

BETTER WORK, BETTER LIFE



New-generation & Standard

M-series PLC

Independent and controllable



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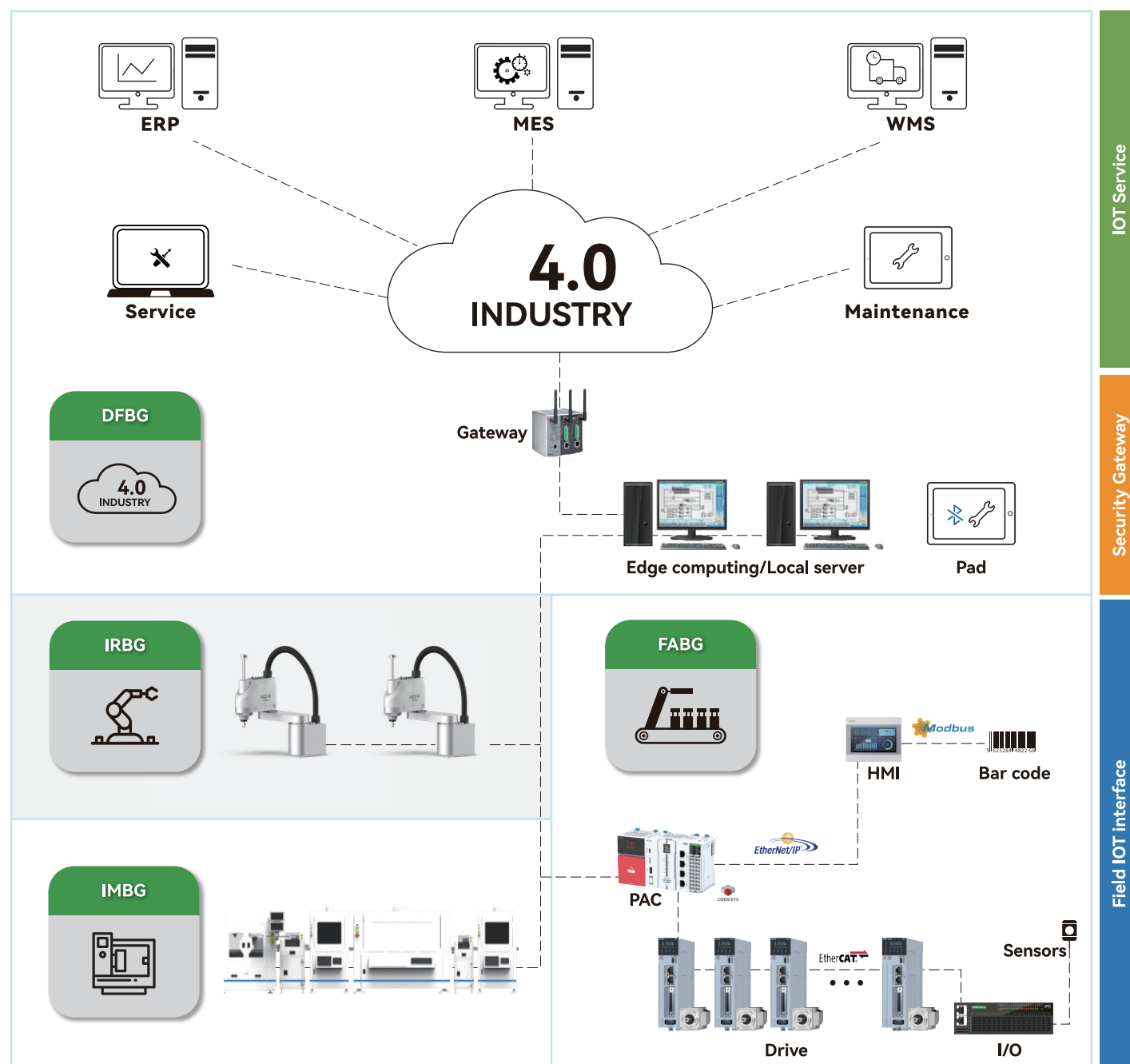


Better Work, Better Life



Be dedicated to creating values in automation industry

We not only provide the core components of industrial automation, but also engage in the industrial process, industrial robots, industrial machines, and digital factories, and can provide enterprises with comprehensive solutions of **automation + intelligent equipment + digitalization**



Zhejiang Hechuan Technology Co., Ltd., established in 2011, is a company that focuses on the research and development, manufacturing, sales and application integration of industrial automation products, and committed to providing core components and system integration solutions for smart factories.

The main products include controllers, servo systems, vision systems, encoders, VFDs, HMIs, electric rollers, precision transmission components, etc., covering the entire field of industrial automation.

In November 2023, HCFA Technology and Bosch Rexroth signed a strategic cooperation agreement. Bosch Rexroth strategically invested in HCFA Technology and planned to cooperate to establish a subsidiary. Based on common innovation concepts and innovative thinking, the two parties will integrate their respective advantages, form resource complementarity, and carry out in-depth cooperation, striving to become ecological partners in the entire value chain of industrial automation and promote the further development of China's industrial automation industry.



Never stop to build up core competitiveness

R&D Centers

5

Set up nationally

R&D investment

10%+

Proportion of revenue

R&D personnel

300+

Elite gathering

- Established five R&D centers in Longyou, Hangzhou, Shenzhen, Dalian, Suzhou and Germany
- Self-designed ASIC and SOC chips, realize localization replacement
- First-class AMR magnetic technology/high-precision encoder in the industry

M

5 MAIN FEATURES



M-SERIES CONTROLLER

M-SERIES



Efficient and fast

Ultra-fast execution speed + multi-task management



Various control

Bus + pulse, respond to various needs



Flexible expansion

Module + optional card, flexible and efficient



Convenient Internet

The whole series built-in Ethernet and multi-protocols, which are easily interconnected.



Easy development

Standard instructions, multi-language, modular, which make development easier

EFFICIENT AND FAST

High-speed computing capability

High-speed computing capability,the instruction processing speed greatly improved;
The execution speed of basic instructions is ns.

Operation instruction



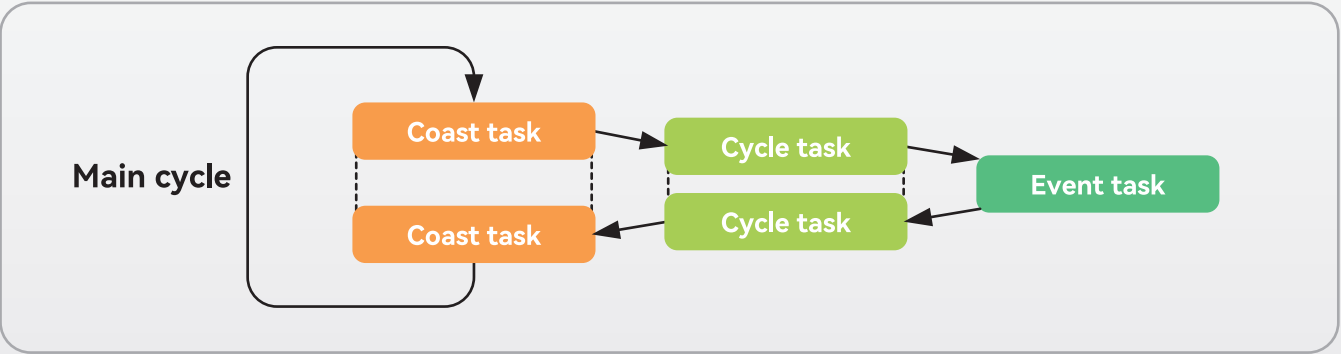
Single instruction

About **5ns**

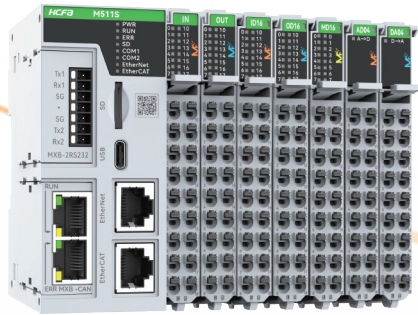


Efficient multitasking system

Multi-task management system: The execution mode and frequency of different tasks can be set, to realize efficient utilization of system resources



FLEXIBLE EXPANSION



FREE MODEL SELECTION

MEET DIFFERENT NEEDS



DUAL CARD-SLOT DESIGN

FLEXIBLE ASSEMBLY



BLADE-STRUCTURE

SPACE GREATLY SAVED



REMOVABLE PRESSING TERMINAL

EFFICIENT ASSEMBLY

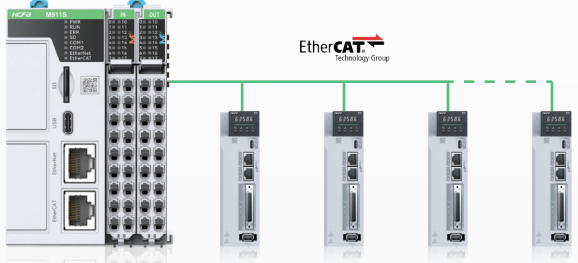
VARIOUS CONTROL

Bus, pulse type, flexible and diverse

Multiple axis control methods of bus, pulse, bus + pulse , adapt to different scenes;
EtherCAT high-speed bus, 8-axis 0.5ms is realized, to meet the high response requirements.

