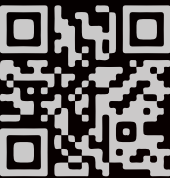


M Series

Programmable Controller



FATEK



fatek.com

FATEK AUTOMATION CORPORATION

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

M-CV1-07-2026

NEXT Level SOLUTION

「Hard PLC」 Technology

Industry Leading

0.0008 *us*

STABLE

「HARD PLC」 structure
Continuous high-efficiency

FASTER

Nanosecond-level processing
Instant boot-up Ultra-low latency

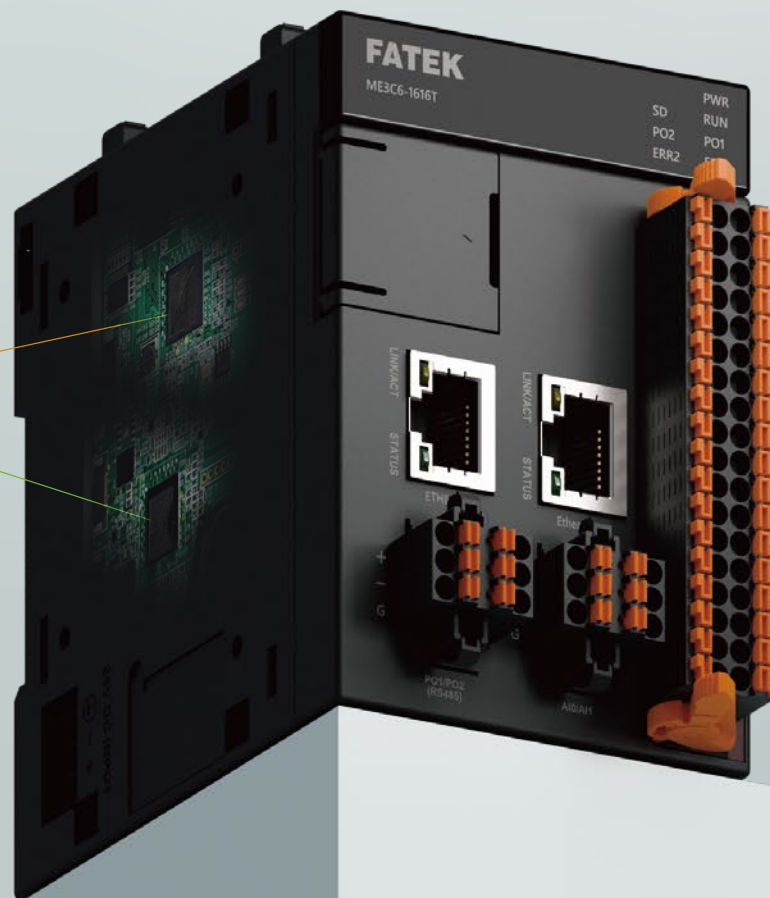
EFFICIENT

Low-heat, durable design

Dual-CPU System

■ Motion control

■ PLC control



「Advanced Motion Control」

Supports **EtherCAT** and **PULSE** modes

Achieve up to **24** axes motion control with EtherCAT and pulse

With advanced motion features, redefining speed and precision

Elevate machine performance to a whole new level

- ✓ E-CAM
- ✓ Flying Shear & Rotary Knife
- ✓ 3D Circular & Helical Interpolation
- ✓ SAPC*
- ✓ ICF & ICA*



Industry Applications

Semiconductor & 3C Manufacturing



Food & Beverage



Automotive & Marine



Textile & Printing



Packaging & Box Stapling



More Application Cases



M series combines advanced technology, flexible configuration, and exceptional computing and motion control capabilities. With high stability and outstanding performance, it is widely used in 3C manufacturing, food processing, coating technology, packaging and box stapling, textiles, and many other industries. Through highly efficient solutions, it drives industrial upgrades and delivers a **NEXT Level SOLUTION** to reach new heights!

* SAPC (single axis positioning control) , ICF (interrupt constant feed) , ICA (interrupt constant angle)

Ultimate Performance & Efficiency

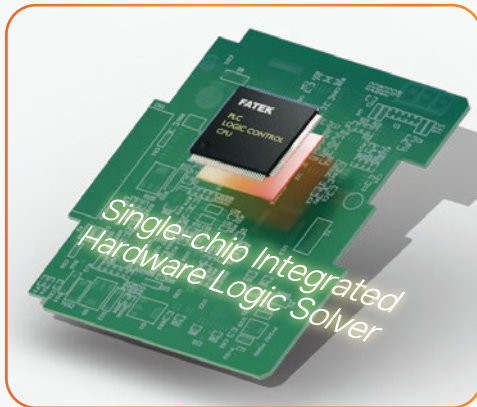
「Hardcore」 PLC Control Solutions

Industry Leading

0.0008 μ S

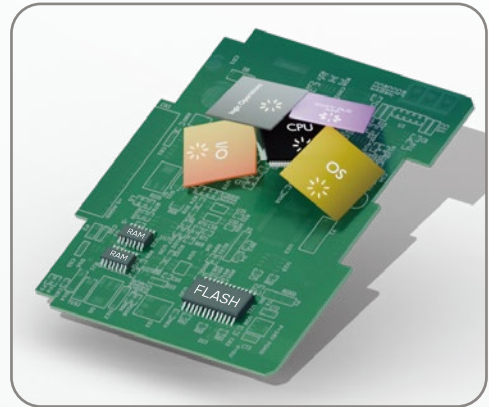
Purpose-Built Logic-Optimized HARD PLC Architecture Achieves Industry-Leading 0.8 Nanosecond Processing

FATEK Hard PLC



Proprietary hard-core architecture delivers rock-solid stability and peak efficiency—performance that doesn't degrade over time. A low-power, fanless design with no heatsinks ensures long-lasting component durability.

Soft PLC



PC-like architectures rely on complex components and heavy operating systems. Layered systems demand high-performance CPUs, large RAM/Flash, and thermal solutions—making stability harder to control, while introducing virus risks and heat-related wear.

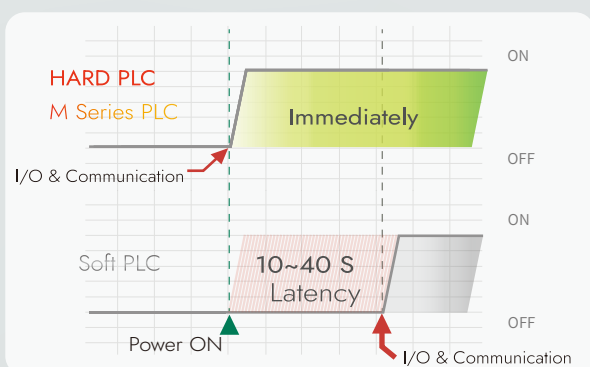
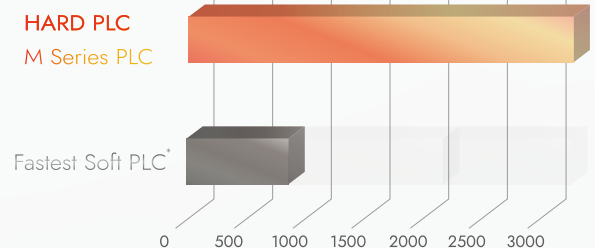
Faster & Smarter

Nanosecond-Level Processing | Ultra-Low Latency | Instant Power-On

0.0008 μ S Ultimate PLC Efficiency

FATEK HARD PLC hardware architecture delivers **5x higher efficiency than Soft PLCs with 80% reduced computation time** for identical tasks. This breakthrough enhances system responsiveness and empowers complex, large-scale control applications with ultra-stable and high-efficiency automation solutions.

Numbers of Sample Code Loops in 1ms

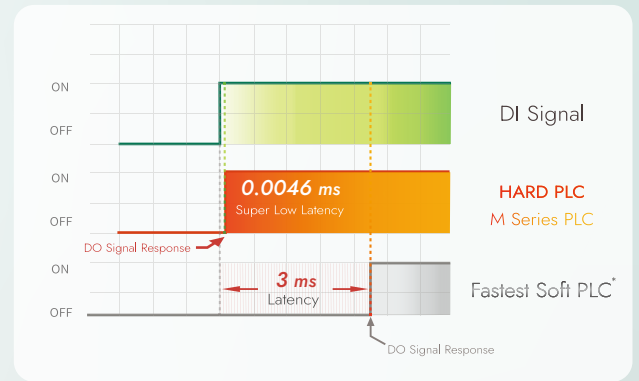


Instant Start , Zero Wait

FATEK HARD PLC runs control tasks directly in hardware—no OS boot time required. **The moment power is on, it's ready for I/O monitoring, processing, and communication.** In contrast, PC-like Soft PLC systems rely on complex operating systems, often taking 10 to 30+ seconds to boot—during which no control or monitoring is possible.

Ultra - **Fast** Interrupt Response

FATEK HARD PLC's hardware-logic-driven I/O control eliminates OS/application-layer delays, achieving **650x faster interrupt handling** than Soft PLCs. In contrast, Soft PLCs struggle with OS-induced latency, compromising real-time responsiveness in critical control scenarios.



Textile Machine



Labeling Machine

High Speed Meets Precision

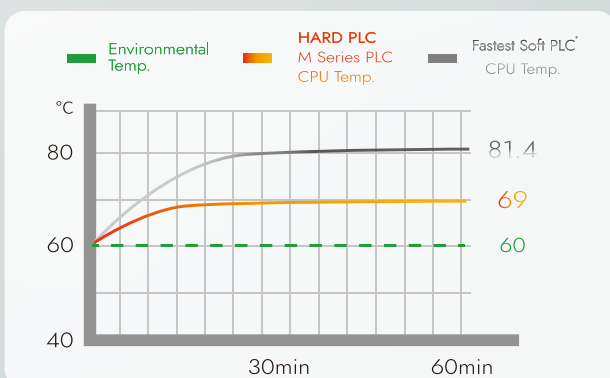
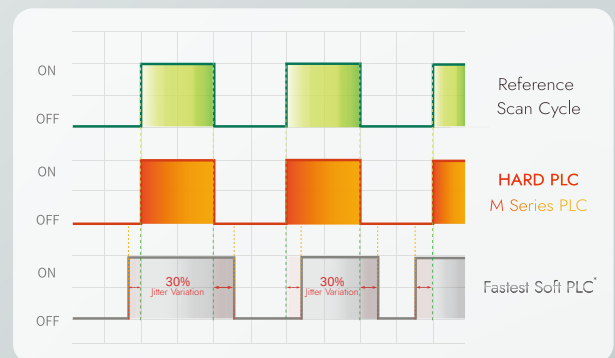
Ultra-low latency interrupt functions enable high-speed operation without sacrificing accuracy, boosting production efficiency and capacity to maximize equipment ROI.

Stable & Efficient

Reduced Heat | Ultra-Low Power | Enduring Design

Consistently Stable Always Reliable

FATEK HARD PLC executes control directly in hardware, free from OS and application-layer interference—ensuring consistently precise and stable performance. With no degradation over time, it delivers near **0% jitter variation** for ultra-precise control. In contrast, Soft PLC depends on OS and application layers. As workloads increase or runtime accumulates, system instability may occur—resulting in **jitter variation up to 30%**.



Low-Thermal, **Low**-Power Enduring Design

Backed by 30+ years of PLC expertise, FATEK's HARD PLC technology integrates the control core into a single chip. Through continuous architecture refinement, it achieves **industry-leading performance with minimal components and ultra-low power consumption**. Its efficient and streamlined design keeps heat and power usage exceptionally low, even at high processing speeds—**reducing heat generation by up to 58%** compared to Soft PLC. Lower temperatures ensure longer component lifespan and higher system reliability.

In contrast, Soft PLC (PC-like architecture) relies on complex operating systems and heavy applications, requiring high-performance CPUs and significantly more components. This leads to higher power consumption and heat buildup, increasing the risk of reduced lifespan and system instability.



Industry Leading

HARD PLC Technology

0.0008 μ s

Ultimate Performance

Ultra-low Latency

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.

BASIC LD
0.0008 μ s (0.8 ns)

MOV	Multiplication	Floating Point Addition
7.5 ns	38 ns	35 ns

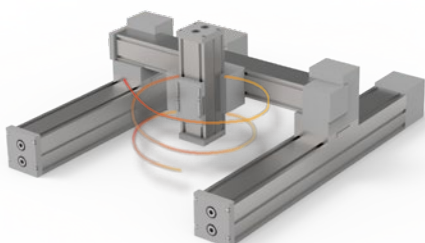
Ultra-low interrupt latency

With a 3 μ s industry-leading ultra-low interrupt latency, ensures precise execution for control demands requiring fast reactions and ultra-low latency, completely unaffected by program complexity or PLC scan cycle time.



Advanced & Ultra-precise Motion Control

Built-in advanced motion control functions including E-Cam, helix interpolation, ICF/ICA*, etc. Equipped with a dedicated motion control chip that independently processes motion control tasks. Even for complex and large motion control commands, they can be executed instantly and accurately without affecting the PLC scan cycle.



Versatile models for diverse scenarios

MQ, MA, MU, MS, and ME: multiple versatile models
From PLC control to advanced multi-axis motion control.
From small I/O points to comprehensive factory-wide control solutions with tens of thousands of points*
Delivering versatile and flexible solutions tailored to your needs.



PLC & Positioning

General Motion

Advanced Motion

*Requires use with FATEK IO Coupler



World-class high-capacity and efficient control center

Built-in EtherCAT/Ethernet dual interfaces

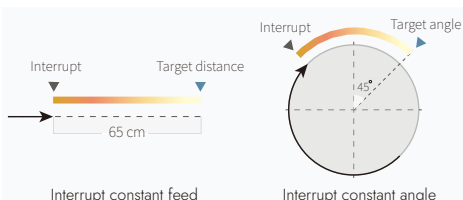
EtherCAT connects seamlessly with 3rd-party EtherCAT servos. Motion and positioning control without extra modules. Ethernet supports Modbus TCP, MQTT and user-defined protocols. Easy data exchange with devices, systems and platforms.



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

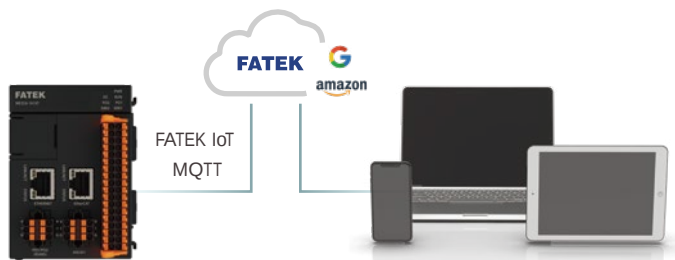
Built-in 16-point 200 kHz pulse motion control

Featuring built-in 16-point 200 kHz pulse motion control, delivers high-speed pulse output for linear, circular, and point-to-point positioning. Advanced functions such as cut-to-length/angle make it ideal for textile processing, cutting, edging, sealing, and feeding applications.



