

MELSEC Consolidated Catalog



Programmable Controller

MELSEC

designed with automation in mind

GLOBAL IMPACT OF MITSUBISHI ELECTRIC



Through Mitsubishi Electric's vision, "Changes for the Better" are possible for a brighter future.

Changes for the Better

We bring together the best minds to create the best technologies. At Mitsubishi Electric, we understand that technology is the driving force of change in our lives. By bringing greater comfort to daily life, maximizing the efficiency of businesses and keeping things running across society, we integrate technology and innovation to bring changes for the better.

Mitsubishi Electric is involved in many areas including the following

Energy and Electric Systems

A wide range of power and electrical products from generators to large-scale displays.

Electronic Devices

A wide portfolio of cutting-edge semiconductor devices for systems and products.

Home Appliance

Dependable consumer products like air conditioners and home entertainment systems.

Information and Communication Systems

Commercial and consumer-centric equipment, products and systems.

Industrial Automation Systems

Maximizing productivity and efficiency with cutting-edge automation technology.

Committed to ever higher customer satisfaction

Mitsubishi Electric is a global leader in the research, manufacturing and marketing of electrical and electronic equipment used in areas such as communications, consumer electronics, industrial technology, energy and transportation. Within this, the industrial automation business has grown significantly since the first induction motor was manufactured over 90 years ago and has closely followed the automation industry in Japan, Asia, and beyond. Mitsubishi Electric industrial automation boasts a wide-range of product areas such as production control, drives, and mechatronics that are used in various industries. In addition, Mitsubishi Electric offers e&eco-F@ctory and iQ Platform, leveraging its total industrial automation solution portfolio.



Intelligence in everything automated—MELSEC

The MELSEC (Mitsubishi ELectric SEquence Control) brand is well known in the automation industry for robust quality and excellent performance that realizes a reduction in total cost of ownership (TCO). The MELSEC lineup consists of various products, the flagship products being the MELSEC-Q Series and recently introduced MELSEC iQ-R Series. These high-end programmable controllers, mainly used for controlling processes in manufacturing lines and advanced machines are complimented by small- to medium-sized controllers like the MELSEC-L Series, MELSEC-F Series and the new MELSEC iQ-F Series, which are commonly utilized for cell manufacturing and stand-alone applications. Over the years, a main characteristic of the MELSEC Series has been seamless connection, from the sensor level all the way through to Enterprise covering all aspects of manufacturing.

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Maximizing productivity and reducing costs

e-F@ctory is the Mitsubishi Electric solution for improving the performance of any manufacturing enterprise by enhancing productivity, and reducing the maintenance and operations costs together with seamless information flow throughout the plant.

e-F@ctory helps to reduce the overall TCO* and is achieved in the following four areas:

*TCO: Total Cost of Ownership

Reduce energy costs

Factory Energy Management Systems (FEMS) - e&eco-F@ctory

Modern manufacturing depends much on reducing energy costs as a way to realize an efficient manufacturing enterprise. e-F@ctory supports this by allowing visualization of real-time energy usage, helping to reduce the overall energy consumption.



Integrate FA and IT systems at low cost

Connecting enterprise with the shop floor

e-F@ctory solutions provide direct connectivity from the shop floor to enterprise, such as Manufacturing Execution System (MES) without requiring a gateway computer. This enables leaner operations, improved yield, and efficient management of the supply chain.

Reduce development, production, and maintenance costs

iQ Platform

The iQ Platform minimizes costs at all phases of the automation life cycle by improving development times, enhancing productivity, reducing maintenance costs, and making information more easily accessible. Integration is at the heart of the iQ Platform, with a highly intelligent controller platform as the core, combined with a seamless communication network and an integrated engineering environment.



Reduce setup and maintenance costs

iQ Sensor Solution

Easily setup and maintain various types of sensors. Maintenance and design costs can be reduced as compatible iQSS partner sensors can be managed together.





For further details, please refer to the "Mitsubishi FA Integrated Solution e-F@ctory", "iQ Platform Integrated Automation Concept", and "iQ Sensor Solution" catalogs.

L(NA)16012E, L(NA)08340ENG, L(NA)16029ENG

across the entire enterprise

e-F@ctory

IT system

FA-IT
Information collaborating product group

ERP
MES
Production planning, cost control, Stock control, yield control, Process control, quality control ...