Bus

0.5ms 8-axis synchr onization

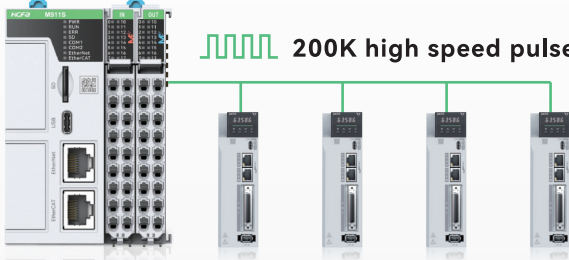


M511S

*Up to 8 axes

Bus+Pulse

200K high speed pulse



M511S

*Up to 4 axes

Pulse

200K high speed pulse

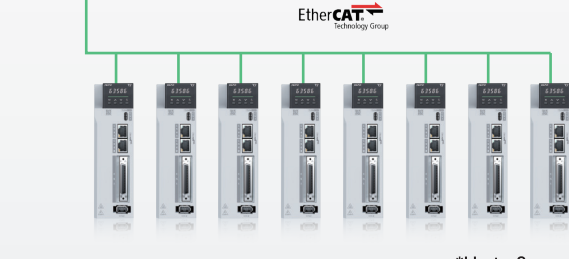


M312

*Up to 6 axes

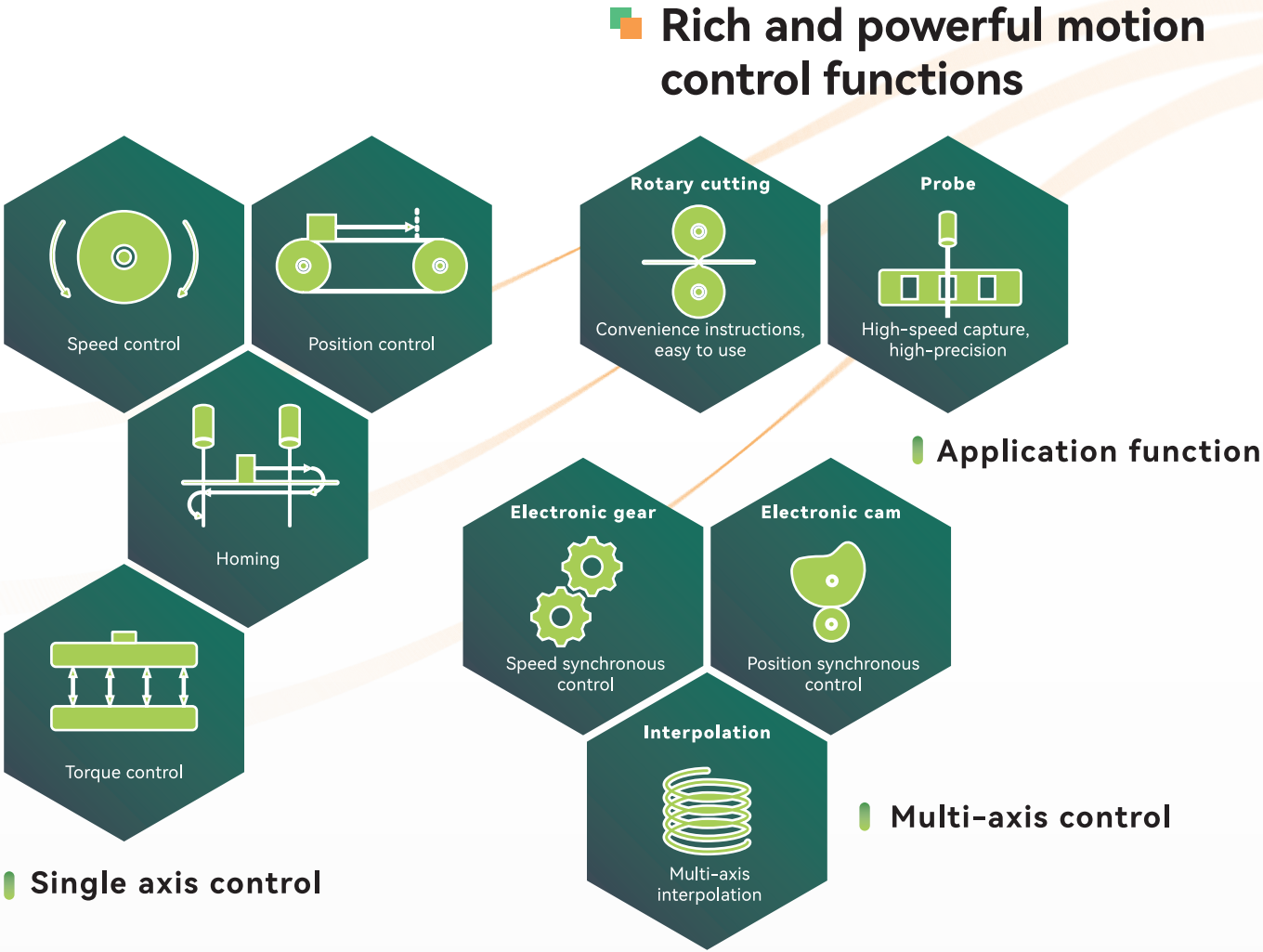
Bus+Pulse

200K high speed pulse



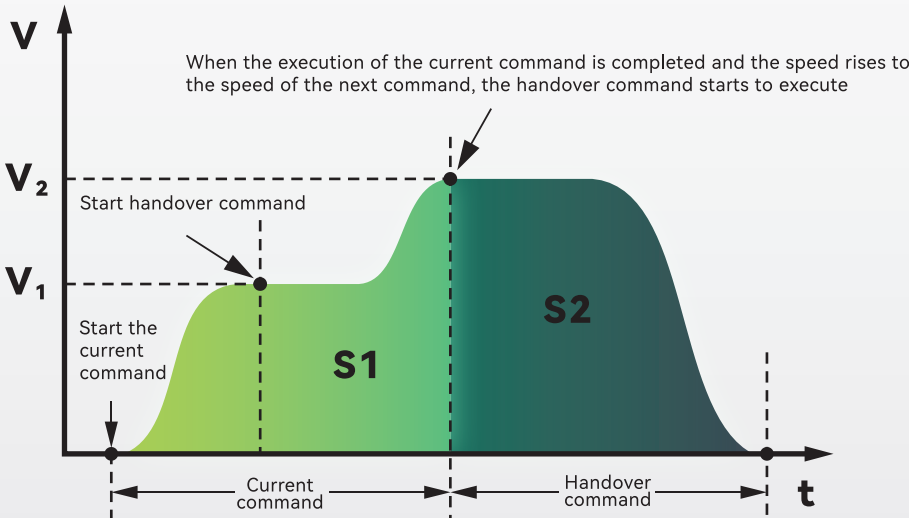
M511S

*Up to 8 axes

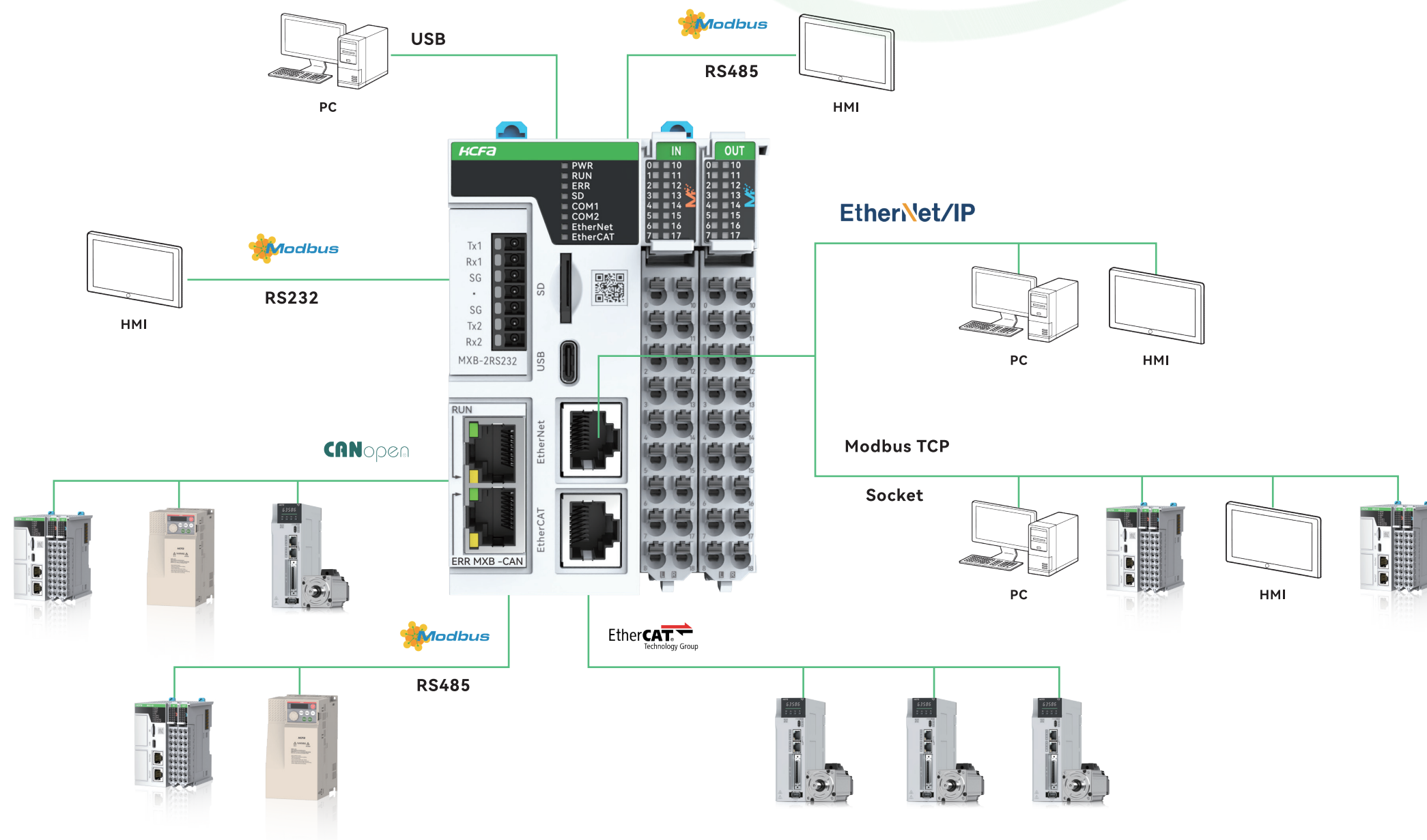


BufferMode

Continuous speed transition, easy to deal with multi-stage speed control;
No stop, elevating the action beat.



CONVENIENT INTERCONNECTION



Support multiple communication protocols



Multi-protocol to improve interconnection

EtherCAT[®]
Technology Group

EtherNet/IP

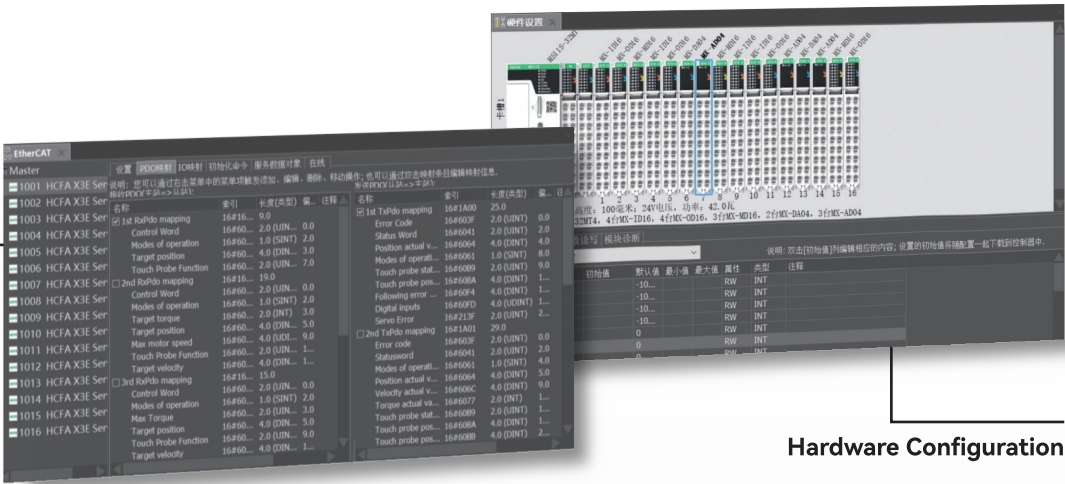
CANopen

Modbus

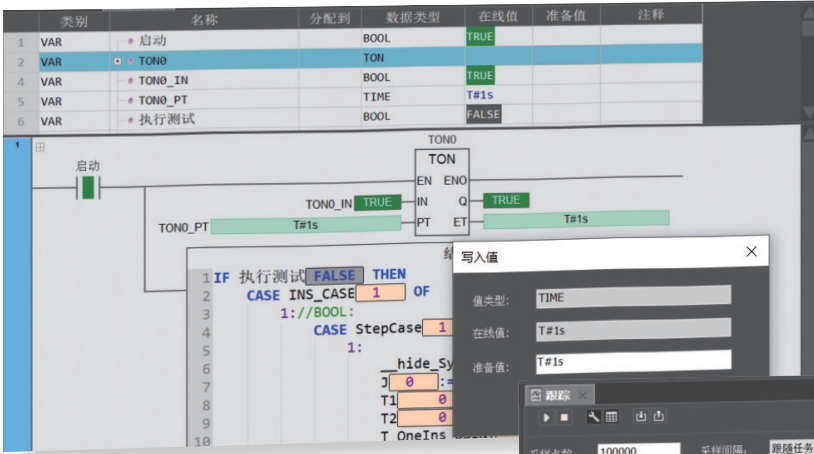
EASY DEVELOPMENT

EASY TO CONFIGURE

EtherCAT network configuration

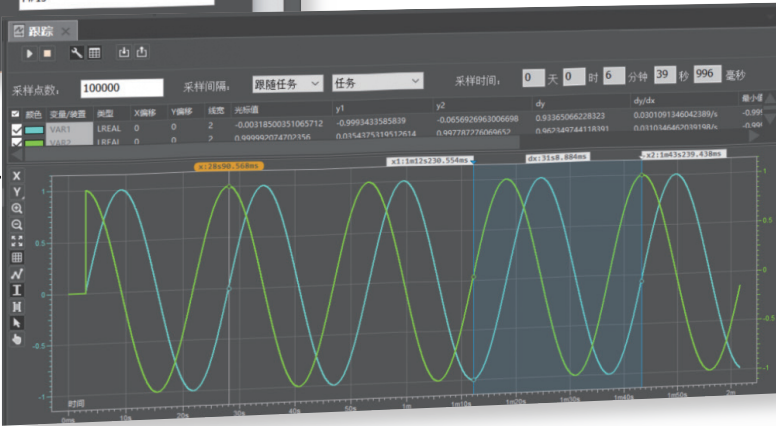


Hardware Configuration

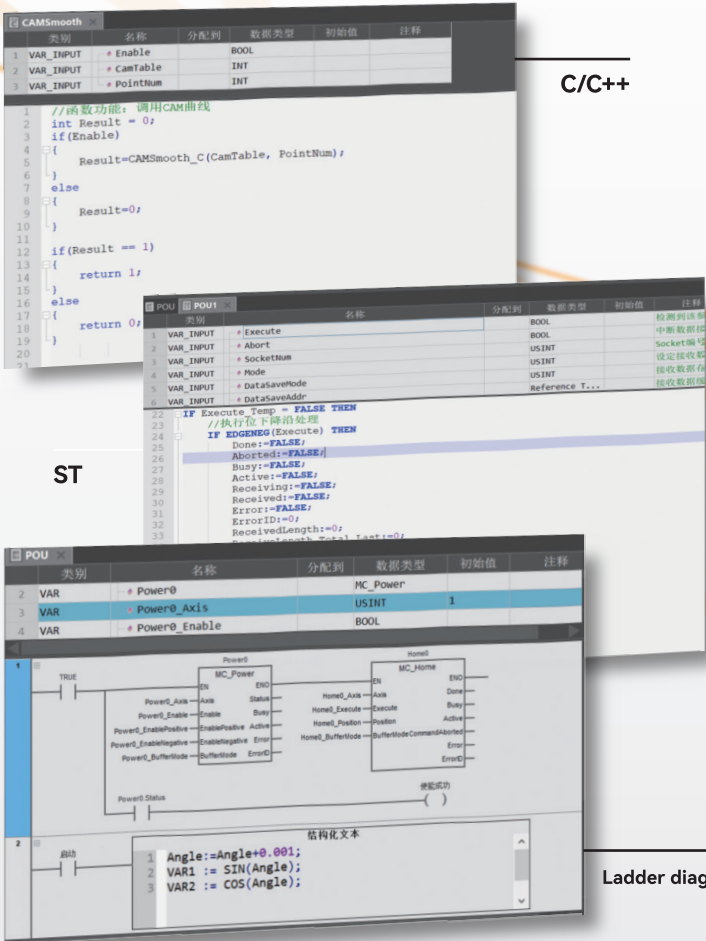


Program online monitoring

Tracing (Data Oscilloscope)



