflow	
		411: receive data short	
		412: receive data long	
		413: receive error	
		414: receive overtime	
		415: no start character	
SD164	Free format communication		
	 SD159 SD160 SD161 SD161 SD162	SD154Free format communication receive data numbersSD159Image: SD160SD160Modbus read write instruction execution resultSD161X-Net communication resultSD162Free format communication send resultSD163Free format communication receive result	SD154Free format communication receive data numbers11: receive data short 413: receive error 414: receive overtime

		Appendix
	1	
	•••••	
	SD169	
Serial	SD170~SD179	
port 3		
Serial	SD180~SD189	2
port 4		11
Serial	SD190~SD199	' O ₂
port 5		6

X

Sequence Function Block (SD300-SD399)

port 5	50190~50199	
	Sequence Function	n Block (SD300-SD399)
ID	Function	Description
SD300	Executing instruction of BLOCK1	The value will be used when BLOCK monitors
SD301	Executing instruction of BLOCK2	The value will be used when BLOCK monitors
SD302	Executing instruction of BLOCK3	The value will be used when BLOCK monitors
SD303	Executing instruction of BLOCK4	The value will be used when BLOCK monitors
SD304	Executing instruction of BLOCK5	The value will be used when BLOCK monitors
SD305	Executing instruction of BLOCK6	The value will be used when BLOCK monitors
SD396	Executing instruction of BLOCK97	The value will be used when BLOCK monitors
SD397	Executing instruction of BLOCK98	The value will be used when BLOCK monitors
SD398	Executing instruction of BLOCK99	The value will be used when BLOCK monitors
	Executing instruction of	
SD399	BLOCK100	The value will be used when BLOCK monitors

Error Check (SD400-SD413)

ID	Function	Note
SD400		
	Extension module no. of	
SD401	communication error	Means module no.n is error
	BD/ED module no. of	
SD402	communication error	
SD403	FROM/TO error type	
SD404	PID error type	
•••••		
SD409	Calculation error code	1: divide by 0 error
		2: MRST, MSET front operand address less than back
		operand

		3: ENCO, DECO data bits of encoding and decoding
		instructions exceed the limit.
		4: BDC code error
		7: Radical sign error
SD410	The number of offset register D	
	when offset crosses the	∇x
	boundary	
SD411		No.
	Invalid data fill value (low 16	
SD412	bits)	
	Invalid data fill value (high 16	
SD413	bits)	
	Error Che	eck (SD450-SD452)

Error Check (SD450-SD452)

ID	Function	Description
	1: Watchdog act (Default 200ms)	
	2: Control block application fail	
SD450	3: Visit illegal address	
	Hardware error type:	
	1: Register error	
	2: Bus error	
SD451	3: Usage error	
SD452	Hardware error	
SD453	SD card error	
SD454	Power-off time	
SD460	Extension module ID not match	
SD461	BD/ED module ID not match	
SD462	Extension module communication overtime	
SD463	BD/ED module communication overtime	

Expansion Modules, BD Status (SD500-SD516)

ID	Function	Description	
	Module number		
	Expansion modules: $\#10000\sim$		
SD500	10015		
	BD: #20000~20001		
	ED: #30000		
	Expansion module, BD /ED		
SD501~516	status		16 registers



Module info (SD520-SD823)

ID	Function	Explanation	Note
SD520~SD535	Extension module info	Extension module 1	
•••••	•••••		Each extension
SD760~SD775	Extension module info	Extension module 16	module, BD,
SD776~SD791	BD module info	BD module 1	ED occupies
SD792~SD807	BD module info	BD module 2	16 registers
SD808~SD823	ED module info	ED module 1	

Expansion Module Error Information

SD808~SD823 ED module info ED module 1 Expansion Module Error Information ID Function Description SD860 Error times of module read Description	
ID Function Description SD860 Error times of module read	
ID Function Description SD860 Error times of module read	
SD860 Error times of module read	
SD861 Error types of module read Module address error. Module accepted data length error. Module CRC parity error when PLC is accepting data. Module ID error. Expansi module Module ID error. Module overtime error. Module	
SD862 Error times of module write	
SD863 Error types of module write	
SD864 Error times of module read	
SD865 Error types of module read Module address error. Module accepted data length error. Module accepted data length error. Module CRC parity error when PLC is accepting data. Expansi module Module ID error. Module overtime error.	
SD866 Error times of module write	
SD867 Error types of module write	
SD920 Error times of module read	
SD921 Error types of module read Module address error. Module accepted data length error. Module accepted data length error. Module CRC parity error when PLC is accepting data. module Module ID error. Module overtime error.	

SD923	Error types of module write		
SD924	Error times of module read		
SD925	Error types of module read		BD
SD926	Error times of module write	0	module 1
SD927	Error types of module write		
SD928	Error times of module read	46	
SD929	Error types of module read		BD
SD930	Error times of module write	8	module 2
SD931	Error types of module write		
SD932	Error times of module read		-
SD933	Error types of module read		ED
SD934	Error times of module write		module 1
SD935	Error types of module write		

X

Version info (SD990~SD993)

ID	Function	Explanation	Note
SD990	Firmware version date	Low 16-bit	
SD991	Firmware version compilation date	High 16-bit	
SD992	FPGAversioncompilation date	Low 16-bit	
SD993	FPGA version compilation date	High 16-bit	

High speed pulse (SD1000-SD1099)

ID	Function	Explanation	Output point
SD1000	Present segment (segment n)		
SD1001			
SD1002	Present pulse number low 16-bit	(the unit is pulse number)	VO
18101003	Present pulse number high 16-bit	(the unit is pulse number)	Y0
SD1004	Present pulse number low 16-bit	(the unit is pulse equivalent)	
SD1005	Present pulse number high	(the unit is pulse equivalent)	

		<i>K</i> ,	
		<u> </u>	Appendix
			Γ
	16-bit		
SD1006	Present output frequency low 16-bit	(the unit is pulse number)	_
SD1007	Present output frequency high 16-bit	(the unit is pulse number)	
SD1008	Present output frequency low 16-bit	(the unit is pulse equivalent)	-
SD1009	Present output frequency high 16-bit	(the unit is pulse equivalent)	
SD1010	Pulse error information	1: pulse data segment configuration error 2: In equivalent mode, the number of pulses per turn and the movement per 1 turn is 0. 3: System parameter block number error 4: Pulse parameter block number exceeding maximum limit 5: Stop after encountering positive limit signal 6: Stop after meeting the negative limit signal 10: No origin signal is set for origin regression 11: Velocity of origin regression VH is 0 12: Origin regression crawling speed VC is 0 or VC \ge VH) 13: Origin regression signal error 15:Follow Performance Parameters \le 0 or >100 16:Follow Feedforward Compensation < 0 or >100 17:Follow Multiplication Coefficient and Division Coefficient Ratio \le 0 or >100 20: Interpolation Direction Terminal Not Set or Set Error 21: The default maximum interpolation speed is 0 22: Arc interpolation data error 23: Arc radius data error 24: Three-point Arc Data Error 25: In polar coordinate mode, the current position is (0, 0)	
SD1011	error pulse data block	26: Control block allocation failed	-
SD1011	number		-
SD1020	Present segment (segment n)		
SD1021			Y1
SD1022	Present pulse number low 16-bit	(the unit is pulse number)	

		tu.	Appendix	
			PPendix	
SD1023	Present pulse number high 16-bit	(the unit is pulse number)		
SD1024	Present pulse number low 16-bit	(the unit is pulse equivalent)		
SD1025	Present pulse number high 16-bit	(the unit is pulse equivalent)		
SD1026	Present output frequency low 16-bit	(the unit is pulse number)		
SD1027	Present output frequency high 16-bit	(the unit is pulse number)		
SD1028	Present output frequency low 16-bit	(the unit is pulse equivalent)	90	
SD1029	Present output frequency high 16-bit	(the unit is pulse equivalent)		Con
SD1030	Pulse error information	Same to SD1010		
SD1031	error pulse data block number		-	
SD1040	Present segment (segment n)			
SD1041				
SD1042	Present pulse number low 16-bit	(the unit is pulse number)		
SD1043	Present pulse number high 16-bit	(the unit is pulse number)		
SD1044	16-bit	(the unit is pulse equivalent)		
SD1045	Present pulse number high 16-bit	(the unit is pulse equivalent)		
SD1046	Present output frequency low 16-bit	(the unit is pulse number)	Y2	
SD1047	Present output frequency high 16-bit			
SD1048	Present output frequency low 16-bit	(the unit is pulse equivalent)		
SD1049	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1050	Pulse error information	Same to SD1010	-	
SD1051	error pulse data block number			
SD1040	Dragant gagmant		Y3	
301000	Present segment		13	

		Č.		
			Appendix	-
	(segment n)			
SD1061				
SD1062	Present pulse number low 16-bit	(the unit is pulse number)		
SD1063	Present pulse number high 16-bit	(the unit is pulse number)		
SD1064	Present pulse number low 16-bit	(the unit is pulse equivalent)		
SD1065	16-bit	(the unit is pulse equivalent)		
	Present output frequency low 16-bit		40	
	Present output frequency high 16-bit			Com
SD1068	Present output frequency low 16-bit	(the unit is pulse equivalent)		5
SD1069	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1070	Pulse error information	Same to SD1010		
SD1071	error pulse data block number			
ISD1080	Present segment (segment n)			
SD1082	Present pulse number low 16-bit	(the unit is pulse number)		
SD1083	Present pulse number high 16-bit	(the unit is pulse number)		
SD1084	Present pulse number low 16-bit	(the unit is pulse equivalent)		
SD1085	Present pulse number high 16-bit	(the unit is pulse equivalent)	Y4	
	Present output frequency low 16-bit			
SD1087	Present output frequency high 16-bit	(the unit is pulse number)		
SD1088	Present output frequency low 16-bit	(the unit is pulse equivalent)		
SD1089	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1090	Pulse error information	Same to SD1010		

		Č.		
			Appendix	
SD1091	error pulse data block number		-	
SD1100	Present segment (segment n)		-	
SD1102	16-bit	(the unit is pulse number)	-	
SD1103	Present pulse number high 16-bit	(the unit is pulse number)		
SD1104	Present pulse number low 16-bit	(the unit is pulse equivalent)	90	
SD1105	16-bit	(the unit is pulse equivalent)		CON
SD1106	Present output frequency low 16-bit		Y5	
SD1107	Present output frequency high 16-bit			
SD1108	Present output frequency low 16-bit	(the unit is pulse equivalent)		
SD1109	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1110	Pulse error information	Same to SD1010		
SD1111	error pulse data block number		-	
SD1120	Present segment (segment n)		-	
SD1122	Present pulse number low 16-bit	(the unit is pulse number)		
SD1123	Present pulse number high 16-bit	(the unit is pulse number)		
SD1124	16-bit	(the unit is pulse equivalent)	Y6	
SD1125		(the unit is pulse equivalent)		
SD1126	low 16-bit			
SD1127	Present output frequency high 16-bit	(the unit is pulse number)		
SD1128	Present output frequency	(the unit is pulse equivalent)		

		E.	Appendix	
			Appendix	
	low 16-bit			
SD1129	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1130	Pulse error information	Same to SD1010		
SD1131	error pulse data block number	Q.X.	-	
SD1140	Present segment (segment n)	97		
SD1142	Present pulse number low 16-bit	(the unit is pulse number)	90	
SD1143	Present pulse number high 16-bit	(the unit is pulse number)		Con
SD1144	Present pulse number low 16-bit	(the unit is pulse equivalent)	_	
SD1145	Present pulse number high 16-bit	(the unit is pulse equivalent)	_	
SD1146	Present output frequency low 16-bit	(the unit is pulse number)	Y7	
SD1147	Present output frequency high 16-bit	(the unit is pulse number)		
SD1148	Present output frequency low 16-bit	(the unit is pulse equivalent)		
SD1149	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1150	Pulse error information	Same to SD1010		
SD1151	error pulse data block number		-	
SD1160	Present segment (segment n)			
SD1162	Present pulse number low 16-bit	(the unit is pulse number)		
SD1163	Present pulse number high 16-bit	(the unit is pulse number)	Y10	
SD1164	Present pulse number low 16-bit	(the unit is pulse equivalent)		
SD1165	Present pulse number high 16-bit	(the unit is pulse equivalent)		
SD1166	Present output frequency	(the unit is pulse number)		

		Č.	Appendix	
	1			
	low 16-bit		_	
SD1167	Present output frequency high 16-bit	(the unit is pulse number)		
SD1168	Present output frequency low 16-bit	(the unit is pulse equivalent)		
SD1169	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1170	Pulse error information	Same to SD1010		
SD1171	error pulse data block number	~	6	
SD1180	Present segment (segment n)			Com
SD1182	Present pulse number low 16-bit	(the unit is pulse number)		3
SD1183	Present pulse number high 16-bit	(the unit is pulse number)		
SD1184	Present pulse number low 16-bit	(the unit is pulse equivalent)		
SD1185	Present pulse number high 16-bit	(the unit is pulse equivalent)		
SD1186	Present output frequency low 16-bit	(the unit is pulse number)	Y11	
	Present output frequency high 16-bit			
	10 11 10 010	(the unit is pulse equivalent)		
SD1189	Present output frequency high 16-bit	(the unit is pulse equivalent)		
SD1190	Pulse error information	Same to SD1010		
SD1191	error pulse data block number			

(X		
	Ç	C)

	High speed pulse	<u> </u>		
ID	Function	Explanation	Output point	
	Accumulated pulse number low 16-bit			
HSD0	(the unit is pulse number)	Q.X.		
	Accumulated pulse number high 16-bit	`C		
HSD1	(the unit is pulse number)			
	Accumulated pulse number low 16-bit		Y0	
HSD2	(the unit is pulse equivalent)		C-	
	Accumulated pulse number high 16-bit		$\mathbf{Q}_{\mathbf{r}}$	
HSD3	(the unit is pulse equivalent)		Č,	
	Accumulated pulse number low 16-bit		•	C
HSD4	(the unit is pulse number)			COM
	Accumulated pulse number high 16-bit			
HSD5	(the unit is pulse number)		371	
	Accumulated pulse number low 16-bit		Y1	
HSD6	(the unit is pulse equivalent)			
	Accumulated pulse number high 16-bit			
HSD7	(the unit is pulse equivalent)			
	Accumulated pulse number low 16-bit			
HSD8	(the unit is pulse number)			
	Accumulated pulse number high 16-bit			
HSD9	(the unit is pulse number)		VO	
	Accumulated pulse number low 16-bit		Y2	
HSD10	(the unit is pulse equivalent)			
	Accumulated pulse number high 16-bit			
HSD11	(the unit is pulse equivalent)			
	Accumulated pulse number low 16-bit			
HSD12	(the unit is pulse number)			
	Accumulated pulse number high 16-bit			
HSD13	(the unit is pulse number)		¥2	
	Accumulated pulse number low 16-bit		Y3	
HSD14	(the unit is pulse equivalent)			
	Accumulated pulse number high 16-bit			
HSD15	(the unit is pulse equivalent)			
	Accumulated pulse number low 16-bit			
HSD16	(the unit is pulse number)			
	Accumulated pulse number high 16-bit		X7 A	
HSD17	(the unit is pulse number)		Y4	
	Accumulated pulse number low 16-bit			
HSD18	(the unit is pulse equivalent)			

Special data register HSD (power-off retentive)

