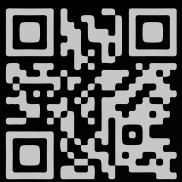


---

# FATEK



[fatek.com](https://www.fatek.com)

FATEK AUTOMATION CORPORATION

Specifications are subject to change without notice in the interest of product improvement

M-CV1-07-2023

# M Series

Programmable Controller





**0.8 ns**  
Ultimate Performance

**Ultimate speed leading ahead of the industry**

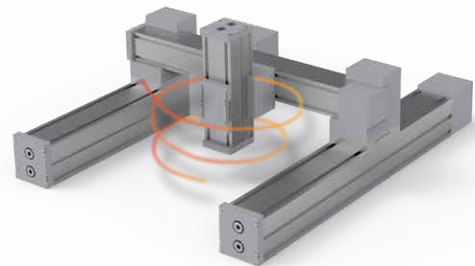
Innovatively developed high-performance processor and high-performance algorithm. Achieves ultimate up to 0.8ns for the command processing speed. Pushes the control performance to the unimaginable “ns” realm.

**Ultra high precision motion control performance**

Independent processing of motion control related tasks with the dedicated motion control CPU. Execute the complicated or massive amount of motion control commands in real-time and accurate manner without affecting the scan time.

BASIC LD  
**0.0008 μs** (0.8 ns)

MOV	Multiplication	Floating Point Addition
<b>7.5 ns</b>	<b>38 ns</b>	<b>35 ns</b>

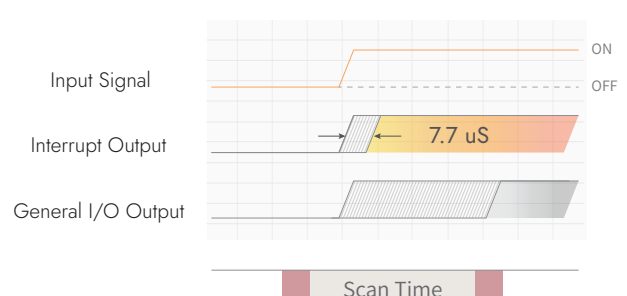
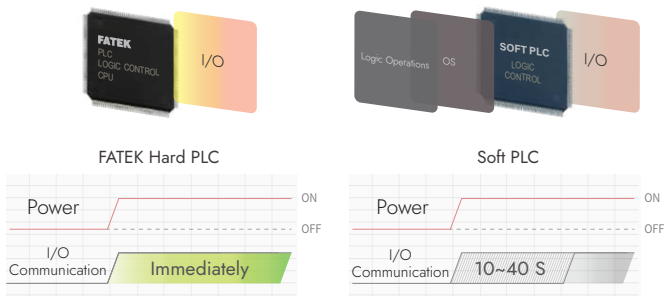


**Ultimate Performance and Efficiency - Hard PLC**

High-performance hardware design for logic operations. Low power consumption and high stability system architecture without fans and heat sink. Without complicated and huge OS, PLC can immediately operate with no delay when power-on.

**Ultra low delay interrupt response**

Achieves up to 7.7 uS interrupt response speed. With interrupt, the input response time will not be not affected by the length of the scan time. Ensure precise and immediate control needs in any situation.

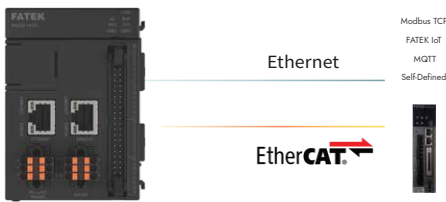




World-class high-capacity and efficient control center

### Dual Ethernet communication interface

Ethernet supports Modbus TCP, MQTT and self-defined protocol. Exchange the data with the peripheral devices, systems and platforms easily. And EtherCAT could seamlessly connect with other brands\* of EtherCAT servos. Advanced motion control can be achieved by the built-in motion control function without the need of expansion module.



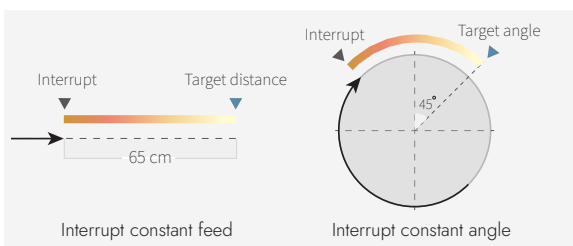
### IoT control hub

Support FATEK IoT solution without the need of fixed IP and IoT gateway. Easily achieve the applications such as remote monitoring, project maintenance and alarm notification. And also supports the MQTT Protocol for interfacing with the third-party cloud platform



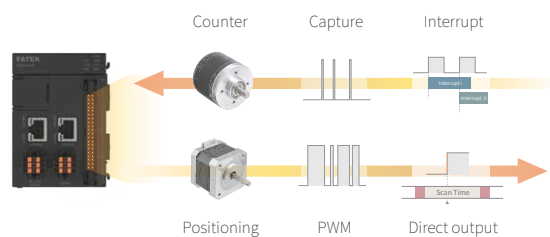
### High-speed pulse output and positioning control

Built-in up to 8 axes and up to 200KHz high-speed pulse output which can perform positioning control. And supports advanced functions such as interrupt constant feed and interrupt constant angle. Application such as edge grinding, edge banding and feeding can be easily realized.



### High-density integrated I/O

Built-in 16 sets of digital input and output points respectively. With up to 200KHz high-speed counter and pulse output. Support interrupt and capture input to ensure commands and signal capture are not affected by scan time when control immediacy is extremely required.



### 2-channel RS-485 communication ports

Built-in 2-channel RS-485 communication ports and support Modbus Client/Slave.

### 2-channel analog input interface

Built-in 2-channel 12-bit analog input interface.

\* For supported driver brands, please refer to the list on FATEK website



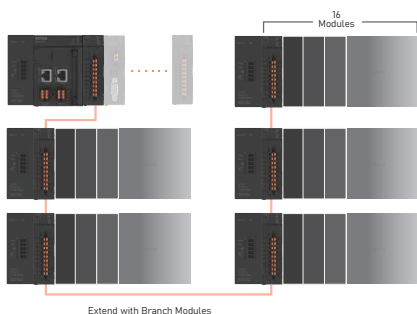
# Powerful Expansion

Efficiency beyond imagination



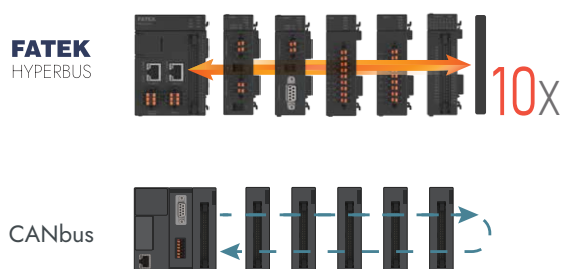
## Powerful control over scale and extensibility

Control scale run up to 2048 DIO and 256 AIO.  
Up to 64 expansion modules of various types can be added.  
FHB transmission technology can transfer data instantly without delay when monitoring large amounts of controlling data gathered from plentiful modules.



## FHB FATEK Hyper-bus data transmission technique

It solves the problem that the serial communication speed will be affected by the number of modules, and the speed can achieve up to 10 times faster than CAN bus. Moreover, the bus connector is designed with a patented vibration damping joint, and now data transmission is not only fast, but also more stable and reliable.



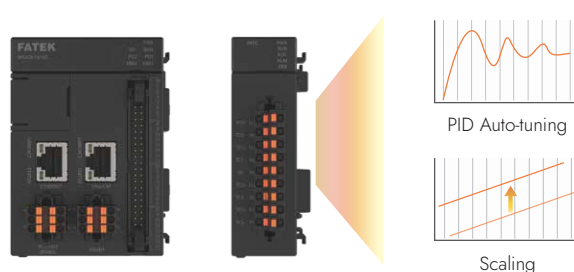
## Comprehensive expansion modules

Provide various modules from I/O, communication, numerical monitoring to IoT\*. In addition to being applicable to various machines and systems, it can also be used as a control and integration hub for cross-system integration.



## Distributed computing on modules

Each extension module has an independent MCU that can perform complex real-time computing tasks. Communication analysis, auto-tuning and various post-processing can be executed directly on the module. Improve system efficiency and significantly reduce CPU loading with a distributed architecture.



# Intuition

## Human-centered design



Hardware

Motion

IoT

Software

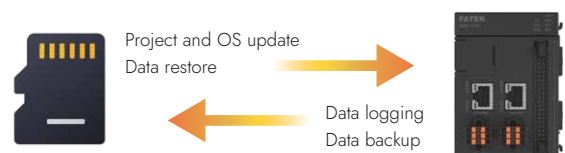
### Battery-free program memory

Program and data memory using non-volatile memory.  
No battery required to maintain internal data storage.  
Never need to worry about data loss or damage caused by battery out of power anymore.



### Micro-SD\* card expansion slot

Logged data can be directly stored in the Micro-SD card, and also project and OS update, data backup and restore can be performed through the Micro-SD card. It allows the user to complete data logging, project loading and system maintenance without a computer.



Line Up

Specification

Dimension

### Patented floating connector

The local bus connector design with patented vibrate-absorbing joints can absorb the vibration effects caused by the machine and the environment. Improve durability and avoid data loss caused by poor contact. Especially suitable for machinery and transportation industries



### Convenient wiring and quick dismantling

Quick wiring without tools using Push-in terminals. And can ensure contacts tightly connected to avoid poor contact.



Model List

### RUN/STOP switch

The physical switch can change-over the state of PLC without a computer. Significantly improve the convenience of tuning and debugging

### Type-C interface

Adopt USB Type-C as the standard programming interface. Project upload/download and online monitoring/editing simply with the use of common USB Type-C cable.

\* Only support MFM06 - dedicated Micro-SD card

# Independent motion control CPU



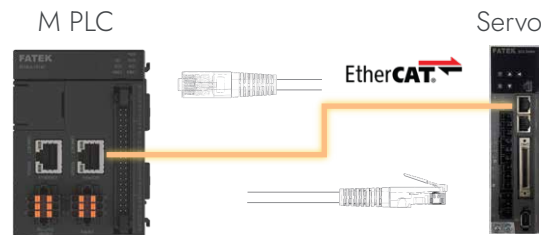
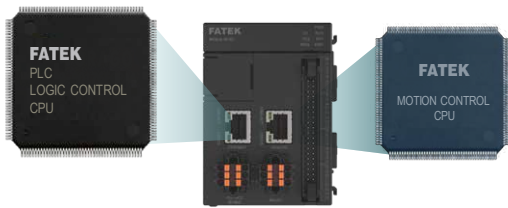
Perform complex motion control with precision

## Independent motion control CPU

Motion control operates independently of the PLC logic program. Even if the execution of complex high-speed and high-precision motion control requirements will not be affected by the program scan time or other interrupt tasks. It can ensure the best control accuracy and stability

## EtherCAT

EtherCAT fieldbus can be seamlessly connected with other brands\* of EtherCAT servos, and provide reliable and highly efficient control method while exhibiting faster transmission speed. Wiring simply done by using standard RJ-45 cables. Improve assembly efficiency while reducing the maintenance cost.