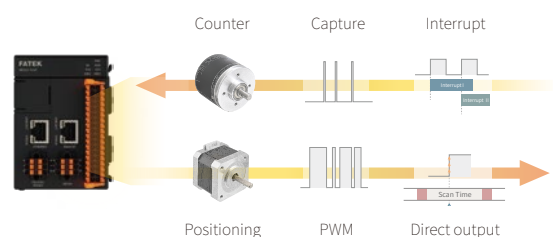
IoT control hub

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-density integrated I/O

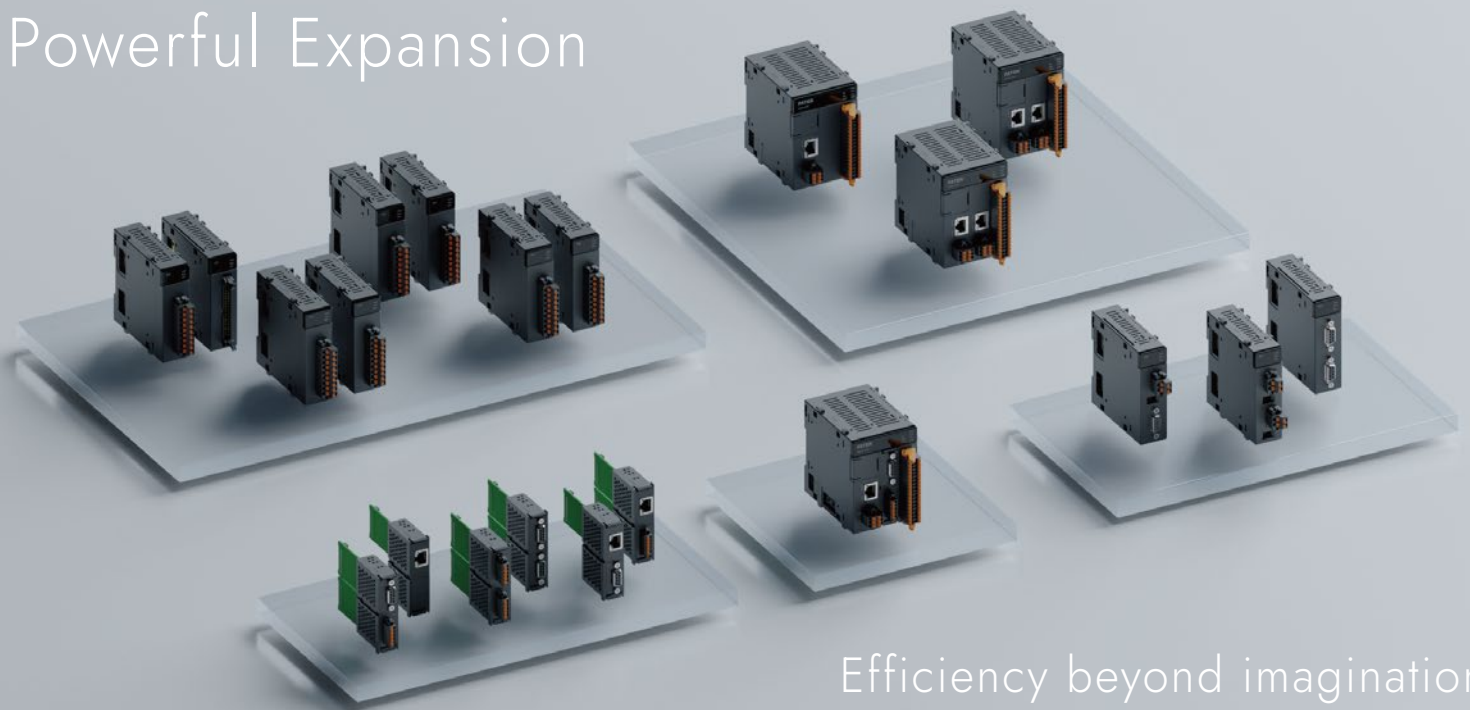
Built-in 16 sets of digital input and output points respectively. With up to 200KHz high-speed counter and pulse output. Support interrupt and capture input to ensure commands and signal capture are not affected by scan time when control immediacy is extremely required.



Built-in 2-channel analog input & RS-485 ports

Built-in 2-channel 12-bit analog input and 2-channel RS-485 ports

Powerful Expansion



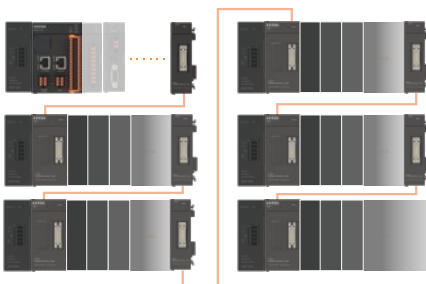
Efficiency beyond imagination

Powerful control over scale and extensibility

Control scale run up to 2048 DIO and 256 AIO.

Can be expanded to include 16 communication ports and up to 64 various expansion modules.

FHB transmission technology can transfer data without delay when monitoring large number of IO points from modules.



Extend with **MRGH & MRGT** IO Bus Extension Module

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.



DIO

AIO

TEMP

COM

Plug-in

Industry Leading

Up to 16-Port Communication Expansion

Expandable with 14 serial ports via modular interfaces

Plus built-in dual Ethernet ports (1x Ethernet + 1x EtherCAT)

A single CPU supports up to 16 multi-protocol interfaces.

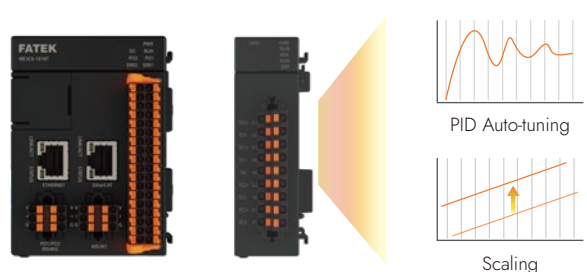
Enabling high-efficiency data monitoring and centralized collection

16 Ports



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.



PID Auto-tuning

Scaling

Intuition

Human-centered design



FHB Ultra-Fast Data Transmission Technology

It solves the problem of increasing bus communication response time with more installed modules. Achieve an astonishing communication efficiency that is 10 times faster than the CAN bus. Moreover, the bus connector is designed with a dedicated vibration damping joint, and now data transmission is not only fast, but also more stable and reliable.

FATEK
HYPERBUS

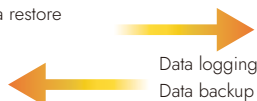


Micro-SD* card expansion slot

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.



Project and OS update
Data restore



Data logging
Data backup



* Only support MFM06 - dedicated Micro-SD card

Battery-free program memory

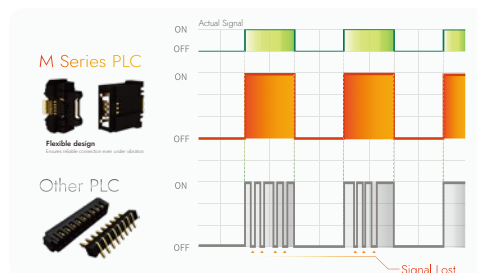
Program and data memory using non-volatile memory. No battery required to maintain internal data storage. Never need to worry about data loss or damage caused by battery out of power anymore.

RUN/STOP switch

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

Dedicated vibrate-absorbing connector

The local bus connector design with dedicated 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 detachment

Tool-free wiring with push-in terminals ensures fast installation. Secure contact design guarantees tight connections and prevents poor contact.



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.

Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

Model List

All-in-One MQ Solution



Plug-in expansion, configured your way

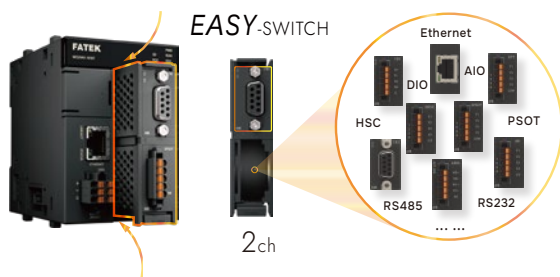
Versatile Plug-in Expansion, Swap Freely Anytime.

Flexible selection of diverse Plug-in modules for applications.

DIO / AIO / Comm. / Pulse / High-speed Counter supported.

Dual expansion slots for flexible configuration and setup.

Expand more, without growing in size footprint.



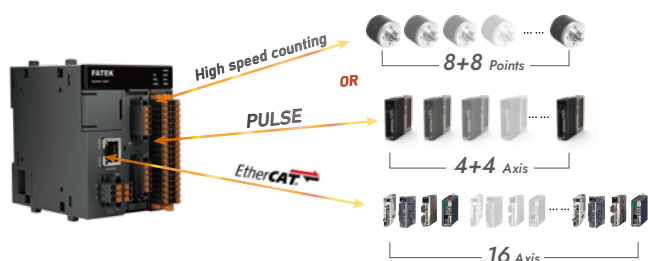
24-Axis Motion control & 16-Point High-Speed counter*

Up to 24-axis motion control or 16-point high-speed counter.

Expandable via Plug-in modules for flexible upgrades. Scalable to

24-axis motion control or 16-point (8-channel) high-speed counter applications. Enables highly flexible multi-axis motion control within

a compact form factor.



EtherCAT & Ethernet universal port

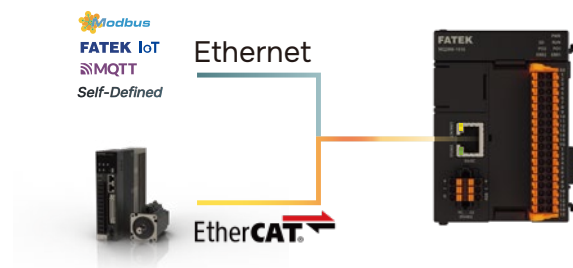
High-efficiency EtherCAT & Ethernet dual-port design.

Single RJ45 interface supporting two protocols and application

scenarios. Seamless switching between IoT communication and

motion control applications. Significantly simplifies system

architecture and enhances overall integration efficiency



Built-in Linear/Circular interpolation & ICF/ICA*

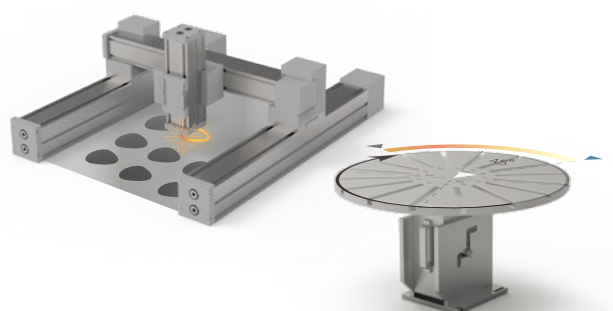
Even entry-level models are uncompromised with built-in motion

control architecture, no expansion module required. Built-in

200kHz high-speed pulse output for stable and precise motion

control EtherCAT support enables multi-axis point-to-point

positioning control applications.



* SAPC (Single Axis Positioning Control) supported on selected models

* Due to limited plug-in slots, 8-axis pulse output and 16-point high-speed counter cannot be used simultaneously.

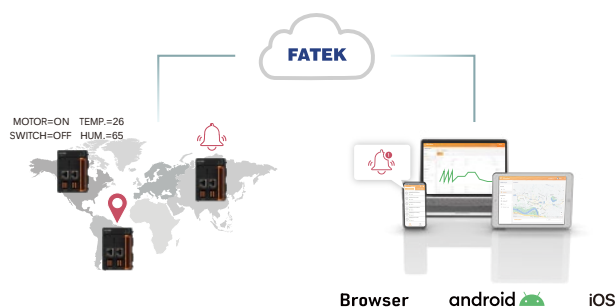
* ICF (interrupt constant feed) , ICA(interrupt constant angle)

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.



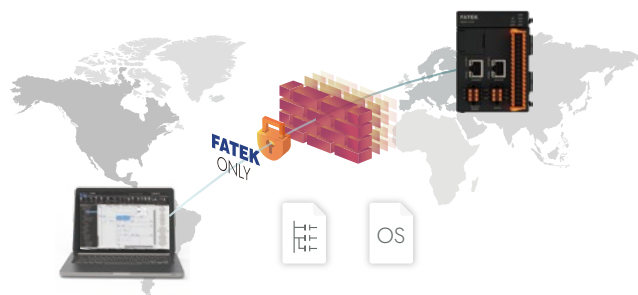
Connect mainstream cloud platforms with MQTT

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.



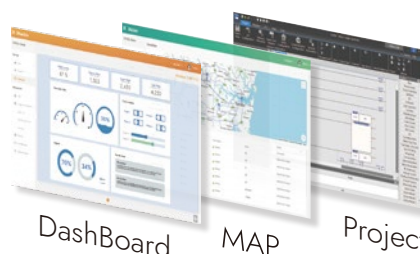
iAccess - remote project maintenance with module*

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.



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.



Learn More

* Will be supported in the future

Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

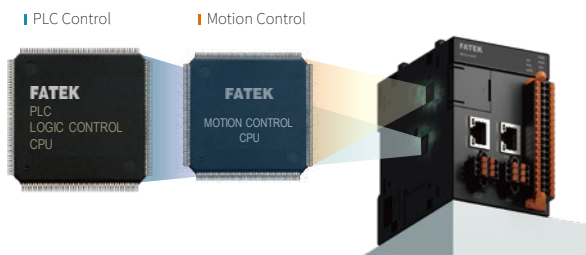
Model List

Independent motion control CPU



Independent Motion Control Chip

Motion control and application logic programs operate independently. Even when handling highly complex high-speed and high-precision motion control tasks, it remains unaffected by program scan cycles or interrupt tasks, ensuring optimal control accuracy and stability.



EtherCAT Flexible Integration & Easy Adaptation

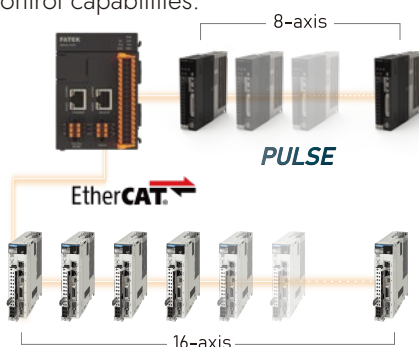
The EtherCAT fieldbus enables seamless integration with third-party servo drives, delivering high-speed control via standard RJ-45 cables. This robust architecture bypasses scan-cycle limitations, enhancing assembly efficiency and cutting maintenance costs while ensuring precision and stability.

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



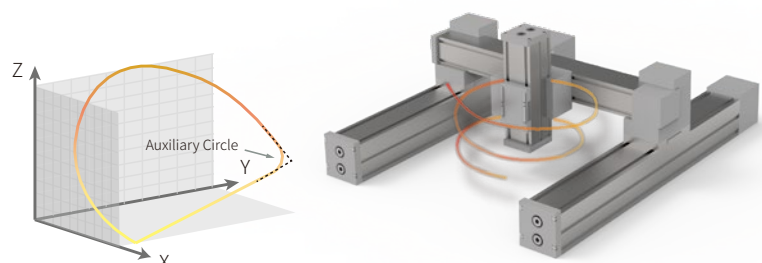
24-Axis Motion & Positioning Control

Achieve simultaneous control of up to 24 servo drives without additional motion modules or multi-host cascading. Supports EtherCAT and pulse-based multi-axis motion control, with advanced synchronized axes and electronic cam control capabilities.