	Č.		
	40	Appendix	-
			1
	Accumulated pulse number high 16-bit		
HSD19	(the unit is pulse equivalent)		
	Accumulated pulse number low 16-bit)	
HSD20	(the unit is pulse number)		
	Accumulated pulse number high 16-bit	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
HSD21	(the unit is pulse number)	Y5	
	Accumulated pulse number low 16-bit	.0	
HSD22	(the unit is pulse equivalent)	<u> </u>	
	Accumulated pulse number high 16-bit		
HSD23	(the unit is pulse equivalent)	C'a	
	Accumulated pulse number low 16-bit		
HSD24	(the unit is pulse number)	y	
	Accumulated pulse number high 16-bit		
HSD25	(the unit is pulse number)	Y6	0,
	Accumulated pulse number low 16-bit		
HSD26	(the unit is pulse equivalent)		
	Accumulated pulse number high 16-bit		
HSD27	(the unit is pulse equivalent)		
	Accumulated pulse number low 16-bit		
HSD28	(the unit is pulse number)		
	Accumulated pulse number high 16-bit		
HSD29	(the unit is pulse number)	Y7	
	Accumulated pulse number low 16-bit	1 /	
HSD30	(the unit is pulse equivalent)		
	Accumulated pulse number high 16-bit		
HSD31	(the unit is pulse equivalent)		
	Accumulated pulse number low 16-bit		
HSD32	(the unit is pulse number)		
	Accumulated pulse number high 16-bit		
HSD33	(the unit is pulse number)	Y10	
	Accumulated pulse number low 16-bit	110	
HSD34	(the unit is pulse equivalent)		
	Accumulated pulse number high 16-bit		
HSD35	(the unit is pulse equivalent)		
	Accumulated pulse number low 16-bit		
HSD36	(the unit is pulse number)		
	Accumulated pulse number high 16-bit		
HSD37	(the unit is pulse number)	Y11	
	Accumulated pulse number low 16-bit	I II	
HSD38	(the unit is pulse equivalent)		
	Accumulated pulse number high 16-bit		
HSD39	(the unit is pulse equivalent)		



Appendix 3. Special FLASH register list

Special FLASH data register SFD

* means it works only after repower on the PLC

I filtering

	Special FLASH data register SFI	2
* means i I filtering	t works only after repower on the PLC	aro,
ID	Function	Description
SFD0*	Input filter time	
SFD2*	Watchdog run-up time, default value is 200ms	

I Mapping

- T meeting	,		
ID		Function	Description
SFD0*	Input filter time		
SFD2*	Watchdog run-up ti	ne, default value is 200ms	
I Mappir	g		
ID	Function	Description	
SFD10*	I00 corresponds t X**	D Input terminal 0 corresponds X** number	to 0xFF means terminal bad, 0xFE means terminal idle
SFD11*	I01 corresponds t X**	0	
SFD12*	I02 corresponds t X**	0	
SFD73*	I77 corresponds t X**	Default value is 77 (Octonary	7)

O Mapping

ID	Function	Description	
SFD74*	O00 corresponds to Y**	Output terminal 0 correspond to Y** number	0xFF means terminal bad, 0xFE means terminal idle
		Default value is 0	
SFD134*	O77 corresponds to Y**	Default value is 77 (Octonary)	

I Attribute

ID	Function	Description	
SFD138*	100 attribute	Attribute of input terminal 0	0: positive logic others: negative logic
SFD139*	I01 attribute		
SFD201*	I77 attribute		

High Speed Counting

		Appendix	
High Sne	ed Counting	YO_	
ID	Function	Description	
SFD320	HSC0 frequency times	2: 2 times frequency; 4: 4 times frequency(effective at AB phase counting mode)	
SFD321	HSC2 frequency times	Ditto	
SFD322	HSC4 frequency times	Ditto	
SFD323	HSC6 frequency times	Ditto	
SFD324	HSC8 frequency times	Ditto	
SFD325	HSC10 frequency times	Ditto	
SFD326	HSC12 frequency times	Ditto	
SFD327	HSC14 frequency times	Ditto	
SFD328	HSC16 frequency times	Ditto	
SFD329	HSC18 frequency times	Ditto	
SFD330	Bit selection of HSC absolute and relative (24 segment)	bit0 corresponds to HSC0, bit1corresponds to HSC2, and so on, bit9 corresponds to HSC180: relative1: absolute	-On
SFD331	Interrupt circulating of 24 segments high speed counting	bit0 corresponds to HSC0, bit1corresponds to HSC2, and so on, bit9 corresponds to HSC180: single1: loop	
SFD332	CAM function	bit0 corresponds to HSC0, bit1corresponds to HSC2, and so on, bit9 corresponds to HSC180: do not support CAM function1: support CAM function	

Expansion Module Configuration

ID	Function	Explanation
000240	Extension module configuration status	Configuration Status of Extension
SFD340	(#1#2)	Modules 1 and 2
SFD341	Extension module configuration status	Configuration Status of Extension
560541	(#3#4)	Modules 3 and 4
•••••		
SFD347	Extension module configuration status	Configuration Status of Extension
560547	(#15#16)	Modules 15 and 16
SFD348	BD module configuration status (#1#2)	Configuration Status of BD Modules 1
51 0 540	BD module configuration status (#1#2)	and 2
SFD349	ED module configuration status (#1)	Configuration Status of ED Module 1
SFD350	Extension module configuration	
:		Configuration of Extension Module 1
SFD359	1	
SFD360	Extension module configuration	Configuration of Extension Module 2
:		Configuration of Extension Module 2

	6			
:				
Extension module configuration	Configuration of Extension Module 16			
	47			
BD module configuration	Configuration of BD Module 1			
BD module configuration	Configuration of BD Module 2			
ED module configuration	Configuration of ED Module 1			
Communication				
	Extension module configuration BD module configuration BD module configuration ED module configuration			

Communication

ID	Function	Note		
SFD600	COM1 free format communication	0: 8-bit 1: 16-bit		
SFD000	buffer bit numbers	0. 8-bit 1. 16-bit		
SED(10	COM2 free format communication	0: 8-bit 1: 16-bit		
SFD610	buffer bit numbers	0. 8-bit 1. 16-bit		
GED (20	COM3 free format communication	0: 8-bit 1: 16-bit		
SFD620	buffer bit numbers	0. 8-bit 1. 10-bit		
SFD630	COM4 free format communication	0: 8-bit 1: 16-bit		
SFD630	buffer bit numbers	0. 8-bit 1. 10-bit		
SFD640	COM5 free format communication	0: 8-bit 1: 16-bit		
560040	buffer bit numbers	0. 8-011 1. 10-011		

Vlotion	control

	1	
	° (Appendix
Motion co	ontrol	0
ID	function	Explanation
	Y0 (common j	parameters)
		Bit1: pulse direction logic
		0: positive logic, 1: negative logic, default is 0
		Bit2: soft position limit
		0: OFF 1: ON, default is 0
		Bit3: machine back to origin direction
		0: negative direction 1: positive direction,
		default is 0
		Bit4: motor operation mode (closed loop
		pulse)
		0: position mode 1: pulse mode, default is 0_{\diamond}
		Bit10~ Bit8: pulse unit
SFD900	Pulse parameters	Bit8: 0: pulse numbers, 1: equivalent
51 D 700	i uise parameters	000: pulse numbers
		001: micron
		011: centimillimeter
		101: decimillimeter
		111: millimeter
		Default is 000
		Bit13: pulse type
		0: single direction pulse 1: AB phase pulse
		(only for XD5-48D4T4-E), default is 0
		Bit15: interpolation coordinate mode
		0: cross coordinate, 1: polar coordinate,
		default is 0
		Bit 0: pulse sending mode
SFD901	Pulse sending mode	0: complete mode; 1: continue mode
SFD902	Pulse number/1 rotation low 16-bit	Default is 0
SFD902 SFD903	Pulse number/1 rotation high 16-bit	
	Moving amount/1 rotation low	
SFD904	16-bit	
	Moving amount/1 rotation high	
SFD905	16-bit	
SFD906	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal
SFD907	Direction delay time	Default is 20, unit: ms
	Gear clearance positive	
SFD908	compensation	
	Gear clearance negative	
SFD909	compensation	
SFD910	Electrical origin position low 16-bit	



	<u> </u>		
		Bit0: Origin Signal Switch State Settings	
		Bit1:Z Phase Switch State Settings	
		Bit2: Positive Limit Switching State Settings	
SFD912	Signal terminal switch state	Bit3: Negative Limit Switching State Settings	
		0: Normally open (positive logic), 1: Normally	
		closed (negative logic); default is 0	
SFD913	Near-point signal terminal setting		
SFD914	Z phase terminal setting	Bit0~Bit7: Specify the number of the X	
51/09/14	SFD914 Z phase terminal setting	terminal, 0xFF is no terminal	
		Bit7~Bit0: Specifies the X terminal number of	
SFD915	Limit terminal setting	the positive limit, and 0xFF is no terminal.	
560915	Limit terminal setting	Bit15~Bit8: Specifies the X terminal number	
		of the negative limit, and 0xFF is no terminal.	0
SFD917	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	COM
SFD917	Zero clear CLK output signar	terminal, 0xFF is no terminal	
SFD918	Return speed VH low 16-bit		
SFD919	Return speed VH high 16-bit		•
SFD922	Creeping speed VC low 16-bit		
SFD923	Creeping speed VC high 16-bit		
SFD924	Mechanical origin position low		
51 D 924	16-bit		
SFD925	Mechanical origin position high		
51 D 925	16-bit		
SFD926	Z phase number		
SFD927	CLR signal delay time	Default is 20, unit: ms	
SFD928	Grinding wheel radius (polar	Low 16-bit	
SFD929	coordinates)	High 16-bit	
SFD930	Soft limit positive value	Low 16-bit	
SFD931		High 16-bit	
SFD932	Soft limit negative value	Low 16-bit	
SFD933		High 16-bit	
•••			
	Y0 (group 1 p	parameters)	
SFD950	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD951	Pulse default speed high 16-bit	speed is 0.	
SFD952	Acceleration time of pulse default		
5110952	speed		
SFD953	deceleration time of pulse default		
510755	speed		
SFD954	Accerlation and deceleration time		

	1.		
		Appendix	
SFD955	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD956	Max speed low 16-bit		
SFD957	Max speed high 16-bit		
SFD958	Initial speed low 16-bit		
SFD959	Initial speed high 16-bit		
SFD960	Stop speed low 16-bit	~~.	
SFD961	Stop speed high 16-bit	40	
SFD962	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, %	
SFD963	Follow feedforward compensation	0~100, %	2
			2
	Y0 (group 2 p	parameters)	
SFD970	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD971	Pulse default speed high 16-bit	speed is 0.	
SFD972	Acceleration time of pulse default speed		
SFD973	deceleration time of pulse default speed		
SFD974	Accerlation and deceleration time		
SFD975	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD976	Max speed low 16-bit		
SFD977	Max speed high 16-bit		
SFD978	Initial speed low 16-bit		
SFD979	Initial speed high 16-bit		
SFD980	Stop speed low 16-bit		
SFD981	Stop speed high 16-bit		
SFD982	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD983	Follow feedforward compensation	0~100, %	
•••			
	Y0 (group 3 p	parameters)	
SFD990	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD991	Pulse default speed high 16-bit	speed is 0.	

	Č.	Amendia	
	4	Appendix	
SFD992	Acceleration time of pulse default speed	0	
SFD993	deceleration time of pulse default speed	9	
SFD994	Accerlation and deceleration time		
SFD995	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD996	Max speed low 16-bit		ł
SFD997	Max speed high 16-bit	+	
SFD998	Initial speed low 16-bit		
SFD999	Initial speed high 16-bit		
SFD1000	Stop speed low 16-bit		
SFD1001	Stop speed high 16-bit		
SFD1002	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1003	Follow feedforward compensation	0~100, %	
•••			
	Y0 (group 4 p	parameters)	
SFD1010	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1011	Pulse default speed high 16-bit	speed is 0.	
SFD1012	Acceleration time of pulse default speed		
SFD1013	deceleration time of pulse default speed		
SFD1014	Accerlation and deceleration time		
SFD1015	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1016	Max speed low 16-bit		
SFD1017	Max speed high 16-bit		
SFD1018	Initial speed low 16-bit		
SFD1019	Initial speed high 16-bit		
SFD1020	Stop speed low 16-bit		
SFD1021	Stop speed high 16-bit		
SFD1022	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	

	Č.		
	· (/	Appendix	
	C		
SFD1023	Follow feedforward compensation	0~100, %	
•••			
	Y1 (common)		
SFD1030	Pulse parameters	Same to SFD900	
		Bit 0: pulse sending mode	
SFD1031	Pulse sending mode	0: complete mode; 1: continue mode	
GED 1000		Default is 0	
SFD1032	Pulse number/1 rotation low 16-bit	9	
SFD1033	Pulse number/1 rotation high 16-bit		
SFD1034	Moving amount/1 rotation low		
	16-bit		
SFD1035	Moving amount/1 rotation high	V	
	16-bit		C
SFD1036	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	0
SFD1037	Direction delay time	Default is 20, unit: ms	
SFD1038	Gear clearance positive		•
	compensation		
SFD1039	Gear clearance negative		
CED1040	compensation		
SFD1040	Electrical origin position low 16-bit		
SFD1041	Electrical origin position high 16-bit		
		Bit0: Origin Signal Switch State Settings	
		Bit1:Z Phase Switch State Settings	
SFD1042	Signal terminal switch state	Bit2: Positive Limit Switching State Settings	
		Bit3: Negative Limit Switching State Settings 0: Normally open (positive logic), 1: Normally	
		closed (negative logic); default is 0	
SFD1044	Near-point signal terminal setting	cioscu (ilegative logic), delault is 0	
51 D 1044	rear-point signal terminal setting	Bit0~Bit7: Specify the number of the X	
SFD1045	Z phase terminal setting	terminal, 0xFF is no terminal	
		Bit7~Bit0: Specifies the X terminal number of	
		the positive limit, and 0xFF is no terminal.	
SFD1047	Limit terminal setting	Bit15~Bit8: Specifies the X terminal number	
		of the negative limit, and 0xFF is no terminal.	
SFD1048	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
51 D 1040		terminal, 0xFF is no terminal	
SFD1049	Return speed VH low 16-bit	winning, over 15 no terminur	
SFD1052	Return speed VH high 16-bit		
SFD1053	Creeping speed VC low 16-bit		
SFD1054	Creeping speed VC high 16-bit		
SED1055	Mechanical origin position low		
SFD1055	16-bit		

SFD1056 Mechanical origin position high 16-bit Mechanical origin position high 16-bit	
SFD1056 Mechanical origin position high 16-bit Mechanical origin position high 16-bit SFD1057 Z phase number Z SFD1058 CLR signal delay time Default is 20, unit: ms	
SFD105616-bitSFD1057Z phase numberSFD1058CLR signal delay timeDefault is 20, unit: ms	
SFD1057Z phase numberSFD1058CLR signal delay timeDefault is 20, unit: ms	
SFD1058 CLR signal delay time Default is 20, unit: ms	
SFD1059 coordinates) Low 16-bit	
SFD1060 High 16-bit	
SFD1061 Soft limit positive value Low 16-bit	
SFD1062 High 16-bit	
SFD1063 Soft limit negative value Low 16-bit	
Y1 (group 1 parameters)	
SFD1080 Pulse default speed low 16-bit Pulse is sent at the default speed when the	
SFD1081 Pulse default speed high 16-bit speed is 0.	<u>~</u> O.
SFD1082 Acceleration time of pulse default speed	2017
SFD1083 deceleration time of pulse default speed	•
SFD1084 Accertation and deceleration time	
SFD1085 Acceleration/deceleration mode Bit1~Bit0: acc/dec mode 00: linear acc/dec 10: sine curve acc/dec 11: reserved Bit12 reserved	
SFD1086 Max speed low 16-bit	
SFD1087 Max speed high 16-bit	
SFD1088 Initial speed low 16-bit	
SFD1089 Initial speed high 16-bit	
SFD1090 Stop speed low 16-bit	
SFD1091 Stop speed high 16-bit	
SFD1092Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1093Follow feedforward compensation0~100, %	
Y1 (group 2 parameters)	
SFD1100Pulse default speed low 16-bitPulse is sent at the default speed when the	
SFD1101Pulse default speed high 16-bitspeed is 0.	
SFD1102 Acceleration time of pulse default speed	
SFD1103 deceleration time of pulse default speed	
SFD1104 Accertation and deceleration time	