EASY TO PROGRAM

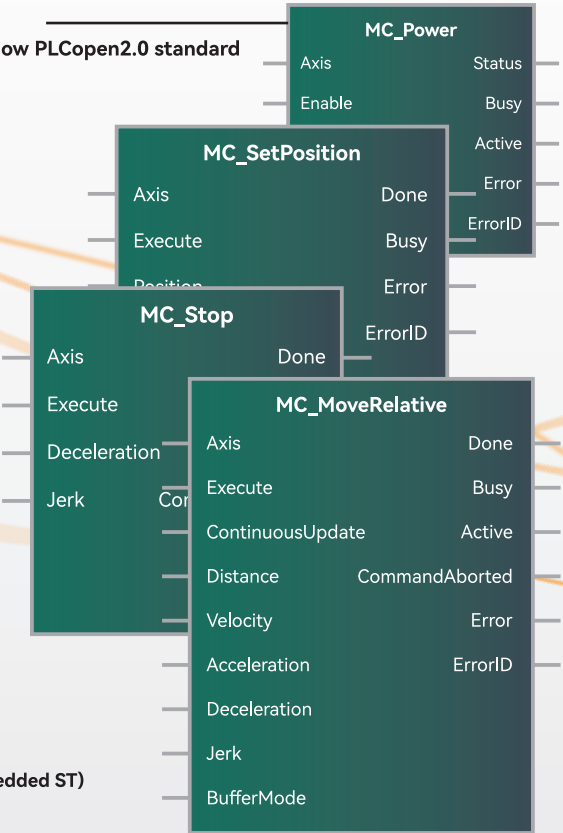


C/C++

ST

Ladder diagram (embedded ST)

Follow PLCopen2.0 standard

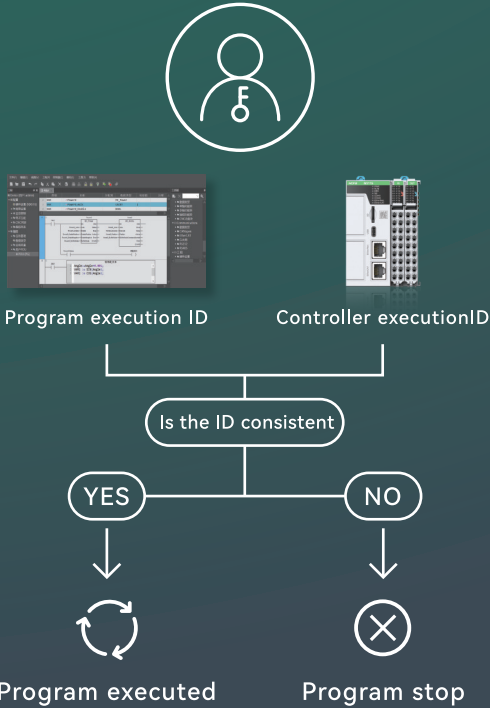


EASY TO PROTECT

User rights management

Display | Revise | Delete

Developer Key (Execution ID)



Naming rule for M-series controllers

HCM501S-16MT4-D-****

1234567891011

1.Product name

HC HC: HCFA

2.Product series

M5 M1: Pulse economical type
M2: Basic/standard logic type
M3: Motion control type(thin type)
M5: General-purpose motion control type

3.Number of Ethernet ports

0 0: None
1: 1 Ethernet port
2: 2 Ethernet ports
3: 3 Ethernet ports

4.Model code

1 M100/M200/M300 series M500 series
0: Type 1 products 1: 8 axes EtherCAT motion axes
1: Type 2 products 2: 16 axes EtherCAT motion axes
2: Type 3 products 3: 32 axes EtherCAT motion axes
3: Type 4 products 4: 64 axes EtherCAT motion axes

6.Total points

16 14: 8 inputs, 6 outputs
16: 8 inputs, 8 outputs
20: 12 inputs, 8 outputs
30: 16 inputs, 14 outputs
32: 16 inputs, 16 outputs (M300/M500 series), 18 inputs, 14 outputs (M200 series)
40: 24 inputs, 16 outputs
42: 24 inputs, 18 outputs
48: 28 inputs, 20 outputs
60: 36 inputs, 24 outputs

8.Output type

T T: NPN transistor
R: Relay
P: PNP transistor

9.Pulse output

4 3: 3-ch pulse output
4: 4-ch pulse output
6: 6-ch pulse output
8: 8-ch pulse output
10: 10-ch pulse output

11.Control version numbers and non-standard specifications

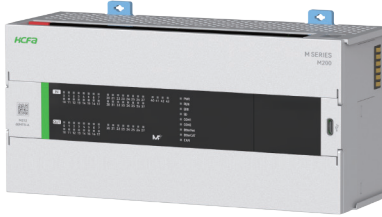
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Note: 1. The difference between the "Type x products" in the model code is mainly the function difference; 2. The EtherCAT motion axis in the model code is the maximum axis number.

M-SERIES CONTROLLER

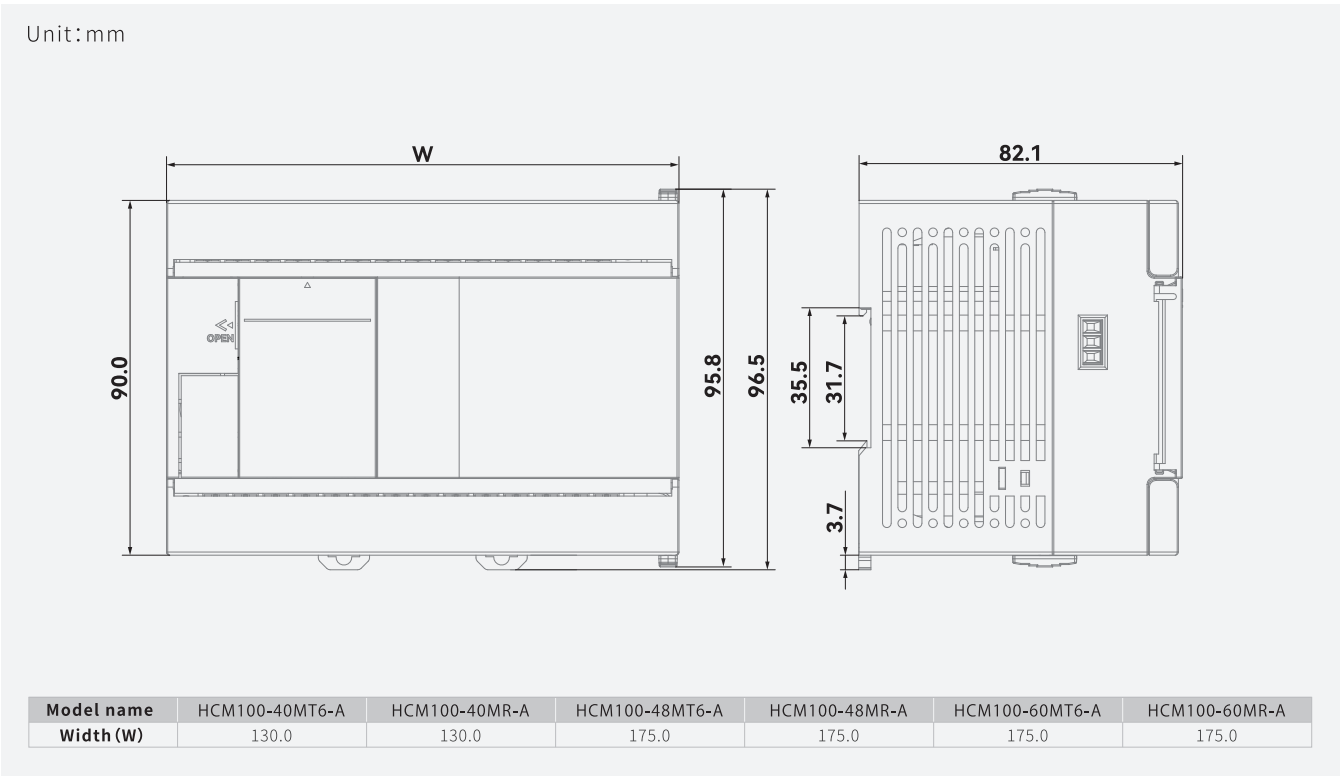
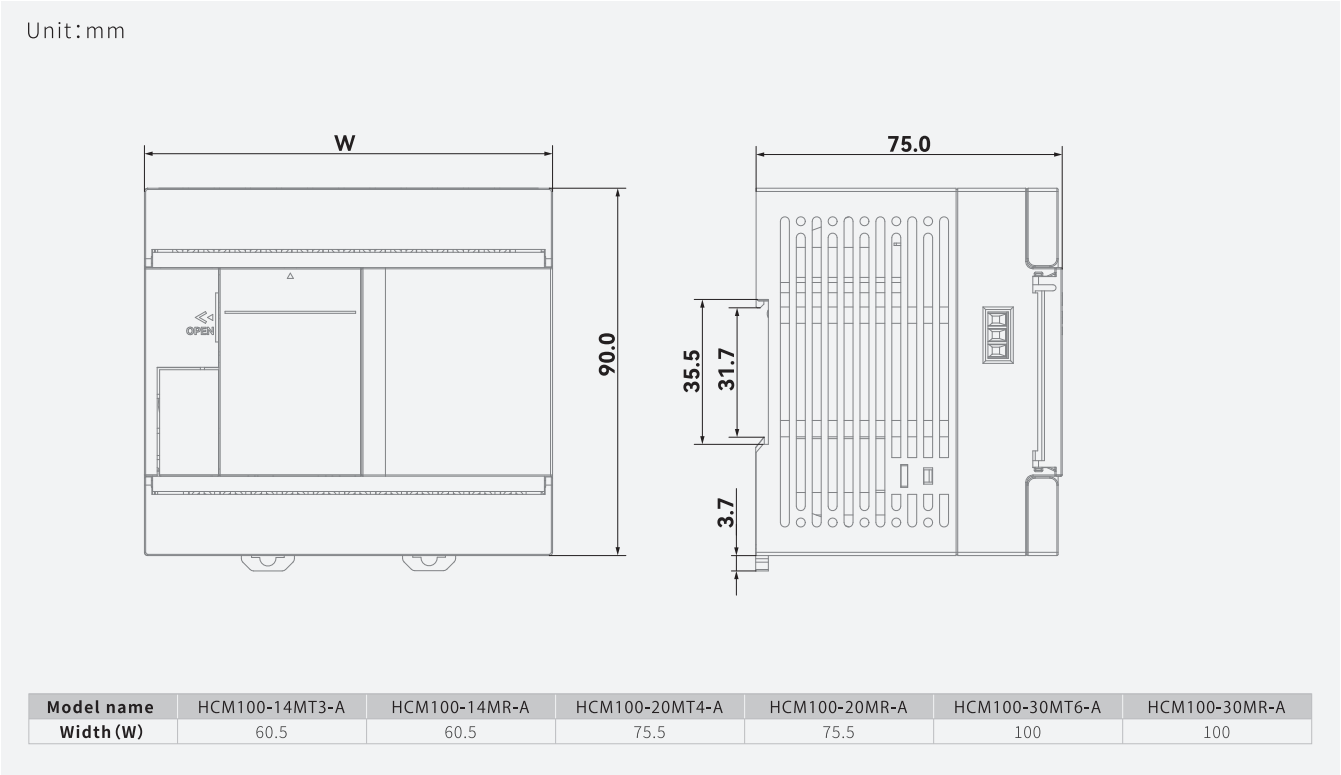
Model name			HCM100-14MT3-A HCM100-14MR-A	HCM100-20MT4-A HCM100-20MR-A	HCM100-30MT6-A HCM100-30MR-A	HCM100-40MT6-A HCM100-40MR-A	HCM100-48MT6-A HCM100-48MR-A	HCM100-60MT6-A HCM100-60MR-A
Appearance								
Programming	Program capacity		256 KBytes					
	Variable capacity		256 KBytes (The power-failure retention capacity is 16Kbytes)					
	I-area(%I)		128 Bytes					
	Q-area(%Q)		128 Bytes					
Programming language	M-area(%M)		128 KBytes					
			LD、ST、C/C++					
Axis capacity	Number of pulse axes(for MT models)		3-axis 100k	4-axis 100k	6-axis 100k			
	Number of encoder axes		2					
	Total number of axes (pulse axis + encoder axis + imaginary axis)		≤16					
Right extension	Max. number of extension modules		Do not support right-side expansion, can add optional card HCMX-CAN-100-BD to support CAN remote expansion					
RTC battery			Built-in main unit					
Optional card	Max. number of option cards		1					
I/O points for main unit	Inputs	Points	8inputs	12inputs	16inputs	24inputs	28inputs	36inputs
		Function	Supports 8-ch external interrupts; 2-ch 200K high-speed pulse inputs (AB phase, pulse + direction, single pulse)					
	Output (MT model is NPN output, MR model is relay output)	Points	6outputs	8outputs	14outputs	16outputs	20outputs	24outputs
		Function	Supports 3-ch 100K high-speed pulse output (pulse + direction)	Supports 4-ch 100K high-speed pulse output (pulse + direction)	Supports 6-ch 100K high-speed pulse output (pulse + direction)			
Electronic cam	Number of cams		-					
	Number of key points of a single curve		-					
Axis group	Max. number of axis groups		-					
Gcode Capacity			-					
SD card			-					
USB	Number of interfaces		1-ch USB2.0 Type-C					
	Supported functions		Program download, software monitoring and debugging, firmware upgrade					
Power supply			AC 220V					
Serial port	RS485	Number of interfaces	Max. 3 channels: The main unit has 1 channel, and 2 more channels can be expanded by installing the optional card HCMXB-2RS485-100-BD					
		Supported protocol	Modbus master and slave (ASCII/RTU); free protocol					
		Max. number of slaves	32					
	RS232	bps Max. number of slaves (bps)	9600、19200、38400、57600、115200					
		Number of interfaces	Max. 3 channels: The main unit has 1 channel, and 2 more channels can be expanded by installing the optional card HCMXB-2RS485-100-BD					
		Supported protocol	Modbus master and slave (ASCII/RTU); free protocol					
CAN	Number of interfaces	Max. number of slaves	1					
		bps Max. number of slaves (bps)	9600、19200、38400、57600、115200					
			Install optional card HCMXB-CAN-100-BD to support 1 channel					
	Supported protocol	CANopen protocol (DS301), can be used as master or slave; supports 32 slaves when used as master						

