



MD600-INT

Compact AC Drive

推进工业文明 共创美好生活

Advancing industrial technology, for a better world!

Bacon Zeng

2025.12.02

密级[内部公开]

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01

PRODUCT INTRODUCTION

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The Economical Choice for Small Automation Equipment

MD600S

Modbus-RTU Version

1-phase 200-240V: 0.37-2.2KW

3-phase 380-480V: 0.37-5.5KW



MD600A

CAN-Bus Version

1-phase 200-240V: 0.37-2.2KW

3-phase 380-480V: 0.37-5.5KW

Over 500,000 units delivered in China.

● Product Specifications



MD600A(T1)
220V: 0.37-1.5KW
380V: 0.37-2.2KW



MD600S(T1)
220V: 0.37-1.5KW
380V: 0.37-2.2KW



MD600A(T2)
220V: 2.2KW
380V: 4.0-5.5KW



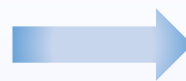
MD600S(T2)
220V: 2.2KW
380V: 4.0-5.5KW

Model	Power Range	Control Method	Motor Type	Communication	Terminal Resources	Sizes(W*H*D), Weight	Certification	IP Level
MD600S	1-phase 200-240V: 0.37-2.2KW 3-phase 380-480V: 0.37-5.5KW	VF, SVC	PMSM, IM	Modbus-RTU	4DI, 1AI, 1AO, 1RO	T1: 60*170*120, 0.8kg T2: 68*170*140, 1kg	CE, KC	IP20
MD600A				CANlink/ CANopen	5DI, 2DO, 1AI, 1RO			

● Ultimate Compact Size



Reduction
Size
38%



Only air-cooled models support side-by-side installation.

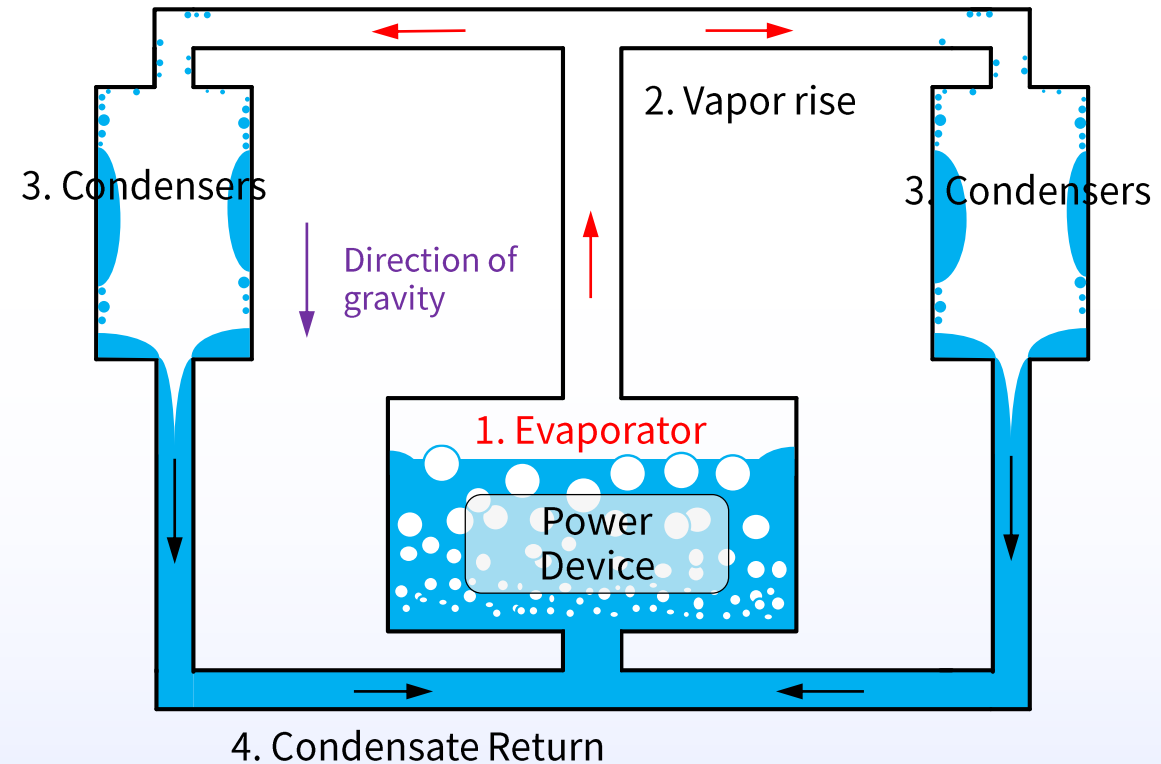
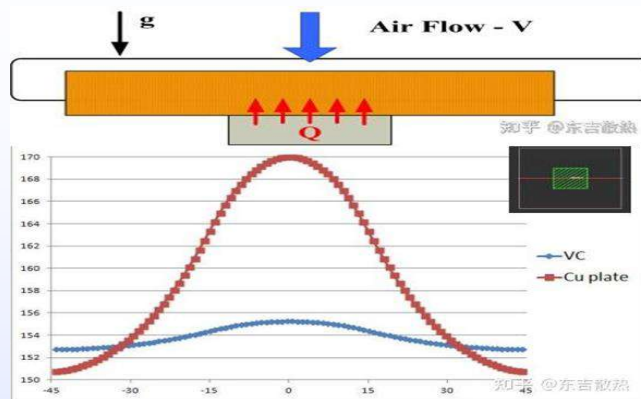


- Unlocks **TCO savings** by directly lowering cabinet material, storage, and logistics costs.
- Engineered for **compact, multi-axis automation**.

Thermosyphon Technology



Excellent heat transfer efficiency and temperature uniformity.



The heat transfer efficiency of the cooling plate is **≥ 20 times higher** than that of the conventional aluminum material.