SFD1106MaxSFD1107MaxSFD1108InitiSFD1109InitiSFD1109StorSFD1110StorSFD1111StorSFD1112FollInitiSFD1120PulsSFD1121PulsSFD1121PulsSFD1121SpeceSFD1123SpeceSFD1124AcceSFD1124AcceSFD1124Acce	celeration/deceleration mode x speed low 16-bit x speed high 16-bit ial speed low 16-bit ial speed high 16-bit p speed low 16-bit p speed low 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed high 16-bit se default speed high 16-bit celeration time of pulse default	•	Con
SFD1106MaxSFD1107MaxSFD1108InitiSFD1109InitiSFD1109StorSFD1110StorSFD1111StorSFD1112FollInitiSFD1120PulsSFD1121PulsSFD1121PulsSFD1121SpeceSFD1123SpeceSFD1124Accord	x speed low 16-bit x speed high 16-bit ial speed low 16-bit ial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the	Con
SFD1106MaxSFD1107MaxSFD1108InitiSFD1109InitiSFD1109StorSFD1110StorSFD1111StorSFD1112FollInitiSFD1120PulsSFD1121PulsSFD1121PulsSFD1121SpeceSFD1123SpeceSFD1124AccordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124Scord	x speed low 16-bit x speed high 16-bit ial speed low 16-bit ial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the	Con
SFD1106MaxSFD1107MaxSFD1108InitiSFD1109InitiSFD1109StorSFD1110StorSFD1111StorSFD1112FollInitiSFD1120PulsSFD1121PulsSFD1121PulsSFD1121SpeceSFD1123SpeceSFD1124AccordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124ScordSFD1124Scord	x speed low 16-bit x speed high 16-bit ial speed low 16-bit ial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the	Con
SFD1107MaxSFD1108InitiSFD1109InitiSFD1110StopSFD1111StopSFD1112FollSFD1113FollImage: SFD1120SFD1120PulsSFD1121PulsSFD1122AccSFD1123accSFD1124AccSFD1124AccSFD1124Acc	x speed high 16-bit ial speed low 16-bit ial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	Bit15~Bit2: reserved	Con
SFD1107MaxSFD1108InitiSFD1109InitiSFD1110StopSFD1111StopSFD1112FollSFD1113FollImage: Second state sta	x speed high 16-bit ial speed low 16-bit ial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	1~100, 100 means the time constant is 1 Tick; 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the	Con
SFD1107MaxSFD1108InitiSFD1109InitiSFD1100StopSFD1111StopSFD1112FollSFD1113FollInitiSFD1120PulsSFD1121PulsSFD1121PulsSFD1122AccSFD1123deccSFD1124AccSFD1124Acc	x speed high 16-bit ial speed low 16-bit ial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	1 means the time constant is 100 Ticks 0~100, % Darameters) Pulse is sent at the default speed when the	Con
SFD1108InitiSFD1109InitiSFD1110StopSFD1111StopSFD1112FollSFD1113FollImage: SFD1120SFD1120PulsSFD1121PulsSFD1122AccSFD1123decaSFD1124AccSFD1124Acc	tial speed low 16-bit tial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	1 means the time constant is 100 Ticks 0~100, % Darameters) Pulse is sent at the default speed when the	Con
SFD1109InitiSFD1110StopSFD1111StopSFD1112FollSFD1113FollImage: SFD1120SFD1120PulsSFD1121PulsSFD1122AccSFD1123deccSFD1124AccSFD1124Acc	ial speed high 16-bit p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	1 means the time constant is 100 Ticks 0~100, % Darameters) Pulse is sent at the default speed when the	Con
SFD1110StopSFD1111StopSFD1112FollSFD1113FollSFD1120PulsSFD1121PulsSFD1122AccSFD1123deccSFD1124AccSFD1124Acc	p speed low 16-bit p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	1 means the time constant is 100 Ticks 0~100, % Darameters) Pulse is sent at the default speed when the	Com
SFD1111 Stor SFD1112 Foll SFD1113 Foll Foll SFD1120 Puls SFD1120 Puls SFD1121 Puls SFD1122 Acc SFD1123 decc SFD1123 decc SFD1124 Acc	p speed high 16-bit low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	1 means the time constant is 100 Ticks 0~100, % Darameters) Pulse is sent at the default speed when the	Con
SFD1112 Foll SFD1113 Foll SFD1120 Puls SFD1121 Puls SFD1122 Acc SFD1123 deca SFD1123 deca SFD1124 Acc	low performance low feedforward compensation Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	1 means the time constant is 100 Ticks 0~100, % Darameters) Pulse is sent at the default speed when the	COM
SFD1120PulsSFD1121PulsSFD1122AccspeceSFD1123deccSFD1124Acc	Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	Pulse is sent at the default speed when the	5
SFD1120PulsSFD1121PulsSFD1122AccspeceSFD1123deccSFD1124Acc	Y1 (group 3 p se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	Pulse is sent at the default speed when the	5
SFD1120 Puls SFD1121 Puls SFD1122 Acc SFD1122 deca SFD1123 deca SFD1124 Acc	se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	Pulse is sent at the default speed when the	
SFD1121PulsSFD1122AccspeedspeedSFD1123deccSFD1124Acc	se default speed low 16-bit se default speed high 16-bit celeration time of pulse default	Pulse is sent at the default speed when the	
SFD1121PulsSFD1122AccspeedspeedSFD1123deccSFD1124Acc	se default speed high 16-bit celeration time of pulse default		
SFD1122 Acc spec SFD1123 decc spec SFD1124 Acc	celeration time of pulse default	speed is 0.	
SFD1122 spee SFD1123 decc spee SFD1124 Acc	-		
SFD1123 spee SFD1124 Acc	ed		
	eleration time of pulse default		
CED1127	cerlation and deceleration time		
SFD1125 Acc	celeration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1126 Max	x speed low 16-bit		
SFD1127 Max	x speed high 16-bit		
SFD1128 Initi	ial speed low 16-bit		
SFD1129 Initi	tial speed high 16-bit		
SFD1130 Stop	p speed low 16-bit		
SFD1131 Stop	p speed high 16-bit		
SFD1132 Foll	low performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1133 Foll	low feedforward compensation	0~100, %	
	-		
		barameters)	
SFD1140 Puls	Y1 (group 4 n	Pulse is sent at the default speed when the	
SFD1141 Puls	Y1 (group 4 p se default speed low 16-bit		

	Č.	Appendix	
SFD1142	Acceleration time of pulse default speed	2	
SFD1143	deceleration time of pulse default speed	9	
SFD1144	Accerlation and deceleration time		
SFD1145	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1146	Max speed low 16-bit	40	
SFD1147	Max speed high 16-bit		
SFD1148	Initial speed low 16-bit		
SFD1149	Initial speed high 16-bit		
SFD1150	Stop speed low 16-bit		
SFD1151	Stop speed high 16-bit		
SFD1152	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1153	Follow feedforward compensation	0~100, %	
•••			
	Y2 (common]	parameters)	
SFD1160	Pulse parameters	Same to SFD900	
SFD1161	Pulse sending mode	Bit 0: pulse sending mode0: complete mode; 1: continue modeDefault is 0	
SFD1162	Pulse number/1 rotation low 16-bit		
SFD1163	Pulse number/1 rotation high 16-bit		
SFD1164	Moving amount/1 rotation low 16-bit		
SFD1165	Moving amount/1 rotation high 16-bit		
SFD1166	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	
SFD1167	Direction delay time	Default is 20, unit: ms	
SFD1168	Gear clearance positive compensation		
SFD1169	Gear clearance negative compensation		
SFD1170	Electrical origin position low 16-bit		
SFD1171	Electrical origin position high 16-bit		



	×.		
		Appendix	
SFD1172	Signal terminal switch state	Bit0: Origin Signal Switch State Settings Bit1:Z Phase Switch State Settings Bit2: Positive Limit Switching State Settings Bit3: Negative Limit Switching State Settings 0: Normally open (positive logic), 1: Normally	
		closed (negative logic); default is 0	
SFD1174	Near-point signal terminal setting	•O_	
SFD1175	Z phase terminal setting	Bit0~Bit7: Specify the number of the X terminal, 0xFF is no terminal	
SFD1177	Limit terminal setting	Bit7~Bit0: Specifies the X terminal number of the positive limit, and 0xFF is no terminal. Bit15~Bit8: Specifies the X terminal number of the negative limit, and 0xFF is no terminal.	
SFD1178	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
SFD1179	Return speed VH low 16-bit	terminal, 0xFF is no terminal	CON
SFD1182	Return speed VH high 16-bit		
SFD1183	Creeping speed VC low 16-bit		
SFD1184	Creeping speed VC high 16-bit		
SFD1185	Mechanical origin position low 16-bit		
SFD1186	Mechanical origin position high 16-bit		
SFD1187	Z phase number		
SFD1188	CLR signal delay time	Default is 20, unit: ms	
SFD1189	Grinding wheel radius (polar coordinates)	Low 16-bit	
SFD1190		High 16-bit	
SFD1191	Soft limit positive value	Low 16-bit	
SFD1192		High 16-bit	
SFD1193	Soft limit negative value	Low 16-bit	
•••			
	Y2 (group 1 p	parameters)	
SFD1210	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	1
SFD1211	Pulse default speed high 16-bit	speed is 0.	
SFD1212	Acceleration time of pulse default speed		
SFD1213	deceleration time of pulse default speed		
SFD1214	Accerlation and deceleration time]

		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
SFD1215	Acceleration/deceleration mode	01: S curve acc/dec	
SFD1215	Acceleration/deceleration mode	10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1216	Max speed low 16-bit	C	
SFD1217	Max speed high 16-bit	2	
SFD1218	Initial speed low 16-bit		
SFD1219	Initial speed high 16-bit	Ċ	
SFD1220	Stop speed low 16-bit		
SFD1221	Stop speed high 16-bit		
SFD1222	Fallow porformance	1~100, 100 means the time constant is 1 Tick,	\mathbf{O}
SFD1222	Follow performance	1 means the time constant is 100 Ticks	
SFD1223	Follow feedforward compensation	0~100, %	CON
	Y2 (group 2 p	arameters)	
SFD1230	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1231	Pulse default speed high 16-bit	speed is 0.	
SFD1232	Acceleration time of pulse default		
51 D1252	speed		
SFD1233	deceleration time of pulse default		
51 51 255	speed		
SFD1234	Accerlation and deceleration time		
		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
SFD1235	Acceleration/deceleration mode	01: S curve acc/dec	
5121200		10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1236	Max speed low 16-bit		
SFD1237	Max speed high 16-bit		
SFD1238	Initial speed low 16-bit		
SFD1239	Initial speed high 16-bit		
SFD1240	Stop speed low 16-bit		
SFD1241	Stop speed high 16-bit		
SFD1242	Follow performance	1~100, 100 means the time constant is 1 Tick,	
		1 means the time constant is 100 Ticks	
SFD1243	Follow feedforward compensation	0~100, %	
	Y2 (group 3 p		
0001250		Unless to cont at the detault speed when the	1
SFD1250 SFD1251	Pulse default speed low 16-bit Pulse default speed high 16-bit	Pulse is sent at the default speed when the speed is 0.	

K.

	Ľ	Appendix	
	1		
SFD1252	Acceleration time of pulse default speed	0	
SFD1253	deceleration time of pulse default speed	97	
SFD1254	Accerlation and deceleration time		
SFD1255	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1256	Max speed low 16-bit		ŀ
SFD1257	Max speed high 16-bit	+	
SFD1258	Initial speed low 16-bit		
SFD1259	Initial speed high 16-bit		
SFD1260	Stop speed low 16-bit		
SFD1261	Stop speed high 16-bit		•
SFD1262	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1263	Follow feedforward compensation	0~100, %	
	Y2 (group 4 J	barameters)	
SFD1270	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1271	Pulse default speed high 16-bit	speed is 0.	
SFD1272	Acceleration time of pulse default speed		
SFD1273	deceleration time of pulse default speed		
SFD1274	Accerlation and deceleration time		
SFD1275	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1276	Max speed low 16-bit		1
SFD1277	Max speed high 16-bit		1
SFD1278	Initial speed low 16-bit		1
SFD1279	Initial speed high 16-bit		1
SFD1279	Stop speed low 16-bit		1
SFD1280 SFD1281	Stop speed high 16-bit		1
SFD1282	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	

	ti.		
	· (/	Appendix	
	Ç		
SFD1283	Follow feedforward compensation	0~100, %	
•••			
	Y3 (common j		
SFD1290	Pulse parameters	Same to SFD900	
SFD1291	Pulse sending mode	Bit 0: pulse sending mode 0: complete mode; 1: continue mode Default is 0	
SFD1292	Pulse number/1 rotation low 16-bit		
SFD1293	Pulse number/1 rotation high 16-bit		
SFD1294	Moving amount/1 rotation low 16-bit	C)	
SFD1295	Moving amount/1 rotation high 16-bit	· · ·	
SFD1296	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	
SFD1297	Direction delay time	Default is 20, unit: ms	0,
SFD1298	Gear clearance positive compensation		
SFD1299	Gear clearance negative compensation		
SFD1300	Electrical origin position low 16-bit		
SFD1301	Electrical origin position high 16-bit		
SFD1302	Signal terminal switch state	 Bit0: Origin Signal Switch State Settings Bit1:Z Phase Switch State Settings Bit2: Positive Limit Switching State Settings Bit3: Negative Limit Switching State Settings 0: Normally open (positive logic), 1: Normally closed (negative logic); default is 0 	
SFD1304	Near-point signal terminal setting		
SFD1305	Z phase terminal setting	Bit0~Bit7: Specify the number of the X terminal, 0xFF is no terminal	
SFD1307	Limit terminal setting	Bit7~Bit0: Specifies the X terminal number of the positive limit, and 0xFF is no terminal.Bit15~Bit8: Specifies the X terminal number of the negative limit, and 0xFF is no terminal.	
SFD1308	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
SFD1309	Return speed VH low 16-bit	terminal, 0xFF is no terminal	
SFD1312	Return speed VH high 16-bit		
SFD1313	Creeping speed VC low 16-bit		
SFD1314	Creeping speed VC high 16-bit		
SFD1315	Mechanical origin position low 16-bit		