Information Network
Ethernet

Electricity equipment controller network
B/NET

MES interface product group
Controller network

Information link

Production facility

Information network
Ethernet

Field network
CC-Link IE Field

Wire-saving network

Safety field network
CC-Link Safety

Servo network
SSCNET III/H

MELDAS Numeric control unit

MELLASER Laser processing system

DIAX Electrical discharge machine

MELSEC-Q Programmable controller

MELSEC-L Programmable controller

MELSEC-Q Programmable controller

MELSEC Safety Programmable controller

MELSEC iQ-R Motion CPU

Geared motor

FR-E700EX/MM-GKR INVERTER

MELFA Robot

MELSEC-F Programmable controller

MELSEC iQ-F Programmable controller

CC-Link CC-Link IE Field target product

Wire-saving network

Safety remote I/O

MR-J4

Transformer

MDU breaker

Power measurement module

EcoMonitorPro Energy measurement module

Electronic multi-indicator

INVERTER-IPM motor

AnyWireASLINK mapping sensor

iQSS Sensor Solution

iQ Platform

Best-in-class solutions across the ecosystem

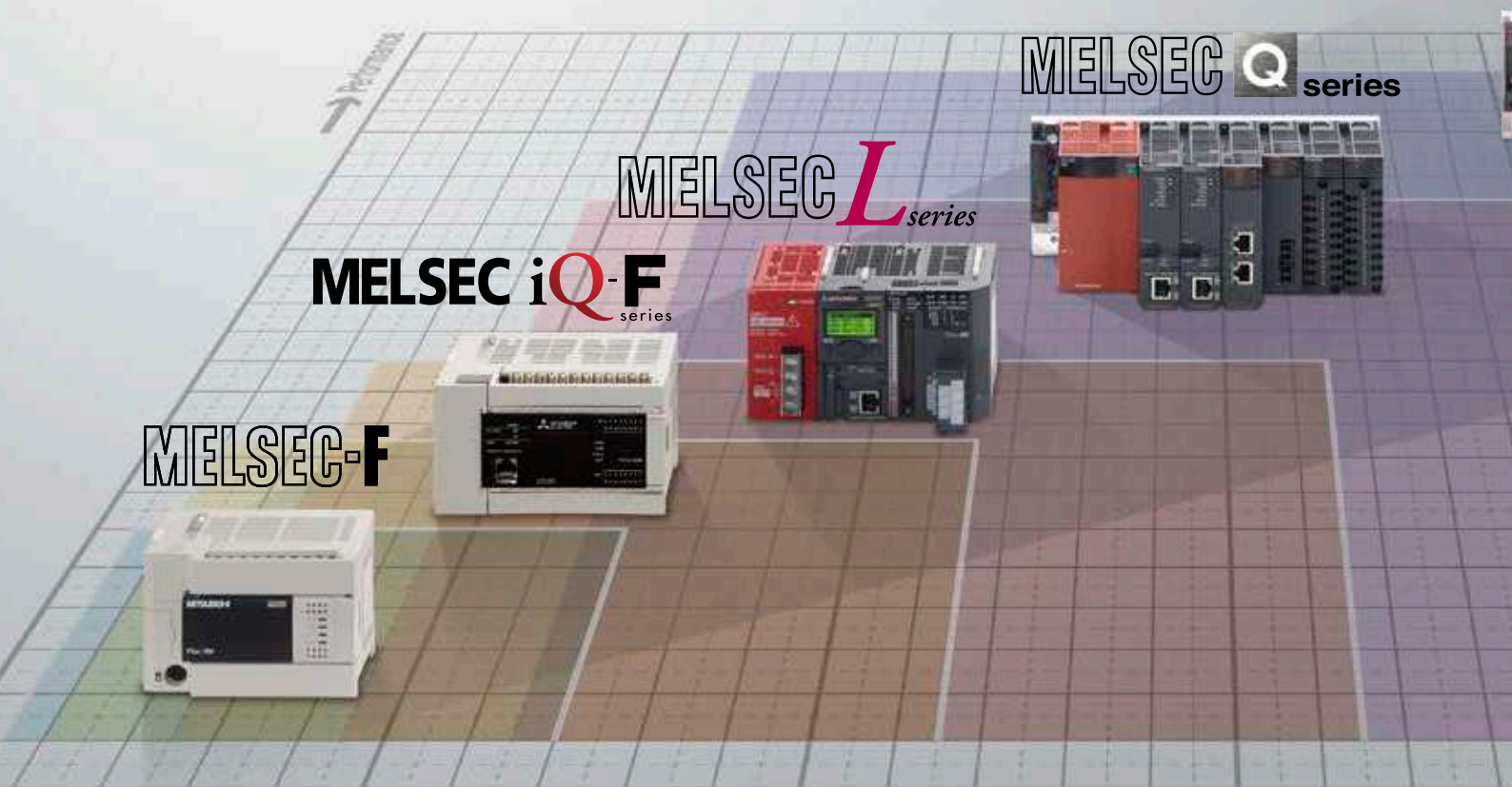
e-F@ctory Alliance

The e-F@ctory Alliance is an ecosystem offering best-in-class solutions by combining products between Mitsubishi Electric and its various partners. Close collaboration with such partners broaden the choices for the customer and realize the best solution possible.

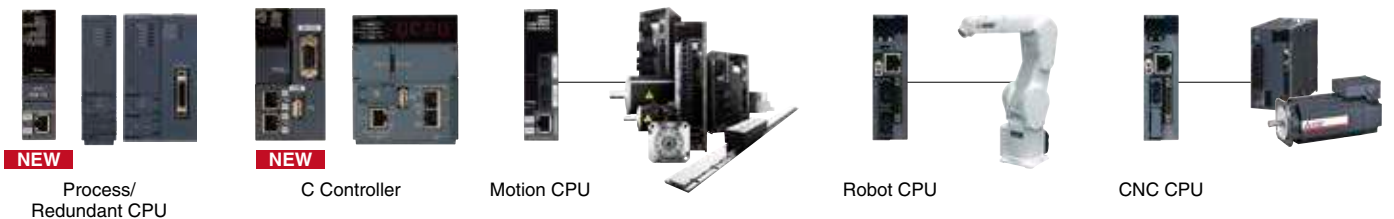


MELSEC

Comprehensive controller lineup available to meet customers' requirements, from small-scale and stand-alone to medium- and large-scale systems



Application-specific CPUs



These best-in-class CPUs, integrated into the iQ Platform, are designed for specific needs across various different industry areas.

MELSEC iQ-R series



Optimum automation control area

→ System size

Medium- to large-scale control



MELSEC iQ-R Series

A next-generation programmable automation controller (PAC), the MELSEC iQ-R Series incorporates a revolutionary high-speed system bus that improves productivity through advanced performance and functionality.



MELSEC-Q Series

The first to incorporate the multiple CPU architecture, the MELSEC-Q Series wide-range of CPUs enables control of multiple operations, improving the performance and scalability of the overall production system.

Small- to medium-scale control



MELSEC-L Series

The MELSEC-L Series is a baseless highly scalable controller ideal for applications having limited space. With various I/O functionality embedded into the CPU head, exceptional cost versus performance is achieved in a compact body.

Small-scale and stand-alone



MELSEC iQ-F Series

Designed to provide outstanding performance and superior drive control, the MELSEC iQ-F Series is a high-performance compact-class controller with a rich assortment of integrated functions.



MELSEC-F Series

Incorporating abundant features with a flexible system configuration, the MELSEC-F Series has a power supply, CPU and I/Os into a single compact body. Furthermore, a diverse range of options are available to further expand its capabilities.

Safety control



MELSEC-QS Series



MELSEC-WS Series

MELSEC Designed with automation in mind

Mitsubishi Electric offers a wide range of controllers capable of satisfying the diversified application needs in various industries. The high-speed, high-accuracy controllers in the MELSEC series covers them all, providing highly flexible cost-effective solutions.

iQ-R : MELSEC iQ-R Series **Q** : MELSEC-Q Series **L** : MELSEC-L Series **iQ-F** : MELSEC iQ-F Series **F** : MELSEC-F Series
C : C Controller **P** : Process/Redundant system **M** : Servo system controller **R** : Robot controller **N** : CNC CPU
S : Safety (MELSEC-QS/ WS Series)

Automotive

iQ-R **Q** **M** **R** **N** **S**



Improve productivity and realize flexibility in different automotive assembly lines with high-accuracy motion control, including linear/circular interpolation and electric cam profile.

Automated warehouse

iQ-R **Q** **iQ-F** **F** **C** **M** **R**



Realize advanced logistics coordination and eliminate errors in repetitive processes. Servo-based high-speed material handling and highly accurate positioning improving productivity and reduce energy consumption.

Food and beverage, CPG

iQ-R **Q** **L** **iQ-F** **F** **P** **M**



Realize improvements in various packaging applications such as high-speed filling, which requires a highly accurate, continuous feed rate and precision.

Semiconductor

iQ-R **Q** **C** **M**



Reduce maintenance costs using the high-durability MELSEC Series. Having the compact, robust design desired for semiconductor manufacturing, MELSEC products solve the small footprint, high-performance requirements.

Pick-and-place

iQ-R **M**



Achieve highly precise, fast and accurate placement of components in various sizes and shapes such as that required by SMT pick-and-place equipment, further improving productivity.

Flat panel display (FPD)

iQ-R **Q** **C** **M** **R** **S**



Improve the large data bandwidth and high performance requirements common in FPD manufacturing processes using MELSEC's integrated control platform. The integrated controller and network solution offer increased flexibility and enhanced performance.

Chemical

iQ-R Q P



Improve control of processes involving chemical manufacturing using highly scalable solutions that integrate process control and factory automation.

Inspection machines

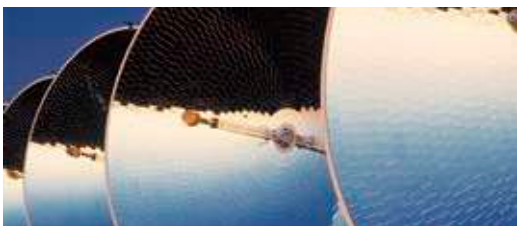
iQ-R C



Easily integrate Inspection machine control into automated systems, thereby reducing maintenance and overall operational costs.