Advanced Interpolation Functions

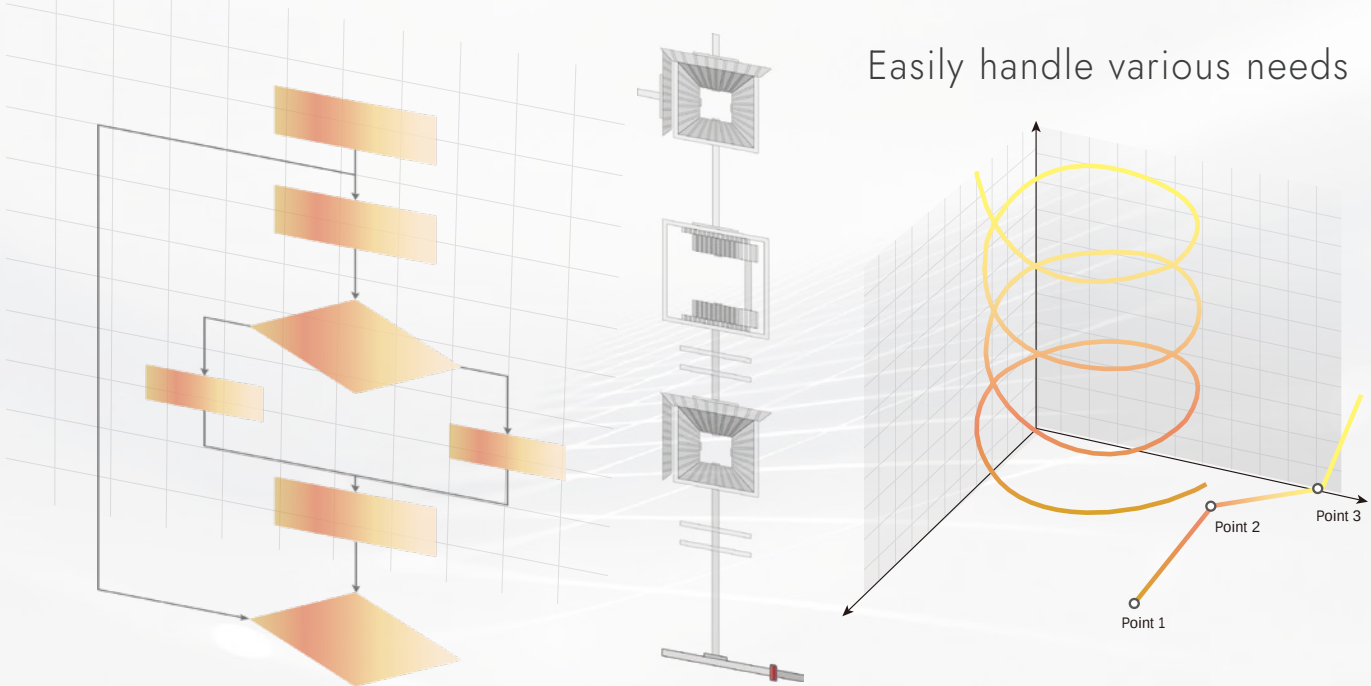
Built-in linear, circular, and helical interpolation modes. Supports continuous arc transitions between path segments. Seamlessly connects motion trajectories with auxiliary circular arcs, ensuring smooth transitions and minimizing mechanical vibration.



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

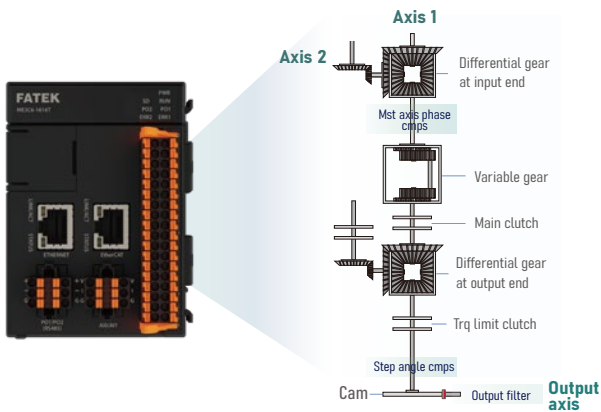
Powerful motion control functions

Easily handle various needs



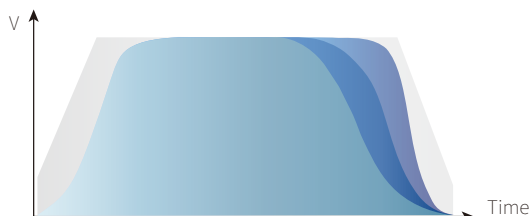
Motion-sync control

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.



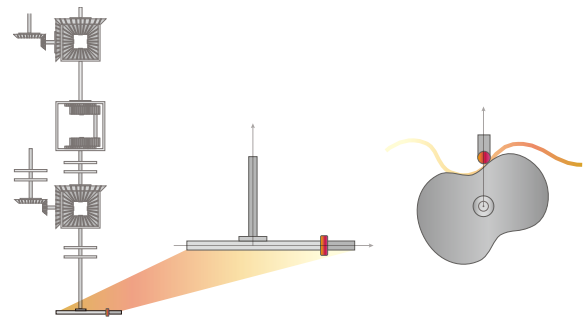
Stabilized and smooth control

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.



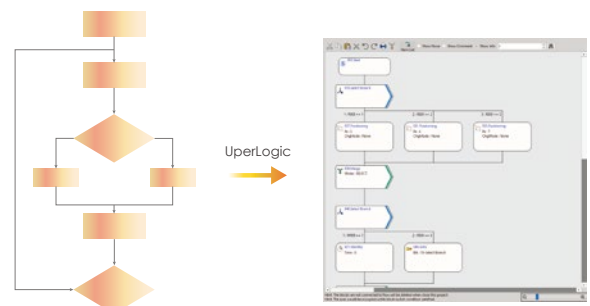
Electronic cam

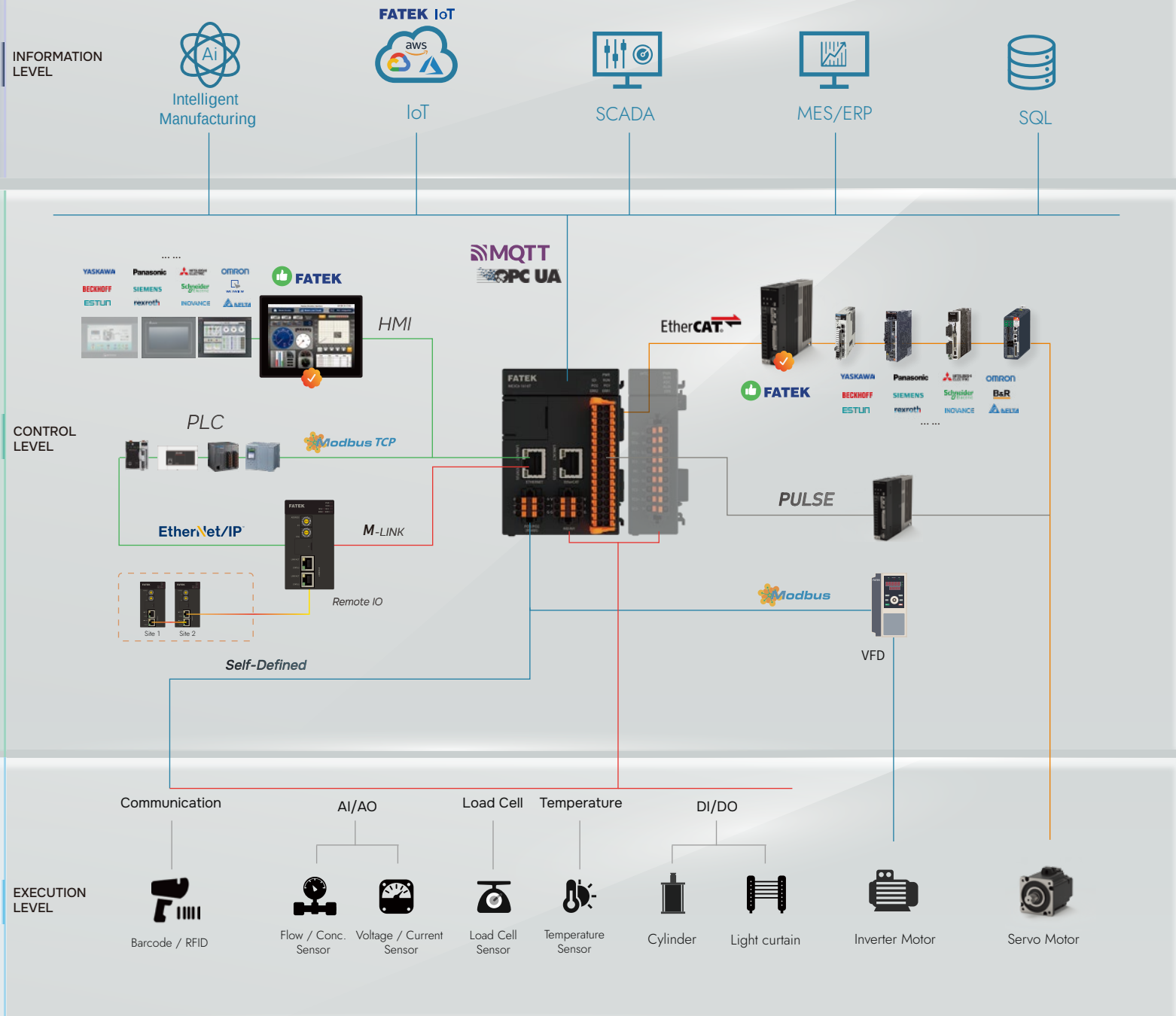
Support electronic cam function on the output axis of motion-sync control. Executes fly shear/rotary knife action without physical cam mechanism. Easily meet complex machine application requirements such as packaging and cutting



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.





Industry Applications

Semiconductor & 3C Manufacturing



Food & Beverage



Automotive & Marine



Textile & Printing



Packaging & Box Stapling



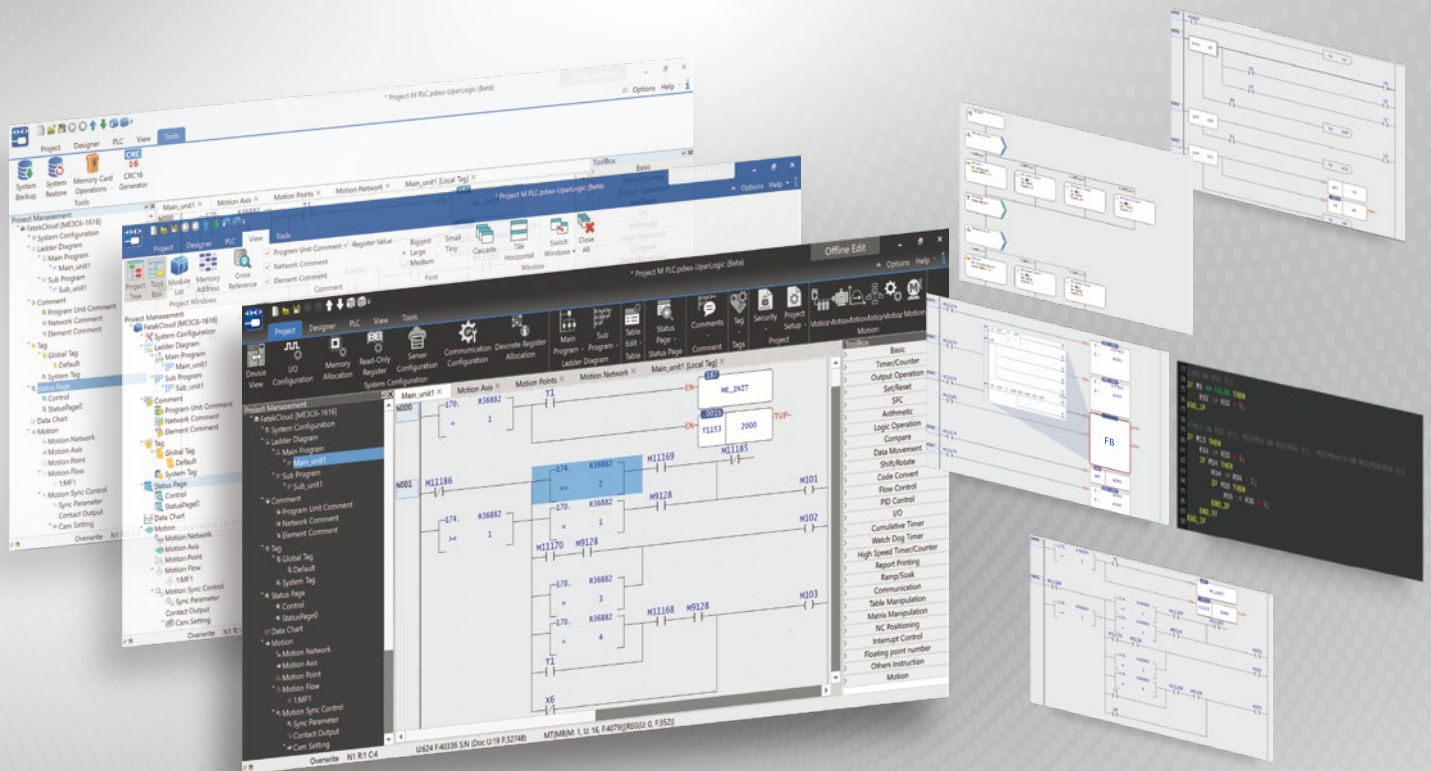
M series combines advanced technology, flexible configuration, and exceptional computing and motion control capabilities. With high stability and outstanding performance, it is widely used in 3C manufacturing, food processing, coating technology, packaging and box stapling, textiles, and many other industries. Through highly efficient solutions, it drives industrial upgrades and delivers a *NEXT Level SOLUTION* to reach new heights!

More Application Cases



UperLogic

Powerful and approachable



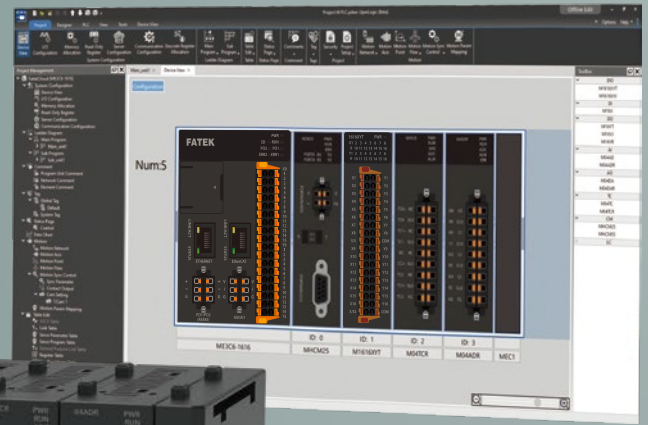
Support LD / ST / FB / SFC
IEC 61131-3 like programming language



download

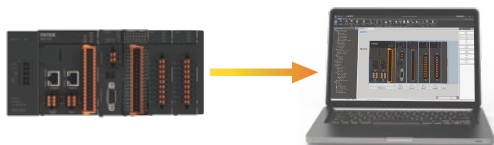
DEVICE VIEW

device information at a glance



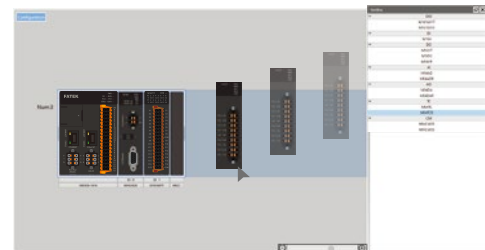
Automatic system composition scanning

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.