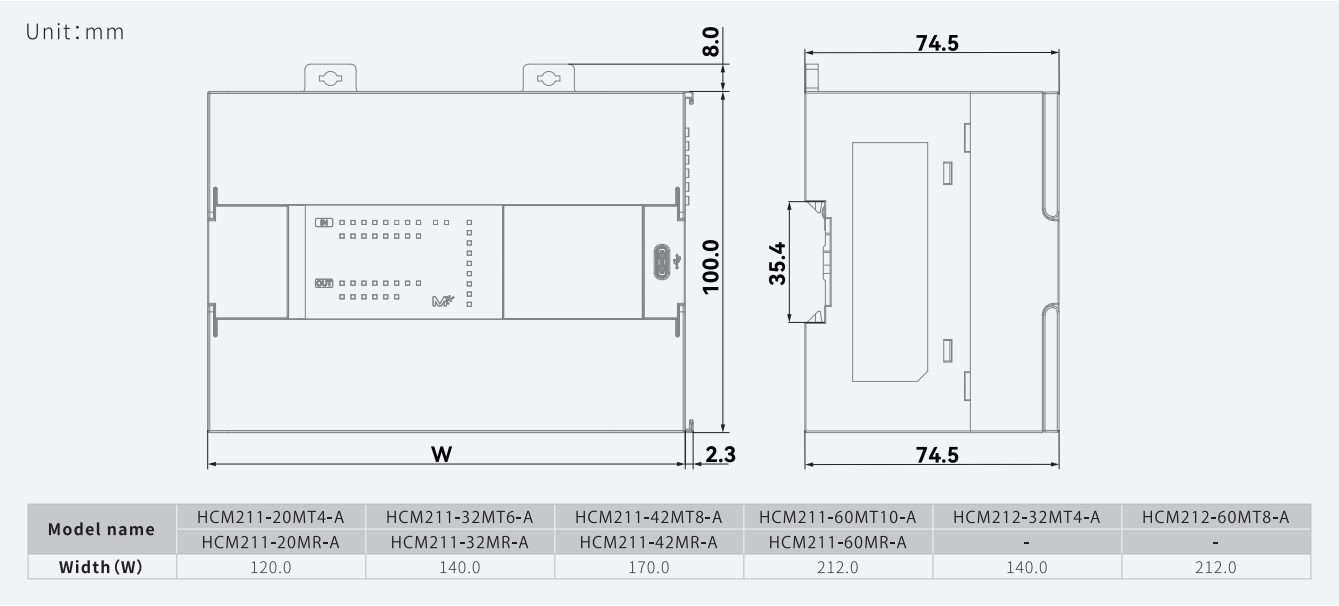
*Note: Only MT models support pulse output.

Model name			HCM211-20MT4-A HCM211-20MR-A		HCM211-32MT6-A HCM211-32MR-A		HCM211-42MT8-A HCM211-42MR-A		HCM211-60MT10-A HCM211-60MR-A		HCM212-32MT4-A -		HCM212-60MT8-A -	
Appearance														
Programming	Program capacity		512 KBytes											
	Variable capacity		256 KBytes(The power-failure retention capacity is 32Kbytes)											
	I-area(%I)		128 Bytes											
	Q-area(%Q)		128 Bytes											
Programming language	M-area(%M)		128 KBytes											
			LD、ST、C/C++											
Axis capacity	EtherCAT axis		-										8(PDO configuration is not required, only slave stations provided in the programming software are supported)	
	Number of pulse axes(for MT models)		4-axis 200k		6-axis 200k		8-axis 200k		10-axis 200k		4-axis 200k		8-axis 200k	
	Number of encoder axes		2				4				2		4	
	Total number of axes (pulse axis + encoder axis + imaginary axis)		≤16											
Right extension	Max. number of extension modules		16											
RTC battery			Built-in main unit											
Optional card	Max. number of option cards		1											
I/O points for main unit	Inputs	Points	12inputs		18inputs		24inputs		36inputs		18inputs		36inputs	
		Function	Supports 8-ch external interrupts; 2-ch 200K high-speed pulse inputs (AB phase, pulse + direction, single pulse)				Supports 8-ch external interrupts; 4-ch 200K high-speed pulse inputs (AB phase, pulse + direction, single pulse)				Supports 8-ch external interrupts; 2-ch 200K high-speed pulse inputs (AB phase, pulse + direction, single pulse)		Supports 8-ch external interrupts; 4-ch 200K high-speed pulse inputs (AB phase, pulse + direction, single pulse)	
	Output (MT model is NPN output, MR model is relay output)	Points	8outputs		14outputs		18outputs		24outputs		14outputs		24outputs	
		Function	Supports 4-ch 200K pulse output (pulse + direction)		Supports 6-ch 200K pulse output (pulse + direction)		Supports 8-ch 200K pulse output (pulse + direction)		Supports 10-ch 200K pulse output (pulse + direction)		Supports 4-ch 200K pulse output (pulse + direction)		Supports 8-ch 200K pulse output (pulse + direction)	
Electronic cam	Number of cams		16											
	Number of key points of a single curve		32											
Axis group	Max. number of axis groups		1 axis groups (max. 8-axis interpolation per axis group)											
Gcode Capacity			-											
SD card			1-ch											
USB	Number of interfaces		1-ch USB2.0 Type-C											
	Function		Program download, software monitoring and debugging, firmware upgrade											
Power supply			AC 220V											
Function	RS485	Number of interfaces	Max. 4 channels: The main unit has 2 channels, and 2 more channels can be expanded by installing the optional card HCMXB-2RS485-200-BD											
		Supported protocol	Modbus master and slave (ASCII/RTU); free protocol											
		Max. number of slaves	32											
		bps Max. number of slaves (bps)	9600、19200、38400、57600、115200											
	RS232	Number of interfaces	Install optional card HCMXB-2RS232-200-BD to support 2-channel											
		Supported protocol	Modbus master and slave (ASCII/RTU); free protocol											
		Max. number of slaves	1											
		bps Max. number of slaves (bps)	9600、19200、38400、57600、115200											
CAN	Number of interfaces	1-ch												
	Supported protocol	CANopen protocol (DS301), can be used as master or slave; supports 32 slaves when used as master										CANopen protocol (DS301), can be used as master or slave; supports 16 slaves when used as master		
EtherNet	Number of interfaces		1-ch											
	Function		Communication, program upload/download, etc.											
	Data transmission speed		100/10Mbps											
	Total number of TCP connections		16(ModbusTCP+Socket + EtherNet/IP)								12(ModbusTCP+Socket)			
	Modbus TCP		Maximum number of connections for client (master): 16; Maximum number of connections for server (slave): 16								Maximum number of connections for client (master): 4; Maximum number of connections for server (slave): 4			
	Socket		Maximum number of connections: 8 (UDP+TCP)								Maximum number of connections: 4 (UDP+TCP)			
EtherNet/IP (Only salve support)	Cables		Standard Industrial Ethernet Communication Cable											
	CIP implicit communication		Maximum number of connections: 8; Maximum data volume per connection: 200Bytes; Cycle interval: 5~1000ms										-	
EtherCAT	CIP explicit communication		Number of Class3 connections: 8; Number of UCMM (non-connection type) clients accessing simultaneously: 16											
	Topology		Linear											
	Transmission medium		Standard EtherCAT communication cable											
	Max. transmission distance between nodes		100m											
	Max. number of nodes		8 (PDO configuration is not required, only supports slaves provided in the programming software)											
	Max. number of process points		1380 bytes (maximum frame number is 1)											
	Communication cycle		Minimum 500μs											
	Supported protocols		EtherCAT master											

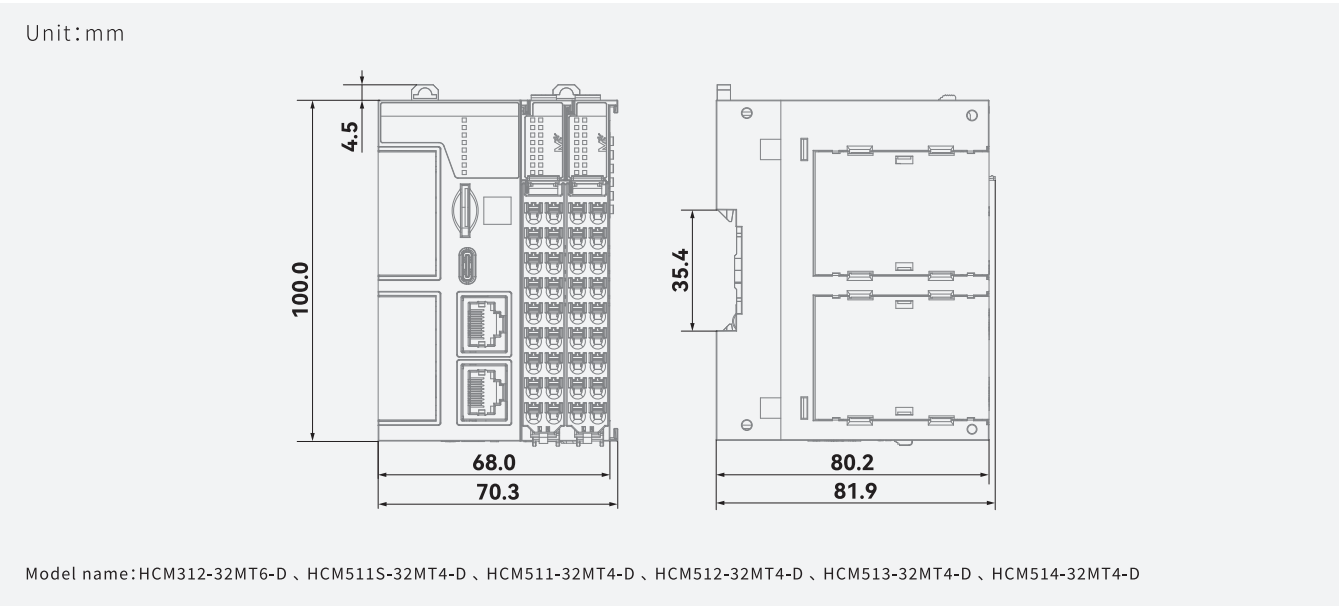
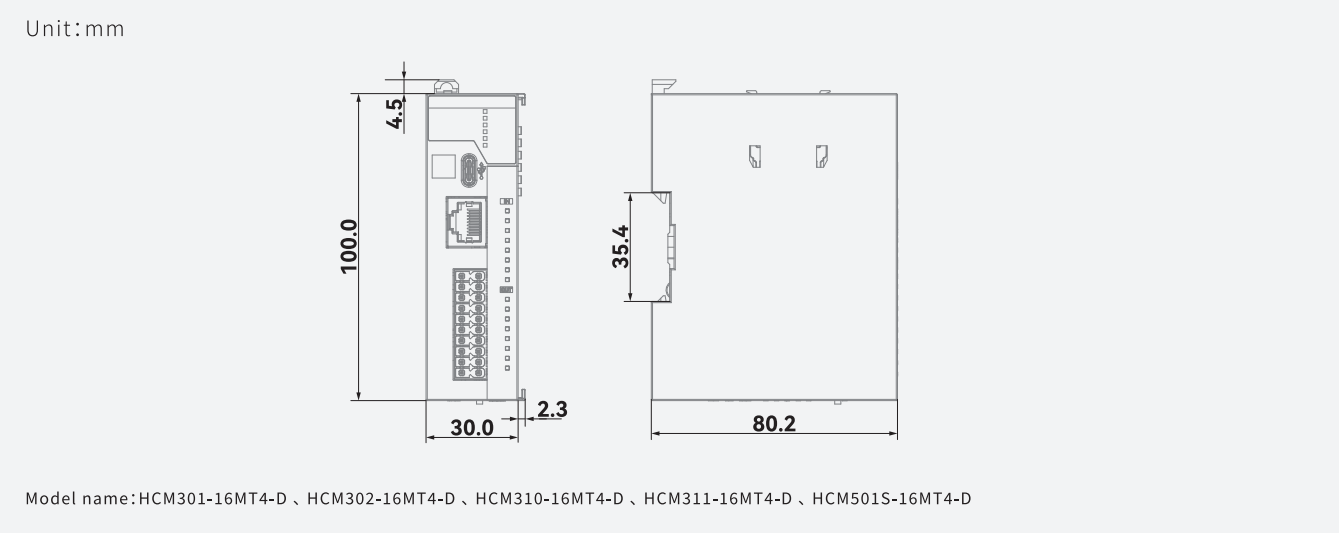
*Note: Only MT models support pulse output.