• Easy to Debug

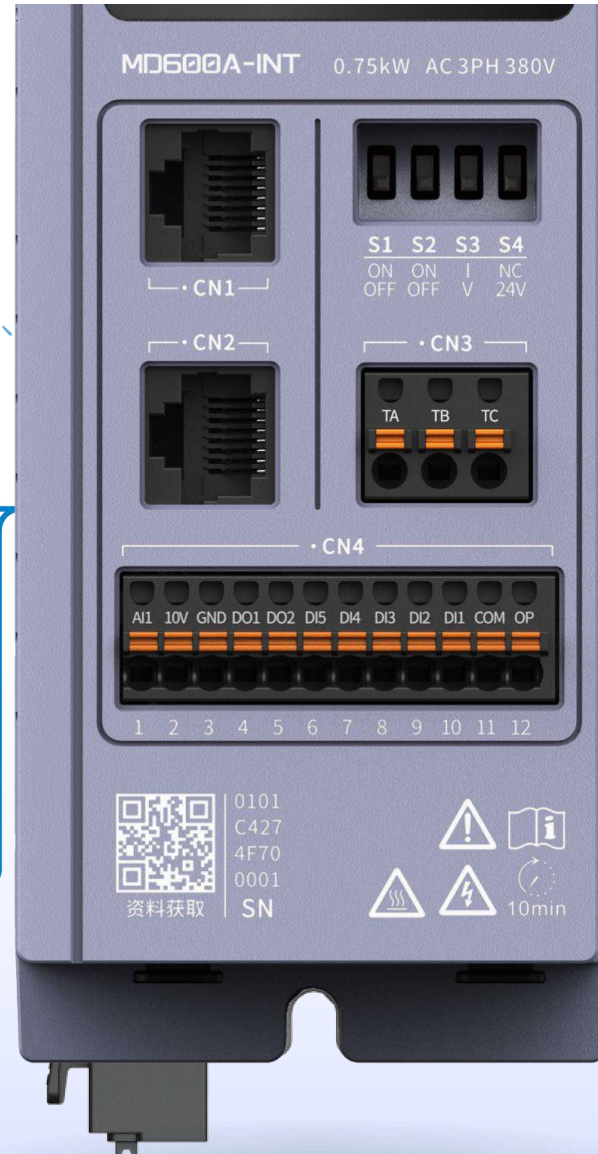
Optional external LED keypad with potentiometer

Model: MD-BP-M
Code: 01040264



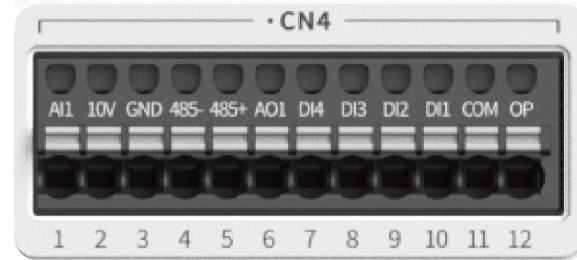
Optional external LCD keypad, Chinese/English, parameter copy function

Model: SOP-20-810
Code: 01040028



Spring-clamp Terminals Assembly efficiency increased by 60%

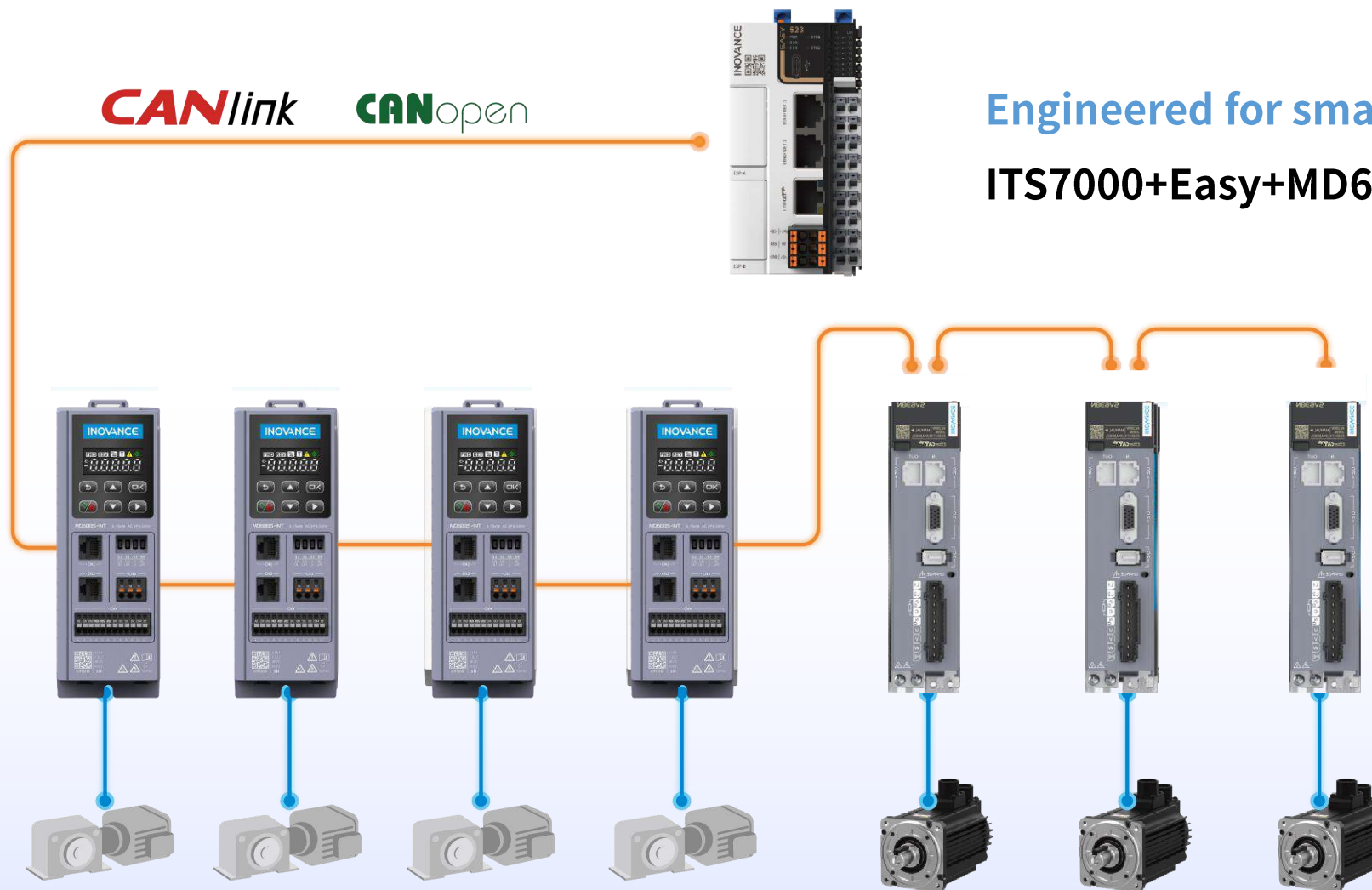
✓ MD600: No screw fastening, preventing terminal thread stripping.