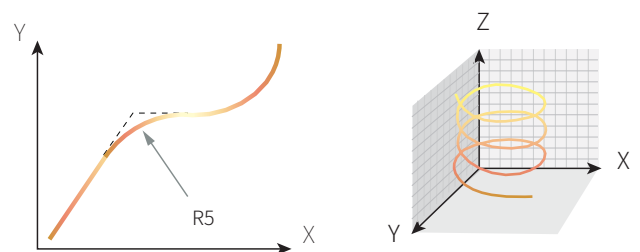
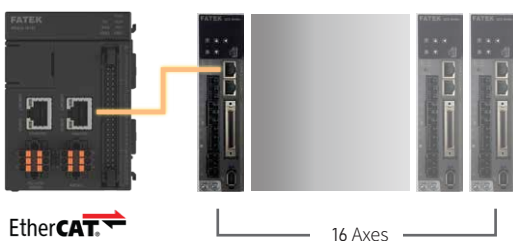


## 16-axis synchronous motion control

Control up to 16-axis servo driver simultaneously without the need of expanding any motion control module or linking several CPUs. Perform high-precision multi-axis time-synchronized cooperative control. Each axis can be used to carry out the advanced motion-sync control.

## Advanced interpolation function

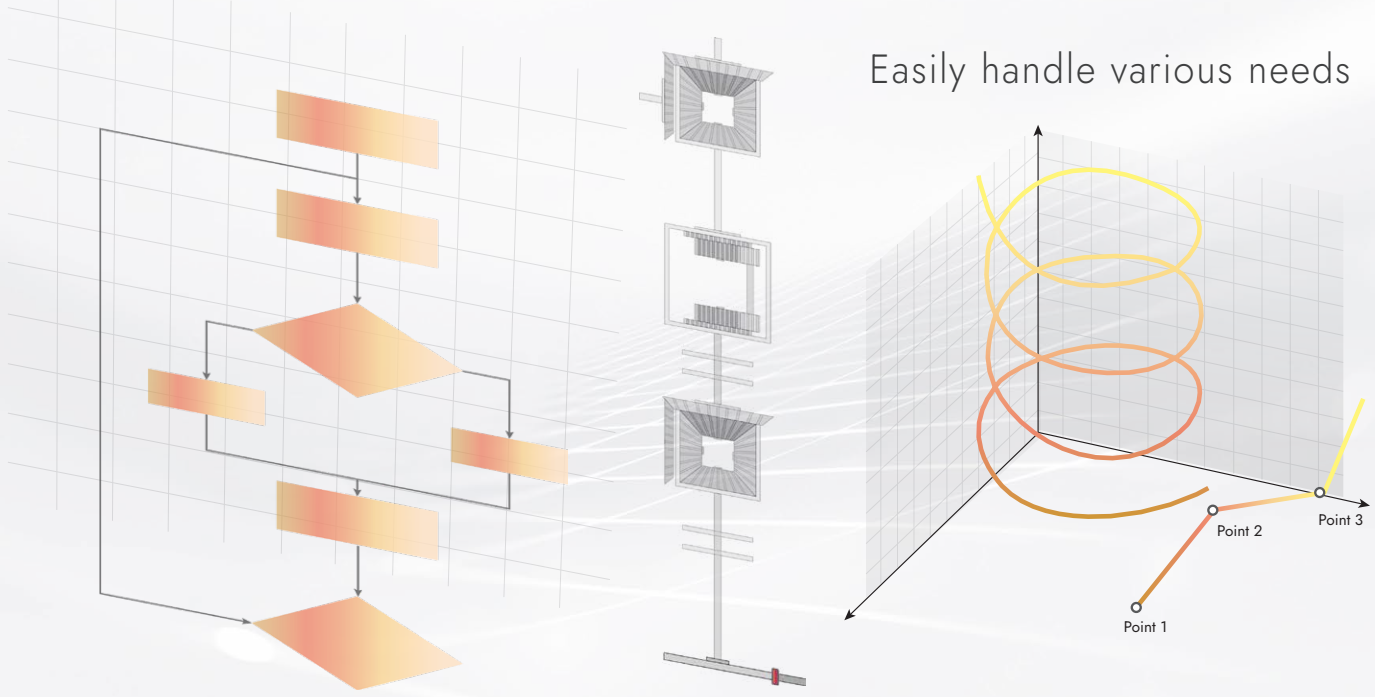
Built-in linear, circular and helical interpolation functions, and support drawing out continuous point arc between two motion points. The two motion trajectories can be connected with each other by auxiliary circles which smoother transitions and reduced mechanical vibration.



Quickly import ESI files to connect to other brands of EtherCAT servo drives, and support virtual axis function

\* For supported driver brands, please refer to the list on FATEK website

# Powerful motion control functions



Easily handle various needs

Hardware

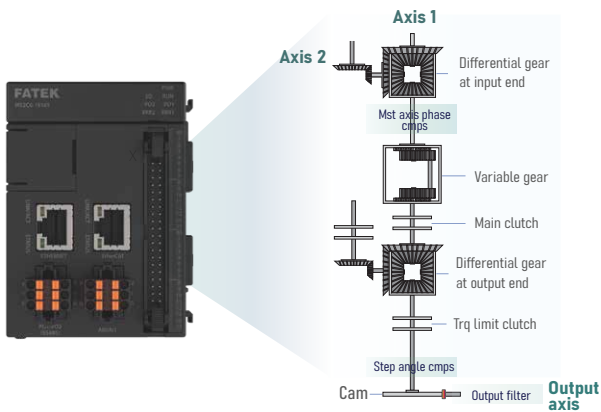
Motion

IoT

Software

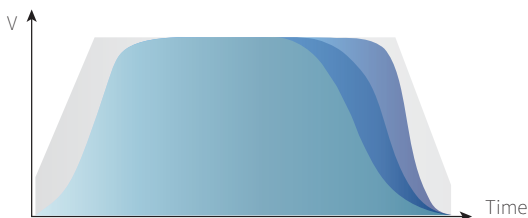
## Motion-sync control

Synchronous axis control can be completed with PLC, without the need for mechanical structures such as transmission gears, clutches and shafts. Provides the flexibility to adjust synchronization parameters in a timely manner in addition to reducing mechanical parts and maintenance costs.



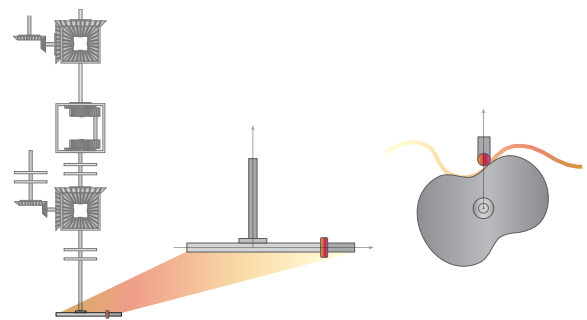
## Stabilized and smooth control

Support S-curve acceleration/deceleration in various motion control modes. On the premise of not reducing the acceleration and deceleration to maintain the existing operating efficiency, it can reduce the jitter caused by the rapid change of speed and make the operation smoother.



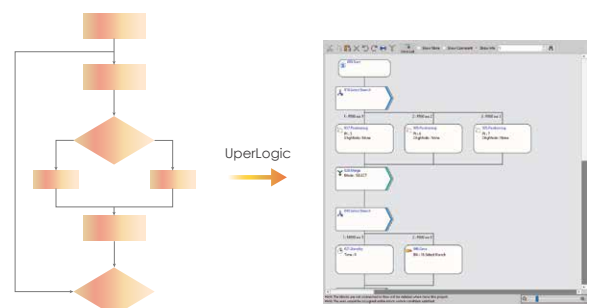
## Electronic cam

Support electronic cam function on the output axis of motion-sync control. Executes fly shear/rotary knife action without physical cam mechanism. Easily meet complex machine application requirements such as packaging and cutting



## Easy and intuitive motion control

Plan the motion control tasks with the highly visualized Motion Flow. Complex motion control processes and requirements can be easily implemented through an intuitive graphical process-Motion flow, that requires no programming at all.



Line Up

Specification

Dimension

Model List



# Monitor and control remote devices anytime and anywhere

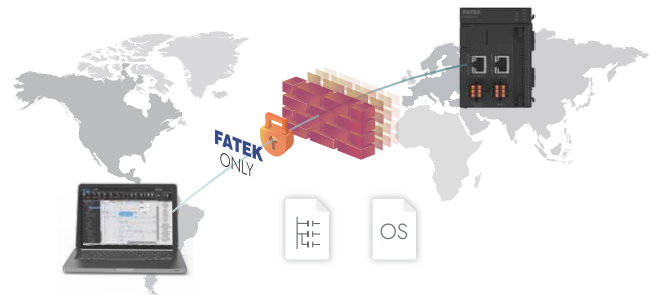
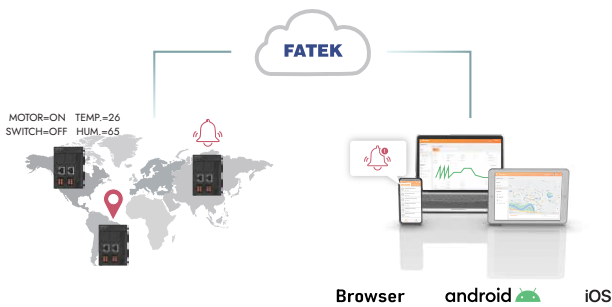


## iMonitor - remote data monitoring

Easily monitor and control the data of the scattered devices remotely through mobile phones and computers. Alarm notifications can inform the administrator when detecting abnormal operations. Pinpoint the device address instantly through the GPS information.

## iAccess - remote project maintenance with module\*

No need for fixed IP and complex firewall settings, as long as the PLC is connected to the Internet, you can easily and quickly perform remote project and firmware maintenance, and you can use UperLogic to achieve real-time online monitoring and project editing. Devices are now within arm's length, no matter how far away they are.

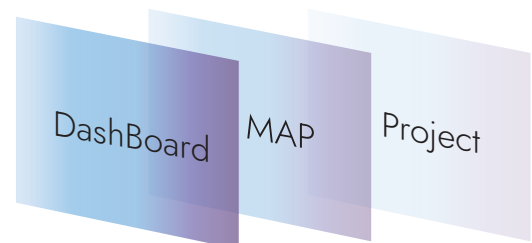


## Connect mainstream cloud platforms with MQTT

Built-in MQTT communication protocol which is commonly used in IoT standard. Provide a convenient setting interface, which can easily connect to mainstream cloud platforms without any programming. The user will be allowed to expand wider realm and aspect applications without limitation.

## FATEK IoT Solution

Easily monitor, control and maintain scattered devices anytime, anywhere. Intuitive user-friendly operation interface and web content management system. Ready-to-use without the need of additional IoT platform development. Support cross-platform to ensure running on various devices.