SFD1346 Mechanical origin position high fo-bit Mechanical origin position high fo-bit SFD1317 Z phase number Default is 20, anterms SFD1318 CLR signal delay time Grinding wheel radius (polar inding wheel radius (polar Explose) Default is 20, anterms SFD1320 High 16-bit Low 16-bit Low 16-bit SFD1323 Soft limit negative value High 16-bit Low 16-bit SFD1324 Soft limit negative value High 16-bit Low 16-bit SFD1325 Soft limit negative value Pulse is sent at the default speed when the speed is 0. SFD1340 Pulse default speed high 16-bit speed Pulse default speed high 16-bit speed SFD1343 Acceleration time of pulse default speed Sit1-Bit(); acc/dec mode 00: linear acc/dec 10: sine curve acc/dec 11: reserved Bit1-Bit(); acc/dec mode 01: Securve acc/dec 11: reserved Bit13-Bit(); acc/dec mode 01: Securve acc/dec 11: reserved Bit13-Bit(); acc/dec mo		X .		
SID1316 16-bit SFD1317 Z phase number SFD1318 CLR signal delay time Gordinates) Default is 20, unit: ms SFD1320 High 16-bit SFD1320 High 16-bit SFD1320 Soft limit positive value Low 16-bit SFD1320 High 16-bit SFD1320 Soft limit negative value Low 16-bit SFD1320 High 16-bit SFD1320 Soft limit negative value Low 16-bit SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed figh 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed is 0. Siti S-Bit2: reserved SFD1343 Acceleration and deceleration mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1344 Max speed low 16-bit SFD1345 Max speed low 16-bit SFD1346 Max speed low 16-bit SFD1347 Max speed low 16-bit SFD1348 Initial speed high 16-bit			Appendix	
SID1316 16-bit SFD1317 Z phase number SFD1318 CLR signal delay time Gordinates) Default is 20, unit: ms SFD1320 High 16-bit SFD1320 High 16-bit SFD1320 Soft limit positive value Low 16-bit SFD1320 High 16-bit SFD1320 Soft limit negative value Low 16-bit SFD1320 High 16-bit SFD1320 Soft limit negative value Low 16-bit SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed figh 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed is 0. Siti S-Bit2: reserved SFD1343 Acceleration and deceleration mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1344 Max speed low 16-bit SFD1345 Max speed low 16-bit SFD1346 Max speed low 16-bit SFD1347 Max speed low 16-bit SFD1348 Initial speed high 16-bit		Ç		
SFD1318 CLR signal delay time Default is 20, duits ms SFD1319 Grinding wheel radius (polar continates) High 16-bit SFD1321 Soft limit positive value High 16-bit SFD1322 Soft limit negative value High 16-bit SFD1323 Soft limit negative value Low 16-bit SFD1323 Soft limit negative value Low 16-bit SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1342 Acceleration time of pulse default speed when the speed is 0. Secol SFD1341 Acceleration and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: si	SFD1316	U 1 U		
SFD1319 Grinding wheel radius (polar coordinates) Low 16-bit SFD1320 High 16-bit SFD1321 Soft limit positive value Low 16-bit SFD1322 Soft limit negative value Low 16-bit SFD1323 Soft limit negative value Low 16-bit V Y (group 1 parameters) SFD1340 Pulse default speed low 16-bit speed is 0. SFD1341 Pulse default speed high 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed is 0. StD1340 SFD1343 deceleration and deceleration time Bit1-Bit0: acc/dec mode SFD1344 Acceleration /deceleration mode Bit1-Bit0: acc/dec SFD1345 Acceleration/deceleration mode Bit1-Bit0: acc/dec SFD1346 Max speed low 16-bit I: reserved SFD1347 Max speed high 16-bit I: reserved SFD1348 Initial speed high 16-bit I: -100, 100 means the time constant is 1 Tick, 1: means the time constant is 1 100 Ticks SFD1350 Stop speed low 16-bit I: -100, 100 means the time constant is 1 100 Ticks SFD1351 Stop speed high 16-bit I: -100, 100 means the time constant is 1 Tick, 1: means the	SFD1317	Z phase number		
SFD1319 coordinates) Low 16-bit SFD1320 High 16-bit SFD1322 Soft limit positive value Low 16-bit SFD1323 Soft limit negative value Low 16-bit SFD1323 Soft limit negative value Low 16-bit SFD1323 Soft limit negative value Low 16-bit SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Acceleration time of pulse default speed speed speed SFD1344 Acceleration and deceleration time Bit1-Bit0: acc/dec mode SFD1344 Acceleration of pulse default speed high 16-bit Dis sine curve acc/dec SFD1344 Acceleration and deceleration time Bit1-Bit0: acc/dec mode SFD1345 Acceleration /deceleration mode Dis sine curve acc/dec Dis sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1346 SFD1345 Max speed high 16-bit SFD1346 Initial speed low 16-bit SFD1347 Max speed high 16-bit SFD1348 Initial speed low 16-bit SFD1345 Stop speed low 16-bit SFD1350 Stop speed	SFD1318	CLR signal delay time	Default is 20, unit: ms	
SFD1321 Soft limit positive value Low 16-bit SFD1322 High 16-bit SFD1323 Soft limit negative value Low 16-bit SFD1323 Soft limit negative value Low 16-bit SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1340 Pulse default speed high 16-bit speed is 0. SFD1341 Acceleration time of pulse default speed speed SFD1343 Acceleration time of pulse default speed 00: linear acc/dec SFD1344 Acceleration and deceleration time Bit1-Bit0: acc/dec mode SFD1344 Acceleration deceleration mode Bit1-Bit0: acc/dec SFD1344 Acceleration/deceleration mode Bit15-Bit2: reserved SFD1345 Acceleration/deceleration mode Bit15-Bit2: reserved SFD1346 Max speed low 16-bit Bit15-Bit2: reserved SFD1347 Max speed low 16-bit SFD1348 Initial speed low 16-bit SFD1349 Initial speed high 16-bit SFD1350 Stop speed low 16-bit SFD1351 Stop speed high 16-bit SFD1352 Follow performance 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks SFD1351 Stop speed low 16-bit SFD1352 Follow feedforw	SFD1319	e 4	Low 16-bit	
SFD1322 Soft limit negative value High 16-bit SFD1323 Soft limit negative value Low 16-bit W12 V3 (group 1 parameters) SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed high 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed means acc/dec SFD1343 deceleration and deceleration time Bit1~Bit0: acc/dec mode SFD1344 Acceleration/deceleration mode Bit1~Bit0: acc/dec SFD1345 Acceleration/deceleration mode Bit1~Bit0: acc/dec SFD1344 Acceleration/deceleration mode Bit1-Bit0: acc/dec SFD1345 Acceleration/deceleration mode Bit1-Bit0: acc/dec SFD1346 Max speed low 16-bit Bit15-Bit2: reserved SFD1347 Max speed low 16-bit SFD1348 SFD1348 Initial speed low 16-bit SFD1349 SFD1347 Max speed low 16-bit SFD1340 SFD1348 Initial speed low 16-bit SFD1341 SFD1351 Stop speed low 16-bit SFD1352 Follow preoformance 1~100, 100 means the time constant	SFD1320		High 16-bit	
SFD1323 Soft limit negative value Low 16-bit V3 (group 1 parameters) SFD1340 Pulse default speed low 16-bit SFD1340 Pulse default speed high 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed high 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed high 16-bit speed SFD1343 deceleration and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1344 Acceleration/deceleration mode Bit1-Bit0: sec/dec 11: reserved Bit15-Bit2: reserved SFD1344 Max speed high 16-bit Est0145 SFD1344 Max speed high 16-bit SFD1345 SFD1345 Acceleration v16-bit SFD1346 Max speed high 16-bit SFD1347 Max speed high 16-bit SFD1348 Initial speed high 16-bit SFD1345 SFD1351 Stop speed low 16-bit SFD1352 Follow performance 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 10 Ticks SFD1352 Follow feedfourd compensation 0-100, % V3 (group 2 parameters) SFD1360 Pulse default speed high 16-bit SFD1361 Pulse default speed high 16-bit	SFD1321	Soft limit positive value	Low 16-bit	
V3 (group 1 parameters) SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed high 16-bit speed is 0. speed SFD1342 Acceleration time of pulse default speed speed speed SFD1343 deceleration time of pulse default speed means the default speed high 16-bit speed SFD1344 Accerlation and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec SFD1344 Acceleration/deceleration mode Di: sine curve acc/dec 11: sereved SFD1345 Acceleration/deceleration mode Di: sine curve acc/dec 11: reserved SFD1345 Max speed high 16-bit SFD1344 SFD1345 SFD1345 Initial speed high 16-bit SFD1345 Stop speed low 16-bit SFD1345 Stop speed high 16-bit 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks SFD1352 Follow performance 1~100, 100 means the time constant is 100 Ticks SFD1360 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1361 Pulse default speed low 16-bit Speed </td <td>SFD1322</td> <td></td> <td>High 16-bit</td> <td></td>	SFD1322		High 16-bit	
V3 (group 1 parameters) SFD1340 Pulse default speed low 16-bit SFD1341 Pulse default speed high 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed speed SFD1343 deceleration and deceleration time means the default speed high 16-bit SFD1344 Accerlation and deceleration time means the default speed high 16-bit SFD1345 Acceleration/deceleration mode Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved SFD1346 Max speed high 16-bit SFD1347 Max speed high 16-bit SFD1348 Initial speed high 16-bit SFD1349 Initial speed high 16-bit SFD1345 Stop speed high 16-bit SFD1346 Max speed high 16-bit SFD1350 Stop speed high 16-bit SFD1351 Stop speed high 16-bit SFD1352 Follow performance V3 (group 2 parameters) SFD1360 Pulse default speed high 16-bit SFD1361 Pulse default speed high 16-bit SFD1360 Pulse default speed high 16-bit </td <td>SFD1323</td> <td>Soft limit negative value</td> <td>Low 16-bit</td> <td></td>	SFD1323	Soft limit negative value	Low 16-bit	
SFD1340 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1341 Pulse default speed high 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed high 16-bit speed SFD1343 deceleration time of pulse default speed high 16-bit speed SFD1344 Accerlation and deceleration time Image: Speed s	•••			
SFD1341 Pulse default speed high 16-bit speed is 0. SFD1342 Acceleration time of pulse default speed SFD1343 deceleration time of pulse default speed SFD1344 Acceleration and deceleration time SFD1344 Accerlation and deceleration time Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved SFD1346 Max speed low 16-bit SFD1347 Max speed low 16-bit SFD1348 Initial speed low 16-bit SFD1345 Stop speed low 16-bit SFD1345 Stop speed low 16-bit SFD1346 Initial speed low 16-bit SFD1347 Max speed high 16-bit SFD1348 Initial speed low 16-bit SFD1349 Initial speed low 16-bit SFD1351 Stop speed low 16-bit SFD1352 Follow performance 1~100, 100 means the time constant is 10 Ticks SFD1353 Follow feedforward compensation 0~100, % Pulse default speed high 16-bit SF		Y3 (group 1 p	parameters)	
SFD1343 speed SFD1344 Accelration time of pulse default speed SFD1344 Accerlation and deceleration time SFD1344 Accelration and deceleration time SFD1345 Acceleration/deceleration mode Bit1~Bit0: acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved Bit15~Bit2: reserved SFD1346 Max speed low 16-bit SFD1347 Max speed high 16-bit SFD1348 Initial speed high 16-bit SFD1350 Stop speed low 16-bit SFD1351 Stop speed high 16-bit SFD1352 Follow performance SFD1353 Follow feedforward compensation 0~100, % V3 (group 2 p=rameters) SFD1360 Pulse default speed high 16-bit SFD1361 Pulse default speed high 16-bit SFD1353 Follow feedforward compensation 0~100, % V3 (group 2 p=rameters) SFD1360 Pulse default speed high 16-bit SFD1361 Pulse default speed high 16-bit speed	SFD1340	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1343 speed SFD1344 Accelration time of pulse default speed SFD1344 Accerlation and deceleration time SFD1344 Accelration and deceleration time SFD1345 Acceleration/deceleration mode Bit1~Bit0: acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved Bit15~Bit2: reserved SFD1346 Max speed low 16-bit SFD1347 Max speed high 16-bit SFD1348 Initial speed high 16-bit SFD1350 Stop speed low 16-bit SFD1351 Stop speed high 16-bit SFD1352 Follow performance SFD1353 Follow feedforward compensation 0~100, % Y3 (group 2 p=rameters) SFD1360 Pulse default speed high 16-bit SFD1361 Pulse default speed high 16-bit SFD1353 Follow feedforward compensation 0~100, % Y3 (group 2 p=rameters) SFD1360 Pulse default speed high 16-bit SFD1361 Pulse default speed high 16-bit speed	SFD1341	Pulse default speed high 16-bit	speed is 0.	
SFD1343 speed SFD1344 Accelation and deceleration time SFD1344 Acceleration and deceleration time Bit1~Bit0: acc/dec mode 00: linear acc/dec 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved SFD1346 Max speed low 16-bit SFD1347 Max speed low 16-bit SFD1348 Initial speed low 16-bit SFD1349 Initial speed low 16-bit SFD1350 Stop speed low 16-bit SFD1351 Stop speed low 16-bit SFD1352 Follow performance SFD1353 Follow performance SFD1354 Follow performance SFD1355 Follow feedforward compensation 0~100, % 1~100, 100 means the time constant is 100 Ticks SFD1360 Pulse default speed low 16-bit SFD1361 Pulse default speed low 16-bit SFD1362 Pollow feedforward compensation 0~100, %	SFD1342	•		>
SFD1344Accerlation and deceleration timeSFD1345Acceleration/deceleration modeBit1-Bit0: acc/dec mode 00: linear acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reservedSFD1346Max speed low 16-bitSFD1347Max speed high 16-bitSFD1348Initial speed high 16-bitSFD1349Initial speed high 16-bitSFD1350Stop speed high 16-bitSFD1351Stop speed high 16-bitSFD1352Follow performanceSFD1353Follow feedforward compensation 0~100, %	SFD1343	-		
SFD1345Acceleration/deceleration mode00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reservedSFD1346Max speed low 16-bitBit15~Bit2: reservedSFD1347Max speed high 16-bitSSFD1348Initial speed low 16-bitSSFD1349Initial speed high 16-bitSSFD1340Stop speed low 16-bitSSFD1341Stop speed low 16-bitSSFD1342Stop speed low 16-bitSSFD1353Stop speed low 16-bitSSFD1354Stop speed low 16-bit1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1353Follow performance0~100, %SFD1354Follow feedforward compensation0~100, %SFD1355Follow feedforward compensation0~100, %SFD1360Pulse default speed high 16-bitPulse is sent at the default speed when the speed is 0.SFD1361Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speedSpeed is 0.SFD1363Gecleration time of pulse default speedSpeed is 0.SFD1363Sp	SFD1344			
SFD1346Max speed low 16-bit	SFD1345	Acceleration/deceleration mode	 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved 	
SFD1347Max speed high 16-bitSFD1348Initial speed low 16-bitSFD1349Initial speed high 16-bitSFD1350Stop speed low 16-bitSFD1351Stop speed high 16-bitSFD1352Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1353Follow feedforward compensation0~100, %SFD1360Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1361Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speedSFD1363Geceleration time of pulse default speed	SFD1346	Max speed low 16-bit		
SFD1348Initial speed low 16-bitSFD1349Initial speed high 16-bitSFD1350Stop speed low 16-bitSFD1351Stop speed high 16-bitSFD1352Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1353Follow feedforward compensation0~100, %Y3 (group 2 prameters)SFD1360Pulse default speed low 16-bitSFD1361Pulse default speed high 16-bitSFD1362Acceleration time of pulse default speedSFD1363deceleration time of pulse default speedSFD1363deceleration time of pulse default speed				
SFD1349Initial speed high 16-bitSFD1350Stop speed low 16-bitSFD1351Stop speed high 16-bitSFD1352Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1353Follow feedforward compensation0~100, %Y3 (group 2 parameters)SFD1360Pulse default speed low 16-bitSFD1361Pulse default speed high 16-bitSFD1362Acceleration time of pulse default speedSFD1363deceleration time of pulse default speed				
SFD1351Stop speed high 16-bitI~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1352Follow performance1~100, 100 means the time constant is 100 TicksSFD1353Follow feedforward compensation0~100, %V3 (group 2 prameters)SFD1360Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1361Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speed-SFD1363deceleration time of pulse default speed-SFD1364speed-	SFD1349			
SFD1352Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1353Follow feedforward compensation0~100, %	SFD1350	Stop speed low 16-bit		
SFD1352Follow performance1 means the time constant is 100 TicksSFD1353Follow feedforward compensation0~100, %V3 (group 2 prameters)SFD1360Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1361Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speedSFD1363deceleration time of pulse default speed	SFD1351	Stop speed high 16-bit		
Image: Constraint of the speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1360Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speed fault speed f	SFD1352	Follow performance		
Y3 (group 2 parameters)SFD1360Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1361Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speed	SFD1353	Follow feedforward compensation	0~100, %	
SFD1360Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1361Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speed	•••			
SFD1361Pulse default speed high 16-bitspeed is 0.SFD1362Acceleration time of pulse default speed		Y3 (group 2 p	parameters)	
SFD1362 Acceleration time of pulse default speed SFD1363 deceleration time of pulse default speed	SFD1360	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1362 speed SFD1363 deceleration time of pulse default speed	SFD1361	Pulse default speed high 16-bit	speed is 0.	
SFD1363 speed	SFD1362	-		
	SFD1363	deceleration time of pulse default		
	SFD1364	Accerlation and deceleration time		

		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
GED 12(5		01: S curve acc/dec	
SFD1365	Acceleration/deceleration mode	10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1366	Max speed low 16-bit		
SFD1367	Max speed high 16-bit	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
SFD1368	Initial speed low 16-bit		
SFD1369	Initial speed high 16-bit		
SFD1370	Stop speed low 16-bit	Š.	
SFD1371	Stop speed high 16-bit		
0001070		1~100, 100 means the time constant is 1 Tick,	
SFD1372	Follow performance	1 means the time constant is 100 Ticks	
SFD1373	Follow feedforward compensation	0~100, %	Con
	Y3 (group 3 p	parameters)	Ť
SFD1380	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1381	Pulse default speed high 16-bit	speed is 0.	
0001202	Acceleration time of pulse default		
SFD1382	speed		
SFD1383	deceleration time of pulse default		
SFD1383	speed		
SFD1384	Accerlation and deceleration time		
		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
SFD1385	Assolution/decolation mode	01: S curve acc/dec	
5601565	Acceleration/deceleration mode	10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1386	Max speed low 16-bit		
SFD1387	Max speed high 16-bit		
SFD1388	Initial speed low 16-bit		
SFD1389	Initial speed high 16-bit		
SFD1390	Stop speed low 16-bit		
SFD1391	Stop speed high 16-bit		
SFD1392	Follow performance	1~100, 100 means the time constant is 1 Tick,	
51101372		1 means the time constant is 100 Ticks	
SFD1393	Follow feedforward compensation	0~100, %	
	Y3 (group 4 p	parameters)	
SFD1400	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1401	Pulse default speed high 16-bit	speed is 0.	