✗ MD200: 22 screws, risk of terminal thread stripping.



• Cost-optimized Solution



Engineered for small automation equipment

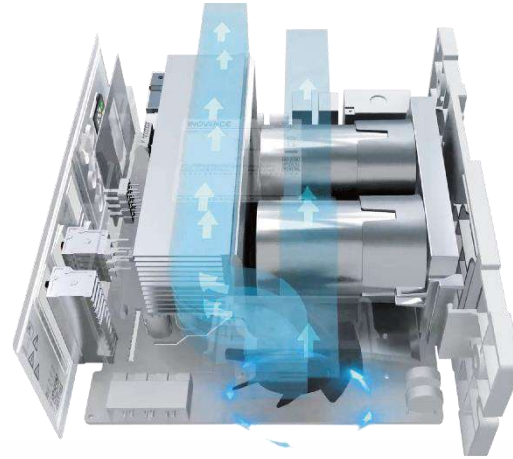
ITS7000+Easy+MD600+SV630

• Reliability



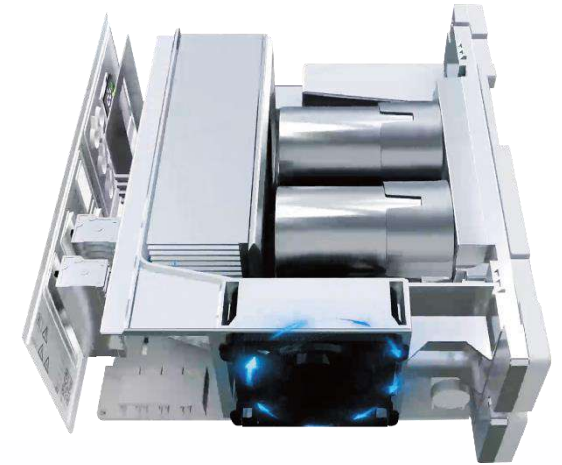
Enhanced Conformal Coating

- Effectively protects drive circuits from salt spray corrosion, significantly enhancing the product's environmental resilience.



Isolated Cooling Tunnel

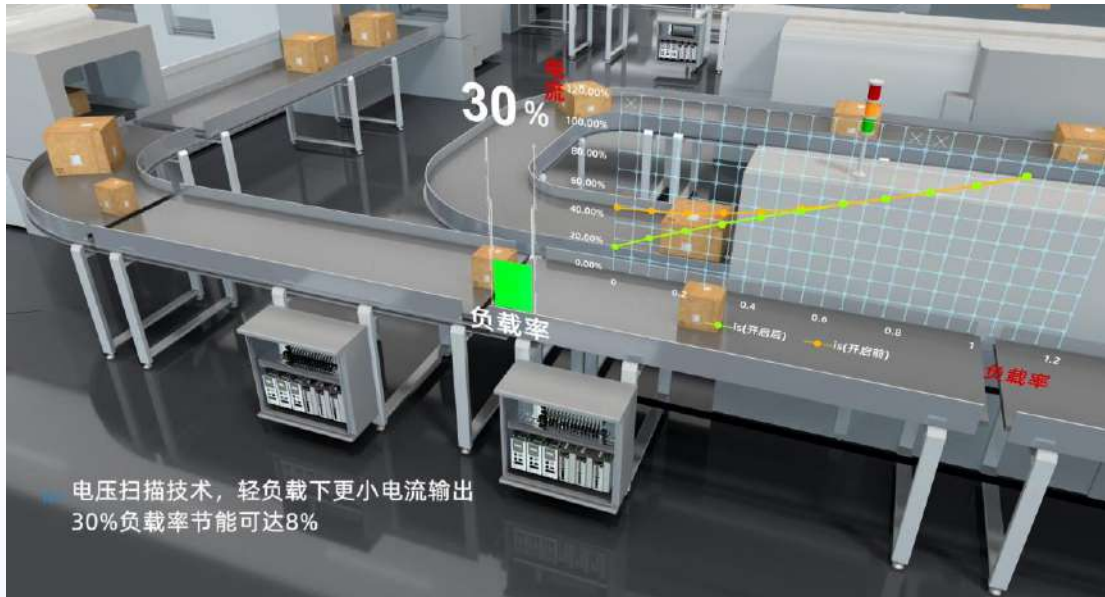
- Effectively isolates the drive board from contaminants such as dust, cutting fluid, and conductive fibers, enhancing reliability in harsh environments.



Adjustable Fan

- Featuring a cycle & bidirectional speed-adjustable rotation support, it prevents lint clogging, enabling maintenance-free operation.
- The fan drive integrated on the board ensures stable performance in harsh environments.

● Energy Saving



- Utilizing **voltage scanning technology**;
- It employs **lower current control under light loads**, achieving up to 8% energy savings at 30% load rate;
- Empowering small-scale automation equipment with enhanced energy efficiency.

• Fire Mode (Non-Standard Firmware)



Fire Mode

- With Fire Mode enabled, most faults will not trigger a shutdown, and the drive continues to operate.

● Application



- Logistics Belt Conveyor
- Logistics Electric Roller
- Telescopic Conveyor
- Automotive Equipment
- Silicon Component
- Food & Beverage

Conveying Equipment



- Woodworking Edge Banding Machine
- Woodworking Sanding Machine
- Cable Pay-off Stand
- Bag Making Machine
- Capping Machine
- Filling Machine
- Dough Press Machine

Process Machining



Simple Fan & Pump

- Pond Aerator Pump
- Industrial Fan
- PCB Chemical Pump
- Vacuum Pump



Machine Tool Spindle

- Panel Cutting Machine Spindle
- Grinding Machine
- Polishing Machine



Tooling Equipment

- Floor Grinding Machine
- Industrial Washer
- Car Wash Machine

● Application Analysis

APPLICATION	BENEFITS
Conveying Equipment	1. Compact design saves electrical cabinet space and reduces overall user costs. 2. Spring-clamp terminals increase installation efficiency by 60%. 3. Light-load operation with lower current control achieves up to 8% energy savings at 30% load. 4. DI supports both sourcing and sinking connections, compatible with a wide range of peripheral devices for enhanced flexibility. 5. S-curve speed ramping enables smooth acceleration and deceleration, reducing mechanical stress. 6. Flux braking and DC braking improve dynamic performance without the need for additional braking resistors.
Process Machining	1. Compact design suitable for confined installation spaces. 2. Load monitoring and motor stall protection ensure stable equipment operation. 3. Two sets of PID parameters facilitate the implementation of closed-loop process control systems.
Fan & Pump	1. Compact design for tight installation spaces. 2. Flying start function ensures high availability of the AC drive. 3. Isolated cooling tunnel, 100% conformal coating on drive board, and adjustable fan with bidirectional rotation, meeting reliable application demands in harsh environments.
Machine Tool Spindle	1. Compact design for limited installation space. 2. Higher operating frequency (599 Hz) delivers superior machining results. 3. Independent air duct, 100% conformal coating on the drive board, and adjustable fan ensure reliable operation in harsh environments.
Tooling Equipment	1. Compact design for confined installation spaces. 2. Load monitoring and motor stall protection ensure stable equipment operation.