M100 series controller





M300/M500 Series Controllers



PLC

Specifications

M-SERIES CONTROLLER

Model name			HCM301-16MT4-D	HCM302-16MT4-D	HCM310-16MT4-D	HCM311-16MT4-D	HCM312-32MT6-D	-
Appearance								-
Programming	Program capacity	256 KBytes			512 KBytes			-
	Variable capacity	256 KBytes(The power-off retention capacity is 16KBytes)			256 KBytes(The power-off retention capacity is 32KBytes)			-
	I-area(%I)				128 Bytes			-
	Q-area(%Q)				128 Bytes			-
	M-area(%M)				128 KBytes			-
Programming language			LD、ST、C/C++					-
Axis capacity	Number of pulse axes	4-axis100k			4-axis200k		6-axis200k	-
	Number of encoder axes				2			-
	Total number of axes (pulse axis + encoder axis + imaginary axis)				≤16			-
Right extension	Max. number of extension modules				16			-
RTC battery		Built-in main unit					Supported by installing option card HCMXB-RTC-BD	-
Optional card	Max. number of option cards		-				2	-
	Inputs	Points	8inputs				16inputs	-
I/O points for main unit	Function		Supports 8-ch external interrupts; 2-ch 100K high-speed pulse inputs (AB phase, pulse + direction, single pulse)		Supports 8-ch external interrupts; 2-ch 200K high-speed pulse inputs (AB phase, pulse + direction, single pulse)			-
	Output	Points	8outputs				16点输出	-
	Function		Supports 4-ch 100K high-speed pulse output (pulse + direction)		Supports 4-ch 200K high-speed pulse output (pulse + direction)		Supports 6-ch 200K high-speed pulse output (pulse + direction)	-
Electronic cam	Number of cams	-	16	-	16	16	-	
	Number of key points of a single curve	-	32	-	32	32	-	
Axis group	Max. number of axis groups	-	1 axis groups (max. 8-axis interpolation per axis group)	-	1 axis groups (max. 8-axis interpolation per axis group)	1 axis groups (max. 8-axis interpolation per axis group)	-	
Gcode Capacity			-					-
SD card			-				1-ch	-
USB	Number of interfaces		1-ch USB2.0 Type-C					-
	Supported functions		Program upload/download, software monitoring and debugging, firmware upgrade					-
Power supply			DC24V(±10%)					-
Serial port	RS485	Number of interfaces	1-ch				Max. 4 channels: The main unit has 2 channels, and 2 more channels can be expanded by installing the optional card HCMXB-2RS485-200-BD	-
		Supported protocol	Modbus master and slave (ASCII/RTU); free protocol					-
		Max. number of slaves	32					-
		Supported protocol (bps)	9600、19200、38400、57600、115200					-
	RS232	Number of interfaces	1-ch				Install optional card HCMXB-2RS232-200-BD to support 2-channel	-
		Supported protocol	Modbus master and slave (ASCII/RTU); free protocol					-
		Max. number of slaves	1					-
CAN	Supported protocol (bps)		9600、19200、38400、57600、115200					-
	Number of interfaces		-				Install HCMXB-CAN-BD optional card to support 1 channel	-
	Supported protocol		-				CANopen protocol (DS301), can be used as master or slave; supports 32 slaves when used as master	-
EtherNet	Number of interfaces		-	1-ch				-
	Function		-	Communication, program upload/download, etc.				-
	Data transmission speed		-	100/10Mbps				-
	Total number of TCP connections		-	16(ModbusTCP+Socket + EtherNet/IP)				-
	Modbus TCP		-	Maximum number of connections for client (master): 16; Maximum number of connections for server (slave): 16				-
	Socket		-	Maximum number of connections: 8, support TCP/UDP				-
	Cables		-	Standard Industrial Ethernet Communication Cable				-
EtherNet/IP (Only salve support)	CIP implicit communication		-	Maximum number of connections: 8; Maximum data volume per connection: 200Bytes; Cycle interval: 5~1000ms				-
	CIP explicit communication		-	Number of Class3 connections: 8; Number of UCMM (non-connection type) clients accessing simultaneously: 16				-

Model name			HCM500S-16MT4-D	HCM501S-16MT4-D	HCM511S-32MT4-D	HCM511S-32MT4-D	HCM512-32MT4-D	HCM513-32MT4-D	HCM514-32MT4-D
Appearance									
Programming	Program capacity	512 KBytes				20 MBytes			
	Variable capacity	256 KBytes (The power-failure retention capacity is 32Kbytes)				20 MBytes (The power-failure retention capacity is 128Kbytes)			
	I-area (%I)					128 Bytes			
	Q-area (%Q)					128 Bytes			
Programming language	M-area (%M)					128 KBytes			
						LD、ST、C/C++			
Axis capacity	EtherCAT axis	4PDO configuration is not required, only supports slaves provided in the programming software	8PDO configuration is not required, only supports slaves provided in the programming software		8	16	32	64	
	Number of pulse axes					4-axis 200k			
	Number of encoder axes					2			
	Total number of axes (pulse axis + encoder axis + imaginary axis)	Total≤16				Total≤64			Total≤128
Right extension	Max. number of extension modules	16							
RTC battery		Built-in main unit				Supported by installing option card HCMXB-RTC-BD			
Optional card	Max. number of option cards	-				2			
						16inputs			
I/O points for main unit	Inputs	8inputs							
	Points					Supports 8-ch external interrupts; 2-ch 200K high-speed pulse inputs (AB phase, pulse + direction, single pulse)			
	Function					16outputs			
	Output	8outputs							
Electronic cam	Points								
	Function					Supports 4-ch 200K high-speed pulse output (pulse + direction)			
Axis group	Number of cams	16				64			
	Number of key points of a single curve	32				2048			
Gcode Capacity	Max. number of axis groups	1 axis groups (max. 8-axis interpolation per axis group)				8 axis groups (max. 8-axis interpolation per axis group)			
		-				16M(Supports up to 64 G-code files, each file is up to 256K)			
SD card		Not supported				1-ch			
USB	Number of interfaces					1-ch USB2.0 Type-C			
	Supported functions					Program upload/download, software monitoring and debugging, firmware upgrade			
Power supply						DC24V(±10%)			
						Max. 4 channels: The main unit has 2 channels, and 2 more channels can be expanded by installing the optional card HCMXB-2RS485-200-BD			
						Modbus master and slave (ASCII/RTU); free protocol			
						32			
Serial port	bps Max. number of slaves (bps)					9600、19200、38400、57600、115200			
	Number of interfaces	1-ch				Install optional card HCMXB-2RS232-200-BD to support 2-channel			
	Supported protocol					Modbus master and slave (ASCII/RTU); free protocol			
	Max. number of slaves					1			
CAN	bps Max. number of slaves (bps)					9600、19200、38400、57600、115200			
	Number of interfaces	-				Install HCMXB-CAN-BD optional card to support 1 channel			
	Supported protocol	-				CANopen protocol (DS301), can be used as master or slave; supports 32 slaves when used as master			
						CANopen protocol (DS301), can be used as master or slave; supports 16 slaves when used as master			
EtherNet	Function	-				Communication, program upload/download, etc.			
	Data transmission speed	-				100/10Mbps			
	Total number of TCP connections	-				12(ModbusTCP+Socket)	16 (ModbusTCP+Socket + EtherNet/IP)		
	Modbus TCP	-				Maximum number of connections for client (master): 16; Maximum number of connections for server (slave): 16			
	Socket	-				Maximum number of connections: 4, support TCP/UDP			
EtherNet /IP (Only salve support)	Cables	-				Maximum number of connections: 8, support TCP/UDP			
						Standard Industrial Ethernet Communication Cable			
	CIP implicit communication	-				Maximum number of connections: 8; Maximum data volume per connection: 200Bytes; Cycle interval: 5~1000ms			
	CIP explicit communication	-				Number of Class3 connections: 8; Number of UCMM (non-connection type) clients accessing simultaneously: 16			
EtherCAT	Topology					Linear			
	Transmission medium					Standard EtherCAT communication cable			
	Max. transmission distance between nodes					100m			
	Max. number of nodes	8 (PDO configuration is not required, only supports slaves provided in the programming software)				16	32	64	128
	Max. number of process points					1380 bytes (maximum frame number is 1)			
	Communication cycle	Minimum 500μs				Minimum 250μs			
	Supported protocol					EtherCAT master			

General specifications for M-series controller

> Environmental specifications

Items	Specifications
Working temperature	0~55℃
Storage temperature	-25~70℃
Ambient humidity	10~95% (no condensation)
Altitude /pressure	2000 m or less (80kPa)
Pollution level	Pollution degree II, generally only non-conductive pollution, but temporary conductivity caused by condensation should also be expected.
Cooling method	Passive cooling, natural air cooling

> AC power supply specifications (M100, M200 series) > High-speed IO input specifications

Items	Specifications
Power voltage	AC 100-240V
Allowable voltage fluctuation range	AC 90-265V
Rated frequency	50/60Hz
Allowable instantaneous power failure time	≤5ms
Max. power consumption	25W

Items	Specifications
Rated input voltage	DC 24V
Input type	Supports source or sink input
Rated input current	5mA
ON current	>4mA
OFF current	<2.5mA
ON voltage	≥15V DC
OFF voltage	≤5V DC
Input resistance	2.7kΩ
Max. input frequency	200kHz
Isolation mode	Capacitor isolation

> DC power supply specifications (M300, M500S, M500 series)

Items	Specifications
Power voltage	DC 24V
Allowable voltage fluctuation range	DC 20.4-28.8V
Power consumption	5W
Undervoltage level	19V

> Relay output specifications

Items	Specifications
Output type	Relay output
External power supply	AC250V, DC30V or less
Circuit insulation	Mechanical insulation
Maximum load	Load is resistance type: 2A/each point
	Load is inductive type: 1A/each point
	Load is bulb type: 30W/each point
Minimum load	DC5V 10mA
Insulation resistance	1000MΩ (500VDC)
ON/OFF response time	<10ms

> Transistor output specifications

Items	Specifications
Output type	Supports sink output
Maximum load	Load is resistive type: 0.5A/point
	Load is inductive type: 13W (24VDC)
	Load is bulb type: 2.5W (24VDC)
Minimum load	1mA / 5V
Leakage current at OFF	<10μA
Maximum output frequency	200kHz
ON/OFF response time	<2.5us
Isolation mode	Capacitor isolation

Naming rule for M-series optional card

H C M X B - 2 R S 2 3 2 - 2 0 0 - B D

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1.Product name

HC

HC: HCFA controller

2.Optional card series

MXB

MXB: M-series optional expansion

3.Product series

2RS232

2RS232: 2-ch 232 serial ports
2RS485: 2-ch 485 serial ports
CAN: CANopen protocol
RTC: Perpetual calendar battery card
A B : AB-phase differential encoder optional card