Renewable energy

iQ-R C P



Easily integrate renewable energy plant management utilizing plant-wide data acquisition and extensive real-time control, thereby reducing overall investment and maintenance costs.

Building automation

iQ-R Q L iQ-F F C



Increase security and ensure effective use of energy management capabilities by supporting various building automation protocols, resulting in a reduced carbon footprint.

Printing

iQ-R Q C M



Realize high-speed, high-quality printing through various solutions offered depending on the printing process involved such as roll paper feed-in, offset printing, binding, and sortation.

Injection molding

iQ-R Q iQ-F F M



Achieve reductions in machine operation costs and improve productivity by integrating MELSEC controllers that utilize an easy-to-use control platform combined with highly accurate motion control.

Machine tool

iQ-R Q L iQ-F F N



Improve productivity, operating efficiency and overall equipment effectiveness using the scalable control of MELSEC products, supporting tasks such as drilling, grinding, and milling.

General automation




iQ-R Q L iQ-F F C



Alternative automation applications such as automatic car washes and automated hydroponic farming require a high-level of automation similar to industrial solutions.

MELSEC Selection Guide

Controller lineup

Series	Modular type		Baseless type
	 MELSEC iQ-R PAC (Programmable automation controller)	 MELSEC-Q Programmable controller CPU	 MELSEC-L Programmable controller CPU
Lineup	<ul style="list-style-type: none"> Programmable controller CPU: 5 models Motion controller: 2 models Process CPU: 4 models NEW C Controller: 1 model 	<ul style="list-style-type: none"> Programmable controller CPU (Universal model): 25 models Process CPU: 4 models Redundant CPU: 2 models C Controller: 4 models Motion controller: 2 models Robot controller: 1 model CNC CPU: 1 model 	<ul style="list-style-type: none"> Programmable controller CPU Sink type: 5 models Source type: 5 models
Control method	Stored program cyclic operation	Stored program cyclic operation	Stored program cyclic operation
I/O control mode	Refresh mode	Refresh mode	Refresh mode
Programming language	<ul style="list-style-type: none"> Ladder diagram Structured text (ST) Sequential function chart (SFC) <small>Coming soon!</small> Function block diagram (FBD/LD) Function block (FB) C/C++*2 	<ul style="list-style-type: none"> Ladder diagram Structured text (ST) Instruction list MELSA3 (SFC), MELSA-P-L Function block diagram (FBD) Function block (FB) C/C++*2 	<ul style="list-style-type: none"> Ladder diagram Structured text (ST) Instruction list MELSA3 (SFC), MELSA-P-L Function block (FB)
Safety standard conformance level	—	—	—
Engineering environment	MELSOFT GX Works3 MELSOFT MT Works2 CW Workbench	MELSOFT GX Works2 MELSOFT PX Developer CW Workbench MELSOFT MT Works2	MELSOFT GX Works2
Program size (K step)	1200	1000	260
Number of I/O points [X/Y] (point)	4096	4096	4096
Device/label memory/ standard RAM (K byte)	3380	1792	768
Data memory/ standard ROM (byte)	40M	16M	2M
Processing speed			
LD instruction (ns)	0.98	1.9	9.5
MOV instruction (ns)	1.96	3.9	19
Floating point addition (μs)	0.01	0.014	0.057
Memory interface			
Extended SRAM cassette	●	●*1	—
SD memory card	●	●*1	●*5
SRAM card, FLASH card, ATA card	—	●*4	—
External interface			
USB	●	●	●
Ethernet (1000BASE-T*4/ 100BASE-TX/10BASE-T)	●	●*7	●*5
RS-232	—	●*8	●*9
RS-422/485	—	—	—
Display unit	—	—	●
Network connectivity (adapter/module)			
Ethernet (1000BASE-T*11/100BASE-TX/10BASE-T)	●	●	●
CC-Link IE Control	●	●	—
CC-Link IE Field	●	●*13	●
CC-Link	●	●	●
CC-Link Safety	—	—	—
CC-Link/LT	—	●	●
SSCNET III/H	●	●	●
AnyWire	●	●	●
BACnet™	●	●	●
MODBUS®/TCP	●	●	●
MODBUS®	●	●	●
General specifications/conformed standards			
Operating ambient temperature	0...55°C	0...55°C	0...55°C
Standard on corrosive atmosphere (JIS C 60721-3-3/ IEC 60721-3-3 3C2)	●*15	—	—
CE: Council Directive of the European Communities	●	●	●
UL: Underwriters Laboratories Listing	●	●	●
LR: Lloyd's Register of Shipping approval	—	●	—
DNV: Norwegian Maritime approval	—	●	—
RINA: Italian Maritime approval	—	●	—
NK: ClassNK approval	—	●	—
ABS: American Bureau of Shipping approval	—	●	—
BV: Bureau Veritas approval	—	●	—
GL: Germanischer Lloyd approval	—	●	—
Key features/functions	<ul style="list-style-type: none"> Line manufacturing Distributed control Large-scale I/O control Security Inter-modular sync Built-in database Integrated network Multiple CPU Process control Real-time monitor 	<ul style="list-style-type: none"> Line manufacturing Distributed control Large-scale I/O control Integrated network Multiple CPU Process control High-reliability control C programming Data logging IT gateway Advanced motion 	<ul style="list-style-type: none"> Machine control Distributed control Small-scale I/O control Large-scale I/O control Space/cost saving Integrated network Extensive built-in functions Data logging Motion control Real-time monitor

*1: Q□UDVCPU only.

*2: When using CW Workbench

*3: Required to use the logging function

*4: Does not support QnUDVCPU and certain models





*5: Does not support L02SCPU(-P)