• MD200 VS MD600

Dimension

- 75*160*145, 1.1kg;
- Relatively large size.

Terminal

- Screw-type terminal;
- No 24V terminal; Not support sourcing wiring.

Protection

- MD200 cannot meet the protection requirements against conductive fibers.

Certification & EMC

- CE, UKCA, UL, EAC, KCC
- Built-in EMC-C3 filter



MD200



MD600

Compact

- T1: 60*170*120, 0.8kg; T2: 68*170*140, 1kg;
- The volume is reduced by 38% compared to MD200.

Easy-to-debug

- Spring-clamp terminals;
- Sourcing/Sinking wiring;
- Dual Ethernet port.

Reliability

- Enhanced conformal coating, isolated cooling tunnel & adjustable fan; Better experiment data.

Certification & EMC

- CE, KCC
- No built-in EMC-C3 filter

● Selection Table

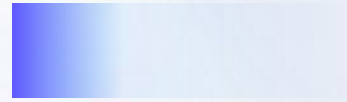
Model	Voltage class	Structure	Power (kW)	Rated input current (A)	Rated output current (A)	Cooling mode	Interface
RS485 model							
MD600S-4T1R6B-INT	Three-phase 380 V to 480 V	T1	0.37	1.9	1.6	Natural ventilation	Modbus - RTU 4*DI 1*AI 1*AO 1*RO
MD600S-4T2R3B-INT	Three-phase 380 V to 480 V	T1	0.75	2.8	2.3	Natural ventilation	
MD600S-4T4R8B-INT	Three-phase 380 V to 480 V	T1	1.5	5.9	4.8	Air cooling	
MD600S-4T5R5B-INT	Three-phase 380 V to 480 V	T1	2.2	6.7	5.5	Air cooling	
MD600S-4T9R5B-INT	Three-phase 380 V to 480 V	T2	4	11.6	9.5	Air cooling	
MD600S-4T013B-INT	Three-phase 380 V to 480 V	T2	5.5	15.8	13	Air cooling	
MD600S-2S2R8B-INT	Single-phase 200 V to 240 V	T1	0.37	6.2	2.8	Natural ventilation	
MD600S-2S4R6B-INT	Single-phase 200 V to 240 V	T1	0.75	10.2	4.6	Air cooling	
MD600S-2S7R5B-INT	Single-phase 200 V to 240 V	T1	1.5	16.6	7.5	Air cooling	
MD600S-2S010B-INT	Single-phase 200 V to 240 V	T2	2.2	22.2	10	Air cooling	
CAN model							
MD600A-4T1R6B-INT	Three-phase 380 V to 480 V	T1	0.37	1.9	1.6	Natural ventilation	CANlink communication CANopen communication 5*DI 2*DO 1*AI 1*RO
MD600A-4T2R3B-INT	Three-phase 380 V to 480 V	T1	0.75	2.8	2.3	Natural ventilation	
MD600A-4T4R8B-INT	Three-phase 380 V to 480 V	T1	1.5	5.9	4.8	Air cooling	
MD600A-4T5R5B-INT	Three-phase 380 V to 480 V	T1	2.2	6.7	5.5	Air cooling	
MD600A-4T9R5B-INT	Three-phase 380 V to 480 V	T2	4	11.6	9.5	Air cooling	
MD600A-4T013B-INT	Three-phase 380 V to 480 V	T2	5.5	15.8	13	Air cooling	
MD600A-2S2R8B-INT	Single-phase 200 V to 240 V	T1	0.37	6.2	2.8	Natural ventilation	
MD600A-2S4R6B-INT	Single-phase 200 V to 240 V	T1	0.75	10.2	4.6	Air cooling	
MD600A-2S7R5B-INT	Single-phase 200 V to 240 V	T1	1.5	16.6	7.5	Air cooling	
MD600A-2S010B-INT	Single-phase 200 V to 240 V	T2	2.2	22.2	10	Air cooling	

- Accessories List

Accessories list

Type	Name	Model	Applicable Unit Model	Function
External opreating panel	Operating panel extension cable	MDCAB	All models	3m standard 8-pin cable, can be connected to the operating panel through the network port
	Mini-type basic keypad	MD-BP-M	All models	LED operating panel, supports simple speed adjustment by the rotary knob
	Hand-held LCD keypad	SOP-20-810	All models	LCD operating panel, supports Chinese/English display, parameter copy, quick debugging, and can connect with PC.
DIN guide rail-based installation	DIN rail	MD600-DGJ1	Only for T1 models	DIN rail
Spare parts	T1 fan	YY4015H12B	Only for T1 model	DC Fan-24V-4.44W-15.88CFM-55.4dB(A)-44*40*15mm
	T2 fan	SB120520BFCNR	Only for T2 model	DC Fan-12V-5.04W-28.79CFM-60.5dB(A)-55*50*20mm