4.Suffix

200

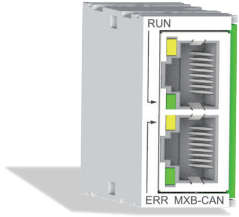
None: M300/M500S/M500 series optional card
5 0 0 : M500 series optional card
2 0 0 : M200 series optional card
1 0 0 : M100 series optional card

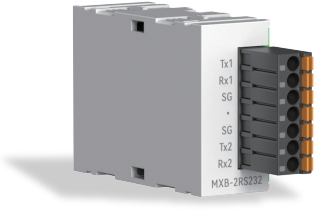
5.Suffix

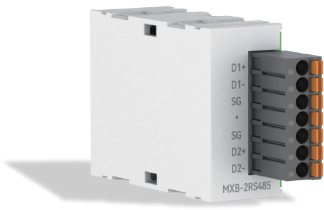
BD

BD: BD optional card

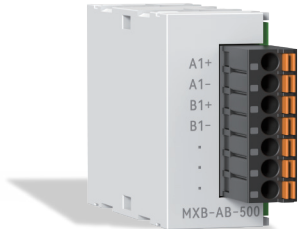
Specification for M-series optional card

Model name	HCMXB-CAN-BD (Applicable to M312, M500S, M500 series main units)	HCMXB-CAN-100-BD (Applicable to M100 series main units)
Appearance		
Specifications	Supports CANopen protocol (DS301), can be used as master station or slave station	
Number of slave stations supported	Refer to Controller Specifications	
Link layer	CAN2.0A	
Terminating resistor	120Ω, externally connected	
Baud rate (bps)	20K, 50K, 125K, 250K, 500K, 1M	
Topology	Daisy chain, star-type	
Transmission medium	Comply with CIA standard CAN communication cable	
Max. communication distance	2500m (20kbps)	
Synchronization period	Mini. 1ms	

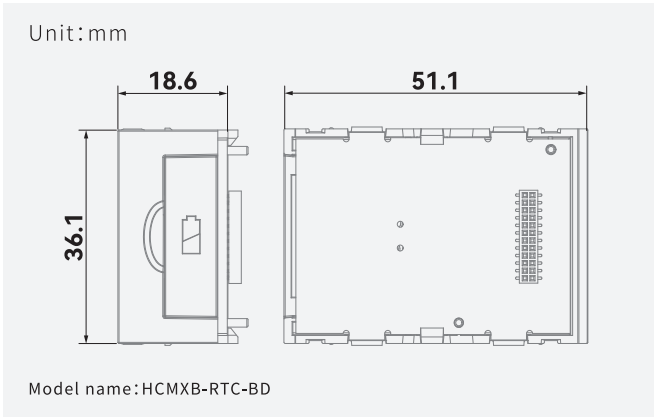
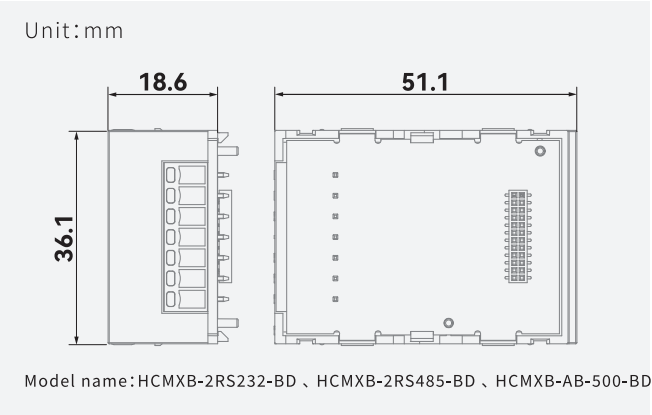
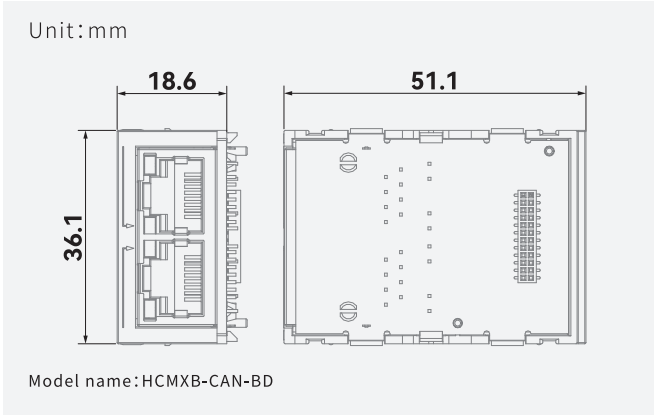
Model name	HCMXB-2RS232-BD (Applicable to M312, M500S, M500 series main units)	HCMXB-2RS232-100-BD (Applicable to M100 series main units)	HCMXB-2RS232-200-BD (Applicable to M200 series main units)
Appearance			
Specifications	2-channel RS232 communication optional card; can be used as a master or slave station, supports Modbus protocol and free protocol		
Communication mode	RTU/ASCII		
Max. supported number of slave stations	1		
Baud rate (bps)	9600, 19200, 38400, 57600, 115200		
Max. communication distance	15m (9600bps)		

Model name	HCMXB-2RS485-BD (Applicable to M312, M500S, M500 series main units)	HCMXB-2RS485-100-BD (Applicable to M100 series main units)	HCMXB-2RS485-200-BD (Applicable to M200 series main units)
Appearance			
Specifications	2-ch RS485 communication optional card; Can be used as a master station or slave station,Support Modbus protocol and free protocol		
Communication mode	RTU/ASCII		
Max. supported number of slave stations	32		
Terminating resistor	120Ω, externally connected		
Baud rate (bps)	9600, 19200, 38400, 57600, 115200		
Max. communication distance	500m (9600bps)		

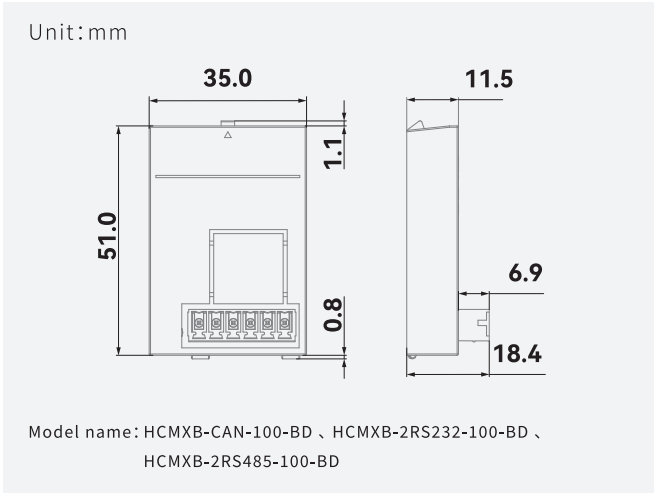
Model name	HCMXB-RTC-BD (Applicable to M312, M500S, M500 series main units)
Appearance	
Specifications	Perpetual calendar battery card (The perpetual calendar time can continue to count after the controller powered off)
Clock accuracy	120s/month
Clock format	Year-month-day-week-hour-minute-second
Battery specifications	Standard battery, can be replaced, service life 3~5 years

Model name	HCMXB-AB-500-BD (Applicable to M500 series main units)
Appearance	
Specifications	AB-phase differential encoder optional card
Counting mode	AB-phase x 1 frequency/ x 2 frequency/ x 4 frequency
Counting direction	Increase counting/decrease counting

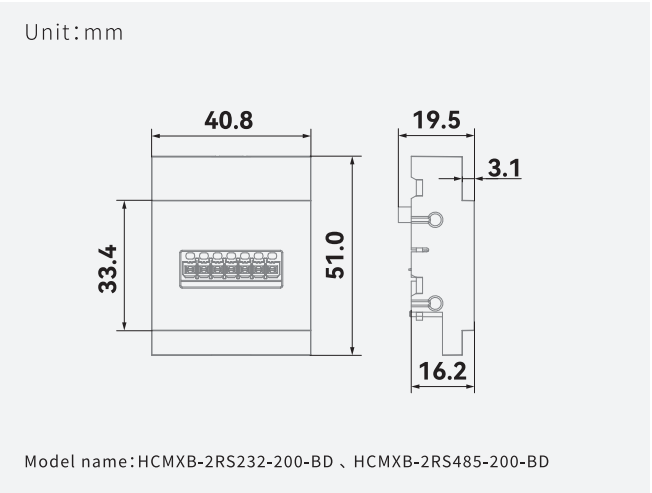
Optional card for M312, M500S, M500 series main unit



Optional card for M100 series main unit



Optional card for M200 series main unit



Naming rule for M-series extension module

HCMX-MD16-D-****

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- 1.Product name

HC

HC: HCFA
- 2.Product series

MX

MX: M-series general extension

MXE: EtherCAT remote I/O

MXC: CANopen remote I/O

MXP: Profinet remote I/O
- 3.Extension module type

MD

OC: Relay output

ID: Digital input

OD: Transistor output

MD: Digital I/O

AD: Analog input

DA: Analog output

EC: EtherCAT coupler
- 4.Number of module channels

16

04: 4-ch

08: 8-ch

16: 16-ch

32: 32-ch
- 5.Power type

D

D: DC power
- 6.Control version and non-standard specifications

*

Coupler module

Model name	HCMX-EC01-D
Appearance	
Product Type	EtherCAT Coupler
Number of expandable modules on the right-side	16
Communication protocol	EtherCAT
Communication rate	100Mbps
Maximum communication distance between sites	100m
Operation mode	FreeRun、SM-Synchron、DC-Synchron
Rated voltage	DC 24V

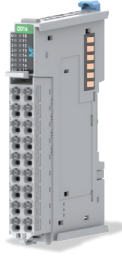
M-series remote expansion module

Model name	HCMXE-MD16-D	HCMXC-MD16-D	HCMXP-MD16-D
Appearance			
Product Type	EtherCAT Remote I/O	CANopen Remote I/O	Profinet Remote I/O
Number of expandable modules on the right-side	16		
Input specifications	8 input points, support NPN or PNP input		
Output specifications	8 output points, support NPN output		
Communication protocol	EtherCAT	CANopen	Profinet
Communication rate	100Mbps	Max. 1Mbps	100Mbps
Max. communication distance	100m	5000m (10Kbps)	100m
Operation mode	FreeRun、SM-Synchron、DC-Synchron	-	-
Rated voltage	DC 24V		

M-series digital input module

Model name	HCMX-ID08-D	HCMX-ID16-D	HCMX-ID32-D
Appearance			
Input points	8	16	32
Input type	NPN/PNP		
Rated power	1W		
Rated input voltage	DC24V		
Rated input current	5mA		
Input ON current	>4mA		
Input OFF current	<2.5mA		
Input ON voltage	≥DC15V		
Input OFF voltage	≤DC5V		
Hardware response time (ON/OFF)	100μs/100μs		
Software filtering	Supported		
Input resistance	2.7kΩ		
Common mode	Share one common terminal for every 8 points		

M-series digital output module

Model name	HCMX-OD08-D	HCMX-OD16-D	HCMX-OD32-D
Appearance			
Output points	8	16	32
Output type	NPN		
Rated power	1W	1W	1.5W
Control circuit voltage	DC24V		
Rated load current (resistance)	0.5A/point, 4A/common terminal		
Rated load current (inductance)	7.2W/point, 24W/common terminal		
Rated load current (lamp)	5W/point, 18W/common terminal		
Leakage current at power OFF	< 10μA		
Hardware response time (ON/OFF)	500μs/500μs		
Output frequency	Resistive load 100Hz; Inductive load 0.5Hz; Lamp load 10Hz		
Protection function	Short-circuit protection, over-current protection		
Common mode	For modules with 8 outputs, Share one common terminal for every 8 points; for modules with 16 or 32 outputs, Share one common terminal for every 16 points.		