\* Will be supported in the future

M SERIES Programming Software

# UperLogic

Powerful and approachable



Hardware

Motion

IoT

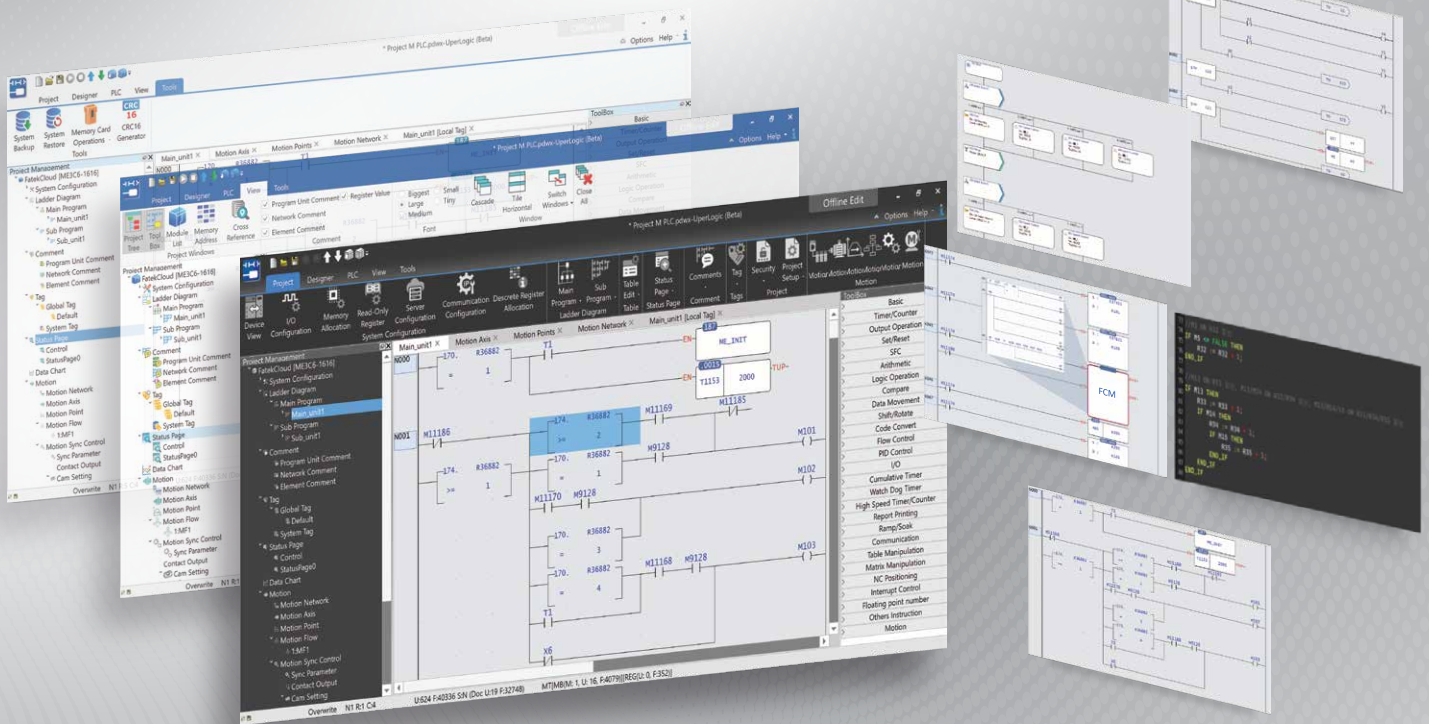
Software

Line Up

Specification

Dimension

Model List



Support LD / ST / FBD / SFC

IEC 61131-3 like programming language



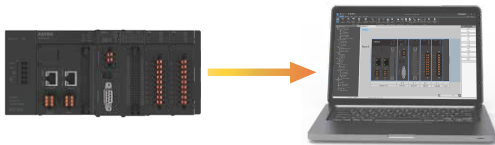
# DEVICE VIEW

device information at a glance



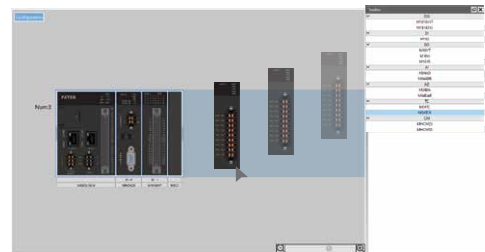
## Automatic system composition scanning

Once connected to the PLC, it will automatically scan the system composition. There is no more need to go to the field or open the control cabinet to check the configuration, and no need to manually enter the module model name to get complete information.



## Drag and Drop

Simply drag and drop to plan the system composition. Automatically prompts whether the location and quantity of the modules are in compliance with the specifications, and help quickly carry out configuration planning without the need of manuals.



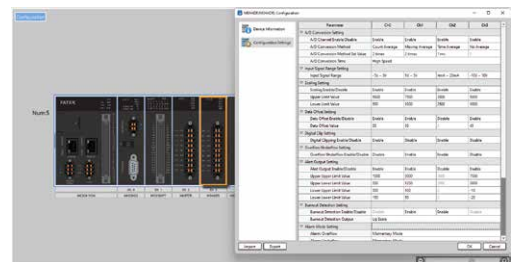
## Online real-time monitoring

Click the module icon on the device view to open the real-time monitoring page, and it will also list out the register data and status code of the module. Clearly get the module information without reading the manual and looking up to the register table.



## Module parameter setting

Set and calibrate the module by clicking on the module icon on device view, and support advanced settings such as alarm, upper and lower limits, and offsets. Quick setup without the need of hardware jumpers or registers and ladder settings.



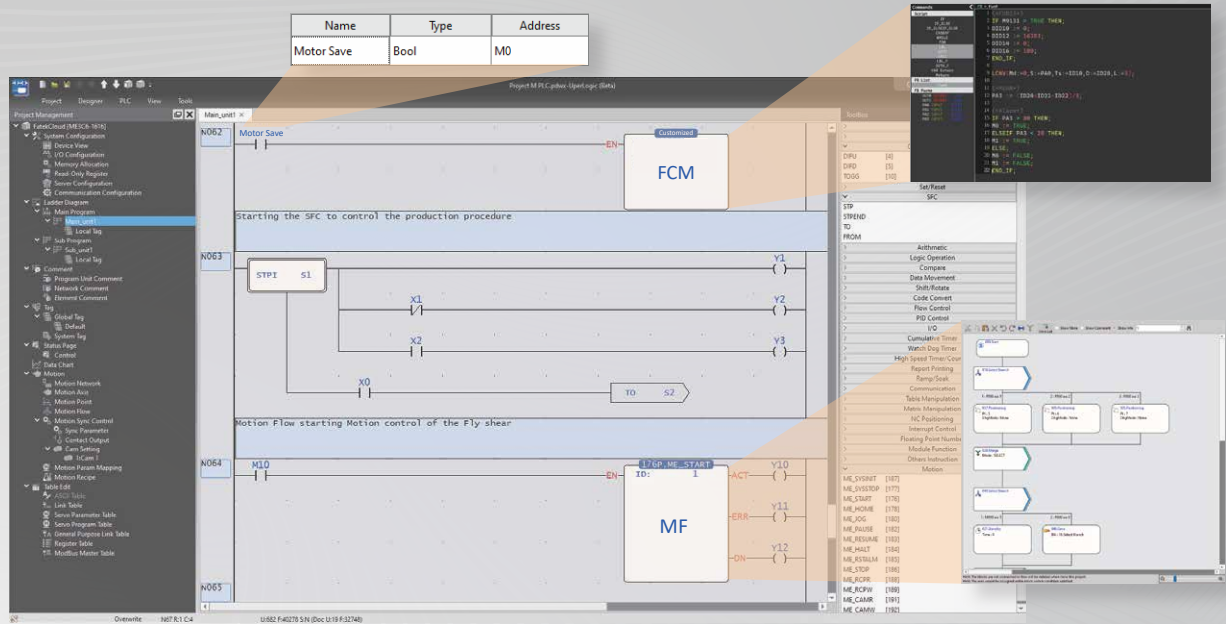
## Module dimensions and information

Display data information and dimensions of individual modules and the entire configuration. Conveniently provide the information you need when planning machines and systems.

## Automatic power consumption

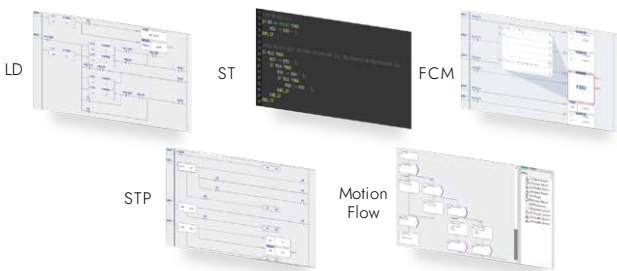
The power consumption of the module is displayed below the module icon on device view, and the total system power margin is automatically calculated to ensure sufficient power supply.

# Comprehensive and powerful features



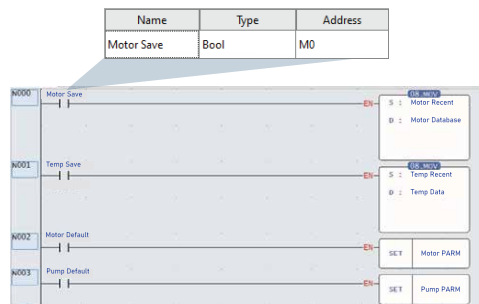
## Multi-language editing

Support LD / ST / FCM / STP / MF editing languages. Multiple languages can be mixed and matched in the same project. The most suitable language could be selected for project development according to different applications.



## PLC TAG

Directly define the object, function and register address by name, no longer have to worry about not being able to identify the purpose represented by the register address for each item. Easily manage and import/export tag settings through the tag database.



## Intellectual property protection

Projects and Data Protection



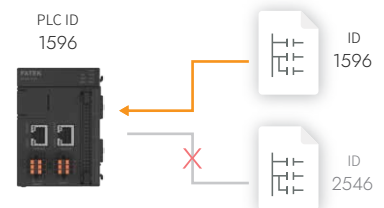
Project, data and settings can be protected by password

Download and project verifying



Project upload/download permissions can also be protected by password

Project and PLC binding



Project can be run if only when Project ID and PLC ID match

## Modbus mapping table

When used as a slave, it can automatically correspond the external Modbus address to the internal register. The communication between the third-party device and the PLC can be easily completed without programming.

## Self-defined protocol

Provide convenient and intuitive self-defined protocol setting table. Even non-mainstream devices and sensors can be easily connected.