02

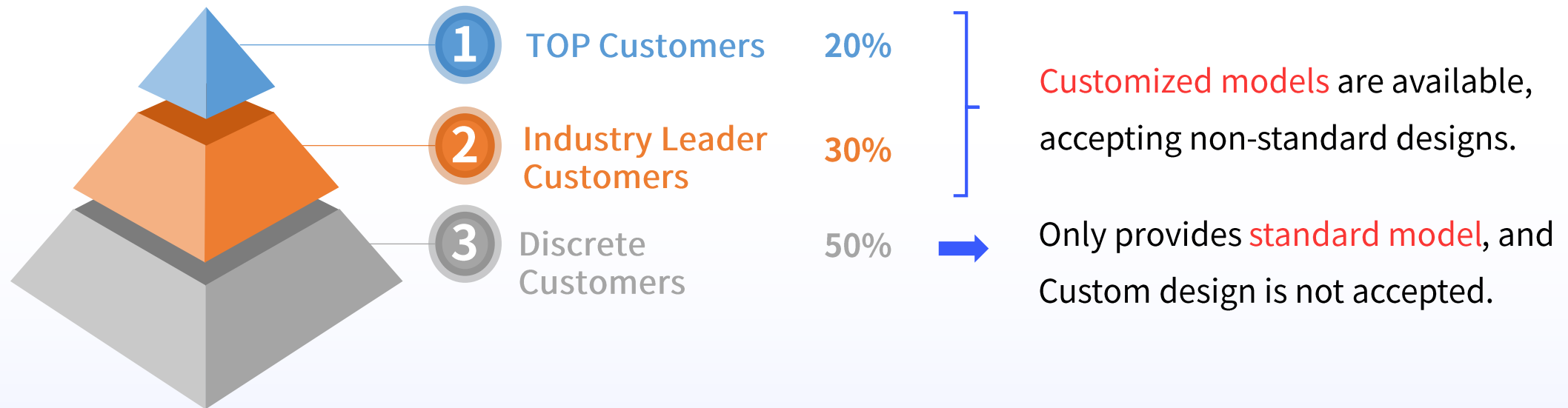


MARKET STRATEGY



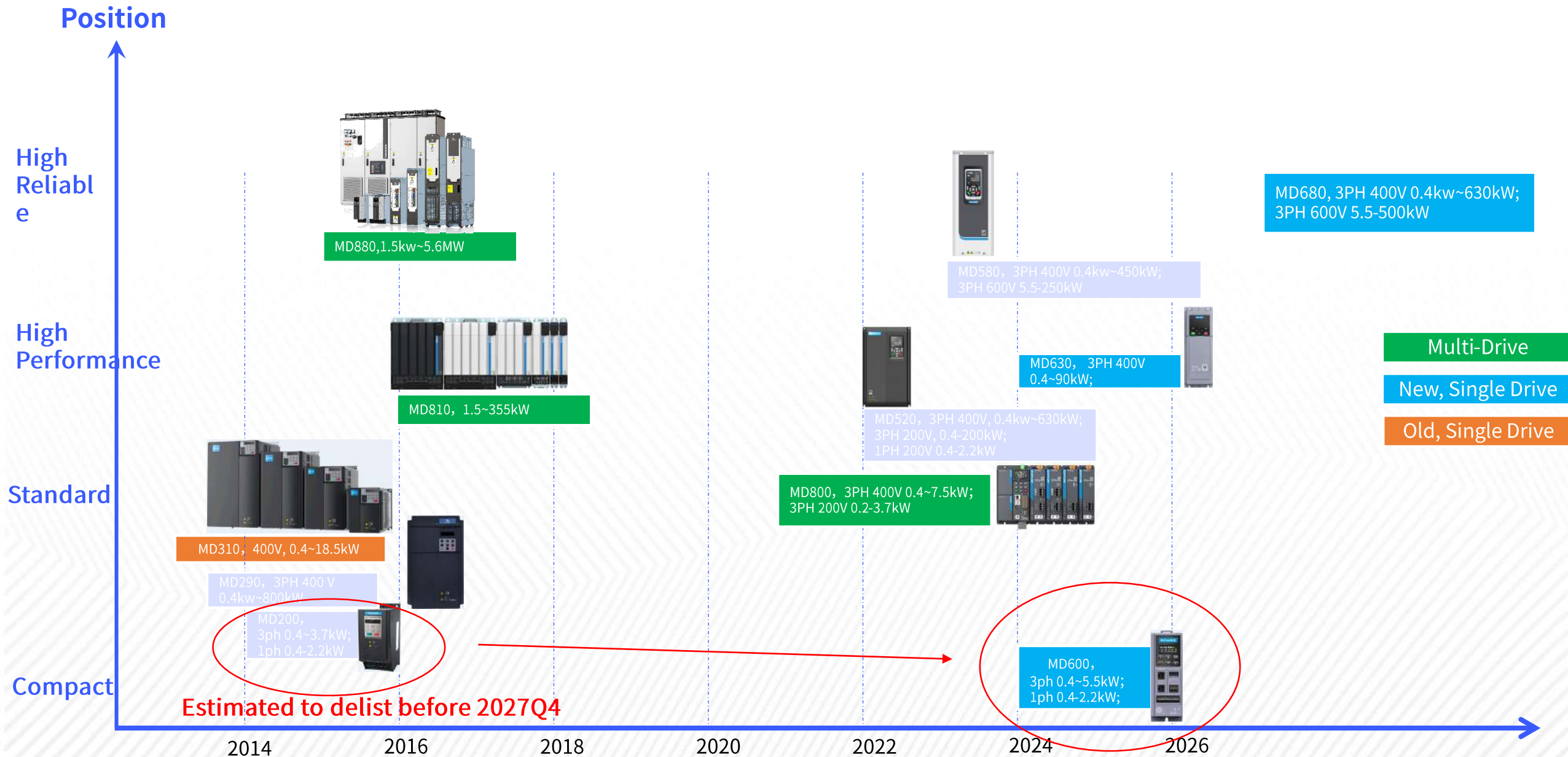
● Market Strategy

The proportion of major customers & discrete customers is approximately 50:50.