*6: Supports the user Ethernet port of Q24DHCCPU-V/VG/LS only

*7: Supports Q□UDE(H)CPU and Q□UDVCPU only

*8: Does not support Q□UDE(H)CPU and Q□UDVCPU

*9: Supports L02SCPU(-P) only

Compact type NEW	Compact type			Modular type	Baseless type
					
MELSEC iQ-F	MELSEC-F			MELSEC-OS	MELSEC-WS
Programmable controller CPU	Programmable controller CPU			Safety programmable controller	Safety controller
FX5U/FX5UC	FX3s	FX3s/FX3sc	FX3u/FX3uc		
<ul style="list-style-type: none"> FX5U: 9 models FX5UC: 2 models 	<ul style="list-style-type: none"> FX3s: 27 models 	<ul style="list-style-type: none"> FX3s: 24 models FX3sc: 2 models 	<ul style="list-style-type: none"> FX3u: 37 models FX3uc: 12 models 	<ul style="list-style-type: none"> CPU: 1 models 	<ul style="list-style-type: none"> CPU: 3 models
Stored program cyclic operation	Stored program cyclic operation			Stored program cyclic operation	—
Refresh mode	Refresh mode			Refresh mode	—
<ul style="list-style-type: none"> Ladder diagram Structured text (ST) Function block diagram (FBD/LD) Function block (FB) 	<ul style="list-style-type: none"> Ladder diagram Structured text (ST) SFC for FX Series Function block (FB) 			<ul style="list-style-type: none"> Ladder diagram Function block (FB) 	<ul style="list-style-type: none"> Function block (FB)
—	—	—	—	<ul style="list-style-type: none"> ISO 13849-1 PL e IEC 61508 SIL3 	<ul style="list-style-type: none"> ISO 13849-1 PL e IEC 61508 SIL3 IEC 62061 SIL CL3
MELSOFT GX Works3	MELSOFT GX Works2			MELSOFT GX Developer Ver.8	Setting/monitoring tool (free)
64	4	32	64	14	—
256	30	128	256	1024	144
120	—	—	—	—	—
5M	—	—	—	128K	—
34	210	210	65	100	—
34	520	520	640	350	—
3.06	11.96	11.96	14.2	—	—
—	●	● ^{*10}	● ^{*13}	—	—
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●	—	—	● ^{*14}	—	—
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●	●	●	●	—	—
0...55°C	0...55°C	0...55°C	0...55°C	0...55°C	-25...55°C
—	—	—	—	—	—
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—	●	●	●	—	—
<ul style="list-style-type: none"> Machine control Distributed control Small-scale I/O control Space/cost saving Security Integrated network Extensive built-in functions 	<ul style="list-style-type: none"> Machine control Small-scale I/O control Space/cost saving Motion control 			<ul style="list-style-type: none"> Line manufacturing Large-scale I/O control Safety 	<ul style="list-style-type: none"> Line manufacturing Small-scale I/O control Safety

*10: Supports FX3s only.
 *11: Supports the MELSEC iQ-R Series only
 *12: Supports with the dedicated adapter

*13: Does not support Q□PHCPU and Q□PRHCPU
 *14: Supports SSCNET III
 *15: For protection against aggressive atmosphere and gases, products with a conformal coating (JIS C 60721-3-3/IEC 60721-3-3 Class 3C2) are available on request



MELSEC iQ-R series

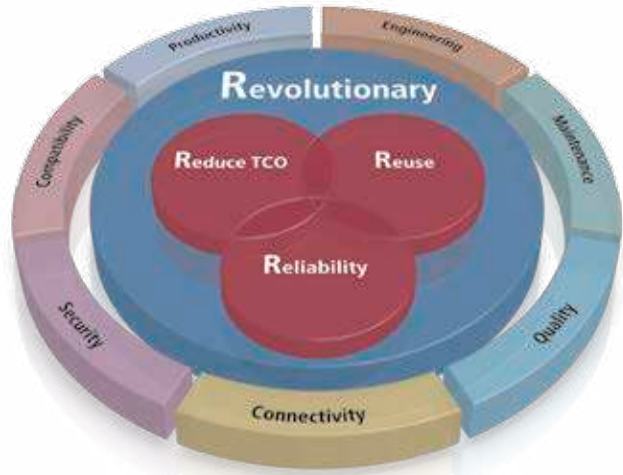
Bridging the next generation of automation

iQ Platform

Revolutionary, next-generation controllers building a new era in automation

To succeed in highly competitive markets, it's important to build automation systems that ensure high productivity and consistent product quality. The MELSEC iQ-R Series has been developed from the ground up based on common problems faced by customers and rationalizing them into seven key areas: Productivity, Engineering, Maintenance, Quality, Connectivity, Security and Compatibility. Mitsubishi Electric is taking a three-point approach to solving these problems: Reducing TCO*¹, increasing Reliability and Reuse of existing assets. As a bridge to the next generation in automation, the MELSEC iQ-R Series is a driving force behind revolutionary progress in the future of manufacturing.

*1: Total Cost of Ownership



Productivity



Improve productivity through advanced performance/ functionality

- New high-speed system bus realizing shorter production cycle
- Super-high-accuracy motion control utilizing advanced multiple CPU features
- Inter-modular synchronization resulting in increased processing accuracy

Engineering



Reducing development costs through intuitive engineering

- Intuitive engineering environment covering the product development cycle
- Simple point-and-click programming architecture
- Understanding globalization by multiple language support

Maintenance



Reduce maintenance costs and downtime utilizing easier maintenance features

- Visualize entire plant data in real-time
- Extensive preventative maintenance functions embedded into modules

Quality



Reliable and trusted MELSEC product quality

- Robust design ideal for harsh industrial environments
- Improve and maintain actual manufacturing quality
- Conforms to main international standards

Connectivity



Seamless network reduces system costs

- Seamless connectivity within all levels of manufacturing
- High-speed and large data bandwidth ideal for large scale control systems
- Easy connection of third-party components utilizing device library

Security



Robust security that can be relied on

- Protect intellectual property
- Unauthorized access protection across distributed control network

Compatibility



Extensive compatibility with existing products

- Utilize existing assets while taking advantage of cutting-edge technology
- Compatible with most existing MELSEC-Q Series I/O

■ Main features/applications

Line manufacturing	Machine control	Distributed control	Small-scale I/O control	Large-scale I/O control	Space/cost saving	Security
Inter-modular sync	Built-in database	Integrated network	Multiple CPU	Process control	High-reliability control	Extensive built-in functions
C programming	Data logging	IT gateway	Motion control	Advanced motion	Safety	Real-time monitor

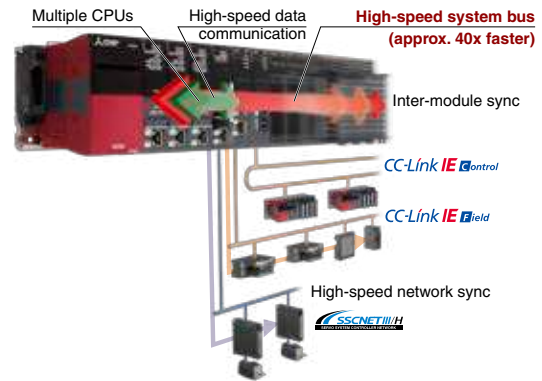


For further details, please refer to the "MELSEC iQ-R Series iQ Platform-compatible PAC" or "MELSEC iQ-R Series iQ Platform-compatible PAC (Concise)" catalog.

L(NA)08298ENG, L(NA)08293ENG

Advanced performance/functions improve productivity

Integrating high-performance capabilities based on the high-end iQ-R system bus, high-speed network, and an advanced motion control system; applications requiring these characteristics can be easily realized using the MELSEC iQ-R Series as the core of the automation system.



Built-in database eliminates the need for a PC-based database server

Recipe data and production results data, previously managed using a database server, can now be managed via the database in the programmable controller. Use of dedicated commands for the built-in database makes it easy to search, add and update data on the fly.



Powerful security features protecting intellectual property

Functions such as hardware security key identification for protecting programs and an IP filter for preventing unauthorized access to the control system through the network are incorporated to protect customers intellectual property whilst ensuring secure and safe control throughout the plant.