Hardware  
Motion  
IOT  
Software

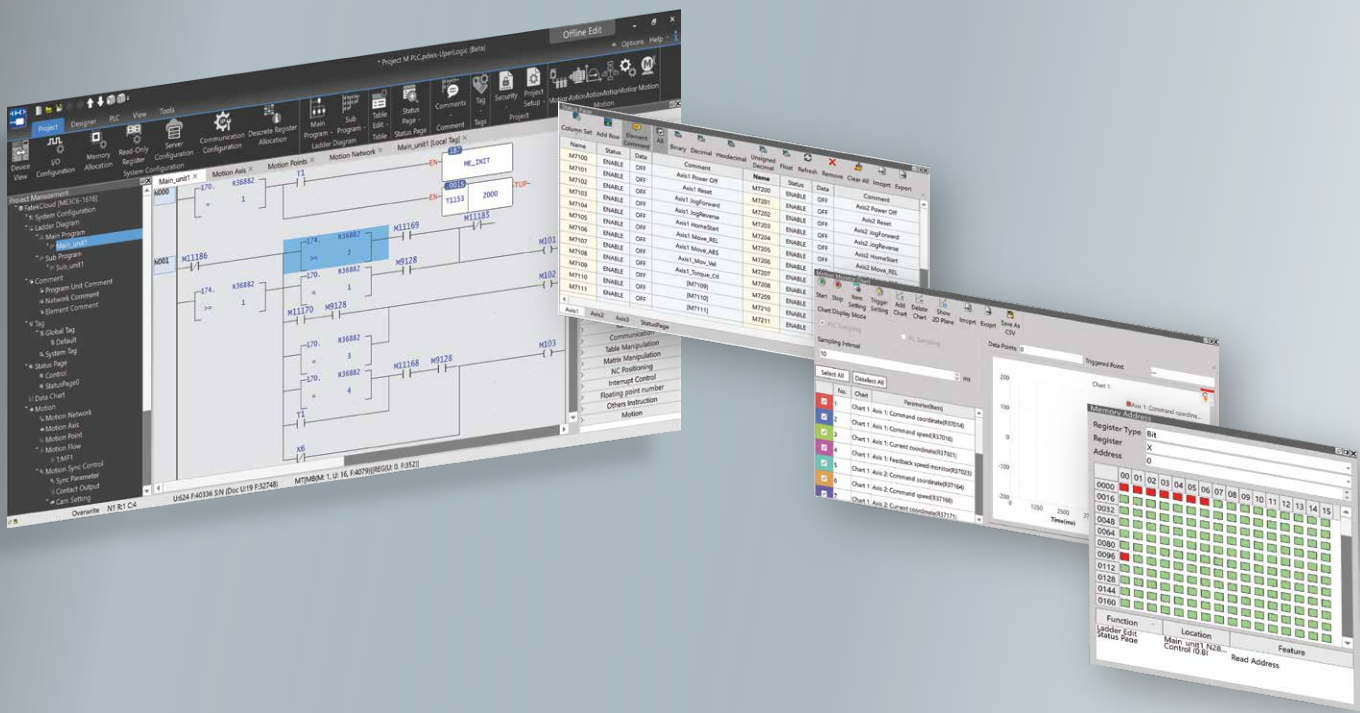
Line Up

Specification

Dimension

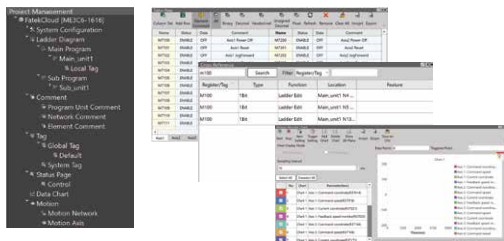
Model List

# Intuitive and convenient operation experience



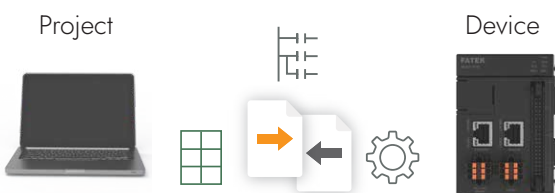
## Tree View and multi-window editing

Tree structure project management window. Project and parameter settings can be clearly and simply managed hierarchically and systematically. Flexible multi-window interface easy for multitasking.



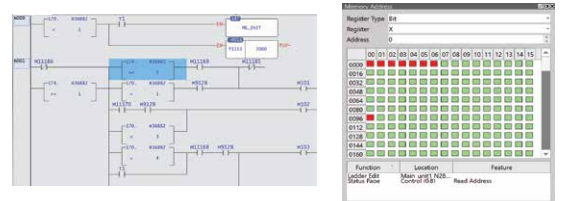
## Project comparison

After onlining, it will automatically compare the project consistency between the computer and the PLC, and list the comparison results of PLC, Motion and modules respectively. Based on the comparison result, you may select the specific item for executing upload or download.



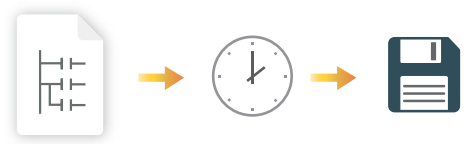
## Memory Map

Clearly indicate the PLC internal memory usage. By clicking on the used resources, it can guide you to the related component or function. Significantly improve resource planning efficiency and accessibility.



## Project automatic backup

A specific time interval can be set for project backup during project development. The project will be saved automatically if the user shuts down the software without saving. Automatic backup ensures that the results are properly retained in the event of any PC errors during programming.



## Network device scanning

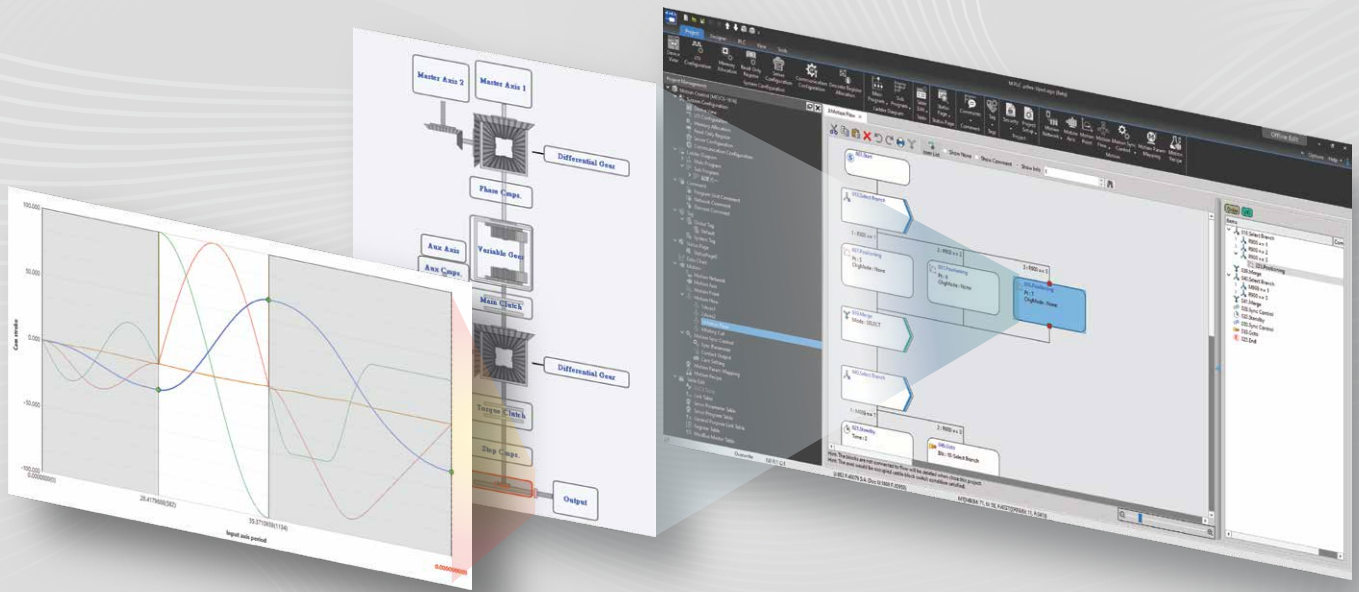
Easily scan devices in LAN through a single click. Eliminate the intricate process of confirming IP information device by device.

## Hotkey input

Support keyboard hotkey command input. Skip the tedious steps of clicking the window to enter the function item by item with the mouse.



# A simple motion planning approach



Hardware

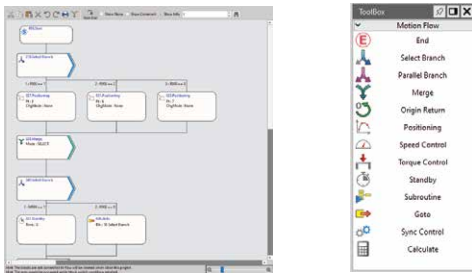
Motion

IoT

Software

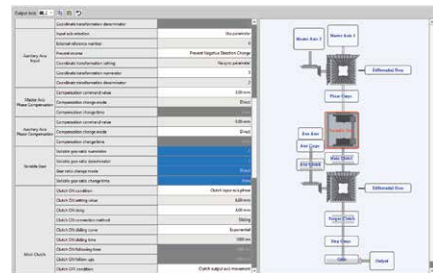
## Motion Flow

Intuitively plan motion control processes graphically without the need of complex programming. Even complicated motion action can be concisely defined through intuitive motion block. Motion flow is highly visualized, it allows the user to comprehend the control process and the command simply by viewing.



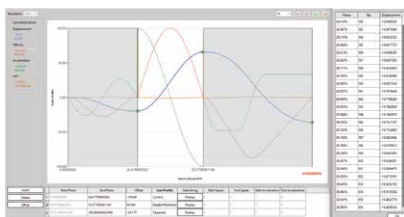
## Sync parameter

Directly click on the icon of the synchronous axis mechanism to adjust the detailed parameters of the clutch and gear, etc. It allows the user to change the interaction between input and output axes quickly and flexibly.



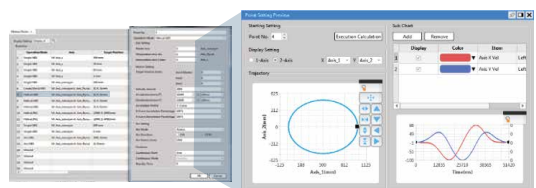
## Electronic cam

Intuitive adjustment of cam stroke and phase by chart dragging. Built-in up to 22 cam profiles for quick and easy cam shape creation. Cam configuration can be achieved without complicated parameter calculation and setting.



## Trajectory simulation

Simulate the motion settings in the motion point table and draw the values and trajectories. Display multiple values at once, such as position, velocity, and acceleration. Quickly verify the correctness of parameters without running the machine.



## Contact output

Cam phase and PLC output can be linked. The required on or off value of the output can be triggered at a specific cam stroke interval.

## Motion Network

Simply connect other brands EtherCAT servo drivers\* by importing ESI files. And also support virtual axis planning.

\* For supported driver brands, please refer to the list on FATEK website

Line Up

Specification

Dimension

Model List

# Line Up



## ME Advanced Motion

Basic LD <b>0.8 nS</b>	Motion Control EtherCAT	Positioning Control Pulse	20 axes	Ethernet	32 DIO
Total Program Memory <b>3 MB</b>	E-Cam	Flying shear Rotary knife	Motion Sync	EtherCAT	2 AI
DIO <b>2048</b>	Helical interpolation	Circular interpolation	Linear interpolation	RS 485	SD slot
AIO <b>256</b>	Point-to-Point	Interrupt constant feed	Interrupt constant angle	IoT	Type C
General	Motion and Positioning Control		Communication		IO & Expansion

# MS

General Motion



Basic LD 0.8 nS	Motion Control EtherCAT	Positioning Control Pulse	20 axes	Ethernet	32 DIO
Total Program Memory 3 MB	E-Cam	Flying Saw Rotary cut	Motion Sync	EtherCAT	2 AI
DIO 2048	Helical interpolation	Circular interpolation	Linear interpolation	RS 485	SD slot
AIO 256	Point-to-Point	Interrupt constant feed	Interrupt constant angle	IoT	Type C

General      Motion and Positioning Control      Communication      IO & Expansion

# MA

BASIC



Basic LD 0.8 nS	Motion Control EtherCAT	Positioning Control Pulse	8 axes	Ethernet	32 DIO
Total Program Memory 80 KB	E-Cam	Flying Saw Rotary cut	Motion Sync	EtherCAT	2 AI
DIO 2048	Helical interpolation	Circular interpolation	Linear interpolation	RS 485	SD slot
AIO 256	Point-to-Point	Interrupt constant feed	Interrupt constant angle	IoT	Type C

General      Motion and Positioning Control      Communication      IO & Expansion

## Power Supply



### MPA024-24

Input : 100~240VAC (50/60Hz)  
Output : 24VDC 1A  
(External+Internal)  
Power : 24W



### MPA048-24

Input : 100~240VAC (50/60Hz)  
Output : 24VDC 2A  
(External+Internal)  
Power : 48W



Digital

Digital Input



**M16X**

Input : 16 points  
24VDC Input  
Push-in terminal blocks

Digital Output



**M16Y T/J/R**

Output : 16 points  
T: SINK(NPN) J: SOURCE (PNP) R:RELAY  
Push-in terminal blocks

Digital Input & Output



**M1616XY T/J**

Input : 16 points Output : 16 points  
24VDC Input  
T: SINK(NPN) J: SOURCE (PNP)  
40 pins box header connector

Analog

Analog Input



**M04AD**

Input : 4 points Voltage/Current  
Resolution : 1/16383  
Precision :  $\pm 0.1\%$   
Push-in terminal blocks

High Resolution Analog Input



**M04ADR**

Input : 4 points Voltage/Current  
Resolution : 1/160000  
Precision :  $\pm 0.1\%$   
Push-in terminal blocks