K.

	Č.	Appendix	
	(· · · · · · · · · · · · · · · · · · ·	
SFD1402	Acceleration time of pulse default speed	2	
SFD1403	deceleration time of pulse default speed		
SFD1404	Accerlation and deceleration time		
SFD1405	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1406	Max speed low 16-bit		
SFD1407	Max speed high 16-bit	*	
SFD1408	Initial speed low 16-bit		
SFD1409	Initial speed high 16-bit		
SFD1410	Stop speed low 16-bit		
SFD1411	Stop speed high 16-bit		
SFD1412	Follow performance	1~100, 100 means the time constant is 1 Tick,1 means the time constant is 100 Ticks	
SFD1413	Follow feedforward compensation	0~100, %	
	Y4 (common j	parameters)	
SFD1420	Pulse parameters	Same to SFD900	
SFD1421	Pulse sending mode	Bit 0: pulse sending mode0: complete mode; 1: continue modeDefault is 0	
SFD1422	Pulse number/1 rotation low 16-bit		
SFD1423	Pulse number/1 rotation high 16-bit		
SFD1424	Moving amount/1 rotation low 16-bit		
SFD1425	Moving amount/1 rotation high 16-bit		
SFD1426	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	
SFD1427	Direction delay time	Default is 20, unit: ms	
SFD1428	Gear clearance positive compensation		
SFD1429	Gear clearance negative compensation		
SFD1430	Electrical origin position low 16-bit		
SFD1431	Electrical origin position high 16-bit		i



	<u> </u>		
		Bit0: Origin Signal Switch State Settings	1
0501422		Bit1:Z Phase Switch State Settings	1
		Bit2: Positive Limit Switching State Settings	l
SFD1432	Signal terminal switch state	Bit3: Negative Limit Switching State Settings	l
		0: Normally open (positive logic), 1: Normally	l
		closed (negative logic); default is 0	l
SFD1434	Near-point signal terminal setting		
QED1425	7 shace to main all softing	Bit0~Bit7: Specify the number of the X	l
SFD1435	Z phase terminal setting	terminal, 0xFF is no terminal	l
		Bit7~Bit0: Specifies the X terminal number of	l
QED1427	Timit to main all actions	the positive limit, and 0xFF is no terminal.	l
SFD1437	Limit terminal setting	Bit15~Bit8: Specifies the X terminal number	>
		of the negative limit, and 0xFF is no terminal.	
SFD1438	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
SFD1439	Return speed VH low 16-bit	terminal, 0xFF is no terminal	-ON
SFD1442	Return speed VH high 16-bit		
SFD1442 SFD1443	Creeping speed VC low 16-bit		l
			l
SFD1444	Creeping speed VC high 16-bit		l
SFD1445	Mechanical origin position low 16-bit		l I
	Mechanical origin position high		l
SFD1446	16-bit		l
SFD1447	Z phase number		l
SFD1448	CLR signal delay time	Default is 20, unit: ms	l
GED 1440	Grinding wheel radius (polar		l
SFD1449	coordinates)	Low 16-bit	l
SFD1450		High 16-bit	l
SFD1451	Soft limit positive value	Low 16-bit	1
SFD1452		High 16-bit	1
SFD1453	Soft limit negative value	Low 16-bit	1
•••			l
	Y4 (group 1 p	parameters)	l
SFD1470	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	1
SFD1471	Pulse default speed high 16-bit	speed is 0.	l
SFD1472	Acceleration time of pulse default speed		
SFD1473	deceleration time of pulse default		
	speed		l
SFD1474	Accerlation and deceleration time		

		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
		01: S curve acc/dec	
SFD1475	Acceleration/deceleration mode	10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1476	Max speed low 16-bit		
SFD1477	Max speed high 16-bit	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
SFD1478	Initial speed low 16-bit		
SFD1479	Initial speed high 16-bit		
SFD1480	Stop speed low 16-bit	Š.	
SFD1481	Stop speed high 16-bit		
		1~100, 100 means the time constant is 1 Tick,	
SFD1482	Follow performance	1 means the time constant is 100 Ticks	
SFD1483	Follow feedforward compensation	0~100, %	-On
	Y4 (group 2 p	parameters)	¥
SFD1490	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1491	Pulse default speed high 16-bit	speed is 0.	
GED 1402	Acceleration time of pulse default		
SFD1492	speed		
SFD1493	deceleration time of pulse default		
SFD1493	speed		
SFD1494	Accerlation and deceleration time		
		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
SFD1495	Acceleration/deceleration mode	01: S curve acc/dec	
51 D 1495	Acceleration/deceleration mode	10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1496	Max speed low 16-bit		
SFD1497	Max speed high 16-bit		
SFD1498	Initial speed low 16-bit		
SFD1499	Initial speed high 16-bit		
SFD1500	Stop speed low 16-bit		
SFD1501	Stop speed high 16-bit		
SFD1502	Follow performance	1~100, 100 means the time constant is 1 Tick,	
51 D 1 5 0 2		1 means the time constant is 100 Ticks	
SFD1503	Follow feedforward compensation	0~100, %	
	Y4 (group 3 p	parameters)	
SFD1510	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
	ſ		

K.

	Ŭ.,		
		Appendix	
			1
SFD1512	Acceleration time of pulse default speed	2	
SFD1513	deceleration time of pulse default speed		
SFD1514	Accerlation and deceleration time	0	
SFD1515	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1516	Max speed low 16-bit		
SFD1517	Max speed high 16-bit	*	
SFD1518	Initial speed low 16-bit		
SFD1519	Initial speed high 16-bit		~0m
SFD1520	Stop speed low 16-bit		
SFD1521	Stop speed high 16-bit		•
SFD1522	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1523	Follow feedforward compensation	0~100, %	
•••			
	Y4 (group 4 p	parameters)	
SFD1530	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1531	Pulse default speed high 16-bit	speed is 0.	
SFD1532	Acceleration time of pulse default speed		
SFD1533	deceleration time of pulse default speed		
SFD1534	Accerlation and deceleration time		
SFD1535	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1536	Max speed low 16-bit		
SFD1537	Max speed high 16-bit		
SFD1538	Initial speed low 16-bit		
SFD1539	Initial speed high 16-bit		
SFD1540	Stop speed low 16-bit		
SFD1541	Stop speed high 16-bit		
SFD1542	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	

	1.		
	· · · ·	Appendix	
SFD1543	Follow feedforward compensation	0~100,-%	
•••			
	Y5 (common)	parameters)	
SFD1550	Pulse parameters	Same to SFD900	
		Bit 0: pulse sending mode	
SFD1551	Pulse sending mode	0: complete mode; 1: continue mode	
		Default is 0	
SFD1552	Pulse number/1 rotation low 16-bit		
SFD1553	Pulse number/1 rotation high 16-bit		
SFD1554	Moving amount/1 rotation low	· C·	
	16-bit		
SFD1555	Moving amount/1 rotation high		
	16-bit	•	C
SFD1556	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	0
SFD1557	Direction delay time	Default is 20, unit: ms	
SFD1558	Gear clearance positive		
	compensation		
SFD1559	Gear clearance negative		
	compensation		
SFD1560	Electrical origin position low 16-bit		
SFD1561	Electrical origin position high 16-bit	Diro, Osiain Sianal Scottab State Southan	
		Bit0: Origin Signal Switch State Settings	
		Bit1:Z Phase Switch State Settings Bit2: Positive Limit Switching State Settings	
SFD1562	Signal terminal switch state	Bit3: Negative Limit Switching State Settings	
		0: Normally open (positive logic), 1: Normally	
		closed (negative logic); default is 0	
SFD1564	Near-point signal terminal setting		
		Bit0~Bit7: Specify the number of the X	
SFD1565	Z phase terminal setting	terminal, 0xFF is no terminal	
		Bit7~Bit0: Specifies the X terminal number of	
0ED1667	The state of the state of the state	the positive limit, and 0xFF is no terminal.	
SFD1567	Limit terminal setting	Bit15~Bit8: Specifies the X terminal number	
		of the negative limit, and 0xFF is no terminal.	
SFD1568	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
SFD1569	Return speed VH low 16-bit	terminal, 0xFF is no terminal	
SFD1572	Return speed VH high 16-bit		
SFD1573	Creeping speed VC low 16-bit		
SFD1574	Creeping speed VC high 16-bit		
SFD1575	Mechanical origin position low 16-bit		

	×.		
		Appendix	
	(
SFD1576	Mechanical origin position high 16-bit	2	
SFD1577	Z phase number		
SFD1578	CLR signal delay time	Default is 20, unit: ms	
SFD1579	Grinding wheel radius (polar coordinates)	Low 16-bit	
SFD1580	· · · · · · · · · · · · · · · · · · ·	High 16-bit	
SFD1581	Soft limit positive value	Low 16-bit	
SFD1582		High 16-bit	
SFD1583	Soft limit negative value	Low 16-bit	
•••			
	Y5 (group 1 p	parameters)	
SFD1600	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1601	Pulse default speed high 16-bit	speed is 0.	
SFD1602	Acceleration time of pulse default speed		-On
SFD1603	deceleration time of pulse default speed		
SFD1604	Accerlation and deceleration time		
SFD1605	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1606	Max speed low 16-bit		
SFD1607	Max speed high 16-bit		
SFD1608	Initial speed low 16-bit		
SFD1609	Initial speed high 16-bit		
SFD1610	Stop speed low 16-bit		
SFD1611	Stop speed high 16-bit		
SFD1612	Follow performance	1~100, 100 means the time constant is 1 Tick,1 means the time constant is 100 Ticks	
SFD1613	Follow feedforward compensation	0~100, %	
•••			
	Y5 (group 2 p	parameters)	
SFD1620	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1621	Pulse default speed high 16-bit	speed is 0.	
SFD1622	Acceleration time of pulse default speed		
SFD1623	deceleration time of pulse default speed		
SFD1624	Accertation and deceleration time		

	<i>.</i>		
		Appendix	
SFD1625	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec	
		10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1626	Max speed low 16-bit	• <u>O</u>	
SFD1627	Max speed high 16-bit		
SFD1628	Initial speed low 16-bit		
SFD1629	Initial speed high 16-bit		
SFD1630	Stop speed low 16-bit		
SFD1631	Stop speed high 16-bit		þ.
SFD1632	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	Con
SFD1633	Follow feedforward compensation	0~100, %	
•••			1
	Y5 (group 3 p	•	
SFD1640	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1641	Pulse default speed high 16-bit	speed is 0.	
SFD1642	Acceleration time of pulse default speed		
SFD1643	deceleration time of pulse default speed		
SFD1644	Accerlation and deceleration time		
SFD1645	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1646	Max speed low 16-bit		
SFD1647	Max speed high 16-bit		
SFD1648	Initial speed low 16-bit		
SFD1649	Initial speed high 16-bit		
SFD1650	Stop speed low 16-bit		
SFD1651	Stop speed high 16-bit		
SFD1652	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1653	Follow feedforward compensation	0~100, %	
	*		
	Y5 (group 4 p	parameters)	
SFD1660	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1661	Pulse default speed high 16-bit	speed is 0.	
		<u>г</u>	I

	Ľ,		
		Appendix	
SFD1662	Acceleration time of pulse default speed	0	
SFD1663	deceleration time of pulse default speed	9	
SFD1664	Accerlation and deceleration time		
SFD1665	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1666	Max speed low 16-bit		ł
SFD1667	Max speed high 16-bit	+	
SFD1668	Initial speed low 16-bit		
SFD1669	Initial speed high 16-bit		
SFD1670	Stop speed low 16-bit		
SFD1671	Stop speed high 16-bit		
SFD1672	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1673	Follow feedforward compensation	0~100, %	
	Y6 (common)	parameters)	
SFD1680	Pulse parameters	Same to SFD900	
SFD1681	Pulse sending mode	Bit 0: pulse sending mode0: complete mode; 1: continue modeDefault is 0	
SFD1682	Pulse number/1 rotation low 16-bit		
SFD1683	Pulse number/1 rotation high 16-bit		
SFD1684	Moving amount/1 rotation low 16-bit		
SFD1685	Moving amount/1 rotation high 16-bit		
SFD1686	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	
SFD1687	Direction delay time	Default is 20, unit: ms	
SFD1688	Gear clearance positive compensation		
SFD1689	Gear clearance negative compensation		
SFD1690	Electrical origin position low 16-bit		
SFD1691	Electrical origin position high 16-bit		



	<i>.</i>		
		Appendix	
		Bit0: Origin Signal Switch State Settings Bit1:Z Phase Switch State Settings	
SFD1692	Signal terminal switch state	Bit2: Positive Limit Switching State Settings Bit3: Negative Limit Switching State Settings 0: Normally open (positive logic), 1: Normally closed (negative logic); default is 0	
SFD1694	Near-point signal terminal setting	closed (hegalive logic), default is o	
SFD1695	Z phase terminal setting	Bit0~Bit7: Specify the number of the X terminal, 0xFF is no terminal	
SFD1697	Limit terminal setting	Bit7~Bit0: Specifies the X terminal number of the positive limit, and 0xFF is no terminal. Bit15~Bit8: Specifies the X terminal number of the negative limit, and 0xFF is no terminal.	
SFD1698	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
SFD1699	Return speed VH low 16-bit	terminal, 0xFF is no terminal	07
SFD1702	Return speed VH high 16-bit		
SFD1703	Creeping speed VC low 16-bit		
SFD1704	Creeping speed VC high 16-bit		
SFD1705	Mechanical origin position low 16-bit		
SFD1706	Mechanical origin position high 16-bit		
SFD1707	Z phase number		
SFD1708	CLR signal delay time	Default is 20, unit: ms	
SFD1709	Grinding wheel radius (polar coordinates)	Low 16-bit	
SFD1710		High 16-bit	
SFD1711	Soft limit positive value	Low 16-bit	
SFD1712		High 16-bit	
SFD1713	Soft limit negative value	Low 16-bit	
•••			
	Y6 (group 1 p	parameters)	
SFD1730	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1731	Pulse default speed high 16-bit	speed is 0.	
SFD1732	Acceleration time of pulse default speed		
SFD1733	deceleration time of pulse default speed		
SFD1734	Accerlation and deceleration time		

		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
SFD1735	Acceleration/deceleration mode	01: S curve acc/dec	
SFD1/55		10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1736	Max speed low 16-bit	` O	
SFD1737	Max speed high 16-bit	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
SFD1738	Initial speed low 16-bit		
SFD1739	Initial speed high 16-bit		
SFD1740	Stop speed low 16-bit		
SFD1741	Stop speed high 16-bit		
SFD1742		1~100, 100 means the time constant is 1 Tick,	\mathbf{O}
SFD1/42	Follow performance	1 means the time constant is 100 Ticks	
SFD1743	Follow feedforward compensation	0~100, %	COM
•••			
	Y6 (group 2 p	parameters)	
SFD1750	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1751	Pulse default speed high 16-bit	speed is 0.	
SFD1752	Acceleration time of pulse default		
511752	speed		
SFD1753	deceleration time of pulse default		
51 51 755	speed		
SFD1754	Accerlation and deceleration time		
		Bit1~Bit0: acc/dec mode	
		00: linear acc/dec	
SFD1755	Acceleration/deceleration mode	01: S curve acc/dec	
5121700		10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD1756	Max speed low 16-bit		
SFD1757	Max speed high 16-bit		
SFD1758	Initial speed low 16-bit		
SFD1759	Initial speed high 16-bit		
SFD1760	Stop speed low 16-bit		
SFD1761	Stop speed high 16-bit		
SFD1762	Follow performance	1~100, 100 means the time constant is 1 Tick,	
	-	1 means the time constant is 100 Ticks	
SFD1763	Follow feedforward compensation	0~100, %	
	Y6 (group 3 p		
SFD1770	Pulse default speed low 16-bit Pulse default speed high 16-bit	Pulse is sent at the default speed when the speed is 0.	
SFD1771			