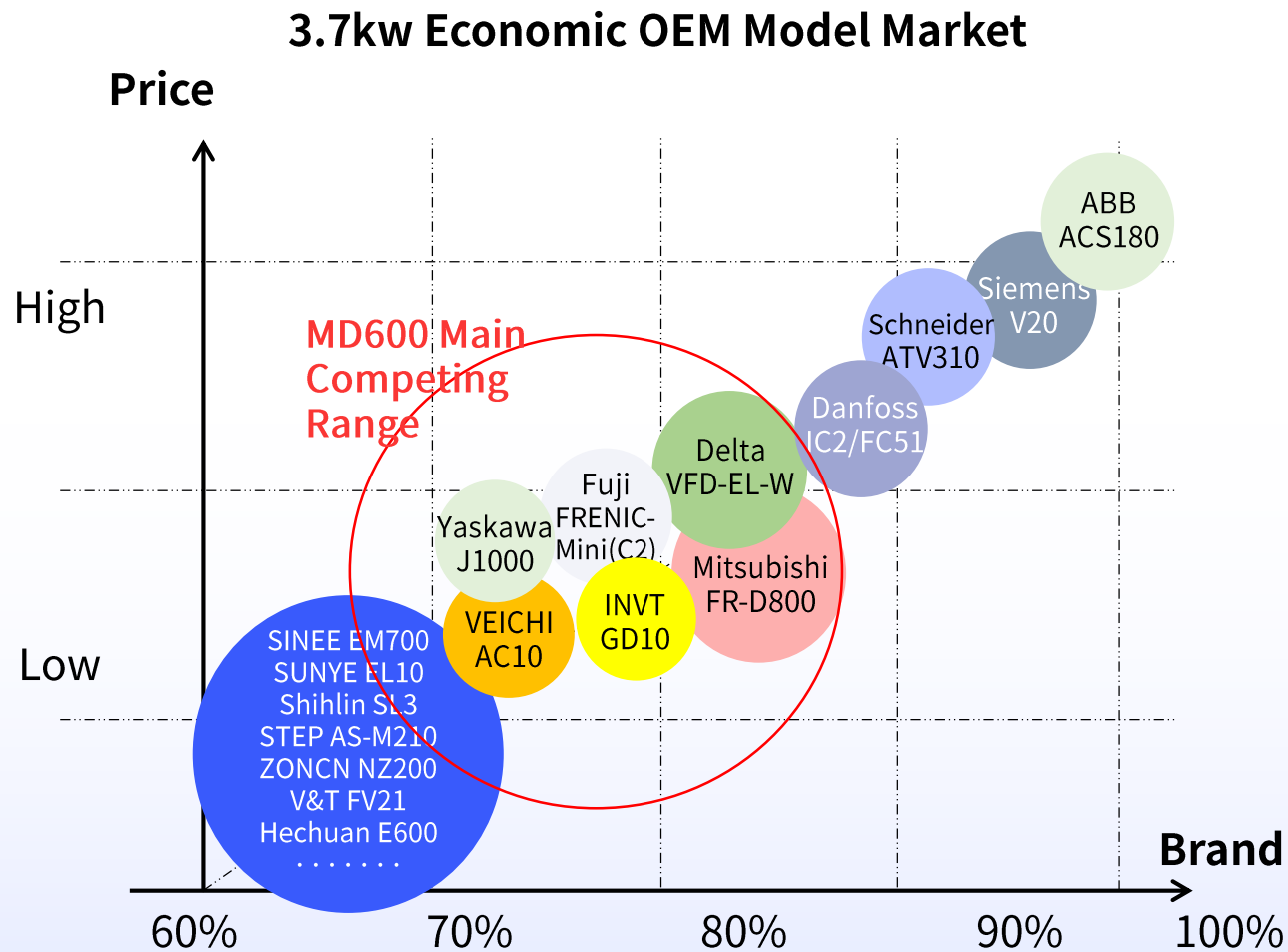


Note: Economic OEM AC Drive Model Market in China

• Internal Positioning



Market Positioning



Competing brands can be divided into three tiers.

First-Tier

European brands, targeting mid-range OEMs.

Second-Tier

Chinese & Japanese brands, **the main competitor.**

Third-Tier

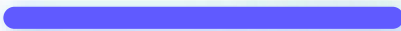
Chinese brands, significant price advantage.

● **Competitor Analysis**

BRAND	MODEL	Simple Product Analysis	STRATEGY
Delta	VFD-EL-W	- Delta is a key competitor for us; the comprehensive solutions are quite competitive. - The customer base is relatively high-quality and carries brand recognition. - The product pricing is comparatively higher.	- Price Advantage - Economical Solution
Mitsubishi: FR-D800 Fuji: FRENIC-Mini Yaskawa: J1000 Omron: 3G3JZ		- Japanese brands' market share in this segment is shrinking, but they maintain a relatively solid customer base. - This market segment has been a traditional stronghold for Japanese brands, which offer a balanced position in terms of performance, reliability, and price.	- Large customers are approached with customized solutions; - Small and medium-sized customers are offered more attractive pricing.
INVT: GD10/GD20-UL VEICHI: AC10		- Early presence in overseas markets with a certain level of brand influence. - Lack of capability to provide comprehensive solutions, and distribution prices are relatively high.	- Partial high-price products can be replaced individually. - Replacement through integrated solution packages.
ZONCN: NZ200 SINEE: EM700 SUNYE: EL10 Shihlin: SL3 STEP: AS-M210 ZONCN: NZ200 V&T: FV21 Hechuan: E600		- Lower prices. - Product influence and performance are relatively weaker.	Machine-level switching can be achieved through brand influence and product performance.

03

APPLICATION CASES

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● Application Case

Equipment Name: Wood Sanding Machine

Equipment Description:

The sander processes the surface of wooden parts with sandpaper to improve surface smoothness. The VFD primarily drives the feeding conveyor belt and the sandpaper rotation shaft.



Original RS485(Modbus-RTU) Solution:

1. The RS485(Modbus-RTU) communication operates on a polling mechanism. In multi-axis applications, start/stop commands experience latency, leading to synchronization issues. Start/stop control can only be managed via I/O points, with each VFD requiring 2 points, thereby increasing the number of points required on the host controller.

CAN Bus Solution:

1. CAN bus is a real-time communication protocol, with common rates up to 1Mbps, enabling delay-free start/stop.
2. Multi-axis installation reduces I/O wiring, achieving control with a single network cable.

● Application Case

Equipment Name: Press Feeder

Equipment Description:

The main feed roller for the sheet metal at the press front uses terminal-controlled start/stop to feed the sheet metal into the press for processing. The equipment operates under harsh conditions, requiring guaranteed stable operation.