Analog Output



**M04DA**

Output : 4 points Voltage/Current  
Resolution : 1/16383  
Precision :  $\pm 0.2\%$   
Push-in terminal blocks

High Resolution Analog Output



**M04DAR**

Output : 4 points Voltage/Current  
Resolution : 1/54000  
Precision :  $\pm 0.05\%$   
Push-in terminal blocks

Analog Input & Output



**M0202AH**

Input : 2 points Voltage/Current  
Resolution : 1/16383  
Precision :  $\pm 0.1\%$  /  $\pm 0.2\%$   
Push-in terminal blocks

Output : 2 points Voltage/Current  
Resolution : 1/16383  
Precision :  $\pm 0.2\%$

Temperature

Temperature Input



**M04TC**

Input : 4 points  
 Thermocouple : K,J,E,T,R,B,N,S  
 Resolution : 0.1°C  
 Precision : ±0.5%  
 Push-in terminal blocks

High Precision Temperature Input



**M04TCR**

Input : 4 points  
 Thermocouple : K,J,E,T,R,B,N,S  
 Resolution : 0.1°C  
 Precision : ±0.2%  
 Push-in terminal blocks

Mixed Temperature Input



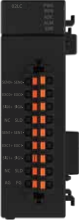
**M0202TH**

Input : 2 points  
 Thermocouple : K,J,E,T,R,B,N,S  
 Resolution : 0.1°C  
 Precision : ±0.2%  
 Push-in terminal blocks

Input : 2 points  
 RTD : Pt100/JPt100: (-200-800°C)  
 Pt1000/JPt1000: (-200-600°C)  
 Pt100/1000(α=0.00385)  
 JPt100/1000(α=0.003916)  
 Resolution : 0.1°C  
 Precision : ±0.5%

Load cell

Load cell input



**M02LC**

Input : 2 points  
 Resolution : 24 bits  
 Precision : ±0.5%  
 Push-in terminal blocks

High Precision Load cell Input



**M02LCR**

Input : 2 points  
 Resolution : 24 bits  
 Precision : ±0.01%  
 Push-in terminal blocks

Communication

Communication Expansion High-speed\*



**MHCM25**

1 port RS485 + 1 port RS232  
 Speed and interface:  
 RS485 - Max. 230400 bps  
 Push-in terminal blocks  
 RS232 - Max. 115200 bps  
 D-Sub 9-Pin



**MHCM55**

2 ports RS485  
 Speed and interface:  
 RS485 - Max. 230400 bps  
 Push-in terminal blocks

Hardware

Motion

IoT

Software

Line Up

Specification

Dimension

Model List

\* Support up to 6 high-speed modules, and need to be installed in the first 6 expansion positions on the right side of the CPU (placed between the CPU and general modules)

# Specifications

## ME

Advanced Motion



## MS

General Motion



## MA

BASIC



## General Specifications

Item	ME □□□ -1616 ◇ / MS □□□ -1616 ◇	MA □□□ -1616 ◇
Power consumption	DC24V±20% · 0.2A	DC24V±20% · 0.15A
Grounding	Class D grounding	
Environmental temperature	0 ~ 55°C	
Storage temperature	-25 ~ 70°C	
Environmental humidity	5 ~ 95%RH(non-condensing, RH-2)	
Working atmosphere	Free from excessive conductive dust and corrosive gas	
Altitude	≤ 2000m	
Vibration resistance	5 to 8.4Hz Half-amplitude: 3.5mm	
	8.4 to 150 Hz Constant acceleration: 19.6m/s <sup>2</sup> (2G)	
	3 directions of X, Y, Z: 10times (IEC61131-2 compliants)	
Shock resistance	10G, three times for each direction of 3 axes	
Noise resistance	1500 Vp-p, pulse width 1μS	
Withstand voltage	1500VAC, 1 minute	
Pollution resistance	Degree II	
CPU module weight	246 g (without end cover)	236 g (without end cover)
	280 g (with end cover)	270 g (with end cover)
Certifications	CE · UL*	

## Input Specifications

### Digital Input

Item	Specification	
Input points	16 points (8 points/1 common point)	
Input type	24VDC single-end input	
Maximum input frequency	200KHz	
Input signal voltage	24VDC±10%	
Threshold	ON current	> 4mA
	OFF current	< 2mA
Maximum input current	6mA(@DC24V)	
Input indication	Displayed by LED: light when "ON", dark when "OFF"	
Isolation method	optical isolation,500VAC,1 minute	
SINK/SOURCE wiring	Via variation of internal common terminal S/S and external common wiring	
Noise filtering time	DHF(0 ~ 15ms) + AHF(0.47μs)	
External connection	40 pins header connector	

### Analog Input

Item	Specification			
Input point	2			
Analog Input characteristics and resolution	Voltage	Analog input range	Value	Resolution
		0~10V	0~4096	2.44mV
	Current	Analog input range	Value	Resolution
		0~20mA	0~4096	4.88uA
Conversion precision	Voltage	±1% (25° C±5°C)		
	Current	±1% (25° C±5°C)		
Conversion speed	Conversion once for each scan			
Input resistance	Voltage : 76KΩ Current : 165Ω			
Hardware maximum input	Voltage : 0 ~ 10V Current : 0 ~ 20mA			
Isolation method	Between analog input terminals and CPU : Isolation (Transformer(power) and optical coupler(signal)) No isolation between each channel			
External connection	2 ch · 2X3 pins Push-in terminal blocks			

# Output Specifications

## Digital Output

Item	MA/MS/ME Series*	MA114-1616 ◇
Output points	16	
Output mode	Single-end transistor output	
Maximum output frequency	200KHz	100KHz
Working voltage	5 ~ 30VDC	
Maximum load current Resistive	0.1A	
Maximum voltage drop(@Maximum load)	0.6V	
Leakage current	< 0.1 mA/30VDC	
Maximum output delay time	ON → OFF	2us
Maximum output delay time	OFF → ON	2us
Output status indication	Displayed by LED: Light when "ON" , dark when "OFF"	
Isolation method	Optical isolation, 500VAC, 1 minute	
SINK/SOURCE output type	Choose SINK/SOURCE by models and non-exchangeable	
External connection	40 pins box header connector	

\* Except for MA114-1616 ◇

# Power Supply Module



Item	MPA024-24	MPA048-24
Input voltage	100~240 VAC	
Frequency	50/60Hz	
Maximum input current	1A max.	
Inrush current (cold start)	22A/115VAC (44A/230VAC)	
Rated output current (External+Internal)	1A	2A
Rated output power (External+Internal)	24W	48W
External output voltage	24 VDC	
Output voltage range	24 VDC+1%	
Output ripple+noise	< 1%	
Hold-up time	>15ms/ 115VAC , >60ms/ 220VAC	
Overcurrent protection	101%~133% Foldback overload protection,automatically recover when overload is removed	
Overvoltage protection	34~36 VDC / Latching overvoltage protection, re-power on to recover	
Conversion efficiency	86%/110VAC, 87%/220VAC	
Withstand voltage	3,000 VAC (Primary-secondary), 1,500 VAC (Primary-PE), 500 VAC(Secondary-PE)	
Insulation resistance	>100M Ohms/500VDC	
Fuse	2A	
Environmental temperature	0°C ~55°C	
Environmental humidity	20%~90% (Non-condensing)	

# Performance specifications

Specification		ME1C1-1616 ◇	ME2C3-1616 ◇	ME2C4-1616 ◇	ME2C5-1616 ◇	ME3C6-1616 ◇	MS1C1-1616 ◇	MS1C2-1616 ◇	MS2C3-1616 ◇	MS2C4-1616 ◇	MS2C5-1616 ◇	MS3C6-1616 ◇	
Programming language		LD / ST / FCM / STP / MotionFlow											
Instruction execution speed	LD Instruction	0.0008 uS / LD (0.8nS/LD)											
	MOV Instruction	7.5nS / MOV											
Maximum I/O	DIO	1024	1024	1024	2048	2048	512	512	512	1024	2048	2048	
	AIO	128	128	128	256	256	128	128	128	128	256	256	
Maximum number of Modules	General + High-speed	64 units (with the use of extension module )											
	High-speed	6 units (need to be installed between CPU and general module)											
Program Memory	PLC	50 KB	60 KB	60 KB	60 KB	80 KB	50 KB	50 KB	60KB	60 KB	60 KB	80 KB	
	Motion	370 KB	742 KB	1.1 MB	1.5 MB	3 MB	370 KB	556 KB	742 KB	1.1 MB	1.5 MB	3 MB	
Memory card <small>Dedicated Industrial Grade Micro-SD Card</small>	Project and OS update	Support project and OS update with memory card											
	Data Logging、Backup、Restore	●	●	●	●	●	-	-	●	●	●	●	
Built-in digital input and output		Input 16 points、Output 16 points											
Built-in analog input		2ch 12bits											
Communication Interface	ETHERNET	Interface	1 port 10/100 Base-T										
		Modbus / User-Defined	Master/Slave	Master/Slave	Master/Slave	Master/Slave	Master/Slave	Slave	Slave	Master/Slave	Master/Slave	Master/Slave	Master/Slave
	EtherCAT	1 port											
	RS-485	2 ports、Support Master/Slave、Communication speed 4.8K ~ 921.6Kbps											
	USB	1 port、USB Type C (USB 2.0)											
IoT expansion <sup>1</sup>		MQTT、FATEK iMonitor / iAccess											
Motion Control <sup>3</sup>	Number of motion control axes		7 axes	9 axes	14 axes	18 axes	20 axes	7 axes	8 axes	13 axes	14 axes	18 axes	20 axes
	Pulse	Axes	4 axes	4 axes	4 axes	4 axes	4 axes	4 axes	4 axes	8 axes	4 axes	4 axes	4 axes
		Output frequency	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	100KHz	200KHz	200KHz	200KHz
		Pulse output mode	6 Modes (U、Ux2、A/B、A/Bx2、A/Bx3、A/Bx4)										
		Positioning control	●	●	●	●	●	●	●	●	●	●	●
	EtherCAT	Number of axis	2 axes + 1 Virtual	4 axes + 1 Virtual	8 axes + 2 Virtual	12 axes + 2 Virtual	16 axis	2 axes + 1 Virtual	3 axes + 1 Virtual	4 axes + 1 Virtual	8 axes + 2 Virtual	12 axes + 2 Virtual	16 axis
		Linear and Circular Interpolation/ Positioning control	●	●	●	●	●	●	●	●	●	●	●
		Helical Interpolation	●	●	●	●	●	-	-	-	-	-	-
E-cam		●	●	●	●	●	-	-	1 axis	1 axis	2 axes	2 axes	
High-speed counter 200KHz		8 channel <sup>12</sup>					6 channel <sup>12</sup>	7 channel <sup>12</sup>	8 channel <sup>12</sup>				
High-speed timer 0.1mS		1 (16-bit), 4 (32-bit)											
HSPWM	Points	16 points											
	Output frequency	72Hz ~ 18.432KHz (with 0.1% resolution) / 720Hz ~ 184.32KHz (with 1% resolution)											
Interrupt control	External interrupt control	16 interrupts (8 points input positive/negative edge)											
	Internal interrupt control	12 interrupts (4 sets of 0.1 ms / 4 sets of 1 ms / 4sets of 10 ms)											
	Counter control	8											
Captured input	points	up to 16											
	Minimum capturable Pulse width	>10μs(High speed input)											
Digital Filter		X0~X7 (Adjustable frequency 28KHz ~ 1.8MHz, Adjustable time constant 3~15mS)											
DI	X	512	512	512	1024	1024	256	256	256	512	1024	1024	
DO	Y	512	512	512	1024	1024	256	256	256	512	1024	1024	
Temporary relay	TR	16											
Internal relay	M	29600											
Step relay	S	3104											
Timer "Time-Up" status contact	T	1024											
Counter "Count-Up" status contact	C	16 bit : 1024, 32 bit : 256											
Timer	TMR	1024											
	CTR 16	1024											
	CTR 32	256											
Data register	R	34768											
	D	12000											
	ROR	4096											
	F	65536											
Input/Output register	AI+AO	128	128	128	256	256	128	128	128	128	256	256	
Special system register	SR	7944(all)											
Index register	XR	12(V、Z、P0~P9(10))											
Calendar Register		sec,min,hour,day,month,year,week											
Data retentive	Program and Data	Non-volatile memory (no battery required)											
	Calendar	Battery											