Intuitive and easy engineering

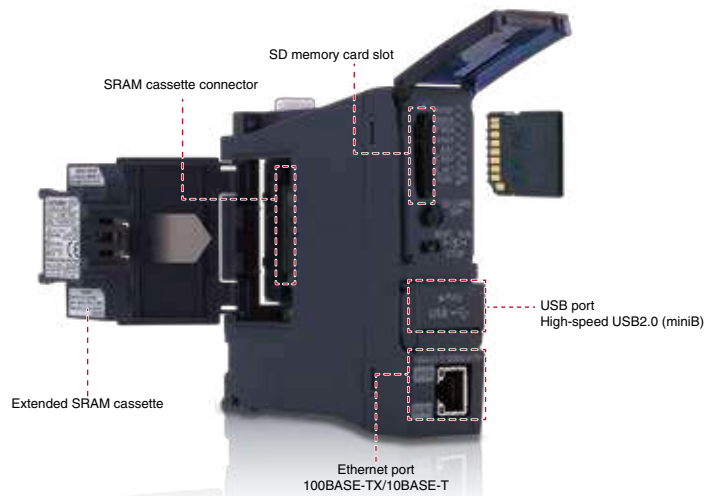
With GX Works3 graphic based programming cannot be made any easier with various intuitive features such as graphic based system configuration, and an extensive module library provided as standard. In addition to multiple language support realizing a global engineering tool required for current automation needs.



A wide range of modules supporting various different applications

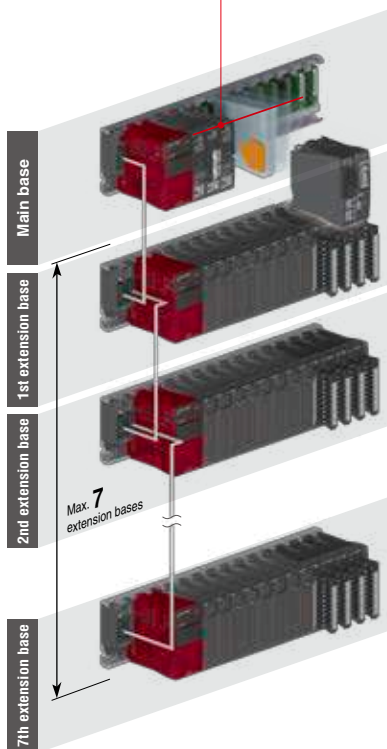
The MELSEC iQ-R Series is a modular control system equipped with various modules such as CPUs, power supply, digital I/O, analog I/O and base unit and intelligent function modules, each having its own responsibility in the system. The core of the system is a base unit that interconnects all of the modules together and enables high-speed communications between each module. From small to large systems, scalability is simple. Up to seven extension bases can be connected and a maximum of 64 modules installed at any one time. An RQ extension base is also available, ensuring compatibility with existing MELSEC-Q Series modules.

- R04CPU**
Program capacity 40K steps
- R08CPU**
Program capacity 80K steps
- R16CPU**
Program capacity 160K steps
- R32CPU**
Program capacity 320K steps
- R120CPU**
Program capacity 1200K steps



MELSEC iQ-R series

System configuration



CPU modules

Install up to four CPU modules together

- Programmable controller CPU module
- Motion CPU module
- Process CPU module
- C Controller module

Power supply module



I/O & intelligent function modules

- Input module
- Output module
- I/O combined module
- Analog input module
- Analog input module (channel isolated)
- Analog output module
- Analog output module (channel isolated)
- Temperature input module
- Simple motion module
- Positioning module
- High-speed counter module
- Ethernet interface module
- CC-Link IE Control Network module
- CC-Link IE Field Network master/local module
- CC-Link system master/local module
- Serial communication module

Base units

- Main base unit



- Extension base unit
An extension base strictly for I/O and intelligent function modules.

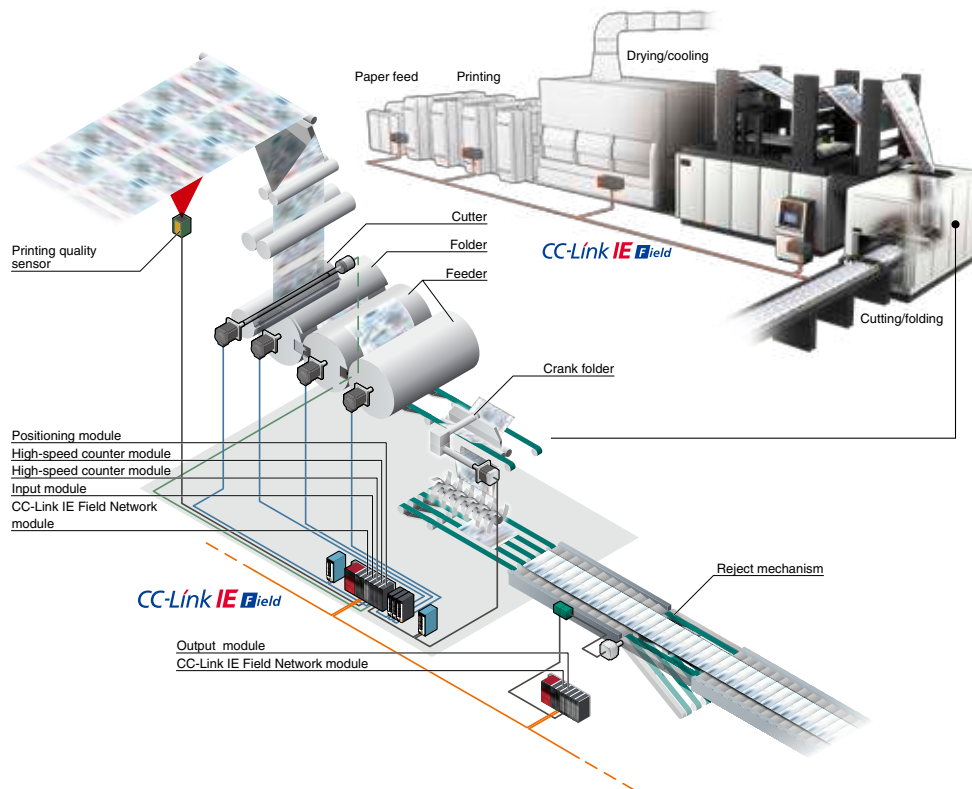


- RQ extension base unit
An extension base for MELSEC-Q Series modules (further extensions requiring the MELSEC-Q Series extension base version).



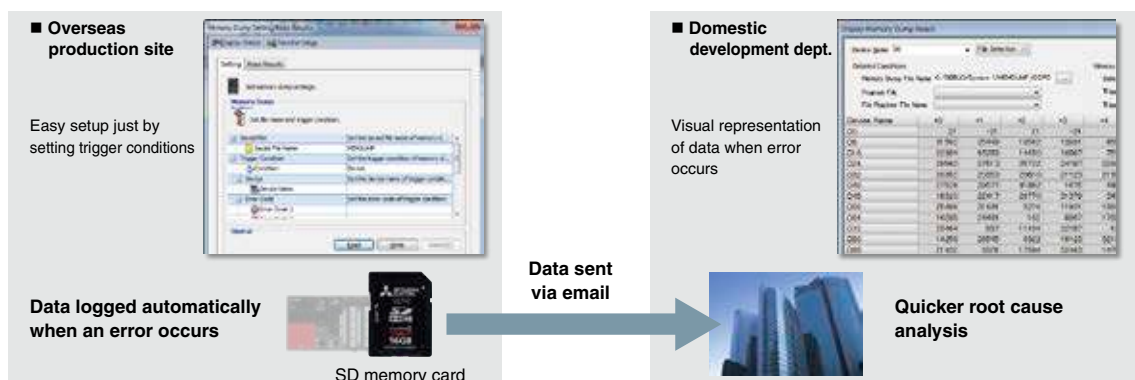
Highly accurate synchronization

The MELSEC iQ-R Series system provides highly accurate synchronization between modules on the control system which is realized through inter-modular synchronization. Additionally, use of the CC-Link IE Field Network realizes network-level synchronization, providing node-level synchronization that ensures deterministic data flow void of any influence from data transmission delays. This is ideal for applications such as “cutting and folding” inside an offset printer, which requires synchronization between the printing quality sensor, high-speed rotary cutter, folding roller and conveyor.