1U2

	Ŭ.,		
		Appendix	
	<u> </u>		1
SFD1772	Acceleration time of pulse default speed	2	
SFD1773	deceleration time of pulse default speed		
SFD1774	Accerlation and deceleration time		
SFD1775	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1776	Max speed low 16-bit		
SFD1777	Max speed high 16-bit	+	
SFD1778	Initial speed low 16-bit		
SFD1779	Initial speed high 16-bit		
SFD1780	Stop speed low 16-bit		
SFD1781	Stop speed high 16-bit		
SFD1782	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1783	Follow feedforward compensation	0~100, %	
•••			
	Y6 (group 4 p	parameters)	
SFD1790	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1791	Pulse default speed high 16-bit	speed is 0.	
SFD1792	Acceleration time of pulse default speed		
SFD1793	deceleration time of pulse default speed		
SFD1794	Accerlation and deceleration time		
SFD1795	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1796	Max speed low 16-bit		
SFD1797	Max speed high 16-bit		
SFD1798	Initial speed low 16-bit		
SFD1799	Initial speed high 16-bit		
SFD1800	Stop speed low 16-bit		
SFD1801	Stop speed high 16-bit		
SFD1802	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	

Č.				
		Appendix		
SFD1803	Follow feedforward compensation	0~100, %	l	
•••	Y7 (common	narameters)		
SFD1810	Pulse parameters	Same to SFD900		
5121010		Bit 0: pulse sending mode		
SFD1811	Pulse sending mode	0: complete mode; 1: continue mode Default is 0		
SFD1812	Pulse number/1 rotation low 16-bit	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
SFD1813	Pulse number/1 rotation high 16-bit			
SFD1814	Moving amount/1 rotation low 16-bit			
SFD1815	Moving amount/1 rotation high 16-bit			
SFD1816	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	6	
SFD1817	Direction delay time	Default is 20, unit: ms		
SFD1818	Gear clearance positive compensation			
SFD1819	Gear clearance negative compensation			
SFD1820	Electrical origin position low 16-bit			
SFD1821	Electrical origin position high 16-bit			
SFD1822	Signal terminal switch state	 Bit0: Origin Signal Switch State Settings Bit1:Z Phase Switch State Settings Bit2: Positive Limit Switching State Settings Bit3: Negative Limit Switching State Settings 0: Normally open (positive logic), 1: Normally closed (negative logic); default is 0 		
SFD1824	Near-point signal terminal setting			
SFD1825	Z phase terminal setting	Bit0~Bit7: Specify the number of the X terminal, 0xFF is no terminal		
SFD1827	Limit terminal setting	Bit7~Bit0: Specifies the X terminal number of the positive limit, and 0xFF is no terminal. Bit15~Bit8: Specifies the X terminal number of the negative limit, and 0xFF is no terminal.		
SFD1828	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y		
SFD1829	Return speed VH low 16-bit	terminal, 0xFF is no terminal		
SFD1832	Return speed VH high 16-bit			
SFD1833	Creeping speed VC low 16-bit			
SFD1834	Creeping speed VC high 16-bit			
SFD1835	Mechanical origin position low 16-bit			

SFD1836 Mechanical origin position high It-bit Ite- Site SFD1837 Z phase number Default is 20, unit ms SFD1838 CLR signal delay time Grinding wheel radius (polar coordinates) Default is 20, unit ms SFD1838 CLR signal delay time Grinding wheel radius (polar Low 16-bit Low 16-bit SFD1840 High 10-bit SFD1841 Soft limit positive value Low 16-bit SFD1842 High 10-bit SFD1843 Soft limit negative value Low 16-bit SFD1844 High 10-bit SFD1845 Pulse default speed high 16-bit SFD1846 Acceleration time of pulse default speed SFD1862 Acceleration time of pulse default speed SFD1864 Acceleration mode SFD1865 Acceleration mode SFD1866 Max speed high 16-bit SFD1877 Stop speed high 16-bit SFD1886 Jop speed high 16-bit <t< th=""><th></th><th>×.</th><th></th><th></th></t<>		×.		
SFD1836 Mechanical origin position high 16-bit SFD1837 Z phase number SFD1838 CLR signal delay time Grinding wheel radius (polar SFD1839 CLR signal delay time Grinding wheel radius (polar SFD1840 Default is 20, anit: ms SFD1841 Soft limit positive value Low 16-bit SFD1842 High 16-bit SFD1843 Soft limit negative value Low 16-bit SFD1844 Soft limit negative value Pulse is sent at the default speed when the SPD1845 SFD1845 Soft limit negative value Pulse is sent at the default speed when the SPD1860 SFD1864 Acceleration time of pulse default speed speed is 0. SFD1865 Acceleration and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 01: Seure acc/dec 11: reserved Bit15-Bit2: reserved SFD1866 Max speed high 16-bit SFD1870 SFD1870 Max speed high 16-bit SFD1881 Initial speed high 16-bit SFD1870 Stop speed high 16-bit SFD1871 Stop speed high 16-bit SFD1870 Stop speed high 16-bit SFD1871 Stop speed high 16-bit SFD1872 Follow feedforward compensati			Appendix	
SPD1836 16-bit SFD1837 Z phase number SFD1838 CLR signal delay time Default is 20, dnit: ms Grinding wheel radius (polar coordinates) High 16-bit SFD1840 Soft limit positive value Low 16-bit SFD1841 Soft limit nogative value Low 16-bit SFD1842 High 16-bit Secondary SFD1843 Soft limit negative value Low 16-bit SFD1844 Soft limit negative value Low 16-bit SFD1845 Soft limit negative value Low 16-bit SFD1860 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1861 Speed Seccleration time of pulse default speed low 16-bit Seccleration and deceleration time SFD1864 Acceleration imode Bit1-Bit0: acc/dee mode 00: linear acc/dee 10: sine curve acc/dee 11: reserved Bit15-Bit2: reserve		10		
SFD1837 Z phase number Default is 20, dnir ms SFD1838 CLR signal delay time Grinding wheel radius (polar coordinates) Default is 20, dnir ms SFD1840 Grinding wheel radius (polar coordinates) Default is 20, dnir ms SFD1840 High 16-bit Low 16-bit SFD1841 Soft limit positive value Low 16-bit SFD1842 High 16-bit Setter the set the default speed ligh 16-bit SFD1843 Soft limit negative value Pulse is sent at the default speed when the speed is 0. SFD1864 Acceleration time of pulse default speed Pulse default speed ligh 16-bit SFD1865 Acceleration and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved Bit15-Bit2: reserved Bit15-Bit2: reserved Bit15-Bit2 SFD1866 Max speed logh 16-bit SFD1867 Max speed logh 16-bit SFD1886 Initial speed ligh 16-bit SFD1871 Stop speed logh 16-bit SFD1886 Initial speed ligh 16-bit SFD1872 Follow performance SFD1873 Follow performance SFD1884 Pulse default speed logh 16-bit SFD1885 Pulse default speed logh 16-bit SFD1872 Follow performance SFD1873 Follow performance	SFD1836		2	
SFD1838 CLR signal delay time coordinates) Default is 20, duit: ms SFD1840 Grinding wheel radius (polar coordinates) High 16-bit SFD1841 Soft limit positive value Low 16-bit SFD1842 High 16-bit Low 16-bit SFD1843 Soft limit negative value Low 16-bit SFD1844 Soft limit negative value Low 16-bit SFD1840 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1861 Pulse default speed high 16-bit Speed is 0. SFD1862 Acceleration time of pulse default speed Speed is 0. SFD1863 deceleration time of pulse default speed Bit1-Bit0: acc/dec mode 00: linear acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved SFD1866 Max speed high 16-bit Sit1-Bit0: acc/dec mode 00: linear acc/dec 11: reserved SFD1866 Max speed high 16-bit Sit1-Bit0: acc/dec mode 00: linear acc/dec 11: reserved SFD1866 Max speed high 16-bit Sit12: reserved SFD1870 Stop speed low 16-bit Image acc/dec 10: sine curve acc/dec 11: reserved SFD1871 Stop speed high 16-bit Image acc acc acc acc acc acc acc acc acc ac	SFD1837			
SFD1839 coordinates) Low 16-bit SFD1840 High 16-bit SFD1841 Soft limit positive value Low 16-bit SFD1842 Soft limit negative value Low 16-bit SFD1843 Soft limit negative value Low 16-bit SFD1844 Soft limit negative value Low 16-bit SFD1860 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1861 Pulse default speed high 16-bit speed SFD1862 Acceleration time of pulse default speed is 0. SFD1863 deceleration and deceleration time Bit1-Bit0: acc/dec mode SFD1864 Acceleration/deceleration mode Di : sine curve acc/dec Di : sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1866 Max speed low 16-bit SED1867 SFD1867 Max speed low 16-bit SED1868 SFD1870 Stop speed high 16-bit SED1870 SFD1871 Stop speed high 16-bit I~100, 100 means the time constant is 1 Tick, 1 means the time constant is 1 100 Ticks SFD1871 Stop speed high 16-bit I~100, 100 means the time constant is 1 100 Ticks SFD1873 Follow	SFD1838	-	Default is 20, unit: ms	
SFD1840 High 16-bit SFD1841 Soft limit positive value High 16-bit SFD1842 High 16-bit SFD1843 Soft limit negative value Low 16-bit SFD1844 Soft limit negative value Low 16-bit SFD1845 Soft limit negative value Low 16-bit SFD1860 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1861 Acceleration time of pulse default speed is 0. Seed SFD1864 Acceleration and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1865 Acceleration/deceleration mode Bit1-Bit0: acc/dec 11: reserved Bit15-Bit2: reserved SFD1866 Max speed low 16-bit SFD1867 SFD1867 Max speed low 16-bit SFD1870 SFD1868 Initial speed low 16-bit SFD1870 SFD1872 Follow performance 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 1 00 Ticks SFD1880 Pulse default speed low 16-bit SFD1873 SFD1881 Pulse default speed low 16-bit SFD1881 SFD1882 Follow feedforward compensation 0~100, % Y (group 2 parameters) SFD1881 Pulse default speed low 16-bit	SFD1839	-	Low 16-bit	
SFD1842 Soft limit negative value High 16-bit SFD1843 Soft limit negative value Low 16-bit V7 (group 1 parameters) SFD1860 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1861 Pulse default speed high 16-bit speed is 0. SFD1862 Acceleration time of pulse default speed when the of eaceleration time of pulse default speed when the speed SFD1863 Acceleration and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1864 Max speed low 16-bit SFD1865 SFD1865 Max speed low 16-bit SFD1866 SFD1866 Max speed low 16-bit SFD1867 SFD1866 Initial speed low 16-bit SFD1867 SFD1867 Max speed low 16-bit SFD1867 SFD1868 Initial speed low 16-bit SFD1867 SFD1869 Initial speed low 16-bit SFD1867 SFD1877 Follow performance 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 10 Ticks SFD1873 Follow feedfortward compensation 0	SFD1840		High 16-bit	
SFD1843 Soft limit negative value Low 16-bit V7 (group 1 parameters) SFD1860 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1861 Pulse default speed high 16-bit speed is 0. SFD1862 Acceleration time of pulse default speed deceleration time of pulse default speed SFD1863 deceleration and deceleration time Bit1-Bit0: acc/dec mode O0: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec SFD1865 Acceleration/deceleration mode Bit1-Bit0: acc/dec SFD1866 Max speed low 16-bit SFD1870 SFD1867 Max speed high 16-bit SFD1871 SFD1868 Initial speed low 16-bit SFD1871 SFD1872 Follow performance 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 1 Tick, 1 means the time constant is 10 Ticks SFD1880 Pulse default speed low 16-bit SFD1881 SFD1881 Pulse default speed high 16-bit	SFD1841	Soft limit positive value	Low 16-bit	
V7 (group 1 parameters) SFD1860 Pulse default speed high 16-bit SFD1801 Pulse default speed high 16-bit speed is 0. SFD1802 Acceleration time of pulse default speed high 16-bit speed SFD1803 deceleration time of pulse default speed high 16-bit speed SFD1804 Acceleration and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1865 Acceleration/deceleration mode Bit1-Sit2: reserved SFD1866 Max speed low 16-bit SFD1867 SFD1866 Initial speed high 16-bit SFD1867 SFD1870 Stop speed low 16-bit SFD1871 SFD1871 Stop speed low 16-bit SFD1872 SFD1871 Stop speed high 16-bit SFD1873 SFD1872 Follow performance 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks SFD1880 Pulse default speed high 16-bit SPC1880 SFD1880 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1881 Pulse default speed low 16-bit speed is 0. SF	SFD1842		High 16-bit	
V7 (group 1 parameters) SFD1860 Pulse default speed low 16-bit SFD1861 Pulse default speed high 16-bit speed is 0. Acceleration time of pulse default speed when time of pulse default speed speed SFD1862 Acceleration time of pulse default speed when time of pulse default speed SFD1863 deceleration time of pulse default speed SFD1864 Accerlation and deceleration time SFD1865 Acceleration/deceleration mode Bit1-Bit0: acc/dec 01: Surve acc/dec 11: reserved Bit15-Bit2: reserved Bit15-Bit2: reserved SFD1866 Max speed low 16-bit SFD1867 Max speed high 16-bit SFD1868 Initial speed high 16-bit SFD1870 Stop speed high 16-bit SFD1871 Stop speed high 16-bit SFD1872 Follow performance 1~100, 100 means the time constant is 100 Ticks SFD1873 Follow feedforward compensation 0~100, % weat weat speed SFD1880 Pulse default speed high 16-bit	SFD1843	Soft limit negative value	Low 16-bit	
SFD1860 Pulse default speed low 16-bit Pulse is sent at the default speed when the speed is 0. SFD1861 Pulse default speed high 16-bit speed is 0. SFD1862 Acceleration time of pulse default speed high 16-bit speed SFD1863 deceleration time of pulse default speed high 16-bit speed SFD1864 Accerlation and deceleration time Bit1-Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15-Bit2: reserved SFD1865 Acceleration/deceleration mode Bit1-Sit2: reserved SFD1866 Max speed low 16-bit Bit1-Sit2: reserved SFD1866 Max speed low 16-bit SFD1867 SFD1867 Max speed high 16-bit SFD1868 SFD1868 Initial speed low 16-bit SFD1870 SFD1870 Stop speed high 16-bit SFD1871 SFD1871 Stop speed high 16-bit septem set time constant is 1 Tick, 1 means the time constant i				
SFD1861 Pulse default speed high 16-bit speed is 0. SFD1862 Acceleration time of pulse default speed		Y7 (group 1 p	parameters)	
SFD1863 deceleration time of pulse default speed SFD1864 Accerlation and deceleration time SFD1864 Accerlation and deceleration time SFD1865 Acceleration/deceleration mode Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved Bit15~Bit2: reserved SFD1866 Max speed low 16-bit SFD1867 SFD1866 Initial speed low 16-bit SFD1868 SFD1866 Initial speed low 16-bit SFD1869 SFD1867 Max speed low 16-bit SFD1869 SFD1868 Initial speed low 16-bit SFD1869 SFD1870 Stop speed low 16-bit SFD1871 SFD1871 Stop speed high 16-bit I~100, 100 means the time constant is 1 Tick, 1 means the time constant is 10 Ticks SFD1872 Follow performance 1~100, 100 means the time constant is 100 Ticks SFD1873 Follow feedforward compensation 0~100, % srt V7 (group 2 parameters) SPD1881 SFD1881 Pulse default speed low 16-bit speed SFD1883 deceleration time of pulse default speed is 0. SFD1884 Acceleration time of pulse default speed is 0. S	SFD1860	Pulse default speed low 16-bit	Pulse is sent at the default speed when the)
SFD1863 deceleration time of pulse default speed SFD1864 Accerlation and deceleration time SFD1864 Accerlation and deceleration time SFD1865 Acceleration/deceleration mode Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved Bit15~Bit2: reserved SFD1866 Max speed low 16-bit SFD1867 SFD1866 Initial speed low 16-bit SFD1868 SFD1866 Initial speed low 16-bit SFD1869 SFD1867 Max speed low 16-bit SFD1869 SFD1868 Initial speed low 16-bit SFD1869 SFD1870 Stop speed low 16-bit SFD1871 SFD1871 Stop speed high 16-bit I~100, 100 means the time constant is 1 Tick, 1 means the time constant is 10 Ticks SFD1872 Follow performance 1~100, 100 means the time constant is 100 Ticks SFD1873 Follow feedforward compensation 0~100, % srt V7 (group 2 parameters) SPD1881 SFD1881 Pulse default speed low 16-bit speed SFD1883 deceleration time of pulse default speed is 0. SFD1884 Acceleration time of pulse default speed is 0. S	SFD1861	Pulse default speed high 16-bit	speed is 0.	'O .
SFD1863 speed SFD1864 Accerlation and deceleration time SFD1865 Acceleration and deceleration time Bit1~Bit0: acc/dec mode 00: linear acc/dec 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved SFD1866 Max speed low 16-bit SFD1867 Max speed high 16-bit SFD1868 Initial speed low 16-bit SFD1869 Initial speed high 16-bit SFD1870 Stop speed low 16-bit SFD1871 Stop speed high 16-bit SFD1872 Follow performance SFD1873 Follow performance 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks SFD1873 Follow feedforward compensation 0~100, % 0~100, % V SFD1880 Pulse default speed high 16-bit SFD1881 Pulse default speed high 16-bit SFD1882 Cecleration time of pulse default speed 0. SFD1883 Gecleration time of pulse default speed 0.	SFD1862	•		3
SFD1865Acceleration/deceleration modeBit1-Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reservedSFD1866Max speed low 16-bit	SFD1863	-		
SFD1865Acceleration/deceleration mode00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reservedSFD1866Max speed low 16-bit=SFD1867Max speed low 16-bit=SFD1868Initial speed low 16-bit=SFD1869Initial speed low 16-bit=SFD1869Initial speed low 16-bit=SFD1870Stop speed low 16-bit=SFD1871Stop speed low 16-bit=SFD1872Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1873Follow performance0~100, %=TTTSFD1880Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1881Pulse default speed low 16-bitspeed is 0.SFD1882Acceleration time of pulse default speed=SFD1883deceleration time of pulse default speed=SFD1884deceleration time of pulse default speed=SFD1883deceleration time of pulse default speed=SFD1884deceleration time of pulse default speed=SFD1883deceleration time of pulse default speed=SFD1884deceleration time of pulse default speed=SFD1885deceleration time of pulse default speed=SFD1884deceleration time of pulse default speed=SFD1885deceleration time of pulse default speed= <td>SFD1864</td> <td>*</td> <td></td> <td></td>	SFD1864	*		
SFD1866Max speed low 16-bitImitial speed low 16-bitSFD1867Max speed high 16-bitImitial speed low 16-bitSFD1868Initial speed low 16-bitImitial speed high 16-bitSFD1870Stop speed low 16-bitImitial speed high 16-bitSFD1871Stop speed high 16-bitImitial speed high 16-bitSFD1872Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1873Follow feedforward compensation0~100, %V7 (group 2 parameters)SFD1880Pulse default speed low 16-bitSFD1881Pulse default speed high 16-bitPulse is sent at the default speed when the speed is 0.SFD1881Pulse default speed high 16-bitspeed is 0.SFD1883Geceleration time of pulse default speed is 0.Imitial speed is 0.SFD1883Acceleration time of pulse default speed is 0.Imitial speed is 0.SFD1883Geceleration time of pulse default speed is 0.Imitial speed is 0.SFD1883Acceleration time of pulse default speed is 0.Imitial speed is 0.SFD1884SpeedImitial speed is 0.SFD1885SpeedImitial speed is 0.SFD1884SpeedImitial speed is 0.SFD1885SpeedImitial speed is 0.SFD1883SpeedImitial speed is 0.SFD1884SpeedImitial speed is 0.SFD1885SpeedImitial speed is 0.SFD1886SpeedImitial speed is 0.SFD1887SpeedImitial speed is 0. <td>SFD1865</td> <td>Acceleration/deceleration mode</td> <td> 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved </td> <td></td>	SFD1865	Acceleration/deceleration mode	 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved 	
SFD1867Max speed high 16-bitSFD1868Initial speed low 16-bitSFD1869Initial speed high 16-bitSFD1870Stop speed low 16-bitSFD1871Stop speed high 16-bitSFD1872Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1873Follow feedforward compensation0~100, %	SFD1866	Max speed low 16-bit		
SFD1869Initial speed high 16-bitSFD1870Stop speed low 16-bitSFD1871Stop speed high 16-bitSFD1872Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1873Follow feedforward compensation 0~100, %0~100, %V7 (group 2 parameters)SFD1880Pulse default speed low 16-bit speed high 16-bitSFD1881Pulse default speed high 16-bit speed is 0.SFD1882Acceleration time of pulse default speedSFD1883deceleration time of pulse default speed	SFD1867			
SFD1870Stop speed low 16-bitSFD1871Stop speed high 16-bitSFD1872Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1873Follow feedforward compensation0~100, %0~100, %0SFD1880Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1881Pulse default speed high 16-bitspeed is 0.SFD1882Acceleration time of pulse default speeddeceleration time of pulse default speedSFD1883deceleration time of pulse default speed	SFD1868	Initial speed low 16-bit		
SFD1871Stop speed high 16-bitI~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1872Follow performance1~100, 100 means the time constant is 100 TicksSFD1873Follow feedforward compensation 0~100, %0~100, %V7 (group 2 parameters)SFD1880Pulse default speed low 16-bit speed high 16-bitPulse is sent at the default speed when the speed is 0.SFD1882Acceleration time of pulse default speedspeed is 0.SFD1883deceleration time of pulse default speed	SFD1869	Initial speed high 16-bit		
SFD1872Follow performance1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 TicksSFD1873Follow feedforward compensation0~100, %0~100, %V7 (group 2 parameters)SFD1880Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1882Acceleration time of pulse default speedAcceleration time of pulse default speedSFD1883deceleration time of pulse default speedImage: Complex default speed	SFD1870	Stop speed low 16-bit		
SFD18/2Follow performance1 means the time constant is 100 TicksSFD1873Follow feedforward compensation0~100, %V7 (group 2 parameters)SFD1880Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1881Pulse default speed high 16-bitspeed is 0.SFD1882Acceleration time of pulse default speedSFD1883deceleration time of pulse default speed	SFD1871	Stop speed high 16-bit		
Image: Non-Sector of the speed Image: Non-Sector of the speed Image: Non-Sector of the speed low in the speed low	SFD1872	Follow performance		
Y7 (group 2 parameters)SFD1880Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1881Pulse default speed high 16-bitspeed is 0.SFD1882Acceleration time of pulse default speeddeceleration time of pulse default speedSFD1883deceleration time of pulse default speed	SFD1873	Follow feedforward compensation	0~100, %	
SFD1880Pulse default speed low 16-bitPulse is sent at the default speed when the speed is 0.SFD1881Pulse default speed high 16-bitspeed is 0.SFD1882Acceleration time of pulse default speeddeceleration time of pulse default speedSFD1883deceleration time of pulse default speed				
SFD1881 Pulse default speed high 16-bit speed is 0. SFD1882 Acceleration time of pulse default speed deceleration time of pulse default speed SFD1883 deceleration time of pulse default speed deceleration time of pulse default speed		Y7 (group 2 p	parameters)	
SFD1882 Acceleration time of pulse default speed SFD1883 deceleration time of pulse default speed	SFD1880	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1882 speed SFD1883 deceleration time of pulse default speed	SFD1881		speed is 0.	
SFD1883 speed	SFD1882	-		
	SFD1883	-		
	SFD1884	Accerlation and deceleration time		