Model name	HCMX-OD08-D-PNP	HCMX-OD16-D-PNP	HCMX-OD32-D-PNP	HCMX-OC08-D
Appearance				
Output points	8	16	32	8
Output type	PNP			Relay
Rated power	1W	1W	1.5W	1.5W
Control circuit voltage	DC24V			AC250V/DC30V
Rated load current (resistance)	0.5A/point, 2A/common terminal			2A/point, 8A/common terminal
Rated load current (inductance)	7.2W/point, 12W/common terminal			1A/point, 4A/common terminal
Rated load current (lamp)	5W/point, 10W/common terminal			30W/point, 120W/common terminal
Leakage current at power OFF	< 10μA			-
Hardware response time (ON/OFF)	500μs/500μs			10ms/10ms
Output frequency	Resistive load100Hz Inductive load0.5Hz Lamp load10Hz			Resistive load1Hz Inductive load0.5Hz Lamp load1Hz
Mini. number of switching times	-			100000
Protection function	Short-circuit protection, over-current protection			-
Common mode	For modules with 8 outputs, Share one common terminal for every 8 points; for modules with 16 or 32 outputs, Share one common terminal for every 16 points.			Share one common terminal for every 4 points

Digital I/O module

Model name		HCMX-MD16-D	HCMX-MD32-D	HCMX-MD16-D-PNP	HCMX-MD32-D-PNP
Appearance					
Input specifications	Input points	8	16	8	16
	Input type	NPN/PNP			
	Rated input voltage	DC24V			
	Rated input current	5mA			
	Input ON current	>4mA			
	Input OFF current	<2.5mA			
	Input ON voltage	≥DC15V			
	Input OFF voltage	≤DC5V			
	Hardware response time (ON/OFF)	100μs/100μs			
	Software filtering	Supported			
Input resistance	2.7kΩ				
Output specifications	Output points	8	16	8	16
	Output type	NPN		PNP	
	Control circuit voltage	DC24V			
	Rated load current (resistance)	0.5A/point, 4A/common terminal		0.5A/point, 2A/common terminal	
	Rated load current (inductance)	7.2W/point, 24W/common terminal		7.2W/point, 12W/common terminal	
	Rated load current (lamp)	5W/point, 18W/common terminal		5W/point, 10W/common terminal	
	Leakage current at power OFF	< 10μA			
	Hardware response time (ON/OFF)	500μs/500μs			
	Output frequency	Resistive load 100Hz; Inductive load 0.5Hz; Lamp load 10Hz			
	Protection function	Short-circuit protection, over-current protection			
Rated power		1W	1.5W	1W	1.5W
Common mode		Share one common terminal for every 8 points	Share one common terminal for every 16 points	Share one common terminal for every 8 points	Share one common terminal for every 16 points

M-series analog input module

Model name	HCMX-AD04-D	HCMX-AD04S-D
Appearance		
Input type	Voltage/current	
Number of input channels	4	
Resolution	16 bit	14 bit
Conversion time	60μs/ch	
Accuracy	Normal temperature 25°C: ±0.1% (full scale); full temperature range: ±0.2% (full scale) Normal temperature 25°C: ±0.5% (full scale); full temperature range: ±1% (full scale)	
Supported modes and conversion values	-10V~10V (-32000~32000)	
	-5V~5V (-32000~32000)	
	0V~5V (0~32000)	
	1V~5V (0~32000)	
	-20mA~20mA (-32000~32000)	
	0mA~20mA (0~32000)	
	4mA~20mA (0~32000)	
Rated input voltage	DC24V	
Rated power	1W	
Filter function	Supported	
Input disconnection detection	Supported when the mode is 4mA~20mA	

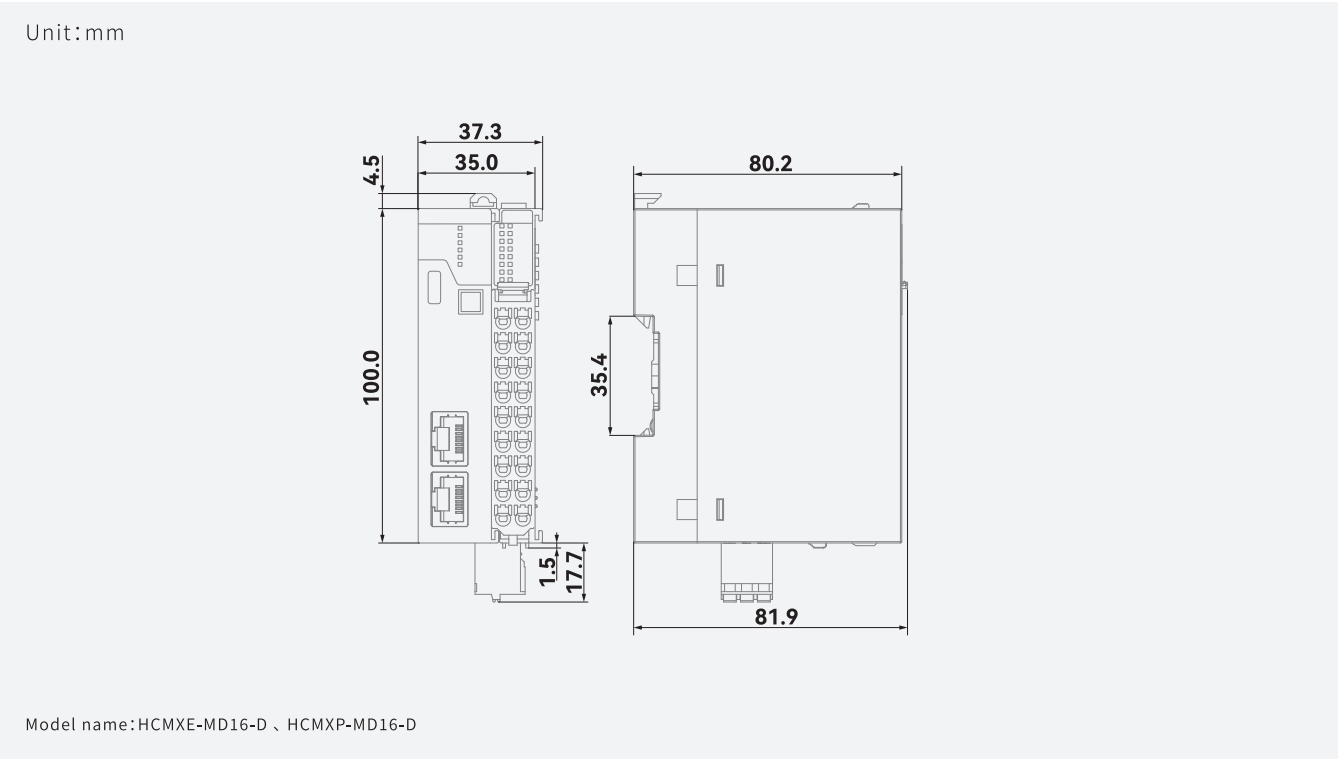
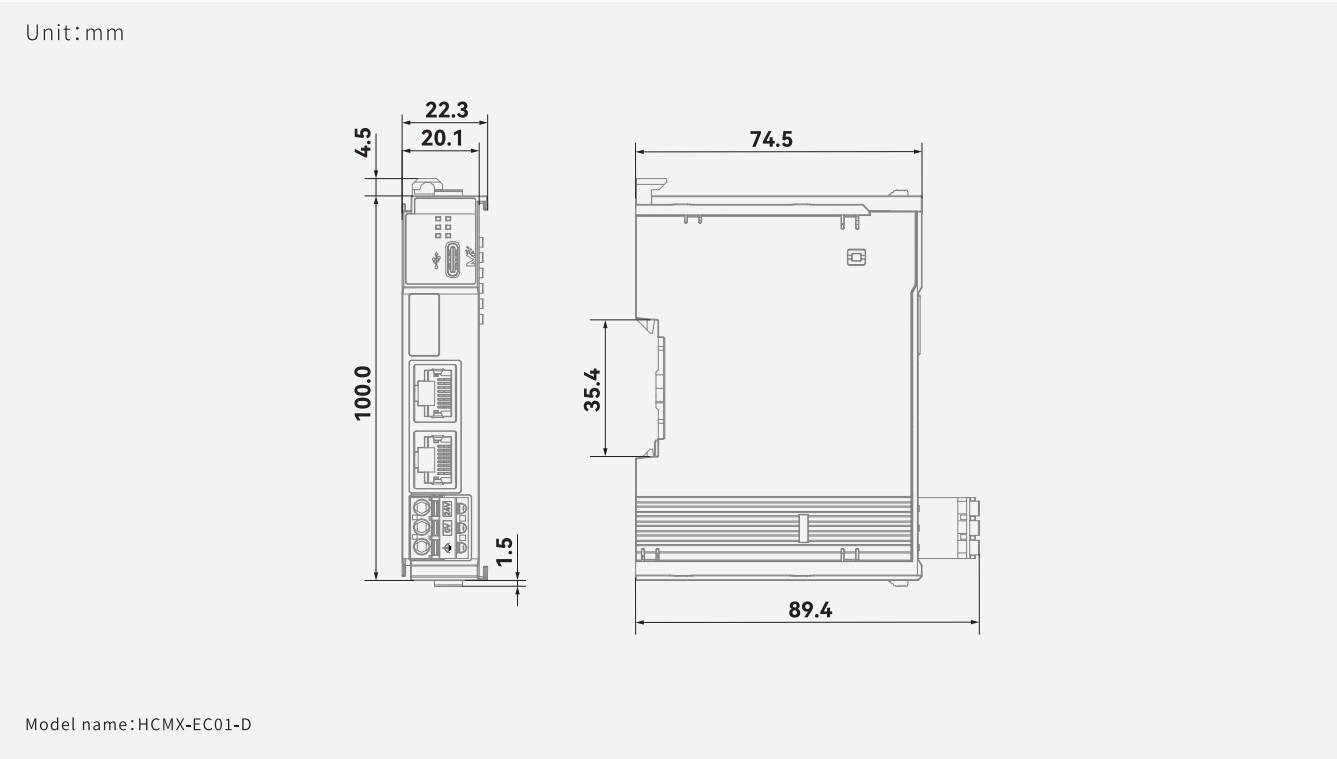
M-series analog output module

Model name	HCMX-DA04-D	HCMX-DA04S-D
Appearance		
Output type	Voltage/current	
Number of output channels	4	
Resolution	16 bit	14 bit
Conversion time	60μs/ch	
Accuracy	Normal temperature 25°C: ±0.1% (full scale); full temperature range: ±0.2% (full scale) Normal temperature 25°C: ±0.5% (full scale); full temperature range: ±1% (full scale)	
Supported modes and conversion values	-10V~10V (-32000~32000)	
	0V~10V (0~32000)	
	0mA~20mA (0~32000)	
	4mA~20mA (0~32000)	
Rated input voltage	DC24V	
Rated power	1W	
Voltage output diagnostics	Support short-circuit detection, over-temperature protection	
Current output diagnostics	Support open-circuit detection, over-temperature protection	