Specification		MA1N1-1616 ◇	MA1N2-1616 ◇	MA1N3-1616 ◇	MA1I4-1616 ◇	MA1M3-1616 ◇	MA2M3-1616 ◇	MA3M3-1616 ◇	
Programming language		LD / ST / FCM / STP / MotionFlow							
Instruction execution speed	LD Instruction	0.0008 uS/ LD (0.8nS/LD)							
	MOV Instruction	7.5nS / MOV							
Maximum I/O	DIO	512	512	512	512	512	1024	2048	
	AIO	128	128	128	128	128	128	256	
Maximum number of Modules	General + High-speed	64 units (with the use of extension module)							
	High-speed	6 units (need to be installed between CPU and general module)							
Program Memory	PLC	50 KB	50 KB	50 KB	50 KB	50 KB	60 KB	80 KB	
	Motion	-	-	-	-	-	-	-	
Memory card <small>Dedicated Industrial Grade Micro-SD Card</small>	Project and OS update	Support project and OS update with memory card							
	Data Logging、Backup、Restore	-	-	-	-	●	●	●	
Built-in digital input and output		Input 16 points、Output 16 points							
Built-in analog input		-	-	-	-	-	-	-	
Communication Interface	ETHERNET	Interface	1 port 10/100 Base-T						
		Modbus / User-Defined	Slave	Slave	Slave	Slave	Master/Slave	Master/Slave	Master/Slave
	EtherCAT		-	-	-	-	-	-	-
	RS-485		2 ports、Support Master/Slave、Communication speed 4.8K ~ 921.6Kbps						
USB		1 port、USB Type C (USB 2.0)							
IoT expansion <sup>1</sup>		MQTT、FATEK iMonitor / iAccess							
Motion Control <sup>3</sup>	Number of motion control axes		2 axes	3 axes	4 axes	8 axes	4 axes	4 axes	4 axes
	Pulse	Axes	2 axes	3 axes	4 axes	8 axes	4 axes	4 axes	4 axes
		Output frequency	200KHz	200KHz	200KHz	100KHz	200KHz	200KHz	200KHz
		Pulse output mode	6 Modes (U、Ux2、A/B、A/Bx2、A/Bx3、A/Bx4)						
		Positioning control	●	●	●	●	●	●	●
	EtherCAT	Number of axis	-	-	-	-	-	-	-
		Linear and Circular Interpolation/ Positioning control	-	-	-	-	-	-	-
Helical Interpolation / E-cam		-	-	-	-	-	-	-	
High-speed counter 200KHz		2 channel	3 channel	4 channel	8 channel	8 channel	8 channel	8 channel	
High-speed timer 0.1mS		1 (16-bit), 4 (32-bit)							
HSPWM	Points	16 points							
	Output frequency	72Hz ~ 18.432KHz (with 0.1% resolution) / 720Hz ~ 184.32KHz (with 1% resolution)							
Interrupt control	External interrupt control	16 interrupts (8 points input positive/negative edge)							
	Internal interrupt control	12 interrupts (4 sets of 0.1 ms / 4 sets of 1 ms / 4sets of 10 ms)							
	Counter control	8							
Captured input	points	up to 16							
	Minimum capturable Pulse width	>10μs(High speed input)							
Digital Filter		X0-X7 (Adjustable frequency 28KHz ~ 1.8MHz, Adjustable time constant 3~15mS)							
DI	X	256	256	256	256	256	512	1024	
DO	Y	256	256	256	256	256	512	1024	
Temporary relay	TR	16							
Internal relay	M	29600							
Step relay	S	3104							
Timer "Time-Up" status contact	T	1024							
Counter "Count-Up" status contact	C	16 bit : 1024, 32 bit : 256							
Timer	TMR	1024							
	CTR 16	1024							
	CTR 32	256							
Data register	R	34768							
	D	12000							
	ROR	4096							
	F	65536							
Input/Output register	AI+AO	128	128	128	128	128	128	256	
Special system register	SR	7944(all)							
Index register	XR	12(V、Z、P0~P9(10))							
Calendar Register		sec,min,hour,day,month,year,week							
Data retentive	Program and Data	Non-volatile memory (no battery required)							
	Calendar	Battery							

◇ : T – Transistor SINK(NPN) output ; J – Transistor SOURCE (PNP) output

\*1 CPU supports MQTT protocol and iMonitor functions. iAccess function needs to be expanded through modules. iMonitor and iAccess services require a licence key to activate

\*2 MS1C1-1616◇ of which 2 channels, MS1C2-1616◇ of which 3 channels, and other models of which 4 channels of HSC are only dedicated for EtherCAT motion only

\*3 **Positioning Control:** Including Point-to-Point Positioning Control、Interrupt constant feed/angle ; **Circular interpolation:** Including Linear/Circular interpolation and functions in **Positioning Control**  
**Advanced Motion:** Including E-CAM、Fly shear、Rotary knife、Helical interpolation and functions in **Positioning Control** and **Circular interpolation**

Hardware

Motion

IoT

Software

Line Up

Specification

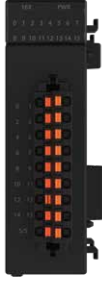
Dimension

Model List



# Digital Module

Digital Input



Digital Output



Digital Input & Output



Item	M16X	
Input points	16	
Input type	24VDC single-end input	
Maximum input frequency	Medium speed 1kHz	
Input signal voltage	24VDC±10%	
Threshold current	ON	> 4mA
	OFF	< 1.5mA
Maximum input current	7.6mA	
Input resistance	5.6kΩ	
Isolation type	Optical isolation, 500VAC, 1 minute	
SINK/SOURCE wiring	Via variation of internal common terminal S/S and external common wiring	
Noise filtering time	DHF(0 ~ 70ms) + AHF(0.47μs)	
External connection	18 pins Push-in terminal blocks	

Item	M16YT	M16YJ	M16YR
Output points	16	16	16
Output type	Transistor SINK(NPN)	Transistor SOURCE(PNP)	Wiring of relay single-end output
Maximum output frequency	Medium speed 1kHz	Medium speed 1kHz	ON/OFF
Working voltage	5~30VDC	5~30VDC	<250VAC,30VDC
Maximum load current	Resistive	0.5A	0.5A
	Inductive	0.5A	0.5A
Maximum voltage drop/ conducting resistance		2.2V	2.2V
			0.06V(first time)
Minimum load	—	—	2mA/DC
Leakage current	< 0.1mA/30VDC	< 0.1mA/30VDC	—
Maximum output delay time	ON > OFF	< 10μS	< 10μS
	OFF > ON	< 40μS	< 40μS
Isolation type	Optical isolation, 500VAC, 1 minute		
External connection	18 pins Push-in terminal blocks		
Internal power consumption	< 150mA	< 163mA	< 90mA
External connection	18 pins Push-in terminal blocks		

Item	M1616XYT/J	
Input points	16	
Input type	24VDC single-end input	
Maximum input frequency	Medium speed 1kHz	
Input signal voltage	24VDC±10%	
Threshold current	ON	> 4mA
	OFF	< 1.5mA
Maximum input current	7.6mA	
Input resistance	5.6kΩ	
Common method	16 points / 4 common point	
Output points	16	
Output type	Transistor NPN/PNP	
Maximum output frequency	Medium speed 1kHz	
Working voltage	5~30VDC	
Maximum voltage drop/ conducting resistance	2.2V	
Leakage current	< 0.1mA/30VDC	
Maximum output delay time	ON > OFF	< 10μS
	OFF > ON	< 40μS
Common method	16 points / 4 common point	
External connection	40 pins box header connector	

# Analog Module

Analog Input



Analog Output



Item	M04AD	M04ADR					
Input points	4	4					
Analog Input characteristics and resolution	Voltage	Input range	Value	Resolution	Input range	Value	Resolution
		-10~+10V	-8192~8191	1.2mV	-10~+10V	-80000~80000	0.125mV
		-5~+5V	-8192~8191	0.6mV	-5~+5V	-80000~80000	0.0625mV
	Current	0~10V	0~16383	0.6mV	0~10V	0~80000	0.125mV
		0~5V	0~16383	0.3mV	0~5V	0~80000	0.0625mV
		1~5V	0~16383	0.24mV	1~5V	0~80000	0.05mV
Conversion precision	Voltage	Input range	Value	Resolution	Input range	Value	Resolution
		-20mA~+20mA	-8192~8191	2.4uA	-20mA~+20mA	-80000~80000	0.25uA
		0~20mA	0~16383	1.2uA	0~20mA	0~80000	0.25uA
Conversion speed	Current	0~20mA	0~16383	0.97uA	4~20mA	0~80000	0.2uA
		±0.1% (25°C±5°C) ±0.2% (0~55°C)		±0.1% (25°C±5°C) ±0.2% (0~55°C)			
		High speed : 300us/Ch Medium speed : 500us/Ch Low speed : 1ms/Ch 50Hz filtering : 80ms/Ch 60Hz filtering : 68ms/Ch		High speed : 1.5ms/Ch. Medium speed : 4ms/Ch. Low speed : 15ms/Ch. 50Hz filtering : 80ms/Ch. 60Hz filtering : 68ms/Ch.			
Input resistance	Voltage : 1MΩ Current : 250Ω						
Hardware maximum input	Voltage : - 15V ~ + 15V Current : -30mA~+30mA						
Isolation method	Between analog input terminals and CPU : Isolation (Transformer(power) and optical coupler(signal)) No isolation between each channel						
External connection	18 pins Push-in terminal blocks		18 pins Push-in terminal blocks				

Item	M04DA	M04DAR					
Output points	4	4					
Analog Output characteristics and resolution	Voltage	Output range	Value	Resolution	Output range	Value	Resolution
		-10~+10V	-8192~8191	1.2mV	-10~+10V	-27000~27000	0.37mV
		-5~+5V	-8192~8191	0.6mV	-5~+5V	-27000~27000	0.185mV
	Current	0~10V	0~16383	0.6mV	0~10V	0~27000	0.37mV
		0~5V	0~16383	0.3mV	0~5V	0~27000	0.185mV
		1~5V	0~16383	0.2mV	1~5V	0~27000	0.148mV
Conversion precision	Voltage	Output range	Value	Resolution	Output range	Value	Resolution
		0~20mA	0~16383	1.22uA	0~20mA	0~27000	0.74uA
Conversion speed	Current	4~20mA	0~16383	0.97uA	4~20mA	0~27000	0.592uA
		±0.2% (25°C±5°C) ±0.5% (0~55°C)		±0.05% (25°C±5°C) ±0.3% (0~55°C)			
Minimum load resistance	Voltage : 1kΩ		Voltage : 1kΩ				
Maximum load resistance	Current : 500Ω		Current : 500Ω				
Hardware maximum input	Voltage	-10.2~+10.2V -5.1~+5.1V -0.2~10.2V -0.1~5.1V 0.9~5.1V		-10.2~+10.2V -5.1~+5.1V -0.2~10.2V -0.1~5.1V 0.9~5.1V			
		Current	0~20.2mA 4~20.2mA		0~20.2mA 4~20.2mA		
Isolation method	Between analog output terminals and CPU : Isolation (Transformer(power) and optical coupler(signal)) No isolation between each channel						
External connection	18 pins Push-in terminal blocks						