Intuitive root cause analysis

When the SD memory card is installed, device data is saved automatically to the SD memory at the time of system failure. This data is useful for investigating the cause of the failure, enabling various data collected before and during the event to be analyzed. The data can be used in a situation such as when the origin of a machine is different than where the machine was actually being used, and the data can simply be sent by e-mail (for example) as a data file for analysis.





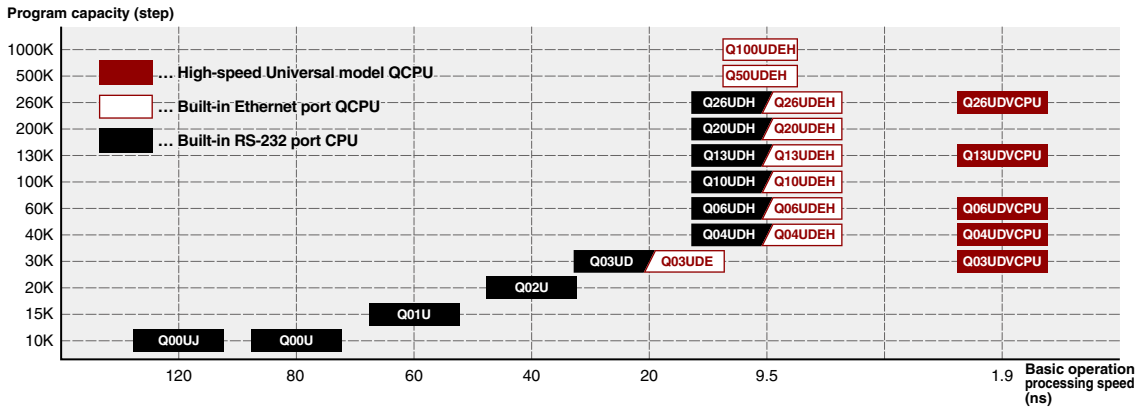
MELSEC Q series

Model flexibility supports versatile applications and improved productivity

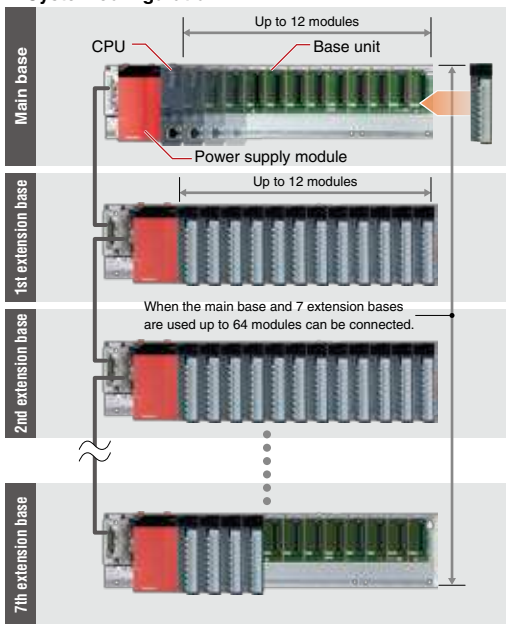


Multi-discipline design offers a broad spectrum of automation controllers

Current production requirements are calling for an increase in productivity and carrying out production processes even faster due to an increase in production information such as production results and traceability. The MELSEC-Q Series programmable controller “Universal Model QnU” is ideal for these market needs. High-speed basic instruction processing dramatically increases control system and machine performance. Inheriting the highly robust and easy-to-use design of the Q Series, the MELSEC QnU programmable controller opens up new possibilities in automation.



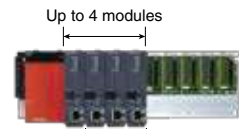
System configuration



*1: The maximum number of modules that can be installed depends on the CPU configuration.
 *2: Except redundant CPU.
 *3: The number within brackets is the number of slots.

CPU modules

- Install up to four CPU modules together*2
- Programmable controller CPU
 - Motion controller
 - Process CPU
 - Redundant CPU
 - C Controller
 - Robot controller
 - CNC CPU



Up to 4 modules
 The 2nd and subsequent CPUs can be installed using slots No. 0 to 2

Base units*3



- Main base (3, 5, 8, 12)
- Multiple CPU high-speed main base (5, 8, 12)
- Slim type main base (2, 3, 5)
- Redundant power main base (8)
- Extension base (2, 3, 5, 8, 12)
- Redundant power extension base (8)
- Redundant type extension base (5)

Power supply modules



- Power supply
- Power supply with life function
- Slim type power supply
- Redundant power supply module
- Redundant power supply

I/O & intelligent function modules



- I/O module
- Interrupt module
- Relay terminal module
- Analog I/O module
- Load cell input module
- CT input module
- Temperature input module
- Temperature control module
- Loop control module
- Simple motion module
- Positioning module
- High-speed counter module
- Channel isolated pulse input module
- Energy measuring module
- Isolation monitoring module
- MES interface module
- High-speed data logger module
- Web server module
- Intelligent communication module
- Network module
- Digital link sensor module

■ Main features/applications

Line manufacturing	Machine control	Distributed control	Small-scale I/O control	Large-scale I/O control	Space/cost saving	Security
Inter-modular sync	Built-in database	Integrated network	Multiple CPU	Process control	High-reliability control	Extensive built-in functions
C programming	Data logging	IT gateway	Motion control	Advanced motion	Safety	Real-time monitor

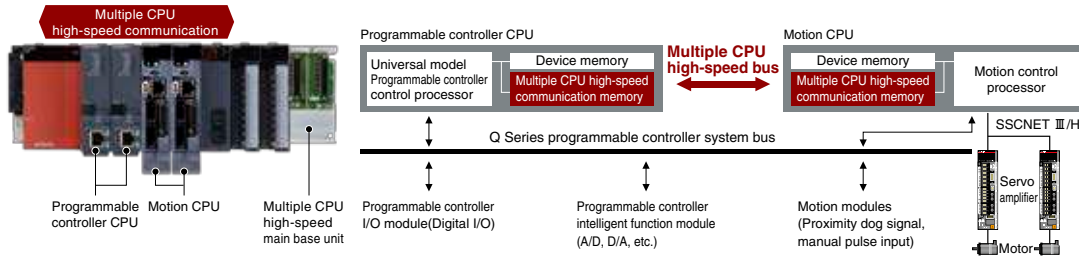


For further details, please refer to the "Programmable Controllers MELSEC-Q series [QnU]" catalog.

L(NA)08101E

High-speed, high-accuracy machine control

To achieve truly high-speed synchronized control between multiple CPUs, a dedicated bus is used, independent of sequence program operation (0.88 ms operation cycle)*1. This multiple CPU high-speed communication is synchronized with motion control to maximize computational efficiency. Additionally, the performance of the motion control CPU is twice as fast as the previous model, ensuring high-speed, high-accuracy machine control.