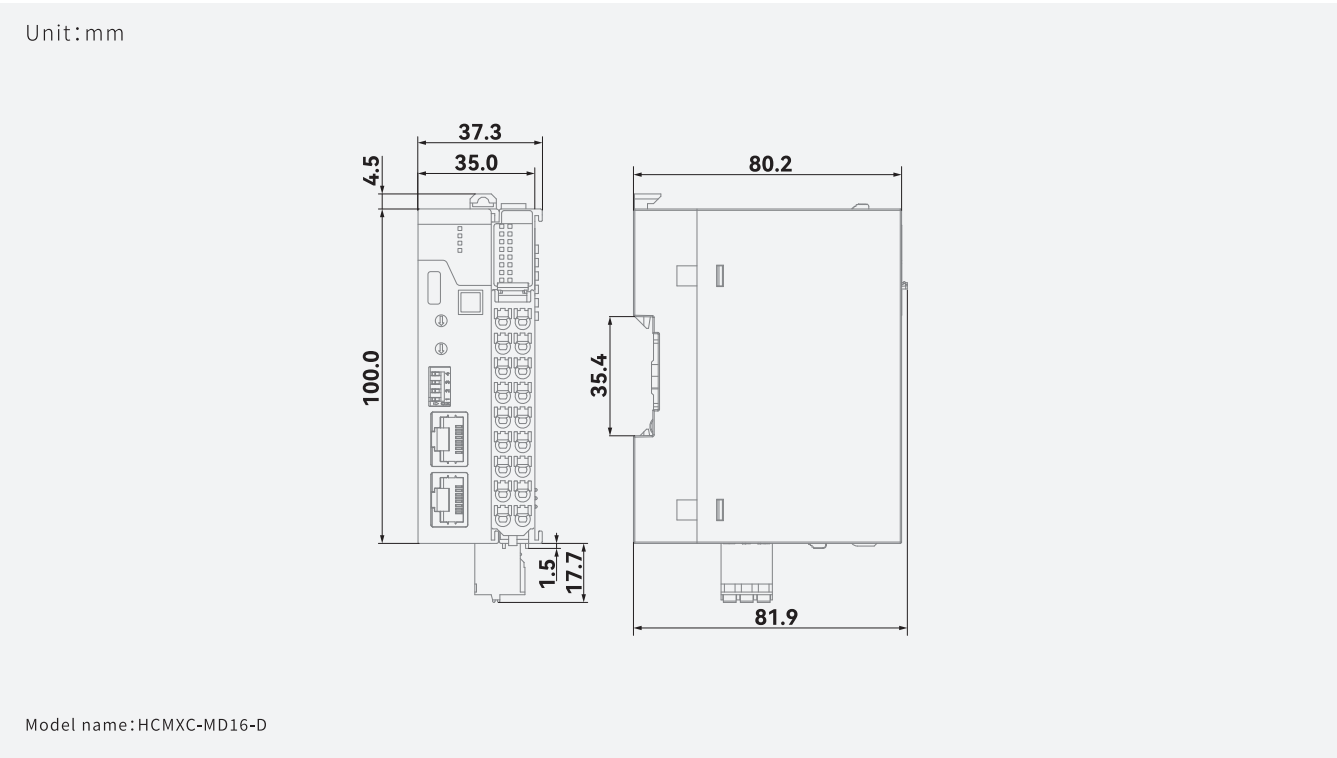
M-SERIES UNIT DIMENSION DRAWING

Dimension drawing for M-series remote expansion module

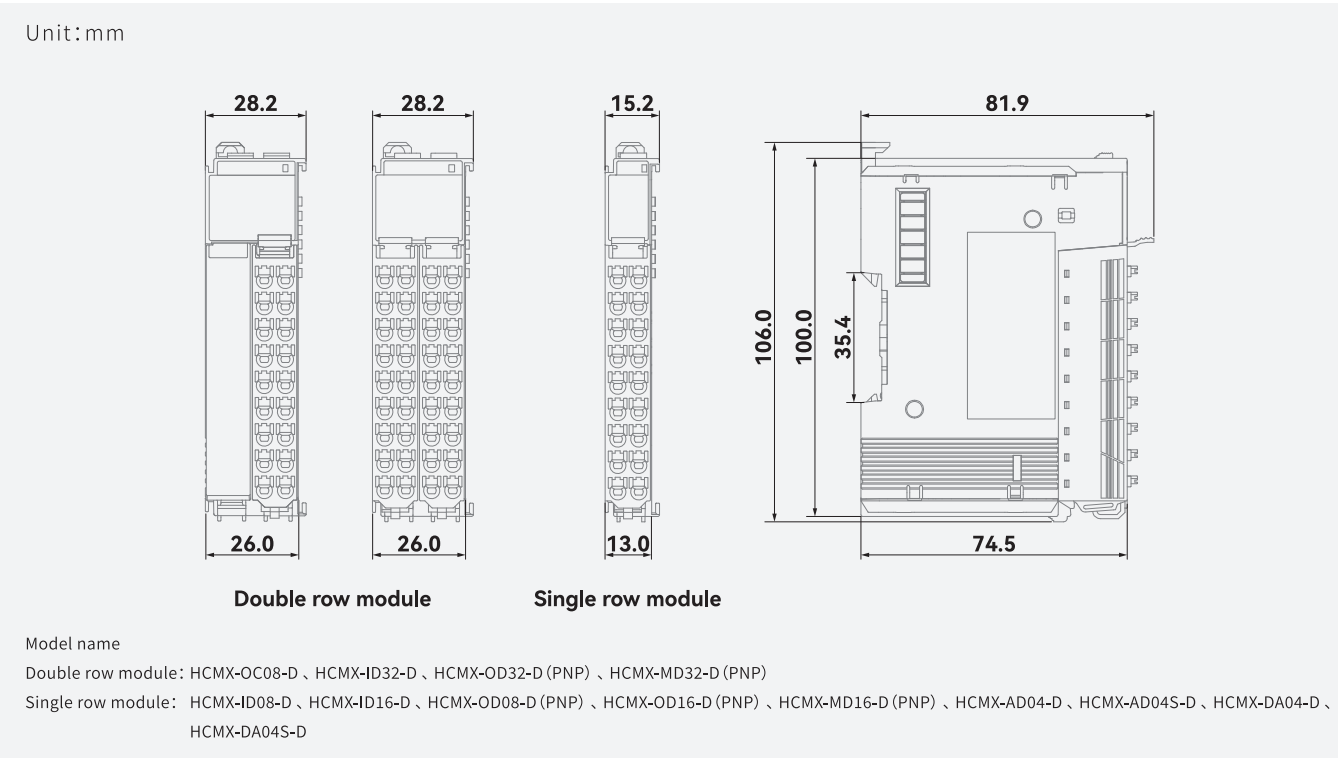
M-series Coupler module



M-series remote expansion module



M-series digital/analog module



Selection guide for M-series controller

Model name	Specifications	Page
HCM100-14MR-A	Relay output, 100k high speed counter *2, 8 inputs 6 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-14MT3-A	100k pulse axis *3, 100k high speed counter *2, 8 inputs 6 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-20MR-A	Relay output, 100k high speed counter *2, 12 inputs 8 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-20MT4-A	100k pulse axis *4, 100k high-speed counter *2, 12 inputs 8 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-30MR-A	Relay output, 100k high speed counter *2, 16 inputs 14 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-30MT6-A	100k pulse axis *6, 100k high speed counter *2, 16 inputs 14 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-40MR-A	Relay output, 100k high speed counter *2, 24 inputs 16 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-40MT6-A	100k pulse axis *6, 100k high speed counter *2, 24 inputs 16 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-48MR-A	Relay output, 100k high speed counter *2, 28 inputs 20 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-48MT6-A	100k pulse axis *6, 100k high speed counter *2, 28 inputs 20 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-60MR-A	Relay output, 100k high speed counter *2, 36 inputs 24 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM100-60MT6-A	100k pulse axis *6, 100k high speed counter *2, 36 inputs 24 outputs, RS232*1, RS485*1, USB*1, 1 optional card	12
HCM211-20MR-A	Relay output, 200k high-speed counter *2, 12 inputs 8 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM211-20MT4-A	200k pulse axis *4, 200k high-speed counter *2, 12 inputs 8 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM211-32MR-A	Relay output, 200k high-speed counter *2, 18 inputs 14 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM211-32MT6-A	200k pulse axis *6, 200k high-speed counter *2, 18 inputs 14 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM211-42MR-A	Relay output, 200k high-speed counter *4, 24 inputs 18 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM211-42MT8-A	200k pulse axis *8, 200k high-speed counter *4, 24 inputs 18 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, support 16 right-side expansion modules	13
HCM211-60MR-A	Relay output, 200k high-speed counter *4, 36 inputs 24 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM211-60MT10-A	200k pulse axis *10, 200k high-speed counter *4, 36 inputs 24 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM212-32MT4-A	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *8, 18 inputs 14 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card *1, supports 16 right-side expansion modules	13
HCM212-60MT8-A	200k pulse axis *8, 200k high-speed counter *4, EtherCAT bus axis *8, 36 inputs 24 outputs, EtherNet*1, CAN*1, RS485*2, USB*1, 1 optional card, SD card*1, support 16 right-side expansion modules	13
HCM301-16MT4-D	100k pulse axis *4, 100k high-speed counter *2, RS485*1, RS232*1, 8 inputs 8 outputs, supports 16 right-side expansion modules	16
HCM302-16MT4-D	100k pulse axis *4, 100k high-speed counter *2, RS485*1, RS232*1, 8 inputs 8 outputs, supports 16 right-side expansion modules	16
HCM310-16MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherNet*1, RS485*1, RS232*1, 8 inputs 8 outputs, supports 16 right-side expansion modules	16
HCM311-16MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherNet*1, RS485*1, RS232*1, 8 inputs 8 outputs, supports 16 right-side expansion modules	16
HCM312-32MT6-D	200k pulse axis *6, 200k high-speed counter *2, EtherNet*1, RS485*2, 16 inputs 16 outputs, 2 optional cards, support 16 right-side expansions, SD card *1	16
HCM500S-16MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *4*1, RS485*1, RS232*1, 8 inputs 8 outputs, supports 16 right-side expansion modules	17
HCM501S-16MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *8*1, RS485*1, RS232*1, 8 inputs 8 outputs, supports 16 right-side expansion modules	17
HCM511S-32MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *8*1, EtherNet*1, RS485*2, 16 inputs 16 outputs, 2 optional cards, supports 16 right-side expansions, SD card *1	17
HCM511-32MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *8, EtherNet*1, RS485*2, 16 inputs 16 outputs, 2 optional cards, support 16 right-side expansions, SD card *1	17
HCM512-32MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *16, EtherNet*1, RS485*2, 16 inputs 16 outputs, 2 optional cards, support 16 right-side expansions, SD card *1	17
HCM513-32MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *32, EtherNet*1, RS485*2, 16 inputs 16 outputs, 2 optional cards, support 16 right-side expansions, SD card *1	17
HCM514-32MT4-D	200k pulse axis *4, 200k high-speed counter *2, EtherCAT bus axis *64, EtherNet*1, RS485*2, 16 inputs 16 outputs, 2 optional cards, support 16 right-side expansions, SD card *1	17

*1: PDOs are fixed configuration; only available to slaves in the configuration software.

Selection guide for M-series optional card

Model name	Applicable main unit	Specifications	Page
HCMXB-CAN-100-BD	M100 series	Supports CANopen protocol (DS301), can be used as master station or slave station	20
HCMXB-2RS232-100-BD		2-ch RS232 serial port, can be used as a master station or slave station, support Modbus protocol and free protocol	20
HCMXB-2RS485-100-BD		2-ch RS485 serial port, can be used as master station or slave station, supports Modbus protocol and user-defined protocol	21
HCMXB-2RS232-200-BD	M200 series	2-ch RS232 serial port, can be used as a master station or slave station, supports Modbus protocol and user-defined protocol	20
HCMXB-2RS485-200-BD		2-ch RS485 serial port, can be used as master station or slave station, supports Modbus protocol and user-defined protocol	21
HCMXB-CAN-BD	M312 、 M511、 M512、 M513、 M514	Supports CANopen protocol (DS301), can be used as master station or slave station	20
HCMXB-2RS232-BD		2-ch RS232 serial port, can be used as a master station or slave station, supports Modbus protocol and user-defined protocol	20
HCMXB-2RS485-BD		2-ch RS485 serial port, can be used as master station or slave station, supports Modbus protocol and free protocol	21
HCMXB-RTC-BD		Perpetual calendar battery card, the perpetual calendar time can continue to count after the controller is powered off	21
HCMXB-AB-500-BD	M511、 M512、 M513、 M514	AB phase differential encoder optional card, supports x 1/2/4 frequency, supports up/down counting	21

Selection guide for M-series extension module

Model name	Specifications	Page
HCMX-EC01-D	EtherCAT coupler, supports 16 right-side expansion modules	24
HCMXE-MD16-D	EtherCAT remote IO, 8 inputs and 8 outputs, supports 16 right-side expansion modules	24
HCMXC-MD16-D	CANopen remote IO, 8 inputs and 8 outputs, supports 16 right-side expansion modules	24
HCMXP-MD16-D	Profinet remote IO, 8 inputs and 8 outputs, supports 16 right-side expansion modules	24
HCMX-ID08-D	8-ch digital input, support NPN or PNP input	25
HCMX-ID16-D	16-ch digital input, support NPN or PNP input	25
HCMX-ID32-D	32-ch digital input, support NPN or PNP input	25
HCMX-OC08-D	8-ch relay output	26
HCMX-OD08-D	8-ch digital output, support NPN output	25
HCMX-OD08-D-PNP	8-ch digital output, support PNP output	26
HCMX-OD16-D	16-ch digital output, support NPN output	25
HCMX-OD16-D-PNP	16-ch digital output, support PNP output	26
HCMX-OD32-D	32-ch digital output, support NPN output	25
HCMX-OD32-D-PNP	32-ch digital output, support PNP output	26
HCMX-MD16-D	16 I/O points : 8-ch digital input, support NPN or PNP input; 8-ch digital output, support NPN output	27
HCMX-MD16-D-PNP	16 I/O points: 8-ch digital input, support NPN or PNP input; 8-ch digital output, support PNP output	27
HCMX-MD32-D	32 I/O points: 16-ch digital input, support NPN or PNP input; 16-ch digital output, support NPN output	27
HCMX-MD32-D-PNP	32 I/O points: 16-ch digital input, support NPN or PNP input; 16-ch digital output, support PNP output	27
HCMX-AD04-D	4-ch analog input, 16-bit resolution. Supported modes: -10V~10V 、 -5V~5V、 0V~5V、 1V~5V、 -20mA~20mA、 0mA~20mA、 4mA~20mA	28
HCMX-AD04S-D	4-ch analog input, 14-bit resolution. Supported modes: -10V~10V 、 -5V~5V、 0V~5V、 1V~5V、 -20mA~20mA、 0mA~20mA、 4mA~20mA	28
HCMX-DA04-D	4-ch analog output, 16-bit resolution: -10V~10V 、 0V~10V、 0~20mA、 4mA~20mA	28
HCMX-DA04S-D	4-ch analog output, 14-bit resolution: -10V~10V 、 0V~10V、 0~20mA、 4mA~20mA	28

M-series programming software

Model name	Overview	Page
SysCtrl Studio	M series programmable controller programming software with multiple functions	-