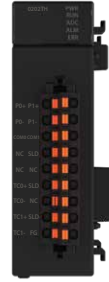
## Analog Module

## Temperature Module

Analog Input & Output



Temperature input



Hardware

Motion

IoT

Software

Line Up

Specification

Dimension

Model List

Item		M0202AH					
Input/Output points		2 input			2 output		
Analog characteristics and resolution	Voltage	Input range	Value	Resolution	Output range	Value	Resolution
		-10~+10V	-8192~8191	1.2mV	-10~+10V	-8192~8191	1.2mV
		-5~+5V	-8192~8191	0.6mV	-5~+5V	-8192~8191	0.6mV
		0~10V	0~16383	0.6mV	0~10V	0~16383	0.6mV
		0~5V	0~16383	0.3mV	0~5V	0~16383	0.3mV
	1~5V	0~16383	0.2mV	1~5V	0~16383	0.2mV	
Current	Input range	Value	Resolution	Output range	Value	Resolution	
	-20mA~+20mA	-8192~8191	2.4uA	0~20mA	0~16383	1.22uA	
	0~20mA	0~16383	1.2uA	4~20mA	0~16383	0.97uA	
Conversion precision	Voltage	±0.1% (25° C±5°C) ±0.2% (0~55°C)			±0.2% (25° C±5°C) ±0.5% (0~55°C)		
	Current	±0.2% (25° C±5°C) ±0.4% (0~55°C)			±0.2% (25° C±5°C) ±0.5% (0~55°C)		
Conversion speed	High speed : 300us/Ch Medium speed : 500us/Ch Low speed : 1ms/Ch 50Hz filtering : 80ms/Ch 60Hz filtering : 68ms/Ch			1ms/ch			
Isolation method	Between analog input/output terminals and CPU : Isolation (Transformer(power) and optical coupler(signal)) No isolation between each channel						
External connection	18 pins Push-in terminal blocks						

Item	M04TC	M04TCR	M0202TH	
Input points	4	4	2 RTD	2 TC
Sensor	Thermocouple K,J,E,T,R,B,N,S		Pt100/JPt100: (-200~800°C) Pt1000/JPT1000:(-200~600°C) Pt100/1000(α=0.00385) JPt100/1000(α=0.003916)	Thermocouple K,J,E,T,R,B,N,S
Resolution	0.1°C	0.1°C	0.1°C	0.1°C
Conversion precision	±0.5% (25° C±5°C) ±1% (0~55°C)	±0.2% (25° C±5°C) ±0.4% (0~55°C)	±0.5% (25° C±5°C) ±0.5% (0~55°C)	±0.2% (25° C±5°C) ±1% (0~55°C)
Sampling period	High speed : 200ms/ch General : 400ms/ch	High speed : 100ms/ch General : 200ms/ch	High speed : 200ms/ch General : 400ms/ch	High speed : 200ms/ch General : 400ms/ch
Control period	1~100 sec		1~100 sec	
Operating mode	PID control、ON/OFF control		PID control、ON/OFF control	
Tuning mode	PID auto-tuning mode		PID auto-tuning mode	
Isolation method	Between analog input terminals and CPU : Isolation (Transformer(power) and optical coupler(signal)) No isolation between each channel		Between analog input terminals and CPU : Isolation (Transformer(power) and optical coupler(signal)) No isolation between each channel	
External connection	18 Pin Push-in terminal blocks		18 Pin Push-in terminal blocks	

## Load cell Module

## Communication Module

High-speed\*

Load cell input



RS-232

RS-485



RS-485



Item	M02LC	M02LCR
Input points	2	2
A/D Converter Utilized	24 bits	24 bits
Conversion precision	±0.5% (25° C±5°C) ±1% (0~55°C)	±0.01% (25° C±5°C) ±0.4% (0~55°C)
Sampling period	High speed :2ms/ch General :10ms/ch	General :10ms/ch
Level of sensitivity	±1.0mV/V、±2.0mV/V、±3.0mV/V、±4.0mV/V	
Zero drift	0.2uV/°C	
Gain drift	±10ppm/°C	
Excitation Voltage	5VDC±5%, Output current :60mA max. 6 wires	
Isolation method	Between analog input terminals and CPU : Isolation (Transformer(power) and optical coupler(signal)) No isolation between each channel	
External connection	18 pins Push-in terminal blocks	

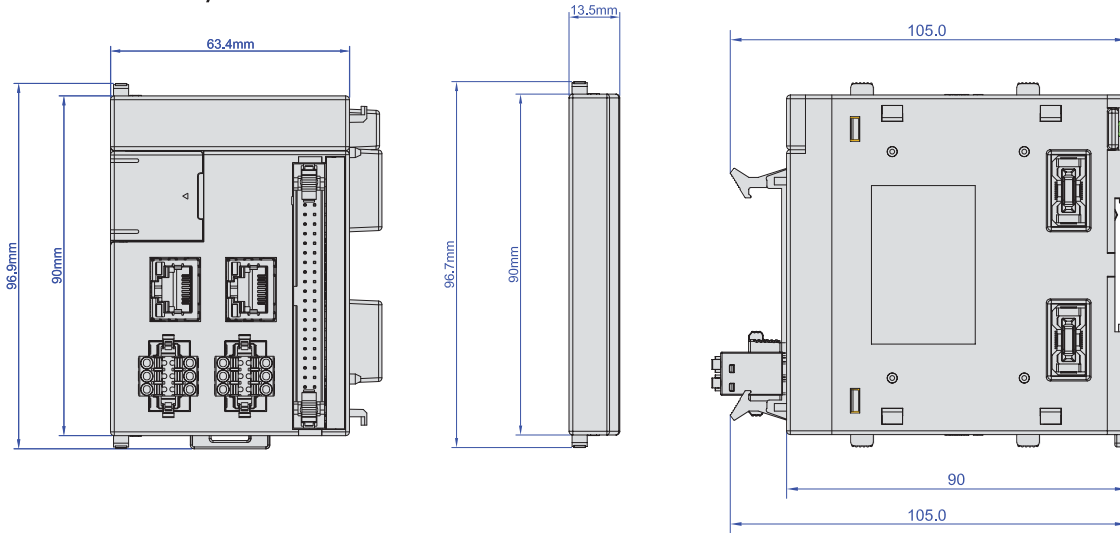
Item	MHCM25	MHCM55
Communication standard	1 port RS485 + 1 port RS232	2 port RS485
Connection interface	RS485: 2X2 pins Push-in terminal blocks RS232 : D-Sub 9-Pin	2X2 pins Push-in terminal blocks
Maximum number of connections	RS485: 32 slave RS232: 1 slave	RS485: 32 slave
Transmission speed	RS485: Maximum 230400 RS232: Maximum 115200	RS485: Maximum 230400
Transmission distance	RS485: 1200M RS232: 15M	RS485: 1200M
Isolation method	Transformer(power) isolation	

\* Support up to 6 high-speed modules, and need to be installed in the first 6 expansion positions on the right side of the CPU (placed between the CPU and general modules)