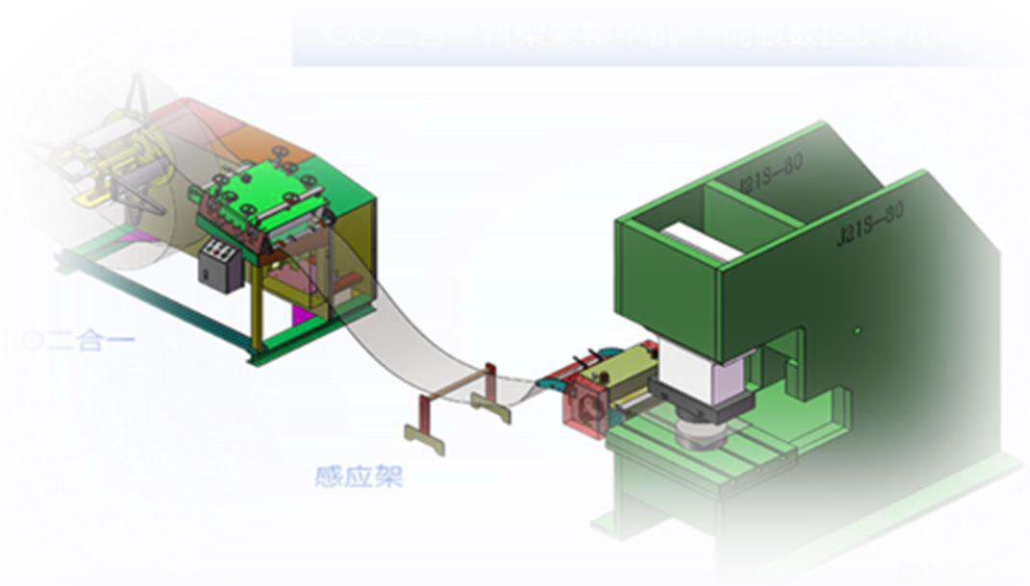
Equipment Requirements:

Inverter Conversion

Detect Insulation Breaks

Machining Debris
Protection

Simplify Wiring



MD600-INT Advantage:

1. **Compact:** The small size (depth only 200mm) allows it to **fit directly into existing contactor cabinets**, reducing retrofit costs for customers.
2. **Easy to Use:** The independent OP terminals can power NPN sensors, **saving a 24V power supply** and optimizing sensor bracket design.
3. **Reliable:** The **isolated cooling tunnel** effectively protects against machining debris.

• Application Case

Equipment Name: Food Tunnel Oven Conveyor Belt

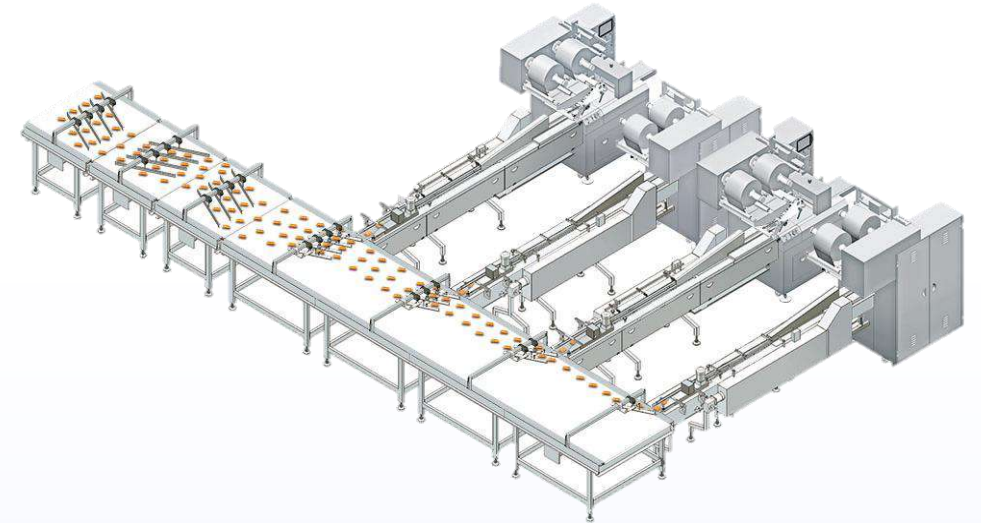
Equipment Description:

The food tunnel oven conveyor belt transports raw food materials into the tunnel oven for baking. Each section of the belt is equipped with a circuit breaker to disconnect the motor from the main drive circuit, enhancing safety during maintenance.

Equipment Requirements:

Centralized Installation

Quick Start



MD600-INT Advantage:

1. **Compact:** The small size and air-cooled design allow for [seamless side-by-side installation](#), reducing the required installation space.
2. **Reliable:** It features [triple hardware overload capacity](#) and supports [cycle-by-cycle current limiting](#). This effectively suppresses peak currents if a motor is directly connected during operation, preventing drive alarms.

- **Application Case**

Equipment Name: Warehousing and Logistics Conveyor Belt

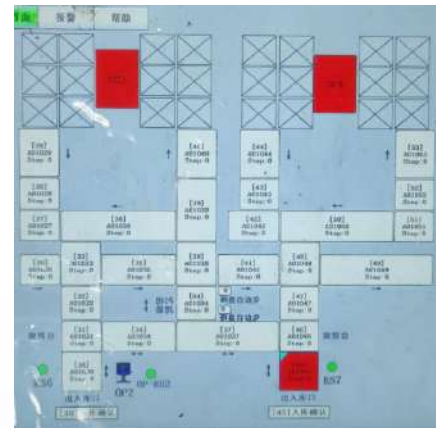
Equipment Description:

An automated warehouse's core includes racks, stacker cranes, conveyors, and a control system. Integrated with AGVs, it achieves high automation, handling receiving, storage, retrieval, shipping, and data logging simultaneously, with conveyors as the primary transport.

Equipment Requirements:

Centralized Installation

Long-Distance Drive



MD600-INT Advantage:

1. **Compact:** The small size and air-cooled design allow for [seamless side-by-side installation](#), reducing the required installation space.
2. **Reliable:** It features triple hardware overload capacity, [supporting outputs for cables up to 100 meters long](#).

● Application Case

Equipment Name: Industrial Fan

Equipment Description:

Industrial Ceiling Fans with outer rotor synchronous motor deliver high-volume airflow for large spaces. Engineered for efficiency and durability, they are ideal for warehouses, manufacturing plants, and commercial facilities.