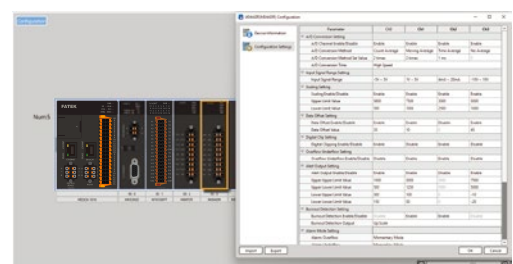
Online real-time monitoring

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.



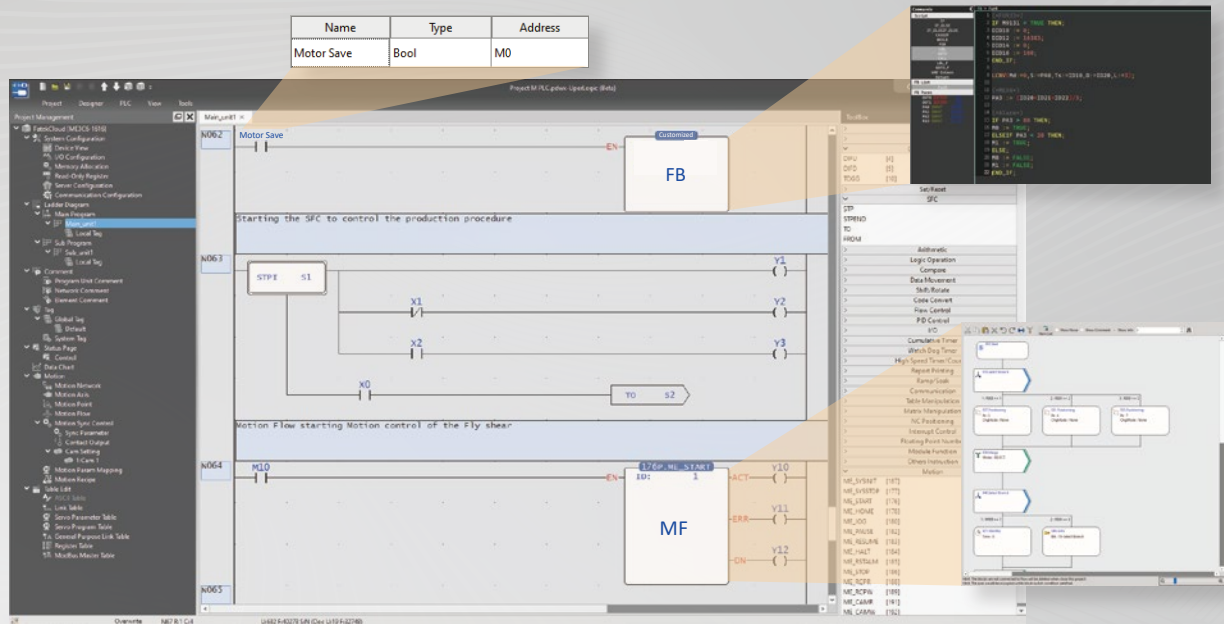
Module dimensions and information

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

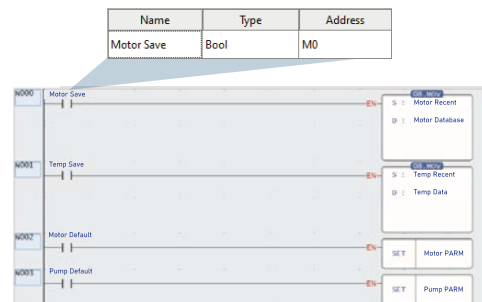
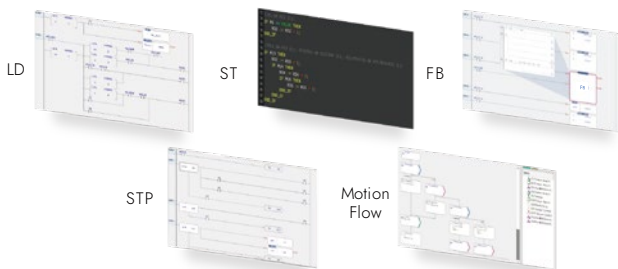


Multi-language editing

Support LD / ST / FB/ STP / MotionFlow 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



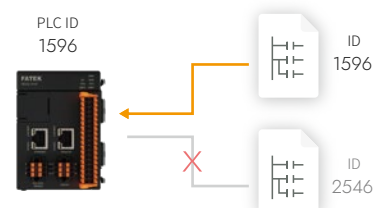
Project, data and settings can be protected by password

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

IoT

Motion

Software

Line Up

Specification

Dimension

Model List

Intuitive and convenient operation experience

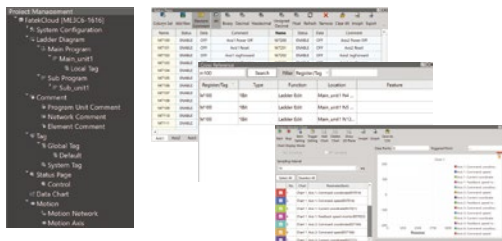


Tree View and multi-window editing

Tree structure project management window.

Project and parameter settings can be clearly and simply managed hierarchically and systematically.

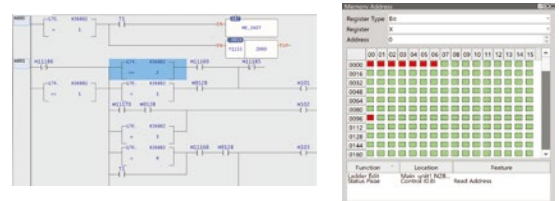
Flexible multi-window interface easy for multitasking.



Memory Map

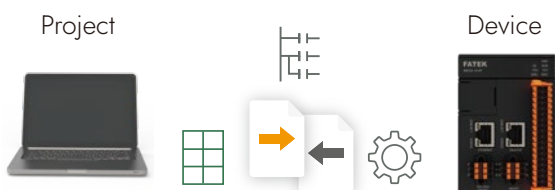
Clearly indicate the PLC internal memory usage.

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



Project 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.



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.

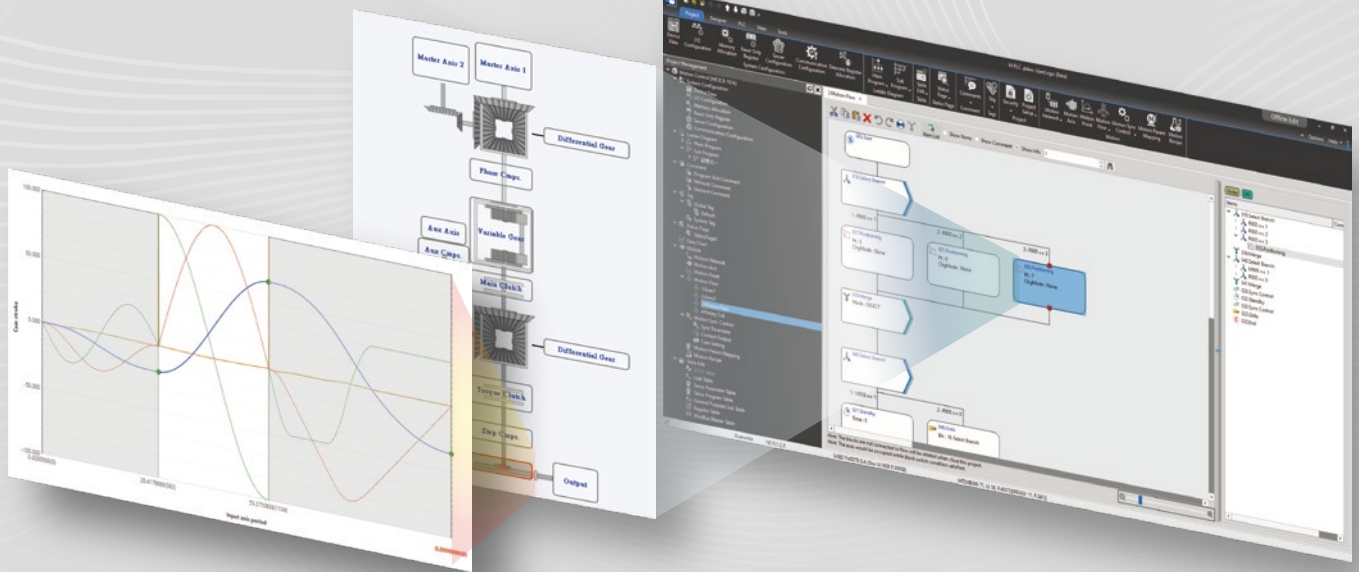
Eliminate the intricate process of confirming IP information device by device.

Hotkey input

Support keyboard hotkey command input.

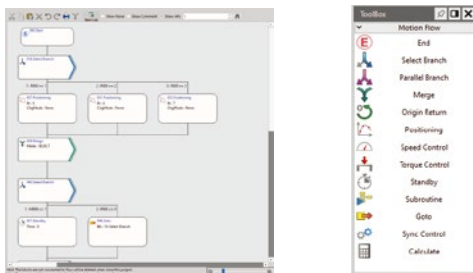
Skip the tedious steps of clicking the window to enter the function item by item with the mouse.

A simple motion planning approach



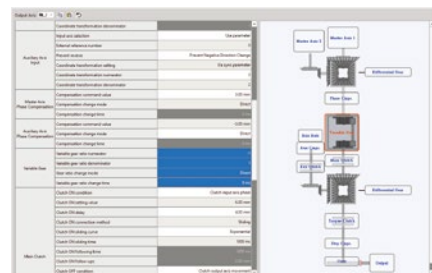
Motion Flow

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.



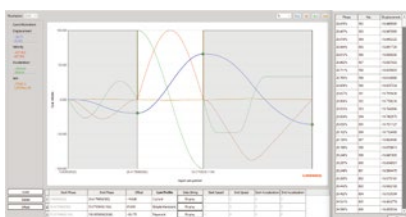
Sync parameter

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.



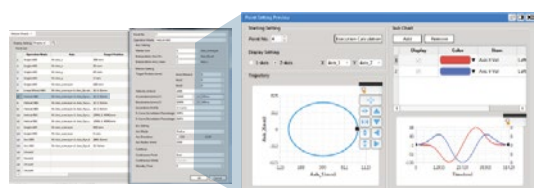
Electronic cam

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

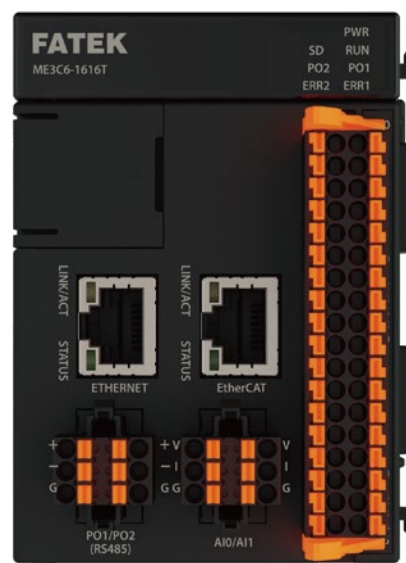
Simply connect other brands EtherCAT servo drivers* by importing ESI files. And also support virtual axis planning.

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

Line Up

ME

Advanced Motion



Expansion Module

Advanced

Local I/O

High-Speed

Basic LD 0.8 nS	PLC + Motion Dual CPU	EtherCAT Motion 16 Axes	Pulse 8 Axes	Ethernet	32 DIO
Total Program Memory 3 MB	E-Cam 16 Axes	Flying shear Rotary knife	Motion Sync	EtherCAT	2 AI
DIO 2048	Helical & 3D Circular interpolation	Circular interpolation	Linear interpolation	RS 485	SD slot
AIO 256	SAPC Single axis positioning control	ICF Interrupt constant feed	ICA Interrupt constant angle	IoT & MQTT	Type C
General	Motion and Positioning Control			Communication	IO & Expansion

MS/MU

General Motion



MS: Advanced Local I/O High-Speed
 MU: Local I/O

Basic LD 0.8 nS	PLC + Motion Dual CPU	EtherCAT Motion 16 Axes	MS Pulse MU 8 Axes 4 Axes	Ethernet	32 DIO
Total Program Memory 3 MB	MS E-Cam MU 3 Axes 6 Axes	Flying Saw Rotary cut	Motion Sync	EtherCAT	2 AI
MS DIO MU 2048 512	Helical & 3D Circular interpolation	Circular interpolation	Linear interpolation	RS 485	SD slot
MS AIO MU 256 128	SAPC Single axis positioning control	ICF Interrupt constant feed	ICA Interrupt constant angle	IoT & MQTT	Type C
General	Motion and Positioning Control			Communication	IO & Expansion

MA

ADVANCED



Advanced Local I/O High-Speed

Basic LD 0.8 nS	PLC + Motion Dual CPU	EtherCAT SAPC 16 Axes	Pulse 8 Axes	Ethernet or*2	32 DIO
Total Program Memory 80 KB	E-Cam	Flying Saw Rotary cut	Motion Sync	EtherCAT	2 AI
DIO 2048	Helical & 3D Circular interpolation	Circular interpolation	Linear interpolation	RS 485	SD slot
AIO 256	SAPC Single axis positioning control	ICF Interrupt constant feed	ICA Interrupt constant angle	IoT & MQTT	Type C
General	Motion and Positioning Control			Communication	IO & Expansion

MQ

COMPACT



Local I/O Plug-in

Basic LD 0.8 nS	PLC + Motion Dual CPU	EtherCAT SAPC 16 Axes	Pulse 4 Axes*1	Ethernet or*2	32 DIO
Total Program Memory 80 KB	E-Cam	Flying Saw Rotary cut	Motion Sync	EtherCAT	2 AI
DIO 512	Helical & 3D Circular interpolation	Circular interpolation	Linear interpolation	RS 485	SD slot
AIO 128	SAPC Single axis positioning control	ICF Interrupt constant feed	ICA Interrupt constant angle	IoT & MQTT	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

The above table lists the highest-level specifications of the series. Please refer to the specification table for each single model.

*1: MQ CPU can Additional expansion 4 axes with plug-in module.

*2: The MU CPU FHB is a single-port interface that supports only local I/O expansion.

*2: MA and MQ some models Eth/EC port can switch between using Ethernet and EtherCAT.

Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

Model List

Local I/O & High-speed expansion

Digital

Local I/O expansion

Digital Input



M16X

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

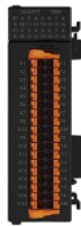
Digital Output



M16YT/J/R

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

Digital Input & Output



M1616XYT/J/R

Input : 16 points Output : 16 points
24VDC Input
T: SINK(NPN) J: SOURCE (PNP) R:RELAY
Push-in terminal blocks

Analog

Local I/O expansion

Analog Input



M04AD

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

High Resolution Analog Input



M04ADS

Input : 4 points Voltage/ Current
Resolution : 1/65535
Precision: $\pm 0.1\%$
Push-in terminal blocks



M04ADR

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

High Resolution Analog Input



M08ADS

Input : 8 points Voltage/ Current
Resolution : 1/65535
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 : $\pm 0.1\%$
Push-in terminal blocks

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

Temperature

Local I/O expansion

Temperature Input



M04TC

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

High Precision Temperature Input



M04TCR

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

Temperature Input



M04RTD

Input : 4 points
RTD : Pt100/Pt1000: (-200~850°C)
JPt100/JPt1000: (-200~600°C)
Pt100/1000 - DIN EN 60751
JPt100/1000 - JIS C 1609-1981
Resolution : 0.1°C Precision : $\pm 0.1\%$
Push-in terminal blocks

Mixed Temperature Input



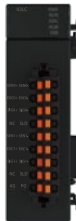
M0202TH

Input : 2 points
RTD : Pt100/Pt1000: (-200~850°C)
JPt100/JPt1000: (-200~600°C)
Pt100/1000 - DIN EN 60751
JPt100/1000 - JIS C 1609-1981
Thermocouple : K,J,E,T,R,B,N,S,mV
Resolution : 0.1°C
Precision : $\pm 0.5\%$
Push-in terminal blocks

Load cell

Local I/O expansion

Load cell input



M02LC

Input : 2 points
Resolution : 24 bits
Precision : $\pm 0.5\%$
Push-in terminal blocks

High Precision Load cell Input



M02LCR

Input : 2 points
Resolution : 24 bits
Precision : $\pm 0.01\%$
Push-in terminal blocks

Communication

High-Speed expansion *

Communication Expansion



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



MHCM22

2 ports RS232
Speed and interface:
RS232 - Max. 115200 bps
D-Sub 9-Pin



MHCM55

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

IO Bus Extension

Repeater



MRPWE-AC

Input : 100~240VAC (50/60Hz)
Output : 24VDC 2A
(External+Internal)
Power : 48W
Maximum expansion number of modules per unit: 16 modules with maximum of 3 modules added per CPU, achieving up to 64 local I/O expansion modules

Head/Tail Branch



MRGH/MRGH

Number of expansion :
Maximum expansion up to 6 rows (6 sections)
Total of 64 expansion modules
Expansion Distance:
Single section of 2 meters, total length 10 meters

* 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 local I/O modules)
MU/MQ CPU does not support High-speed modules

Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

Model List

Plug-in expansion

Digital

Plug-In expansion*

Digital Input



MB-4X

Input : 4 points
24VDC Input
Push-in terminal blocks

Digital Output



MB-4YT/J

Output : 4 points
T: SINK(NPN) J: SOURCE (PNP)
Push-in terminal blocks

High speed-Digital Input



MB-2HSC

Input : 4 points
HSC: 200KHz High speed counter
24VDC Input
Push-in terminal blocks

High speed-Digital Output



MB-2PSOT/J

Output : 4 points
HSPO: 200KHz High speed pulse output
T: SINK(NPN) J: SOURCE (PNP)
Push-in terminal blocks

Analog

Plug-In expansion*

Analog Input



MB-2ADL

Input : 2 points Voltage/ Current
Resolution : 1/4096
Precision : $\pm 1\%$
Push-in terminal blocks

Analog Output



MB-2DAL

Output : 2 points Voltage/ Current
Resolution : 1/4096
Precision : $\pm 1\%$
Push-in terminal blocks

Communication

Plug-In expansion*

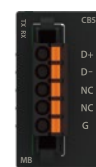
RS232



MB-CB2

1 ports RS232
Speed and interface:
RS232 - Max. 115200 bps
D-Sub 9-Pin

RS485



MB-CB5

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

Ethernet



MB-CBEQ

Coming Soon

RTC

Plug-In expansion*



MB-RTC

Accurately keep time regardless of whether the PLC is powered on or off.
It provides seven types of time data:
week, year, month, day, hour, minute, and second

* Plug-in expansion module is only supported by MQ series CPU and can maximum expand up to 2.

Performance specifications

ME

Advanced Motion



MS/MU

General Motion



MA

Advanced



MQ

Compact



General Specifications

Item	ME □□□ -1616 ◇ / MS □□□ -1616 ◇/MU □□□ -1616 ◇	MA □□□ -1616 ◇/MQ □□□ -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 ² (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	
Certifications	CE 、 UL*	

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

*Please note when placing an order.

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) DHF: Digital Hardware Filtering; AHF: Analog Hardware Filtering
External connection	2X18 pins Push-in terminal blocks

Analog Input

Item		Specification		
Input point		2ch		
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 ~ 15V Current : 0 ~ 30mA		
External connection		2X3 pins Push-in terminal blocks		

Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

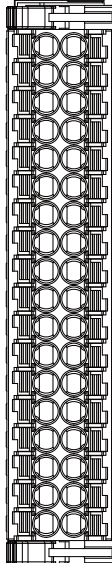
Model List

Output Specifications

Digital Output

Item	MQ/MA/MU/MS/ME Series	
output points	16	
output mode	Single-end transistor output	
Maximum output frequency	200KHz	
Working voltage	5 ~ 30VDC	
Maximum load current	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	2X18 pin Push-in terminal blocks	

I/O Definition

Definition	Code		Code	Definition
X0	1		19	Y0
X1	2		20	Y1
X2	3		21	Y2
X3	4		22	Y3
X4	5		23	Y4
X5	6		24	Y5
X6	7		25	Y6
X7	8		26	Y7
S/S0	9		27	COM
X8	10		28	Y8
X9	11		29	Y9
X10	12		30	Y10
X11	13		31	Y11
X12	14		32	Y12
X13	15		33	Y13
X14	16		34	Y14
X15	17		35	Y15
S/S1	18		36	COM

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)	

IO Bus Extension

Repeater



Item	MRPWE-AC
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)	2A
Rated output power (External+Internal)	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)
Maximum expansion of modules	One repeater module can expand to 16 local I/O expansion modules, with maximum of 3 repeaters added per CPU, achieving up to 64 local I/O expansion modules. (Including the original 16 local I/O expansion modules directly supported by the CPU)
Installation location	Can only be installed between local I/O modules, cannot be installed between CPU and high-speed modules.
Notes	Cannot be expanded to the second row, must be connected to the main section (basic section)

Head Branch



Tail Branch



Item	MRGH	MRGT
Number of expansion	It can be expanded up to 6 rows (6 sections) with a total of 64 local IO expansion modules.	
Maximum Expansion Distance	Single section of 2 meters, total length 10 meters (Used with MFB20M-120 cable)	
Installation Location	It can only be installed to the right of the power module, not in the main section, and must be placed in the expansion section (from the second row onward). There is only one port on the front, so it cannot be directly daisy-chained to the next row's MRGH. To connect to the next row, an additional MRGT module is required.	It can only be placed in the RACK (entire section) at the end of a row, specifically to the left of the end module(MRE). For each additional expansion section (next row), an MRGH module must be added.
Power expansion	The left side must be connected to a power module or supplied with 24V from an external power source to provide power for the expansion modules in this section.	It does not include power expansion, and a power module cannot be connected to the left side to expand internal power.
Notes	Requires the use of MFB20M-120 dedicated connection cable and includes one MRE end module.	Requires the use of MFB20M-120 dedicated connection cable

Performance specifications

Specification			ME3C6	ME2C5	ME2C4	ME2C3	MS2C6	MS2C5	MS2C4	MU3C6	MU3C5	MU3C4	MU3C3	MU3C2 ^{*7}	
Programming language			LD / ST / FB / STP / MotionFlow												
Instruction execution speed	LD Instruction		0.0008 uS/ LD (0.8nS/LD)												
	MOV Instruction		0.0075 uS/ LD (7.5nS / MOV)												
Maximum I/O	DIO		2048	2048	1024	1024	2048	2048	1024	512	512	512	512	512	
	AIO		256	256	128	128	256	256	128	128	128	128	128	128	
Maximum Expansion Modules	Local I/O + High-speed		64 units (with the use of I/O Bus Extension module)												
	High-speed Expansion		6 units (need to be installed between CPU and Local I/O module)							-	-	-	-	-	
	Advanced Expansion		●	●	●	●	●	●	●	-	-	-	-	-	
	Plug-in Expansion		-	-	-	-	-	-	-	-	-	-	-	-	
Program Memory	PLC		80KB	80KB	80KB	80KB	80KB	80KB	80KB	80KB	80KB	80KB	80KB	80KB	
	Motion		3 MB	1.5 MB	1.1 MB	742 KB	3 MB	1.5 MB	1.1 MB	1.5MB	1.5MB	1.5MB	1.5MB	1.5MB	
Memory card ^{*5} Dedicated Industrial Grade Micro-SD Card	Project & Register Data Backup and Restore		Support project and OS update with memory card												
	Data Logging		●	●	●	●	●	●	●	●	●	-	-	-	
Built-in digital input and output			Input 16 points 、 Output 16 points												
Built-in analog input			2ch 12bits							2ch 12bits					
Built-in analog output			Optional selection (PWMDA x1 only in Y0)												
Communication Interface	ETHERNET	Interface	1 Port 10/100 Base-T												
		Modbus / User-Defined	Master/Slave												
	EtherCAT		1 Port												
	RS-485		2 ports 、 Support Master/Slave 、 Communication speed 4.8K ~ 921.6Kbps												
	Maximum serial ports		14 (2 Built-in + 12 Expansion)							2 Built-in					
	USB		1 port 、 USB Type C (USB 2.0)												
	IoT expansion ^{*4}			MQTT 、 FATEK iMonitor / iAccess											
Motion Control	Number of control axes		24 axes	22 axes	18 axes	13 axes	24 axes	22 axes	18 axes	20 axes	17 axes	9 axes	9 axes	7 axes	
	High-Speed Pulse Output	Axes	8 axes	8 axes	8 axes	8 axes	8 axes	8 axes	8 axes	4 axes	4 axes	2 axes	2 axes	2 axes	
		Output frequency	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	200KHz	
		Pulse output mode	3 Modes (U/D 、 P/R 、 A/B)							1 Mode (P/R)					
		Linear Interpolation	●	●	●	●	●	●	●	●	●	●	●	●	
		Circular Interpolation	●	●	●	●	●	●	●	●	●	●	●	●	
		ICF/ICA ^{*2}	●	●	●	●	●	●	●	●	●	●	●	●	
		EtherCAT	Number of axis (A+B+C)		16	14	10	5	16	14	10	16	13	7	7
	Real/Virtual axes(A)		16	12	8	4	16	12	8	16	12	6	6	4	
	Additional Virtual axes (B)		0	2	2	1	0	2	2	0	1	1	1	1	
	Additional SAPC ^{*1} axes on EN/EC port (C)		-	-	-	-	-	-	-	-	-	-	-	-	
	Linear Interpolation		●	●	●	●	●	●	●	●	●	●	●	●	
	Circular Interpolation		●	●	●	●	●	●	●	●	●	●	●	●	
	ICF/ICA ^{*2}		●	●	●	●	●	●	●	●	●	●	●	●	
	3D circular/Helical Interpolation		●	●	●	●	-	-	-	-	-	-	-	-	
	E-cam (Fly-saw/Rotary-cut)		16	12	8	4	3	3	2	6	4	4	3	2	
High-speed counter 200KHz ^{*3}			16 points (8 channel)				16 points (8 channel)			6 points(3 channel)		4 points(2 channel)			
High-speed Pulse output			16 points(8 axes)				16 points(8 axes)			8 points(4 axes)		4 points(2 axes)			
High-speed timer 0.1mS			1 (16-bit) , 4 (32-bit)												
Built-in RTC			sec,min,hour,day,month,year,week												
Data retentive	Program and Data		Non-volatile memory (no battery required)												
	Calendar		Battery												

^{*1}: SAPC (single axis positioning control) . Eth/EC ports on MA/MQ some models can be switched to support Ethernet/EtherCAT.

^{*2}: ICF (interrupt constant feed) , ICA(interrupt constant angle)

^{*3}: ME/MS/MU models, half of the available channels are reserved for Motion control

^{*4}: CPU built-in support for MQTT and iMonitor functions, while iAccess will be supported through advanced expansion (planned support in 2025). iMonitor and iAccess services must be activated using a license key

^{*5}: Only supports the MFM06 dedicated SD memory card (planned for support in 2026)