Bit1~Bit0: acc/dec mode 00: linear acc/dec	
00: linear acc/dec	
SED 1995 A 1 / / l 1 / l 01: S curve acc/dec	
SFD1885 Acceleration/deceleration mode 10: sine curve acc/dec	
11: reserved	
Bit15~Bit2: reserved	
SFD1886 Max speed low 16-bit	
SFD1887 Max speed high 16-bit	
SFD1888 Initial speed low 16-bit	
SFD1889 Initial speed high 16-bit	
SFD1890 Stop speed low 16-bit	2.
SFD1891 Stop speed high 16-bit	0
$1 \sim 100, 100$ means the time constant is 1	Tick,
SFD1892Follow performance1 100, 100 interior interinterinte	
SFD1893 Follow feedforward compensation 0~100, %	Tick,
Y7 (group 3 parameters)	
SFD1900 Pulse default speed low 16-bit Pulse is sent at the default speed when	n the
SFD1901 Pulse default speed high 16-bit speed is 0.	
Acceleration time of pulse default	
SFD1902 speed	
deceleration time of pulse default	
SFD1903 speed	
SFD1904 Accertation and deceleration time	
Bit1~Bit0: acc/dec mode	
00: linear acc/dec	
SED 1005 Acceleration (deceleration model 01: S curve acc/dec	
SFD1905 Acceleration/deceleration mode 10: sine curve acc/dec	
11: reserved	
Bit15~Bit2: reserved	
SFD1906 Max speed low 16-bit	
SFD1907 Max speed high 16-bit	
SFD1908 Initial speed low 16-bit	
SFD1909 Initial speed high 16-bit	
SFD1910 Stop speed low 16-bit	
SFD1911 Stop speed high 16-bit	
SFD1912 Follow performance 1~100, 100 means the time constant is 1	Tick,
SFD1912Follow performanceI means the time constant is 100 Ticks	
SFD1913Follow feedforward compensation0~100, %	
Y7 (group 4 parameters)	
SFD1920 Pulse default speed low 16-bit Pulse is sent at the default speed when	n the
SFD1921 Pulse default speed high 16-bit speed is 0.	

1Un

	Č.	Appendix	
		Аррения	
SFD1922	Acceleration time of pulse default speed	20	
SFD1923	deceleration time of pulse default speed	9	
SFD1924	Accerlation and deceleration time		
SFD1925	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1926	Max speed low 16-bit	40	
SFD1927	Max speed high 16-bit		
SFD1928	Initial speed low 16-bit		
SFD1929	Initial speed high 16-bit		2
SFD1930	Stop speed low 16-bit		
SFD1931	Stop speed high 16-bit		
SFD1932	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD1933	Follow feedforward compensation	0~100, %	
	Y10 (common	parameters)	
SFD1940	Pulse parameters	Same to SFD900	
SFD1941	Pulse sending mode	Bit 0: pulse sending mode0: complete mode; 1: continue modeDefault is 0	
SFD1942	Pulse number/1 rotation low 16-bit		
SFD1943	Pulse number/1 rotation high 16-bit		
SFD1944	Moving amount/1 rotation low 16-bit		
SFD1945	Moving amount/1 rotation high 16-bit		
SFD1946	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	
SFD1947	Direction delay time	Default is 20, unit: ms	
SFD1948	Gear clearance positive compensation		
SFD1949	Gear clearance negative compensation		
SFD1950	Electrical origin position low 16-bit		
SFD1951	Electrical origin position high 16-bit		



	<u> </u>		
		Bit0: Origin Signal Switch State Settings	
		Bit1:Z Phase Switch State Settings	
SFD1952		Bit2: Positive Limit Switching State Settings	
	Signal terminal switch state	Bit3: Negative Limit Switching State Settings	
		0: Normally open (positive logic), 1: Normally	
		closed (negative logic); default is 0	
SFD1954	Near-point signal terminal setting		
SED1055	7 share to minal actions	Bit0~Bit7: Specify the number of the X	
SFD1955	Z phase terminal setting	terminal, 0xFF is no terminal	
		Bit7~Bit0: Specifies the X terminal number of	
SFD1957	Limit terminal setting	the positive limit, and 0xFF is no terminal.	
SFD1957	Limit terminal setting	Bit15~Bit8: Specifies the X terminal number	
		of the negative limit, and 0xFF is no terminal.	0
SFD1958	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
SFD1959	Return speed VH low 16-bit	terminal, 0xFF is no terminal	-On
SFD1962	Return speed VH high 16-bit		
SFD1963	Creeping speed VC low 16-bit		
SFD1964	Creeping speed VC high 16-bit		
	Mechanical origin position low		
SFD1965	16-bit		
GED 10.((Mechanical origin position high		
SFD1966	16-bit		
SFD1967	Z phase number		
SFD1968	CLR signal delay time	Default is 20, unit: ms	
0FD10(0	Grinding wheel radius (polar		
SFD1969	coordinates)	Low 16-bit	
SFD1970		High 16-bit	
SFD1971	Soft limit positive value	Low 16-bit	
SFD1972		High 16-bit	
SFD1973	Soft limit negative value	Low 16-bit	
•••			
	Y10 (group 1	parameters)	
SFD1990	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD1991	Pulse default speed high 16-bit	speed is 0.	
SFD1992	Acceleration time of pulse default		
51 1772	speed		
SFD1993	deceleration time of pulse default speed		
1	speed		

	Ľ,		
	· (/	Appendix	
	C		
SFD1995	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD1996	Max speed low 16-bit		
SFD1997	Max speed high 16-bit		
SFD1998	Initial speed low 16-bit		
SFD1999	Initial speed high 16-bit		
SFD2000	Stop speed low 16-bit	Ö.	
SFD2001	Stop speed high 16-bit		
SFD2002	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD2003	Follow feedforward compensation	0~100, %	2
			2
	Y10 (group 2	parameters)	•
SFD2010	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD2011	Pulse default speed high 16-bit	speed is 0.	
SFD2012	Acceleration time of pulse default speed		
SFD2013	deceleration time of pulse default speed		
SFD2014	Accerlation and deceleration time		
SFD2015	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD2016	Max speed low 16-bit		
SFD2017	Max speed high 16-bit		
SFD2018	Initial speed low 16-bit		
SFD2019	Initial speed high 16-bit		
SFD2020	Stop speed low 16-bit		
SFD2021	Stop speed high 16-bit		
SFD2022	Follow performance	1~100, 100 means the time constant is 1 Tick,1 means the time constant is 100 Ticks	
SFD2023	Follow feedforward compensation	0~100, %	
	Y10 (group 3	parameters)	
SFD2030	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD2031	Pulse default speed high 16-bit	speed is 0.	