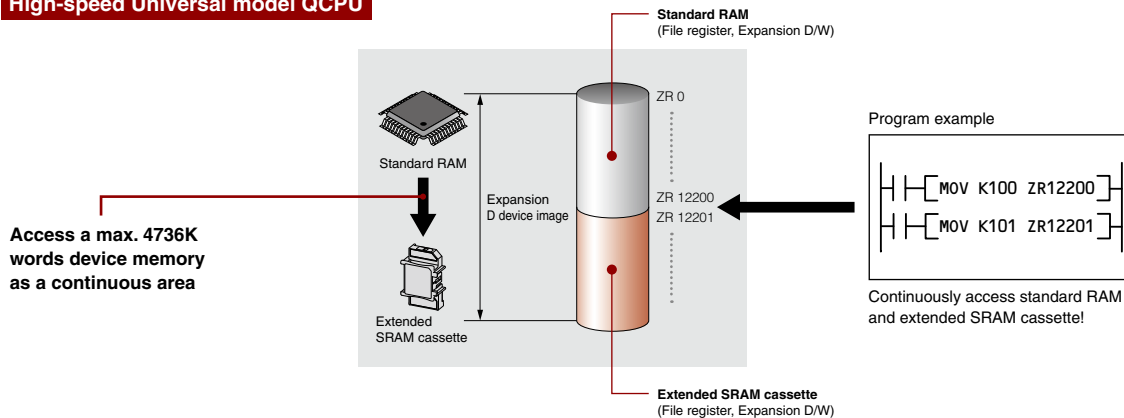


*1: Q00UJ, Q00U, Q01U, and Q02U are not supported.

Large data volume at high-speed

Conventionally, continuous access to the standard RAM and SRAM card's file register area could not be achieved which had to be reflected in the user program. When an 8 MB extended SRAM cassette*2 is installed in the High-Speed Universal model QCPU, the standard RAM can be as one continuous file register with up to 4736K words capacity, simplifying the user program. Even if device memory is insufficient, the file register area can be expanded easily by installing an extended SRAM cassette.

High-speed Universal model QCPU



*2: Q03UDV, Q04UDV, Q06UDV, Q13UDV and Q26UDV are not supported.

Easy logging without a program*3

Logging can be easily performed using the Wizard setting tool. The data collected can be saved in CSV format on an SD memory card and be displayed on a computer or GOT (HMI). Various reference materials including daily and general reports can be created easily using the saved CSV file. This data can be used for a wide variety of applications requiring traceability, production data, etc.



Logging data display and analysis tool GX LogViewer



GOT (HMI) log viewer function

*3: Supports Q03UDV, Q04UDV, Q06UDV, Q13UDV, and Q26UDV.



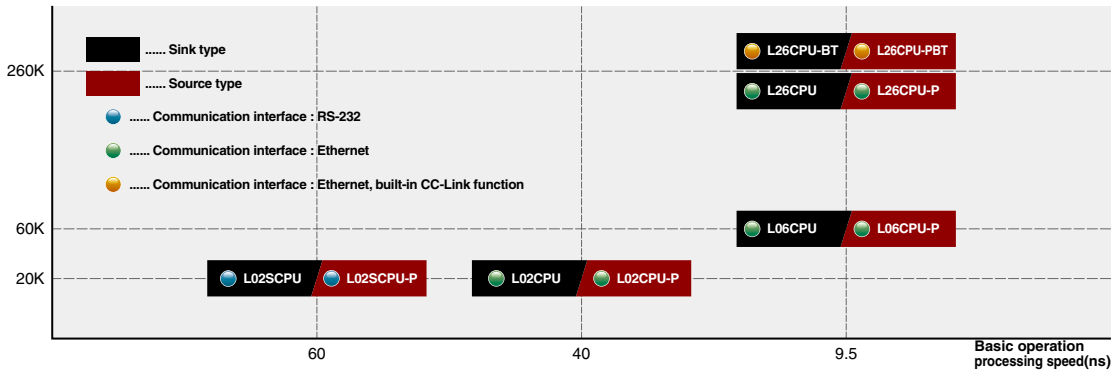
MELSEC *L* series

Amazingly small footprint and loaded with high-performance features

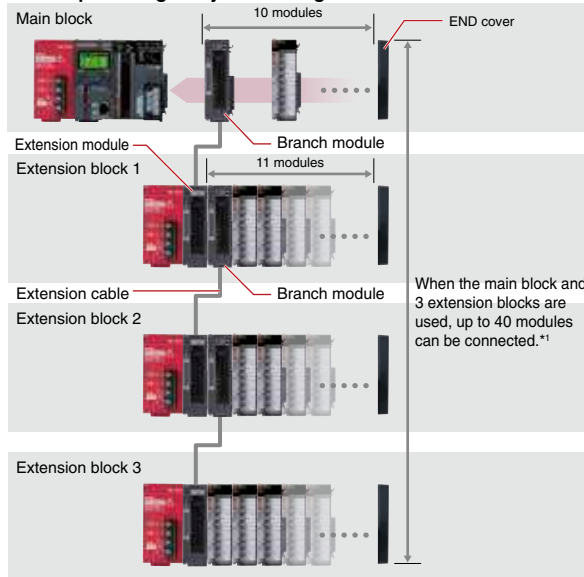
Convenience that fits in the palm of your hand

The L Series is a compact-class controller, part of the MELSEC products renowned for exceptional cost verses performance and strong reliability. It provides the performance, functions, and capabilities required for today's demanding applications in a small package. MELSEC-L Series greatly expands the range of functionality traditionally associated with compact programmable controllers and through user-centric design, pushes the limits of ease of use.

Program capacity (step)



Example of largest system configuration with L26CPU-BT



■ CPU module



- Programmable controller CPU (sink type/source type)
- Built-in communication interface
 - ▶ RS-232
 - ▶ Ethernet
 - ▶ Ethernet + CC-Link

■ Option



- Display unit
- RS-232 adapter
- RS-422/485 adapter
- Battery
- SD/SDHC memory card

■ Power supply modules



- Power supply module
- Power supply module (slim type)

■ Branch/extension modules



- Branch module
- Extension module

■ Modules



- I/O module
- Analog module
- Multiple input (voltage/current/temperature) module
- Temperature control module
- Simple motion module
- Positioning module
- High-speed counter module
- Network module
- Digital link sensor

CPU module	Number of extension blocks	Number of installable modules*2
L02SCPU(-P) L02CPU(-P)	Up to 2	Main block: 10 Extension block: 11
L06CPU(-P) L26CPU(-P) L26CPU(-P)BT	Up to 3	

*1: Total number of I/O, intelligent function, and network modules. Does not include branch module.

*2: Total number of I/O, intelligent function, network, and branch modules. Does not include power supply module, CPU module, display unit, extension module, RS-232 adapter, RS-422/485 adapter and END cover.