^{*6}: Expected future support

^{*7}: MU3C2 consolidates the majority of functions from MS2C3 / MS1C2 / MS1C1

Specification			MU2C6	MU2C4	MA1I4	MA1N3	MA1N0	MQ2M6	MQ2M3	MQ2M1	MQ2M0	
Programming language			LD / ST / FB / STP / MotionFlow		LD / ST / FB / STP							
Instruction execution speed	LD Instruction		0.0008 uS/ LD (0.8nS/LD)									
	MOV Instruction		0.0075 uS/ LD (7.5nS / MOV)									
Maximum I/O	DIO		512	512	2048	1024	1024	512	512	512	512	
	AIO		128	128	256	128	128	128	128	128	128	
Maximum Expansion Modules	Local I/O + High-speed		64 units (with the use of I/O Bus Extension module)									
	High-speed Expansion		－	－	6 units (need to be installed between CPU and Local I/O module)			－	－	－	－	
	Advanced Expansion		－	－	●	●	●	－	－	－	－	
	Plug-in Expansion		－	－	－	－	－	2 Sets				
Program Memory	PLC		80KB	80KB	80KB	80KB	80KB	80KB	80KB	80KB	80KB	
	Motion		1.5MB	1.5MB	－	－	－	－	－	－	－	
Memory card *5 Dedicated Industrial Grade Micro-SD Card	Project & Register Data Backup and Restore		Support project and OS update with memory card									
	Data Logging		－	－	●	●	－	●	－	－	－	
Built-in digital input and output			Input 16 points 、 Output 16 points									
Built-in analog input			2ch 12bits		－	－	－	－	－	－	－	
Built-in analog output			Optional selection (PWMDA x1 only in Y0)									
Communication Interface	ETHERNET	Interface	1 Port 10/100 Base-T									
		Modbus / User-Defined	Master/Slave									
	EtherCAT		1 Port		1 Port (Eth/EC port shared with Ethernet)		－	1 Port (Eth/EC port shared with Ethernet)	－	－	－	
	RS-485		2 ports 、 Support Master/Slave 、 Communication speed 4.8K ～ 921.6Kbps									
	Maximum serial ports		2 Built-in		14 (2 Built-in + 12 Expansion)			4 (2 Built-in + 2 Plug-in)				
	USB		1 port 、 USB Type C (USB 2.0)									
	IoT expansion *4			MQTT 、 FATEK iMonitor / iAccess								
Motion Control	Number of control axes		18 axes	10 axes	24 axes	12 axes	－	20 axes	4 axes	2 axes	－	
	High-Speed Pulse Output	Axes	2 axes	2 axes	8 axes	4 axes	－	4 axes Can expand up to 8 axes	4 axes Can expand up to 8 axes	2 axes Can expand up to 6 axes	－	
		Output frequency	200KHz	200KHz	200KHz	200KHz	－	200KHz	200KHz	200KHz	－	
		Pulse output mode	1 Mode (P/R)			3 Modes (U/D 、 P/R 、 A/B)						
		Linear Interpolation	●	●	●	●	－	●	●	●	－	
		Circular Interpolation	●	●	●	－	－	●	－	－	－	
		ICF/ICA*2	●	●	●	●	－	●	●	●	－	
	EtherCAT	Number of axis (A+B+C)		16	8	16	8	－	16	－	－	－
		Real/Virtual axes(A)		16	8	－	－	－	－	－	－	－
		Additional Virtual axes (B)		－	－	－	－	－	－	－	－	－
		Additional SAPC *1 axes on EN/EC port (C)		－	－	16*6	8*6	－	16	－	－	－
		Linear Interpolation		●	●	－	－	－	－	－	－	－
		Circular Interpolation		●	●	－	－	－	－	－	－	－
		ICF/ICA*2		－	－	－	－	－	－	－	－	－
		3D circular/Helical Interpolation		－	－	－	－	－	－	－	－	－
E-cam (Fly-saw/Rotary-cut)		－	－	－	－	－	－	－	－	－		
High-speed counter 200KHz *3			4 points(2 channel)		8 points (4 channel)		－	8 points (4 channel) Can expand up to 8 channel		4 points (2 channel) Can expand up to 6 channel	－	
High-speed Pulse output			4 points(2 axes)		16 points (8 axes)	8 points (4 axes)	－	8 points(4 axes) Can expand up to 8 axes		4 points (2 axes) Can expand up to 6 axes	－	
High-speed timer 0.1mS			1 (16-bit) , 4 (32-bit)									
Built-in RTC			sec,min,hour,day,month,year,week					－ (Can Expandable through by MB-RTC)				
Data retentive	Program and Data		Non-volatile memory (no battery required)									
	Calendar		Battery									

Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

Model List

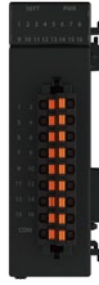
Digital Module

Local I/O

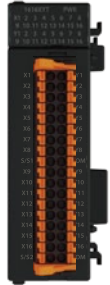
Digital Input



Digital Output



Digital Input & Output



Item	M16X
Input points	16
Input type	24VDC single-end input
Maximum input frequency	Medium to Low speed 1kHz
Input signal voltage	24VDC $\pm 10\%$
Threshold current	ON > 4mA
	OFF < 1.5mA
Maximum input current	7.6mA
Input resistance	5.6 k Ω
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(0.47ms)
External connection	18 pins Push-in terminal blocks

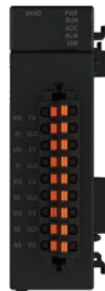
Item	M16YT/J	M16YR
Output points	16	16
Output type	T: Transistor SINK(NPN) J: Transistor SOURCE(PNP)	Wiring of relay single-end output
Maximum output frequency	Medium to Low speed 1kHz	ON/OFF
Working voltage	5~30VDC	<250VAC, 30VDC
Maximum load current	Resistive 0.5A/single 4A/Common	2A/Single, 8A/Common 80VA(AC)/24VA(DC)
	Inductive	
Maximum voltage drop/conducting resistance	2.2V	0.06V(first time)
Minimum load	—	2mA/DC
Leakage current	< 0.1mA/30VDC	—
Maximum output delay time	ON > OFF	< 10 μ S
	OFF > ON	< 40 μ S
Isolation type	Optical isolation, 500VAC, 1 min	Electromagnetic isolation, 500VAC, 1 min
SINK / SOURCE Wiring	Selected based on the model cannot be changed	Polarity-free components, configurable as either SINK or SOURCE output.
External connection	18 pins Push-in terminal blocks	

Item	M166XYT/J	M166XYR
Input	Input points	16
	Input type	24VDC single-end input
	Maximum input frequency	Medium to Low speed 1kHz
	Input signal voltage	24VDC $\pm 10\%$
	Threshold current	ON > 4mA
		OFF < 1.5mA
	Maximum input current	7.6mA
	Input resistance	5.6 k Ω
	Common method	16 points / 4 common(S/S)
	Output points	16
Output	Output type	Transistor NPN(T)/PNP(J)
	Maximum output frequency	Medium to Low speed 1kHz
	Working voltage	5~30VDC
	Maximum voltage drop/conducting resistance	2.2V
	Leakage current	< 0.1mA/30VDC
	Maximum output delay time	ON > OFF < 10 μ S
		OFF > ON < 40 μ S
	Maximum load current	Resistive 0.5A/single 4A/Common
		Inductive 80VA(AC)/24VA(DC)
	SINK / SOURCE Wiring	Selected based on the model cannot be changed
External connection	36 pins Push-in terminal blocks	

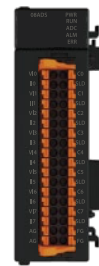
Analog Module

Local I/O

Analog Input



High Resolution Analog Input



Item	M04AD			M04ADS			M04ADR			M08ADS			
Input points	4			4			4						
Analog Input characteristics and resolution	Voltage	Input range	Value	Resolution	Input range	Value	Resolution	Input range	Value	Resolution	Input range	Value	Resolution
		-10~+10V	-8192~8191	1.2mV	-10~+10V	-32768~32767	0.3mV	-10~+10V	-80000~80000	0.125mV	-10~+10V	-32768~32767	0.3mV
		-5~+5V	-8192~8191	0.6mV	-5~+5V	-32768~32767	0.15mV	-5~+5V	-80000~80000	0.0625mV	-5~+5V	-32768~32767	0.15mV
		0~10V	0~16383	0.6mV	0~10V	0~65535	0.15mV	0~10V	0~80000	0.125mV	0~10V	0~65535	0.15mV
		0~5V	0~16383	0.3mV	0~5V	0~65535	0.075mV	0~5V	0~80000	0.0625mV	0~5V	0~65535	0.075mV
		1~5V	0~16383	0.24mV	1~5V	0~65535	0.06mV	1~5V	0~80000	0.05mV	1~5V	0~65535	0.06mV
	Current	Input range	Value	Resolution	Input range	Value	Resolution	Input range	Value	Resolution	Input range	Value	Resolution
		-20mA~+20mA	-8192~8191	2.4uA	-20mA~+20mA	-32768~32767	0.6uA	-20mA~+20mA	-80000~80000	0.25uA	-20mA~+20mA	-32768~32767	0.6uA
		0~20mA	0~16383	1.2uA	0~20mA	0~65535	0.3uA	0~20mA	0~80000	0.25uA	0~20mA	0~65535	0.3uA
		4~20mA	0~16383	0.97uA	4~20mA	0~65535	0.24uA	4~20mA	0~80000	0.2uA	4~20mA	0~65535	0.24uA
Conversion precision	Voltage	±0.1% (25° C±5° C) ±0.2% (0 ~ 55° C)					±0.1% (25° C±5° C) ±0.2% (0 ~ 55° C)					±0.1% (25° C±5° C) ±0.2% (0 ~ 55° C)	
	Current	±0.2% (25° C±5° C) ±0.4% (0 ~ 55° C)					±0.1% (25° C±5° C) ±0.2% (0 ~ 55° C)					±0.1% (25° C±5° C) ±0.2% (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			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.			Medium speed : 500us/Ch Low speed : 1ms/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										36 pins Push-in terminal blocks		

Analog Module

Local I/O

Analog Input



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
		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
	Current	Output range	Value	Resolution	Output range	Value	Resolution
		0~20mA	0~16383	1.22μA	0~20mA	0~27000	0.74μA
		4~20mA	0~16383	0.97μA	4~20mA	0~27000	0.592μA
Conversion precision	Voltage	±0.2% (25°C ±5°C) ±0.5% (0~55°C)			±0.05% (25°C ±5°C) ±0.3% (0~55°C)		
	Current	±0.2% (25°C ±5°C) ±0.5% (0~55°C)			±0.05% (25°C ±5°C) ±0.3% (0~55°C)		
Conversion speed		1ms/ch			0.5ms/ch		
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		
		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 Input & Output



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
	Current	1~5V	0~16383	0.2mV	1~5V	0~16383	0.2mV
		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	4~20mA	0~16383	0.97uA
Conversion precision	Voltage	$\pm 0.1\%$ (25° C $\pm 5^{\circ}$ C) $\pm 0.2\%$ (0 ~ 55° C)			$\pm 0.2\%$ (25° C $\pm 5^{\circ}$ C) $\pm 0.5\%$ (0~55° C)		
	Current	$\pm 0.2\%$ (25° C $\pm 5^{\circ}$ C) $\pm 0.4\%$ (0 ~ 55° C)			$\pm 0.2\%$ (25° C $\pm 5^{\circ}$ C) $\pm 0.5\%$ (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					

Temperature Module

Local I/O

Temperature input



Item	M04TC	M04TCR	M04RTD	M0202TH	
Input points	4 TC	4 TC	4RTD	2 RTD	2 TC
Sensor	Thermocouple K,J,E,T,R,B,N,S,mV		Pt100/Pt1000: (-200~850°C) JPt1000/JPt1000:(-200~600°C) Pt100(1000) - DIN EN60751 JPt100(1000) - JIS 1609-1981		Thermocouple K,J,E,T,R,B,N,S,mV
Resolution	0.1°C	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)	±0.1% (25° C±5°C) ±0.5% (0 ~ 55°C)		±0.5% (25° C±5°C) ±1% (0 ~ 55°C)
Sampling period	High speed : 200ms/ch General : 400ms/ch	High speed : 100ms/ch General : 200ms/ch	100ms/ch		High speed : 200ms/ch General : 400ms/ch
PID Control period	Adjustable computation interval: 0.1 to 30 seconds (TS), plus an additional scan cycle.				
Control Method	PID control 、ON/OFF control				
Calibration Method	PID auto-tuning mode				
Isolation method	Between analog input terminals and CPU : Isolation (Digital Isolator) Analog input channels: Insulated (Optocoupler isolation)				
External connection	18 Pin Push-in terminal blocks				

Load cell Module

Local I/O

Load cell input



Item	M02LC	M02LCR
Input points	2	2
A/D Converter Utilized	24 bits	24 bits
Conversion precision	$\pm 0.5\%$ (25°C $\pm 5^\circ\text{C}$) $\pm 1\%$ (0 ~ 55°C)	$\pm 0.01\%$ (25°C $\pm 5^\circ\text{C}$) $\pm 0.4\%$ (0 ~ 55°C)
Sampling period	High speed: 2 ms/ch (for single-point use) General: 10ms/ch	General: 10ms/ch
Level of sensitivity	$\pm 1.0\text{mV/V}$ 、 $\pm 2.0\text{mV/V}$ 、 $\pm 3.0\text{mV/V}$ 、 $\pm 4.0\text{mV/V}$	
Zero drift	0.2uV/°C	
Gain drift	$\pm 10\text{ppm/}^\circ\text{C}$	
Excitation Voltage	5VDC $\pm 5\%$, 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	

Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

Model List

Communication Module

High-Speed*

Serial



Item	MHCM25	MHCM22	MHCM55
Communication standard	1 port RS485 1 port RS232	2 port RS232	2 port RS485
Connection interface	RS485: 2X2 pins Push-in terminal blocks RS232: D-Sub 9-Pin	RS232: D-Sub 9-Pin	2X2 pins Push-in terminal blocks
Maximum number of connections	RS485: 32 slave RS232: 1 slave	RS232: 1 slave	RS485: 32 slave

Digital Plug-in

Plug-in*

Digital Input



Item	MB-4X	MB-2HSC
Input points	4	4
HSC	—	○
Channel	—	2
Input type	24VDC single-end input	
Maximum input frequency	0.47mS	High speed 200kHz
Input signal voltage	24VDC ± 10%	
Threshold current	ON	> 4mA
	OFF	< 1.5mA < 2mA
Maximum input current	7.6mA(DC24V)	6mA(DC24V)
Input resistance	5.6 kΩ	3.3 kΩ
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(0.47ms)	DHF(0 ~ 15ms) + AHF(0.47us)
External connection	5 pins Push-in terminal blocks	

Digital Output



Item	MB-4YT/J	MB-2PSOT/J
Output points	4	4
HSPO	—	○
Channel	—	2
Output type	T: Transistor SINK(NPN) J: Transistor SOURCE(PNP)	
Maximum output frequency	—	High speed 200kHz
Working voltage	5~30VDC	
Maximum load current	Resistive	0.1A
	Inductive	0.1A
Maximum voltage drop/ conducting resistance	2.2V	0.6V
Minimum load	—	—
Leakage current	< 0.1mA/30VDC	
Maximum output delay time	ON > OFF	15μS < 2μS
	OFF > ON	30μS < 2μS
Isolation type	Optical isolation, 500VAC, 1 minute	
External connection	5 pins Push-in terminal blocks	

Analog Plug-in

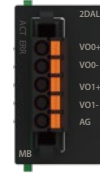
Plug-in*

Analog Input



Item		MB-2ADL		
Input points		2		
Analog Input characteristics and resolution	Voltage	Input range	Value	Resolution
		0~10V	0~4096	2.44mV
	Current	Input range	Value	Resolution
		0~20mA	0~4096	4.88uA
Conversion precision		±1%		
Conversion speed		Each scan update		
Input resistance		Voltage : 100KΩ Current : 125Ω		
Hardware maximum input		Voltage : - 15V ~+ 15V Current : 30mA		
External connection		Push-in terminal blocks		

Analog Output

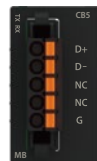


Item		MB-2DAL		
Output points		2		
Analog output characteristics and resolution	Voltage	Output range	Value	Resolution
		0~10V	0~4096	2.44mV
		0~5V	0~4096	1.22mV
	Current	Output range	Value	Resolution
		0~20mA	0~4096	4.88uA
		0~10mA	0~4096	2.44uA
Conversion precision		±1%		
Conversion speed		Each scan update		
Minimum load resistance		Voltage : 500Ω Current : 0Ω		
Maximum load resistance		Voltage : 1MΩ Current : 500Ω		
External connection		Push-in terminal blocks		

Communication Plug-in

Plug-in*

Serial



Item	MB-CB2	MB-CB5
Communication standard	1 port RS232	1 port RS485
Connection interface	D-Sub 9-Pin	5 pin Push-in terminal blocks
Maximum number of connections	1 slave	32 slave

RTC Plug-in

Plug-in*



Item	MB-RTC
Function	This module can accurately keep time regardless of whether the PLC is powered on or off. It provides seven types of time data: week, year, month, day, hour, minute, and second

* Plug-in expansion is only supported by MQ series CPUs, expanding up to 2 Plug-ins