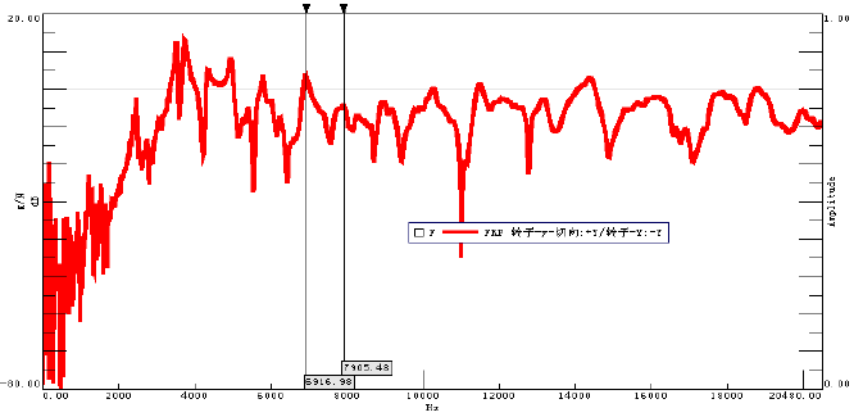
Equipment Requirements:

Smooth Start

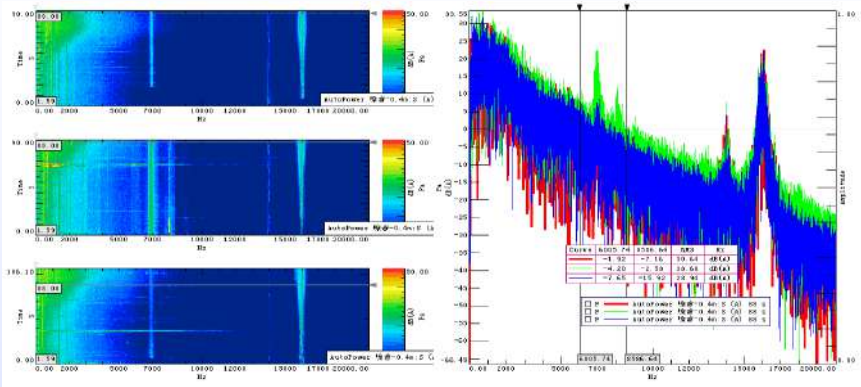
Low Noise

MD600-INT Advantage:

- 1. **SVC Control:** SVC 4.0(new algorithm), with a speed regulation range of 1:500 under load, delivers stable torque at low speeds with high carrier frequency and ensures smooth starting.
- 2. **Low Noise:** 16 kHz carrier frequency control and excellent current loop regulation achieve quieter operation.



Resonance analysis of the system structure identified multiple resonance points, including one at 7 kHz.



Noise at 7KHz Competitor: 30.4dB MD600-INT: 28.9dB

• Application Case

Equipment Name: Textile Softening & Oiling Machine

Equipment Description:

The tension of the unwinding/rewinding process is maintained by the host computer's PID algorithm. After passing through the main roller, the knitted fabric is sprayed with silicone oil via a pump, thereby enhancing its softness and comfort.

Equipment Requirements:

HMI + PLC + VFD

Start/Stop via I/O, Speed Control & Monitoring via Communication

Machine-Mounted Cabinet Installation

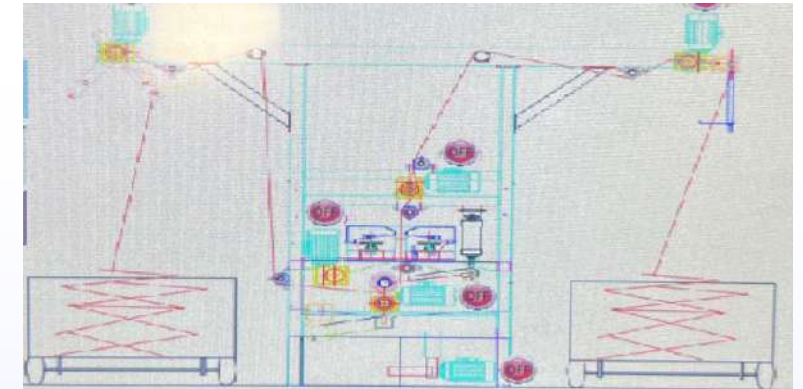
Pump Load One-Drive-Two Protection

Solution Advantage:

1. **Compact:** The modular design of Easy-series PLC + the book-style structure of MD600, fits into the tight spaces of machine-mounted cabinets.
2. **Efficient:** The PLC's self-tuning PID algorithm eliminates commissioning, and both the Easy and MD600 series feature spring-clamp terminals, improving wiring efficiency.
3. **Reliable:** The MD600's one-drive-two current monitoring and stall protection ensure reliable equipment operation.



ITS7000 + Easy301 + MD600 Solution



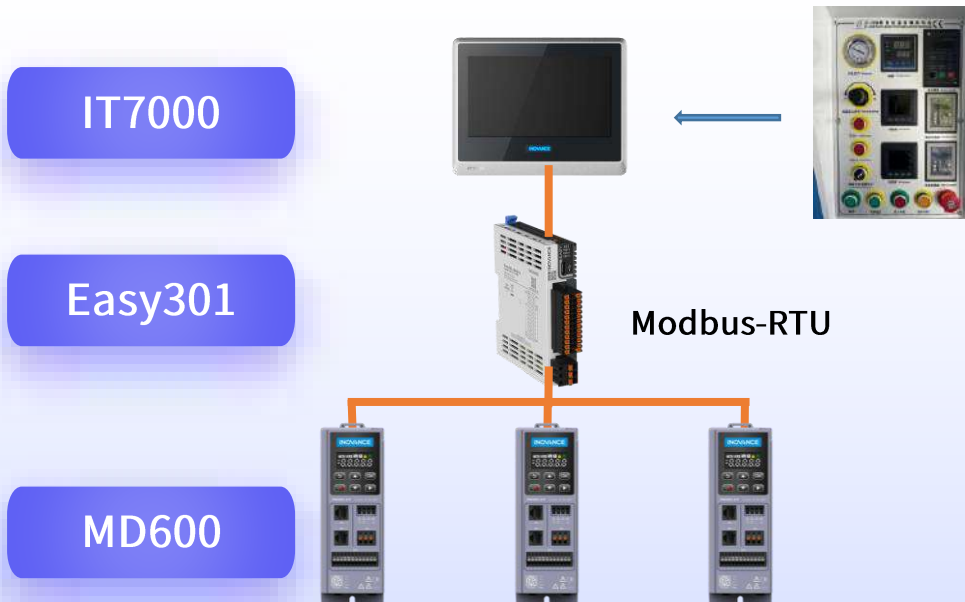
• Application Case

Equipment Name: Roller Hot Transfer Machine

Equipment Description:

The layout pattern is first printed onto transfer paper by a digital printer. This printed paper is then placed on the hot transfer machine, where it is pressed onto the fabric by a high-temperature roller.

Equipment Solution:



Solution Advantage:

1. The roller contains heating elements, raising the [cabinet temperature to over 40°C](#), yet the MD600 operates stably.
2. Both the Easy301 and MD600 utilize [spring-clamp terminals](#).
3. The IT7000 replaces traditional push buttons, providing more intuitive human-machine interaction.

INOVANCE

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Advancing industrial technology for a better world