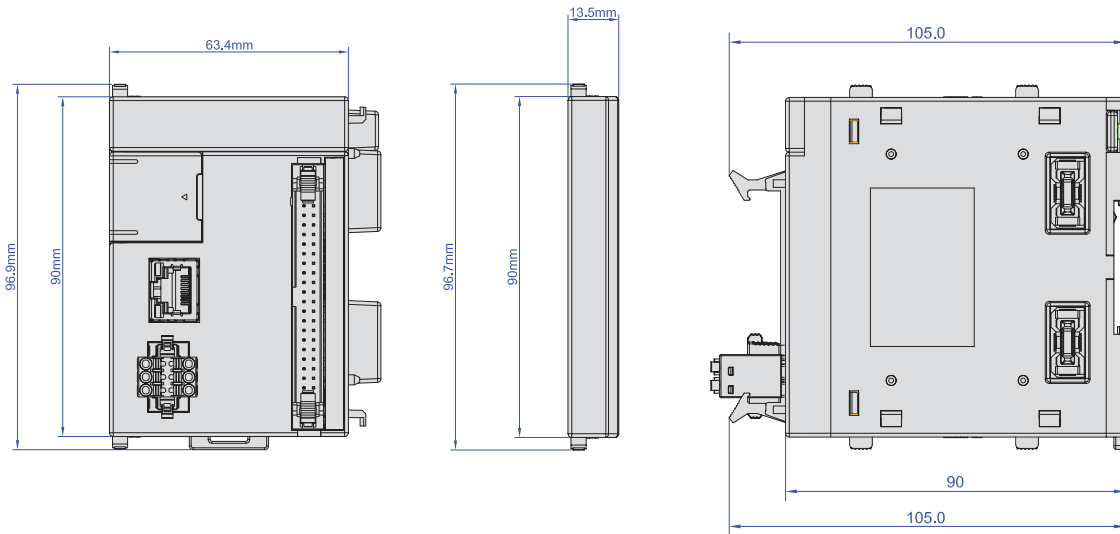
# Dimensions

## CPU

### ME / MS

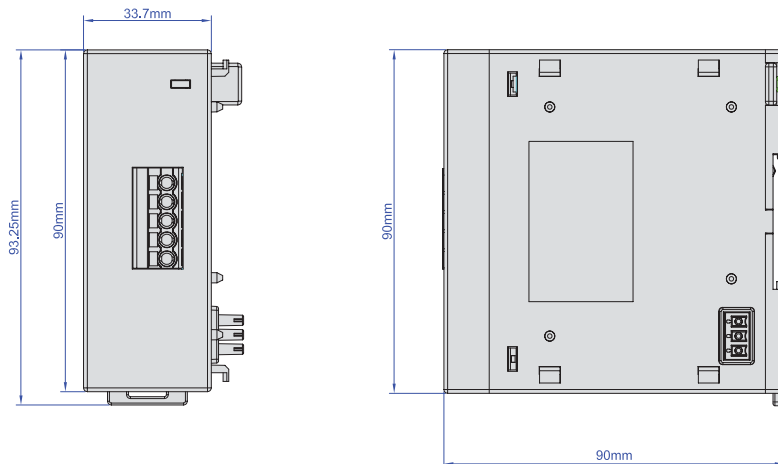


### MA



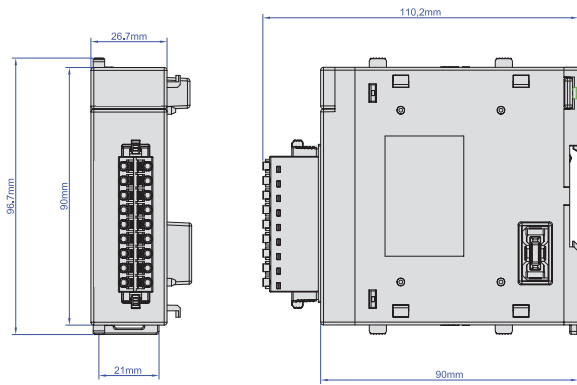
## Power Supply Module

### MPA024/48-24

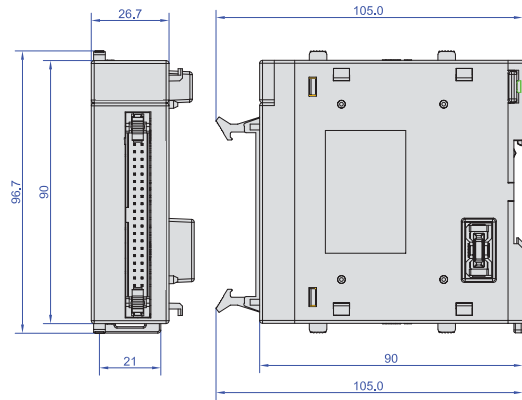


## Digital Module

M16X / M16Y T/J/R

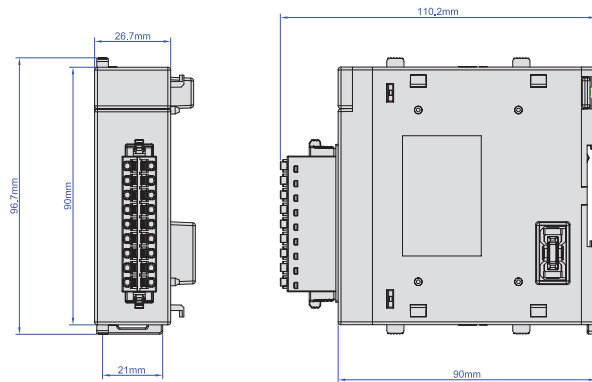


M1616XY T/J



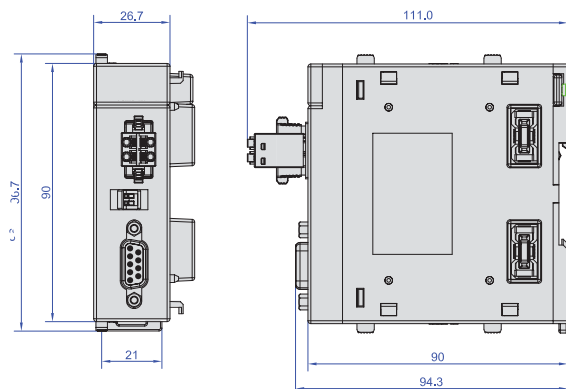
## Analog / Temperature / Load cell Module

M04AD R / M04DA R / M0202AH / M04TC R / M0202TH / M02LC R

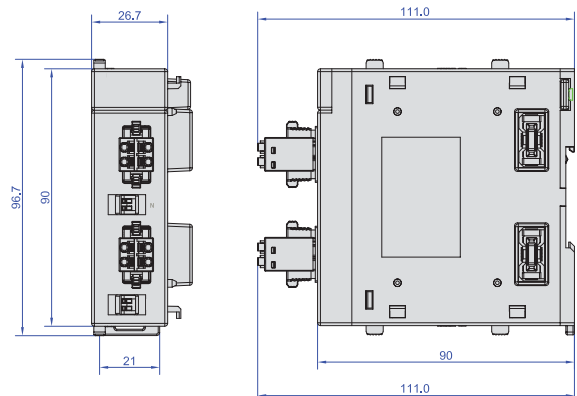


## Communication Module

MHCM25

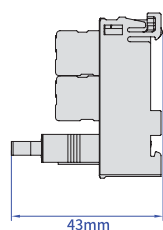
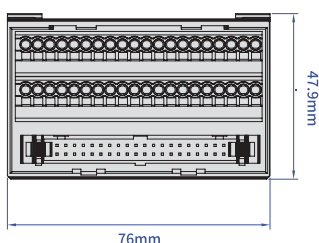


MCHM55



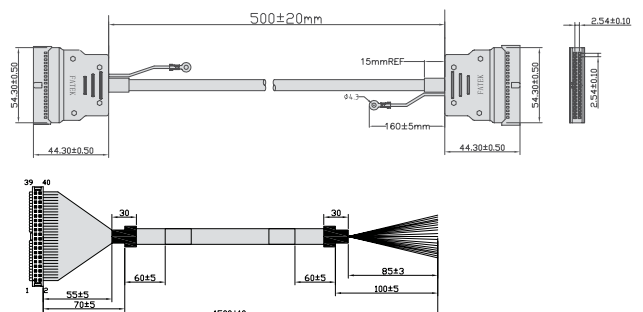
## Peripheral and Accessory

MFT40T



MFW40I-50

MFW40N-150



Hardware

Motion

IoT

Software

Line Up

Specification

Dimension

Model List

# Model List

Category	Model	Maximum I/O Points		Total Program Memory		Built-in Ethernet Communication <sup>*2</sup>	HSC <sup>*1</sup>	HSPO <sup>*1</sup>	Total Axes	Pulse		EtherCAT	
		DIO	AIO	PLC	Motion					Positioning Control	Axes	Circular <sup>*4</sup> interpolation	E-CAM <sup>*5</sup>
<b>Basic CPU</b>	MA1N1-1616 ◇	512	128	50 KB	—	Slave	2	2	2	2	—	—	—
	MA1N2-1616 ◇	512	128	50 KB	—	Slave	3	3	3	3	—	—	—
	MA1N3-1616 ◇	512	128	50 KB	—	Slave	4	4	4	4	—	—	—
	MA1I4-1616 ◇	512	128	50 KB	—	Slave	8	8 <sup>*1</sup>	8	8 <sup>*1</sup>	—	—	—
	MA1M3-1616 ◇	512	128	50 KB	—	Master/Slave	8	4	4	4	—	—	—
	MA2M3-1616 ◇	1024	128	60 KB	—	Master/Slave	8	4	4	4	—	—	—
	MA3M3-1616 ◇	2048	256	80 KB	—	Master/Slave	8	4	4	4	—	—	—
<b>General Motion CPU</b>	MS1C1-1616 ◇	512	128	50 KB	370 KB	Slave	6 <sup>*3</sup>	4	7	4	2 axes + 1 Virtual	●	—
	MS1C2-1616 ◇	512	128	50 KB	556 KB	Slave	7 <sup>*3</sup>	4	8	4	3 axes + 1 Virtual	●	—
	MS2C3-1616 ◇	512	128	60 KB	742 KB	Master/Slave	8 <sup>*3</sup>	8 <sup>*1</sup>	13	8 <sup>*1</sup>	4 axes + 1 Virtual	●	1 axis
	MS2C4-1616 ◇	1024	128	60 KB	1.1 MB	Master/Slave	8 <sup>*3</sup>	4	14	4	8 axes + 2 Virtual	●	1 axis
	MS2C5-1616 ◇	2048	256	60 KB	1.5 MB	Master/Slave	8 <sup>*3</sup>	4	18	4	12 axes + 2 Virtual	●	2 axes
	MS3C6-1616 ◇	2048	256	80 KB	3 MB	Master/Slave	8 <sup>*3</sup>	4	20	4	16 axes	●	2 axes
<b>Advanced Motion CPU</b>	ME1C1-1616 ◇	1024	128	50 KB	370 KB	Master/Slave	8 <sup>*3</sup>	4	7	4	2 axes + 1 Virtual	●	●
	ME2C3-1616 ◇	1024	128	60 KB	742 KB	Master/Slave	8 <sup>*3</sup>	4	9	4	4 axes + 1 Virtual	●	●
	ME2C4-1616 ◇	1024	128	60 KB	1.1 MB	Master/Slave	8 <sup>*3</sup>	4	14	4	8 axes + 2 Virtual	●	●
	ME2C5-1616 ◇	2048	256	60 KB	1.5 MB	Master/Slave	8 <sup>*3</sup>	4	18	4	12 axes + 2 Virtual	●	●
	ME3C6-1616 ◇	2048	256	80 KB	3 MB	Master/Slave	8 <sup>*3</sup>	4	20	4	16 axes	●	●

◇ : T — Transistor SINK(NPN) output ; J — Transistor SOURCE (PNP) output

\* 1 : 200 KHz HSC and HSPO , MA1I4-1616◇、MS2C3-1616◇ support up to 100KHz HSPO \* 2 : Including Modbus and Self-defined protocol. Differ only in Ethernet port, serial port supports both Master and Slave

\* 3 : MS1C1-1616◇ of which 2 channels, MS1C2-1616◇ of which 3 channels, and other models of which 4 channels of HSC are only dedicated for EtherCAT motion only

\* 4 : **Positioning Control**: Including Point-to-Point Positioning Control、Interrupt constant feed/angle ; **Circular interpolation**: Including Linear/Circular interpolation and functions in **Positioning Control**

**Advanced Motion** : Including E-CAM、Fly shear、Rotary knife、Helical interpolation and functions in **Positioning Control** and **Circular interpolation**

\* 5 : Specific models supported

Category	Model	Specifications
Digital I/O Module	M16X	16 points 24 VDC digital input › Push-in terminal blocks
	M16YT	16 points transistor SINK(NPN) output › Push-in terminal blocks
	M16YJ	16 points transistor SOURCE(PNP) output › Push-in terminal blocks
	M16YR	16 points relay output › Push-in terminal blocks
	M1616XYT	16 points 24 VDC digital input › 16 points transistor SINK(NPN) output › 40 pins header connector
	M1616XYJ	16 points 24 VDC digital input › 16 points transistor SOURCE(PNP) output › 40 pins header connector
Analog I/O Module	M04ADR	4 channels › Voltage and current input › Resolution:1/160000
	M04AD	4 channels › Voltage and current input › Resolution:1/16383
	M04DAR	4 channels › Voltage and current output › Resolution:1/54000
	M04DA	4 channels › Voltage and current output › Resolution:1/16383
	M0202AH	2 channels voltage and current input + 2 channels voltage and current output › Resolution:1/16383
Temperature Input Module	M04TCR	4 channels › Thermocouple temperature input (K, J, T, E, R, B, N, S, mV) › Resolution: $\pm 0.2\%$ ( $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ )
	M04TC	4 channels › Thermocouple temperature input (K, J, T, E, R, B, N, S, mV) › Resolution: $\pm 0.5\%$ ( $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ )
	M0202TH	2 channels RTD(JIS or DIN) + 2 channels thermocouple(K, J, T, E, R, B, N, S, mV) temperature input › Resolution: $0.1^{\circ}\text{C}$
Load Cell Module	M02LCR	2 channels load cell input module › A/D Converter Utilized: 24 bits › Precision: $\pm 0.01\%$ ( $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ )
	M02LC	2 channels load cell input module › A/D Converter Utilized: 24 bits › Precision: $\pm 0.5\%$ ( $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ )
Communication Module	MHCM25	1 port RS232 + 1 port RS485 high speed serial <sup>*1</sup> communication
	MHCM55	2 ports RS485 high speed serial <sup>*1</sup> communication
Coupler Unit	MC0MN	Remote I/O Coupler (Modbus / TCP)
Power Supply Module	MPA024-24	Input: 100~240VAC (50/60Hz) › Output: 24VDC 1A(Internal and external) › 24W
	MPA048-24	Input: 100~240VAC (50/60Hz) › Output: 24VDC 2A(Internal and external) › 48W
Dedicated Memory Card	MFM06	Industrial grade Micro-SD card › Data-log area: 6GB <sup>*2</sup>
Peripheral and Accessory	MFT40T	40 pins interface module › Connection method: PID(for engineering testing purpose, not necessary)
	MFW40I-50	High density modules connector 40pin socket, shielded 28AWG I/O cable length 50cm
	MFW40N-150	High density modules connector 40pin socket (discrete wire at one end), right-angle shielded 28AWG I/O cable length 150cm
	MFW40NS-300	High density modules connector 40pin socket (discrete wire at one end), vertical 22AWG I/O cable length 300cm

\*1 Support up to 6 high-speed modules, and need to be installed in the first 6 expansion positions on the right side of the CPU (placed between the CPU and general modules)

\*2 The functions of the memory card vary by CPU model. Please check the CPU specification list for the supported features.