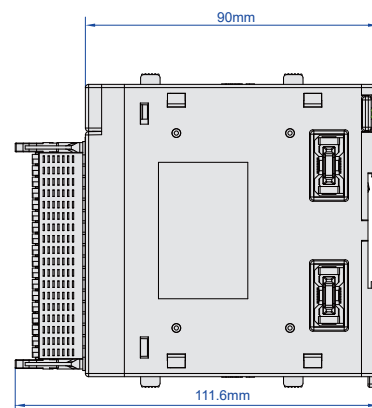
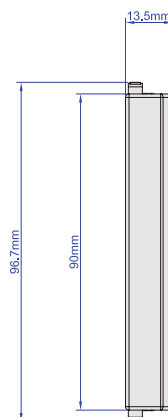
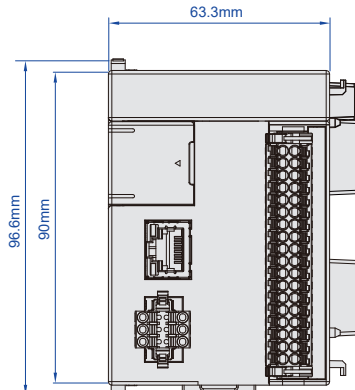
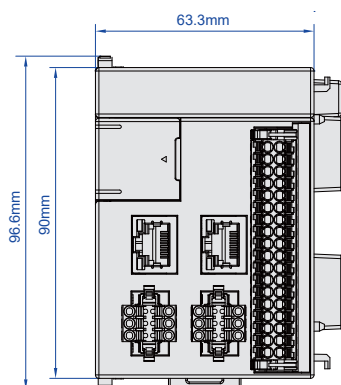
Dimensions

CPU

ME / MS

Advanced Motion

General Motion



Advanced

Local I/O

High-Speed

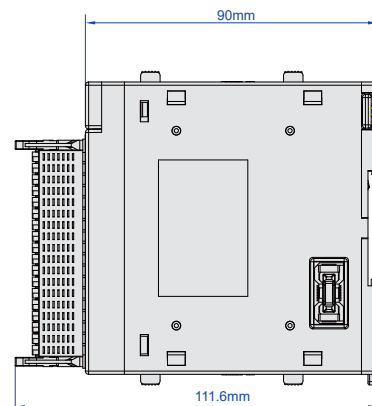
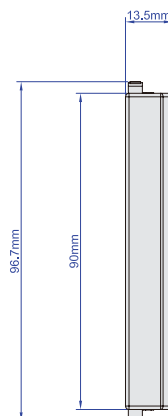
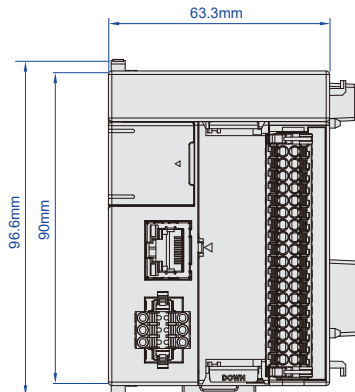
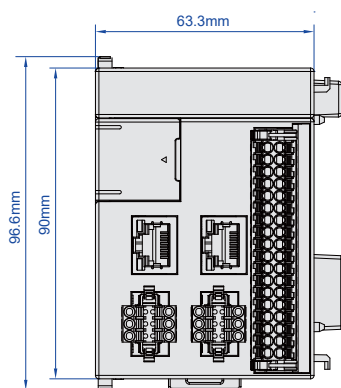
Advanced

Local I/O

High-Speed

MU

General Motion



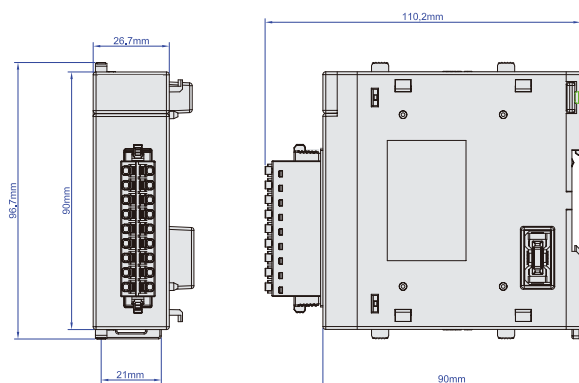
Local I/O

Local I/O

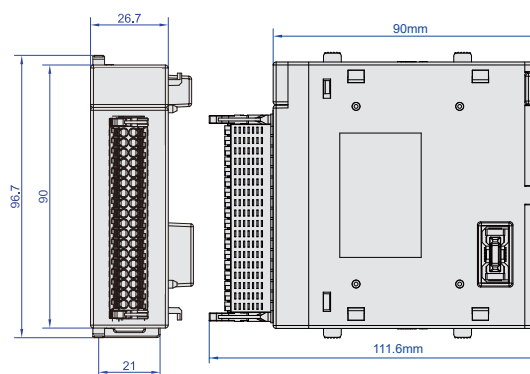
Plug-in

Digital / Analog Module

M16X / M16Y T/J/R

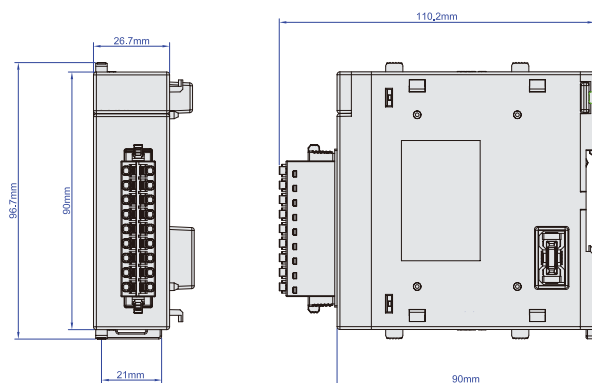


M1616XY T/J/R / M08ADS



Analog / Temperature / Load cell Module

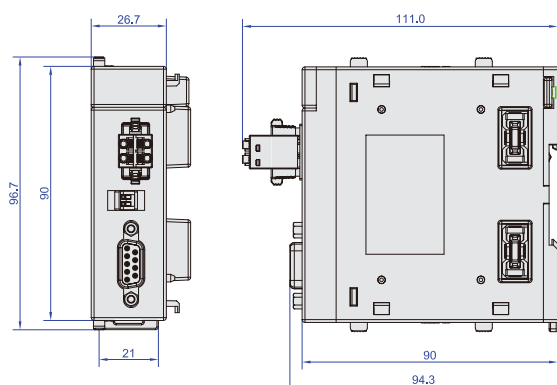
M04AD S/R / M04DA R / M0202AH / M04TC R / M04RTD / M0202TH / M02LC R



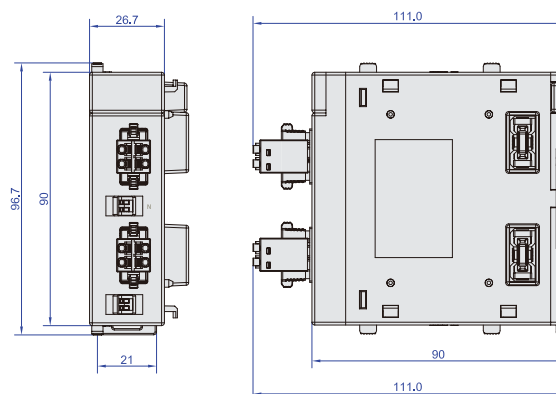
Communication Module

High-Speed*

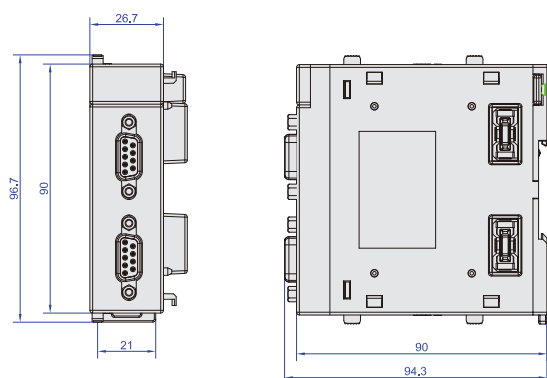
MHCM25



MHCM55



MHCM22

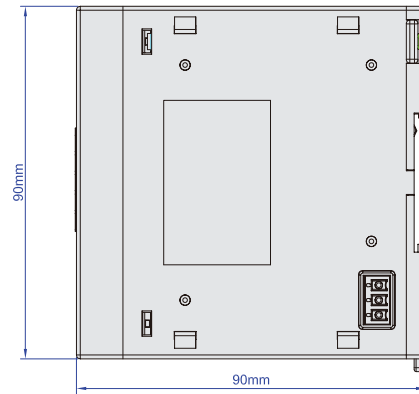
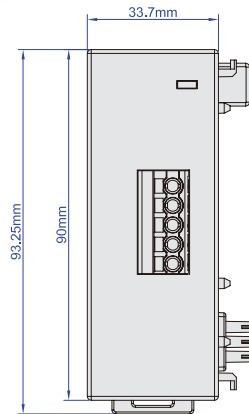


*Supports up to 6 high-speed modules, which must be installed in the first 6 expansion slots to the right of the CPU (between the CPU and local I/O expansion). MQ series CPUs do not support high-speed expansion

Dimensions

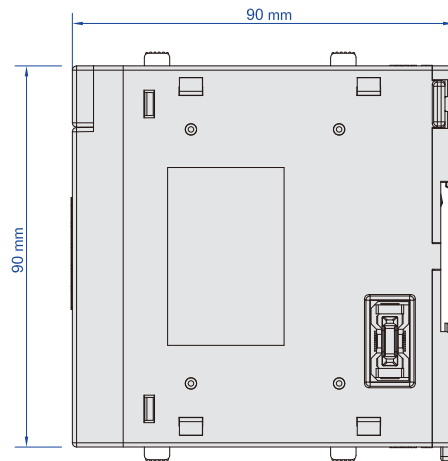
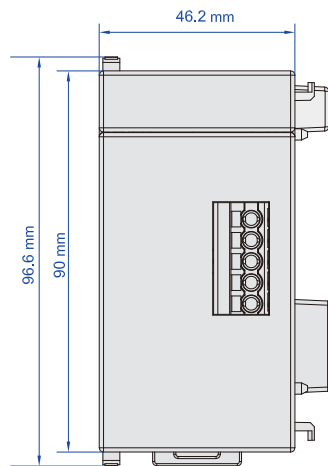
Power Supply Module

MPA024/48-24

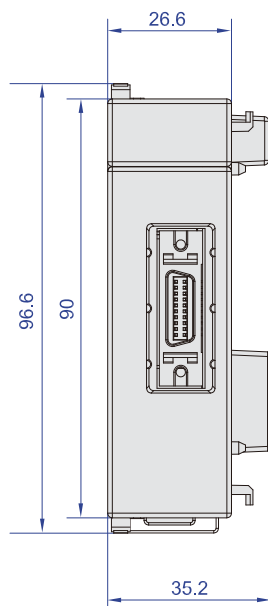


IO Bus Extension

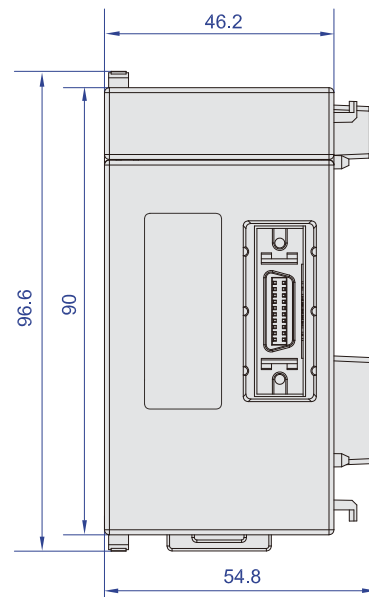
MRPWE-AC



MRGT



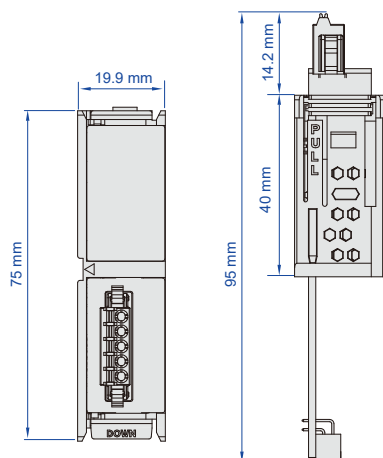
MRGH



Digital / Analog Plug-in Module

Plug-in*

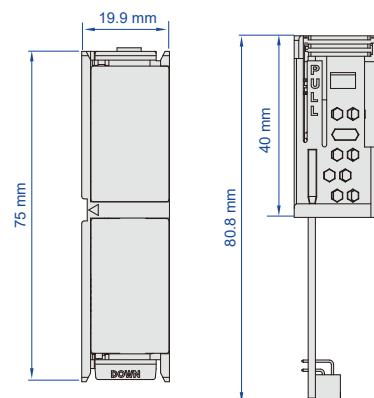
MB-4X
MB-2HSC
MB-4YT/J
MB-2PSOT/J
MB-2ADL
MB-2DAL



RTC Plug-in Module

Plug-in*

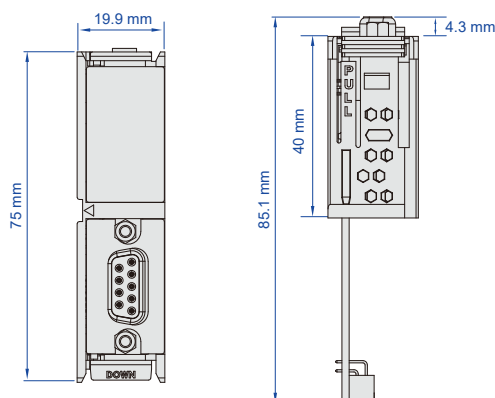
MB-RTC



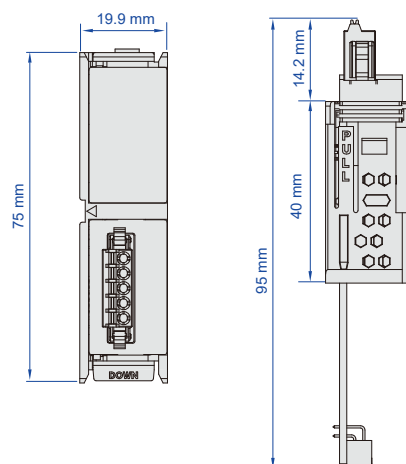
Communication Plug-in Module

Plug-in*

MB-CB2



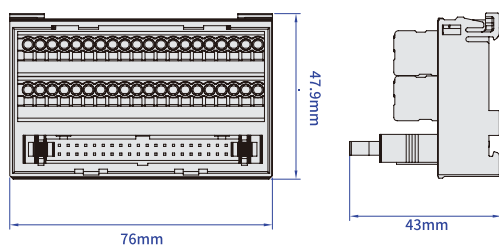
MB-CB5



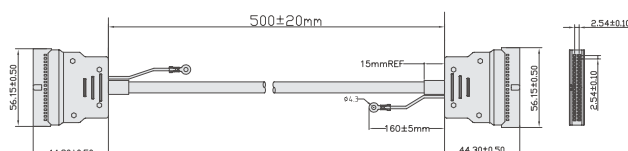
* Plug-in expansion is only supported by MQ series CPUs, expanding up to 2 Plug-ins