	1		
	· · · · ·	Appendix	
	Č,		
SFD2032	Acceleration time of pulse default speed		
SFD2033	deceleration time of pulse default speed	Show and the second sec	
SFD2034	Accerlation and deceleration time	0	
		Bit1~Bit0: acc/dec mode 00: linear acc/dec	
SFD2035	Acceleration/deceleration mode	01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD2036	Max speed low 16-bit		
SFD2037	Max speed high 16-bit		
SFD2038	Initial speed low 16-bit		
SFD2039	Initial speed high 16-bit		
SFD2040	Stop speed low 16-bit		1
SFD2041	Stop speed high 16-bit		
SFD2042	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD2043	Follow feedforward compensation	0~100, %	
	Y10 (group 4	parameters)	
SFD2050	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD2051	Pulse default speed high 16-bit	speed is 0.	
SFD2052	Acceleration time of pulse default speed		
SFD2053	deceleration time of pulse default speed		
SFD2054	Accerlation and deceleration time		
		Bit1~Bit0: acc/dec mode 00: linear acc/dec	
		01: S curve acc/dec	
SFD2055	Acceleration/deceleration mode	10: sine curve acc/dec	
		11: reserved	
		Bit15~Bit2: reserved	
SFD2056	Max speed low 16-bit		
SFD2057	Max speed high 16-bit		
SFD2037 SFD2058	Initial speed low 16-bit		
SFD2038 SFD2059			
SFD2059 SFD2060	Initial speed high 16-bit Stop speed low 16-bit		
SFD2060 SFD2061			
SFD2061 SFD2062	Stop speed high 16-bit Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	

t i statistica de la constatistica de la constatistica de la constatistica de la constatistica de la constatis			
	· · · ·	Appendix	
SFD2063	Follow feedforward compensation	0~100, %	
•••			
	Y11 (common	parameters)	
SFD2070	Pulse parameters	Same to SFD900	
		Bit 0: pulse sending mode	
SFD2071	Pulse sending mode	0: complete mode; 1: continue mode	
		Default is 0	
SFD2072	Pulse number/1 rotation low 16-bit	96	
SFD2073	Pulse number/1 rotation high 16-bit		
SFD2074	Moving amount/1 rotation low	C ₂	
	16-bit		
SFD2075	Moving amount/1 rotation high		
	16-bit	*	
SFD2076	Pulse direction terminal	Appoint to Y terminal, 0xFF is no terminal	0
SFD2077	Direction delay time	Default is 20, unit: ms	
SFD2078	Gear clearance positive		
	compensation		
SFD2079	Gear clearance negative		
SFD2080	compensation Electrical origin position low 16-bit		
SFD2080 SFD2081	Electrical origin position high 16-bit		
51 D2081	Electrical origin position high to-on	Bit0: Origin Signal Switch State Settings	
		Bit1:Z Phase Switch State Settings	
		Bit2: Positive Limit Switching State Settings	
SFD2082	Signal terminal switch state	Bit3: Negative Limit Switching State Settings	
		0: Normally open (positive logic), 1: Normally	
		closed (negative logic); default is 0	
SFD2084	Near-point signal terminal setting		
SED2005	7 mbass tomming 1 setting	Bit0~Bit7: Specify the number of the X	
SFD2085	Z phase terminal setting	terminal, 0xFF is no terminal	
		Bit7~Bit0: Specifies the X terminal number of	
SFD2087	Limit terminal setting	the positive limit, and 0xFF is no terminal.	
51 D2007		Bit15~Bit8: Specifies the X terminal number	
		of the negative limit, and 0xFF is no terminal.	
SFD2088	Zero clear CLR output signal	Bit0~Bit7: Specify the number of the Y	
SFD2089	Return speed VH low 16-bit	terminal, 0xFF is no terminal	
SFD2092	Return speed VH high 16-bit		
SFD2093	Creeping speed VC low 16-bit		
SFD2094	Creeping speed VC high 16-bit		
SFD2095	Mechanical origin position low		
51 12075	16-bit		

	×.		
		Appendix	
	(<u> </u>	
SFD2096	Mechanical origin position high 16-bit	20	
SFD2097 Z	Z phase number		
SFD2098 0	CLR signal delay time	Default is 20, unit: ms	
I SED2099	Grinding wheel radius (polar coordinates)	Low 16-bit	
SFD2100	· · · · · · · · · · · · · · · · · · ·	High 16-bit	
SFD2101 S	Soft limit positive value	Low 16-bit	
SFD2102		High 16-bit	
SFD2103 S	Soft limit negative value	Low 16-bit	
	Y11 (group 1 p	parameters)	
SFD2120 H	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	0
SFD2121 H	Pulse default speed high 16-bit	speed is 0.	
SFD2122	Acceleration time of pulse default speed		CON
SFD2123	deceleration time of pulse default speed		
	Accerlation and deceleration time		
SFD2125 4	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD2126 N	Max speed low 16-bit		
	Max speed high 16-bit		
SFD2128 I	Initial speed low 16-bit		
SFD2129 I	Initial speed high 16-bit		
SFD2130 S	Stop speed low 16-bit		
SFD2131 S	Stop speed high 16-bit		
SFD2132	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD2133 H	Follow feedforward compensation	0~100, %	
	Y11 (group 2 p	parameters)	
SFD2140 H	Pulse default speed low 16-bit	Pulse is sent at the default speed when the	
	Pulse default speed high 16-bit	speed is 0.	
SFD2142	Acceleration time of pulse default speed		
	deceleration time of pulse default		
SFD2143	speed		

SFD2146MaSFD2147MaSFD2148InitSFD2149InitSFD2150StoSFD2151StoSFD2152FolSFD2153FolSFD2164PulSFD2160PulSFD2162AccSFD2162SpeSFD2163GecSFD2163AccSFD2163SpeSFD2164SpeSFD2163SpeSFD2163SpeSFD2164SpeSFD2163SpeSFD2164SpeSFD2163SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2165SpeSFD2165Spe <tr< th=""><th>ecceleration/deceleration mode ax speed low 16-bit ax speed high 16-bit tial speed high 16-bit tial speed high 16-bit op speed low 16-bit op speed low 16-bit llow performance llow feedforward compensation <u>V11 (group 3 public default speed high 16-bit</u> lse default speed high 16-bit cecleration time of pulse default</th><th></th><th>Con</th></tr<>	ecceleration/deceleration mode ax speed low 16-bit ax speed high 16-bit tial speed high 16-bit tial speed high 16-bit op speed low 16-bit op speed low 16-bit llow performance llow feedforward compensation <u>V11 (group 3 public default speed high 16-bit</u> lse default speed high 16-bit cecleration time of pulse default		Con
SFD2146MaSFD2147MaSFD2148InitSFD2149InitSFD2150StoSFD2151StoSFD2152FolSFD2153FolSFD2164PulSFD2160PulSFD2162AccSFD2162SpeSFD2163GecSFD2163AccSFD2163SpeSFD2164SpeSFD2163SpeSFD2163SpeSFD2164SpeSFD2163SpeSFD2164SpeSFD2163SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2165SpeSFD2165Spe <tr< th=""><th>ax speed low 16-bit ax speed high 16-bit itial speed low 16-bit itial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation V11 (group 3 p lse default speed low 16-bit lse default speed high 16-bit</th><th>00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the</th><th>Con</th></tr<>	ax speed low 16-bit ax speed high 16-bit itial speed low 16-bit itial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation V11 (group 3 p lse default speed low 16-bit lse default speed high 16-bit	00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the	Con
SFD2146MaSFD2147MaSFD2148InitSFD2149InitSFD2150StoSFD2151StoSFD2152FolSFD2153FolSFD2164PulSFD2160PulSFD2162AccSFD2162SpeSFD2163GecSFD2163AccSFD2163SpeSFD2164SpeSFD2163SpeSFD2163SpeSFD2164SpeSFD2163SpeSFD2164SpeSFD2163SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2164SpeSFD2165SpeSFD2165SpeSFD2165Spe <tr< td=""><td>ax speed low 16-bit ax speed high 16-bit itial speed low 16-bit itial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation V11 (group 3 p lse default speed low 16-bit lse default speed high 16-bit</td><td>00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the</td><td>Con</td></tr<>	ax speed low 16-bit ax speed high 16-bit itial speed low 16-bit itial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation V11 (group 3 p lse default speed low 16-bit lse default speed high 16-bit	00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved 1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks 0~100, % Pulse is sent at the default speed when the	Con
SFD2147MaSFD2148InitSFD2149InitSFD2150StoSFD2151StoSFD2152FolSFD2153FolImage: Comparison of the second of t	ax speed high 16-bit itial speed low 16-bit itial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation <u>Y11 (group 3 p</u> lse default speed low 16-bit lse default speed high 16-bit	1~100, 100 means the time constant is 1 Tick; 1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	Con
SFD2147MaSFD2148InitSFD2149InitSFD2150StoSFD2151StoSFD2152FolSFD2153FolImage: Comparison of the second of t	ax speed high 16-bit itial speed low 16-bit itial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation <u>Y11 (group 3 p</u> lse default speed low 16-bit lse default speed high 16-bit	1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	Con
SFD2148InitSFD2149InitSFD2150StoSFD2151StoSFD2152FolSFD2153FolImage: Comparison of the second of the secon	tial speed low 16-bit tial speed high 16-bit op speed low 16-bit llow performance llow feedforward compensation Y11 (group 3 p lse default speed low 16-bit lse default speed high 16-bit	1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	Con
SFD2149InitSFD2150StoSFD2151StoSFD2152FolSFD2153FolSFD2160PulSFD2161PulSFD2162SpeSFD2163accSFD21643accSFD21643accSFD21643accSFD21643accSFD21643acc <tr< td=""><td>tial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation Y11 (group 3 p lse default speed low 16-bit lse default speed high 16-bit</td><td>1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the</td><td>Con</td></tr<>	tial speed high 16-bit op speed low 16-bit op speed high 16-bit llow performance llow feedforward compensation Y11 (group 3 p lse default speed low 16-bit lse default speed high 16-bit	1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	Con
SFD2150StoSFD2151StoSFD2152FolSFD2153FolSFD2160PulSFD2161PulSFD2162AccSFD2163speSFD2163accSFD2164accSFD2164accSFD2165accSFD2164accSFD2165accSFD2165accSFD2165accS	pp speed low 16-bit pp speed high 16-bit llow performance llow feedforward compensation Y11 (group 3 provided the speed low 16-bit lse default speed high 16-bit	1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	Con
SFD2151StoSFD2152FolSFD2153FolSFD2160PulSFD2161PulSFD2162AccSFD2163apeSFD2164apeSFD2165apeSFD2165apeSFD2165apeSFD2165apeSFD2165apeSFD2165apeSFD2165apeSFD2165apeS	op speed high 16-bit llow performance llow feedforward compensation Y11 (group 3 g lse default speed low 16-bit lse default speed high 16-bit	1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	Com
SFD2152FolSFD2153FolSFD2160PulSFD2161PulSFD2162AccSFD2163speSFD2163accSFD2163spe	llow performance llow feedforward compensation Y11 (group 3 I lse default speed low 16-bit lse default speed high 16-bit	1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	Con
SFD2153 Fol Fol SFD2160 Pul SFD2161 Pul SFD2162 Spul SFD2163 Gate SFD2164 Spul SFD2165 Gate SFD2166 Spul SFD2167 Spul SFD2168 Spul SFD2163 Spul	Ilow feedforward compensation Y11 (group 3 g Ise default speed low 16-bit Ise default speed high 16-bit	1 means the time constant is 100 Ticks 0~100, % parameters) Pulse is sent at the default speed when the	COM
Image: SFD2160PullSFD2161PullSFD2162According to the second secon	Y11 (group 3 g lse default speed low 16-bit lse default speed high 16-bit	parameters) Pulse is sent at the default speed when the	S
Image: state of the state of	Y11 (group 3 g lse default speed low 16-bit lse default speed high 16-bit	parameters) Pulse is sent at the default speed when the	5
SFD2160 Pul SFD2161 Pul SFD2162 Acc SFD2162 dec SFD2163 gee	lse default speed low 16-bit lse default speed high 16-bit	parameters) Pulse is sent at the default speed when the	
SFD2161 Pul SFD2162 Acc spe SFD2163 dec spe	lse default speed low 16-bit lse default speed high 16-bit	Pulse is sent at the default speed when the	
SFD2161 Pul SFD2162 Acc spe SFD2163 dec spe	lse default speed high 16-bit	-	
SFD2162 Acc spe SFD2163 dec spe		speed is 0.	
SFD2162 spe SFD2163 dec spe			
SFD2163 dec spe	-		
SFD2164 Acc	celeration time of pulse default		
	ccerlation and deceleration time		
SFD2165 Acc	cceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD2166 Ma	ax speed low 16-bit		
SFD2167 Ma	ax speed high 16-bit		
SFD2168 Init	tial speed low 16-bit		
SFD2169 Init	tial speed high 16-bit		
SFD2170 Sto	op speed low 16-bit		
SFD2171 Sto	op speed high 16-bit		
SFD2172 Fol	llow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD2173 Fol	llow feedforward compensation	0~100, %	
	*		
	Y11 (group 4 j	parameters)	
SFD2180 Pul	lse default speed low 16-bit	Pulse is sent at the default speed when the	
SFD2181 Pul		speed is 0.	

	Ľ,	Appendix	
SFD2182	Acceleration time of pulse default speed	0	
SFD2183	deceleration time of pulse default speed		
SFD2184	Accerlation and deceleration time		
SFD2185	Acceleration/deceleration mode	Bit1~Bit0: acc/dec mode 00: linear acc/dec 01: S curve acc/dec 10: sine curve acc/dec 11: reserved Bit15~Bit2: reserved	
SFD2186	Max speed low 16-bit		
SFD2187	Max speed high 16-bit	· · ·	
SFD2188	Initial speed low 16-bit).
SFD2189	Initial speed high 16-bit		
SFD2190	Stop speed low 16-bit		
SFD2191	Stop speed high 16-bit		
SFD2192	Follow performance	1~100, 100 means the time constant is 1 Tick, 1 means the time constant is 100 Ticks	
SFD2193	Follow feedforward compensation	0~100, %	
•••			



Appendix 4. External interruption terminal list

XD series PLC external interrupt terminal allocation is as follows: XD/XL series 10 I/O

	Poi	Disable		
Input terminal	Rising interruption	Falling interruption	interruption instruction	
X2	10000	I0001	SM050	
X3	I0100	I0101	SM051	
X4	10200	I0201	SM052	

XD/XL series 16 I/O

X2	X2 I0000		SM050	
X3	I0100	I0101	SM051	
X4	10200	I0201	SM052	
D/XL series 16 I/C)			34
	Poi	nter	Disable	· C
Input terminal	Dising intermention	Falling interruption	interruption	
	Rising interruption	rannig interruption	instruction	
X2	10000	I0001	SM050	
X3	I0100	I0101	SM051	
X4	I0200	I0201	SM052	
X5	10300	I0301	SM053	
X6	I0400	I0401	SM054	
X7	10500	I0501	SM055	

XD/XL series 24~64 I/O

	Poin	Disable		
Input terminal	Rising interruption	Falling interruption	interruption	
	Kising interruption	Pannig interruption	instruction	
X2	10000	I0001	SM050	
X3	I0100	I0101	SM051	
X4	I0200	I0201	SM052	
X5	I0300	I0301	SM053	
X6	I0400	I0401	SM054	
X7	10500	I0501	SM055	
X10	I0600	I0601	SM056	
X11	I0700	I0701	SM057	
X12	10800	I0801	SM058	
X13	10900	I0901	SM059	



Appendix 5. PLC resource conflict table

When PLC is used in practice, conflicts may arise due to the simultaneous use of some resources. This section will list the resources that may cause conflicts in each PLC model. This part mainly refers to high-speed counting, accurate timing and pulse output.

					SO.		
Precise		High sp	eed counter		Pulse		
timing					output		
XD2-16, XD3-16, X	XD5-16, XL3-	16, XL5-16,	XL5E-16		•	0	
ET0	-	-	-	-	-		_
ET2							
ET4						*	
ET6							C'
ET8	HSC0						
ET10		HSC2					
ET12			HSC4				
ET14					Y0		
ET16					Y0		
ET18					Y1		
ET20					Y1		
ET22							
ET24							
XD3-24/32/48/60, 2	ZG3-30	•		•	-		
ET0							
ET2							
ET4							
ET6							
ET8							
ET10							
ET12	HSC0						
ET14		HSC2					
ET16			HSC4				
ET18					Y0		
ET20					Y0		
ET22					Y1		
ET24					Y1		
XD5-24/32/48/60, 2	XDM-24/32/4	8/60, XD5E-:	30/60, XDME	-60, XL5-32,		LME-32	
ETO	-	-	-	-	-	-	
ET2				HSC6			
ET4			HSC4				
ET6		HSC2					
ET8	HSC0						



	ET10					Y3		
	ET12					Y3		
	ET14				77	Y2		
	ET16					Y2		
	ET18					Y1		
	ET20				9	Y1		
	ET22					Y0		
	ET24					Y0		
XDC-2	4/32/48/60							
	ET0	-	-	-	HSC6	-	C_{\sim}	
	ET2			HSC4			0	
	ET4		HSC2				· C	
	ET6	HSC0					•	0
	ET8					Y3		
	ET10					Y3		
	ET12					Y2		
	ET14					Y2		
	ET16					Y1		-
	ET18					Y1		
	ET20					Y0		
	ET22					Y0		
-	ET24							-

 \times 1: This form should be read horizontally. Any two resources in each row cannot be used at the same time. Otherwise, it will cause conflict.

tudonghoaitoancau.com

tudonahoatoancau.com



WUXI XINJE ELECTRIC CO., LTD.

4th Floor Building 7,Originality Industry park, Liyuan Development Zone, Wuxi City, Jiangsu Province 214072 Tel: 400-885-0136 Fax: (510) 85111290