Peripheral and Accessory

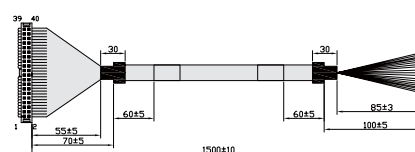
MFT40T



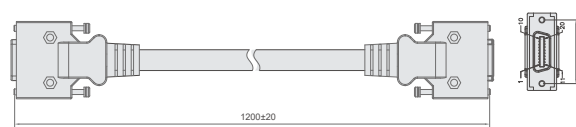
MFW40I-50



MFW40N-150



MFB20M-120



Hardware

IoT

Motion

Software

Line Up

Specification

Dimension

Model List

Model List

Category		Model	Maximum I/O Points		Total Program Memory		Built-in Ethernet Communication	HSC ^{*8}	HSPO ^{*8}	Motion Control ^{*9}				
			DIO	AIO	PLC	Motion				Total Axes	HSPO ^{*8} Number of axis	EtherCAT		
												Number of axis	3D circular/helical interpolation	E-CAM
Compact CPU	EtherCAT Motion Control : SAPC(Single axis positioning control) Pulse Positioning Control : SAPC、Linear/Circular Interpolation ^{*5} ICF/ICA ^{*2} Built-in I/O : Input 16 / Output 16、 Optional analog output function (PWMDA) Communication Ports : Ethernet or EtherCAT(Eth/EC) 、2 ports RS485 USB Type-C、FHB expansion bus、Micro-SD slot ^{*6} 、Run/Stop switch Supports local I/O and Plug-in expansion modules	MQ2M0-1616 ◇	512	128	80 KB	—	Master/Slave	—	—	—	—	—	—	—
	MQ2M1-1616 ◇	512	128	80 KB	—	Master/Slave	4 Points ⁺³ (2ch)	4 Points ⁺³ (2 axes)	2 axes	2 axes ⁺³	—	—	—	
	MQ2M3-1616 ◇	512	128	80 KB	—	Master/Slave	8 Points ⁺³ (4ch)	8 Points ⁺³ (4 axes)	4 axes	4 axes ⁺³	—	—	—	
	MQ2M6-1616 ◇	512	128	80 KB	—	Master/Slave	8 Points ⁺³ (4ch)	8 Points ⁺³ (4 axes)	20 axes	4 axes ⁺³	16 axes (SAPC ⁺¹)	—	—	
Advanced CPU	EtherCAT Motion Control : SAPC(Single axis positioning control) Pulse Positioning Control : SAPC、Linear/Circular Interpolation ^{*5} 、 ICF/ICA ^{*2} Built-in I/O : Input 16 / Output 16、 Optional analog output function (PWMDA) Communication Ports : Ethernet or EtherCAT(Eth/EC) 、2 ports RS485 USB Type-C、FHB expansion bus、Micro-SD slot ^{*6} 、Run/Stop switch Supports local I/O, high-speed, and advanced expansion modules	MA1N0-1616 ◇	1024	128	80 KB	—	Master/Slave	—	—	—	—	—	—	—
	MA1N3-1616 ◇	1024	128	80 KB	—	Master/Slave	8 Points (4ch)	8 Points (4 axes)	12 axes	4 axes	8 axes (SAPC ⁺¹)	—	—	
	MA1I4-1616 ◇	2048	256	80 KB	—	Master/Slave	8 Points (4ch)	16 Points (8 axes)	24 axes	8 axes	16 axes (SAPC ⁺¹)	—	—	
General Motion CPU	EtherCAT Motion Control : SAPC(Single axis positioning control) Linear/Circular Interpolation、E-CAM、ICF/ICA ^{*2} Pulse Positioning Control : SAPC、Linear/Circular Interpolation、 ICF/ICA ^{*2} Built-in I/O : Input 16 / Output 16、12-bit 2ch analog input Optional analog output function (PWMDA) Communication Ports : EtherCAT、Ethernet、2 ports RS485、 USB Type-C、FHB expansion bus、Micro-SD slot ^{*6} 、Run/Stop switch Supports local I/O, high-speed^{*7}, and advanced expansion modules^{*7}	MU2C4-1616 ◇	512	128	80 KB	1.5MB	Master/Slave	4 Points ⁺³ (2ch)	4 Points (2axes)	10 axes	2 axes	8 Real/Virtual	—	—
		MU2C6-1616 ◇	512	128	80 KB	1.5MB	Master/Slave	4 Points ⁺³ (2ch)	4 Points (2 axes)	18 axes	2 axes	16 Real/Virtual	—	—
		MU3C2-1616 ◇	512	128	80 KB	1.5MB	Master/Slave	4 Points ⁺³ (2ch)	4 Points (2axes)	7 axes	2 axes	4 Real/Virtual + 1 Virtual	—	2 axes
		MU3C3-1616 ◇	512	128	80 KB	1.5MB	Master/Slave	4 Points ⁺³ (2ch)	4 Points (2 axes)	9 axes	2 axes	6 Real/Virtual + 1 Virtual	—	3 axes
		MU3C4-1616 ◇	512	128	80 KB	1.5MB	Master/Slave	4 Points ⁺³ (2ch)	4 Points (2 axes)	9 axes	2 axes	6 Real/Virtual + 1 Virtual	—	4 axes
		MU3C5-1616 ◇	512	128	80 KB	1.5MB	Master/Slave	6 Points ⁺³ (3ch)	8 Points (4 axes)	17 axes	4 axes	12 Real/Virtual + 1 Virtual	—	4 axes
		MU3C6-1616 ◇	512	128	80 KB	1.5MB	Master/Slave	6 Points ⁺³ (3ch)	8 Points (4 axes)	20 axes	4 axes	16 Real/Virtual	—	6 axes
		MS2C4-1616 ◇	1024	128	80 KB	1.1 MB	Master/Slave	16 Points ⁺³ (8ch)	16 Points (8 axes)	18 axes	8 axes	8 Real/Virtual + 2 Virtual	—	2 axes
		MS2C5-1616 ◇	2048	256	80 KB	1.5 MB	Master/Slave	16 Points ⁺³ (8ch)	16 Points (8 axes)	22 axes	8 axes	12 Real/Virtual + 2 Virtual	—	3 axes
		MS3C6-1616 ◇	2048	256	80 KB	3 MB	Master/Slave	16 Points ⁺³ (8ch)	16 Points (8 axes)	24 axes	8 axes	16 Real/Virtual	—	3 axes
Advanced Motion CPU	EtherCAT Motion Control : SAPC(Single axis positioning control) Linear/Circular/3D Circular/Helical interpolation、E-CAM、ICF/ICA ^{*2} Pulse Positioning Control : SAPC、Linear/Circular Interpolation、 ICF/ICA ^{*2} Built-in I/O : Input 16 / Output 16、12-bit 2ch analog input Optional analog output function (PWMDA) Communication Ports : EtherCAT、Ethernet、2 ports RS485、 USB Type-C、FHB expansion bus、Micro-SD slot ^{*6} 、Run/Stop switch Supports local I/O, high-speed, and advanced expansion modules	ME2C3-1616 ◇	1024	128	80 KB	742 KB	Master/Slave	16 Points ⁺³ (8ch)	16 Points (8 axes)	13 axes	8 axes	4 Real/Virtual + 1 Virtual	●	4 axes
	ME2C4-1616 ◇	1024	128	80 KB	1.1 MB	Master/Slave	16 Points ⁺³ (8ch)	16 Points (8 axes)	18 axes	8 axes	8 Real/Virtual + 2 Virtual	●	8 axes	
	ME2C5-1616 ◇	2048	256	80 KB	1.5 MB	Master/Slave	16 Points ⁺³ (8ch)	16 Points (8 axes)	22 axes	8 axes	12 Real/Virtual + 2 Virtual	●	12 axes	
	ME3C6-1616 ◇	2048	256	80 KB	3 MB	Master/Slave	16 Points ⁺³ (8ch)	16 Points (8 axes)	24 axes	8 axes	16 Real/Virtual	●	16 axes	

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

* 1: SAPC (Single Axis Positioning Control)

* 2: ICF (interrupt constant feed), ICA(interrupt constant angle); MU2C4-1616 ◇ MU2C6-1616 ◇, does not support EtherCAT control ICF/ICA

* 3: MQ can Additional expansion 8 points (4 axes /4 channels) via Plug-in, For ME/MS/MU models half of the counting interrupts are allocated for Motion control use.

* 4: Built-in CPU support for MQTT and iMonitor; iAccess will be supported through expansion modules (expected in 2026) / iMonitor and iAccess services require activation via key

* 5: Specific models supported ; MQ2M0-1616, ◇ MQ2M1-1616, ◇ MQ2M3-1616 ◇, MA1N0-1616 ◇, MA1N3-1616 ◇, do not support Circular Interpolation

* 6: Specific models supported SD card data collection function : MQ2M6, MA1N3, MA1I4, MU3C5, MU3C6, MS2C4, MS2C5, MS3C6, ME2C3, ME2C4, ME2C5, ME3C6 (expected support in 2026)

* 7: MU CPU Not Supported high-speed, and advanced expansion modules

* 8: HSC : High-speed counter ; HSPO: High-speed pulse output

* 9: Actual Supported Functions Reference Performance Specifications Table

Category		Model	Specifications	
Local I/O Expansion	Digital I/O Module	M16X	16 points 24 VDC digital input , Push-in terminal blocks	Hardware
		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 , Push-in terminal blocks	
		M1616XYJ	16 points 24 VDC digital input , 16 points transistor SOURCE(PNP) output , Push-in terminal blocks	
		M1616XYR	16 points 24 VDC digital input , 16 points relay output , Push-in terminal blocks	
	Analog I/O Module	M04AD	4 channels , Voltage and current input , Resolution:1/16383	IoT
		M04ADS	4 channels , Voltage and current input , Resolution:1/65535	
		M04ADR	4 channels , Voltage and current input , Resolution:1/160000	
		M08ADS	8 channels , Voltage and current input , Resolution:1/65535	
		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) , Precision: $\pm 0.2\%$ ($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$)	Motion
		M04TC	4 channels , Thermocouple temperature input (K, J, T, E, R, B, N, S, mV) , Precision: $\pm 0.5\%$ ($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$)	
		M04RTD	4 channels RTD(Pt100/Pt1000, JPt100/JPt1000) , Precision: $\pm 0.1\%$ ($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$)	
		M0202TH	2 channels RTD + 2 channels thermocouple , Precision: RTD: $\pm 0.1\%$, TC: $\pm 0.5\%$ ($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$)	
	Load Cell Module	M02LCR	2 channels load cell input module , A/D Converter Utilized: 24 bits , Precision: $\pm 0.01\%$ ($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$)	Software
		M02LC	2 channels load cell input module , A/D Converter Utilized: 24 bits , Precision: $\pm 0.5\%$ ($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$)	
High-speed ^{*3}	Communication Module	MHCM25	1 port RS232 + 1 port RS485 high speed ^{*1} serial communication	Line Up
		MHCM22	2 port RS232 high speed ^{*1} serial communication	
		MHCM55	2 ports RS485 high speed ^{*1} serial communication	
I/O Bus Extension	Repeater Module	MRPWE-AC	Including the original 16 local I/O expansion modules directly supported by the CPU with maximum of 3 repeaters added per CPU, achieving up to 64 local I/O expansion modules. Input: 100~240VAC (50/60Hz) , Output: 24VDC 2A(Internal and external) , 48W	Specification
	I/O Bus Extension Module (Head)	MRGH	The head module must be used with the MRGT (tail). with a maximum of 6 rows (6 sections, racks), for a total of 64 Local I/O expansion modules.	
	I/O Bus Extension Module (Tail)	MRGT	The tail module must be used with the MRGH (head). with a maximum of 6 rows (6 sections, racks), for a total of 64 Local I/O expansion modules.	
Power Expansion Module	Power Supply Module	MPA024-24	Input: 100~240VAC (50/60Hz) , Output: 24VDC 1A(Internal and external) , 24W	Dimension
		MPA048-24	Input: 100~240VAC (50/60Hz) , Output: 24VDC 2A(Internal and external) , 48W	
Plug-in ^{*3} Expansion Module	Digital I/O Plug-in	MB-4X	4 points 24 VDC digital input , Push-in terminal blocks	Model List
		MB-2HSC	24 VDC digital input , 2 channels 200KHz HSC , Push-in terminal blocks	
		MB-4YT	4 points transistor SINK(NPN) output , Push-in terminal blocks	
		MB-4YJ	4 points transistor SOURCE(PNP) output , Push-in terminal blocks	
		MB-2PSOT	transistor SINK(NPN) output , 2 channels 200KHz HSPO , Push-in terminal blocks	
		MB-2PSQJ	transistor SOURCE(PNP) output , 2 channels 200KHz HSPO , Push-in terminal blocks	
	Analog I/O Plug-in	MB-2ADL	2 channels , Voltage and current input , Resolution:1/4096	
		MB-2DAL	2 channels , Voltage and current output , Resolution:1/4096	
	Communication Plug-in	MB-CB2	1 port RS232 Communication	
		MB-CB5	1 port RS485 Communication	
		MB-CBEQ	coming soon	
	RTC Plug-in	MB-RTC	RTC Clock Extension	
Peripheral and Accessory	Coupler Unit	MC0EN	Remote I/O Coupler (Modbus TCP and Ethernet/IP)	
	Dedicated Memory Card	MFM06	Industrial grade Micro-SD card , Data-log area: 6GB ^{*2}	
	End module	MRE	End module must be connected to the right side of the CPU module or the end of the entire row(rack) (Included within the CPU and I/O bus extension module)	
	Terminal block	MFT40T	40 pins interface module , Connection method: PID(for engineering testing purpose, not necessary)	
	High density DI/DO connection cable	MFW40I-50	High density modules connector 40pin socket, Vertical cable exit, shielded 28AWG I/O cable length 50cm Usually used with MFT40T	
		MFW40N-150	High density modules connector 40pin socket (discrete wire at one end) , Horizontal cable exit, shielded 28AWG I/O cable length 150cm	
		MFW40NS-300	High density modules connector 40pin socket (discrete wire at one end) , Vertical cable exit, 22AWG I/O cable length 300cm	
	I/O Bus extension module connection cable	MFB20M-120	Connection between I/O Bus extension modules MRGT and MRGH with a 20-pin MDR connector, cable length 120 cm	

*1 ME/MS/MA CPUs support high-speed expansion modules, MU/MQ CPUs and I/O Couplers do not.

A single CPU can support up to 6 high-speed expansion modules, which must be installed in the first 6 expansion slots on the right side of the CPU (between the CPU and local I/O expansion).

*2 The M series PLC only supports the MFM06 dedicated memory card

*3 MQ CPUs support Plug-in expansion modules, ME/MS/MU/MA CPUs do not.