■ Main features/applications

Line manufacturing	Machine control	Distributed control	Small-scale I/O control	Large-scale I/O control	Space/cost saving	Security
Inter-modular sync	Built-in database	Integrated network	Multiple CPU	Process control	High-reliability control	Extensive built-in functions
C programming	Data logging	IT gateway	Motion control	Advanced motion	Safety	Real-time monitor



For further details, please refer to "Programmable Controllers MELSEC-L series" catalog.
L(NA)08159E

Various built-in I/O features and communication interfaces come as standard

In its compact body, a large variety of I/O features are built in as standard. Due to an abundance of advanced functionality, L Series CPUs are flexible enough to meet a wide variety of needs. With a display unit enabling routine operation without a computer, an SD memory card, and easy-to-use programming environment, the L Series dramatically improves system designing and system operation and contributes to improve work efficiency. The display unit*1 shows system statuses and enables setting changes to be made without a program. Even when an error occurs, the error status can be easily checked, assisting troubleshooting on-site.



*1: Option (sold separately). Not compatible with L02SCPU (-P).
*2: Supports L02CPU (-P), L06CPU(-P), L26CPU(-P), L26CPU(-P) BT.
*3: Supports L26CPU (-P) BT.

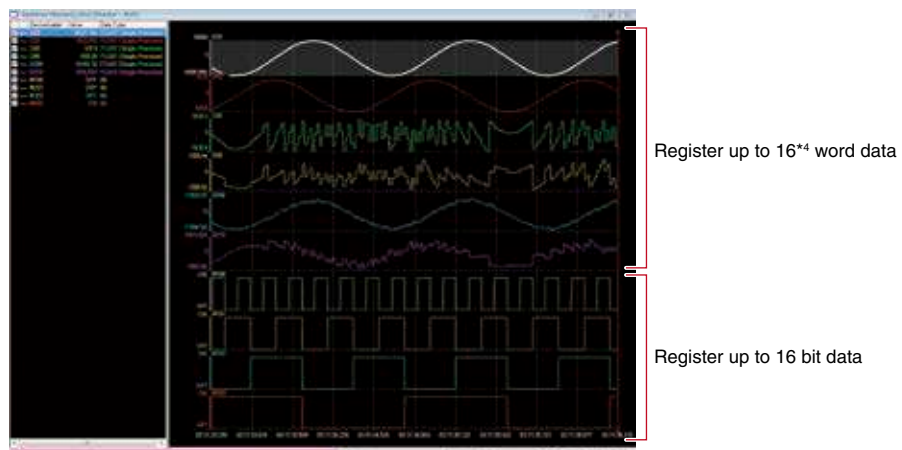
Gain more flexibility with an integrated system bus structure

L Series modules do not require a base unit. Having an integrated system bus structure, the L Series can be attached directly to a DIN rail by using the minimal required space. Furthermore, adding modules to the system is not restricted by the number of available base unit slots, and costs may be reduced due to the elimination of extension base units.



Improved debugging for system startup and troubleshooting

Device values in the CPU can be monitored in real-time with a detailed setting including interval and timing. Additionally, changes in the device value can be monitored within the GX LogViewer trend graph and are exportable to a computer for further analysis.



*4: Up to 15 when a bit data is registered



MELSEC iQ-F series

The next level of industry

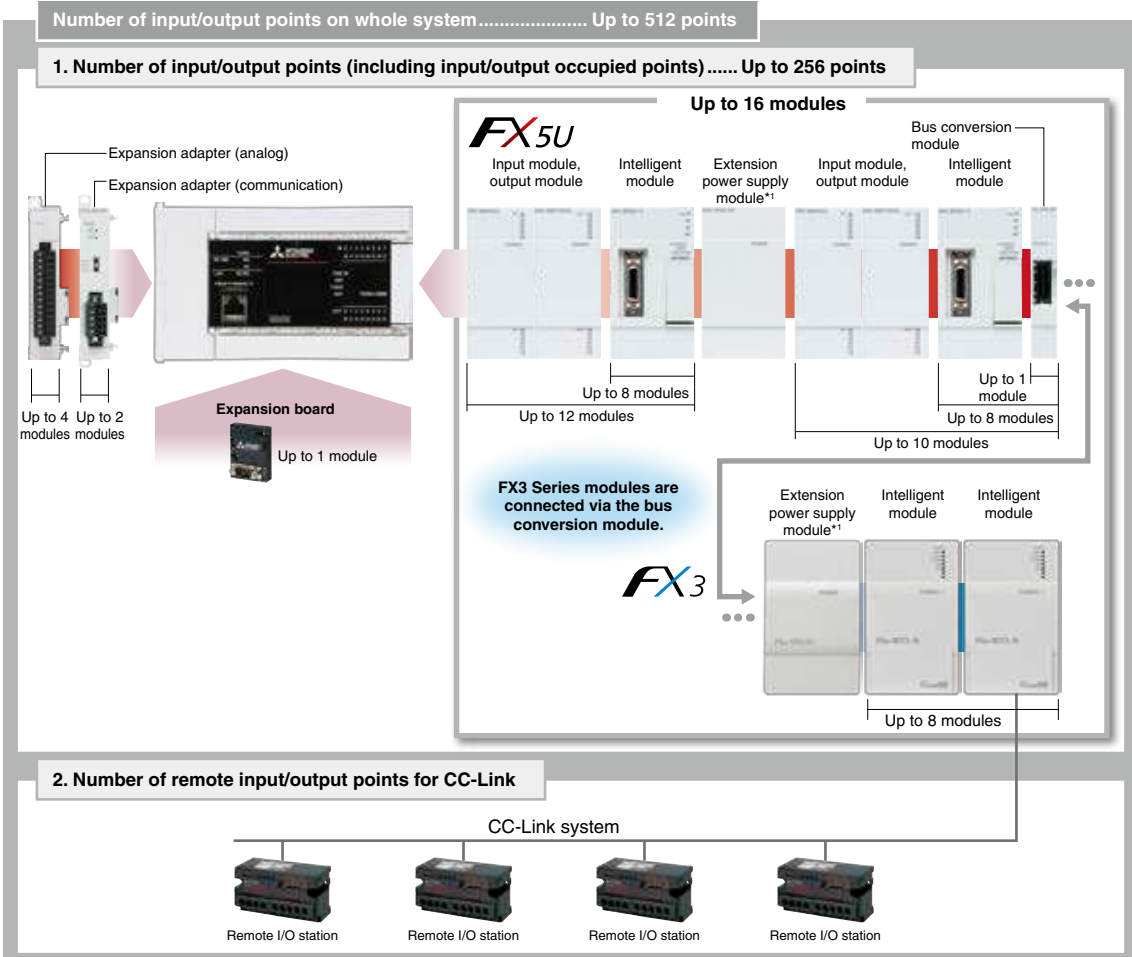


New micro PLC designed on the concept of ...



- ▶ Completely redesigned, high-speed system bus
- ▶ Extensive built-in functions
- ▶ Enhanced security functions
- ▶ No internal battery required
- ▶ Built-in positioning (4-axis 200 kHz)
- ▶ Simple linear interpolation
- ▶ Synchronous control with Simple Motion unit (4-axis) without requiring dedicated positioning software
- ▶ Easy programming by drag and drop
- ▶ Reduced development time with module FB
- ▶ Parameterized setup for a variety of functions

System configuration



*1: Up to two extension power supply modules are connectable.

■ Main features/applications

Line manufacturing	Machine control	Distributed control	Small-scale I/O control	Large-scale I/O control	Space/cost saving	Security
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C programming	Data logging	IT gateway	Motion control	Advanced motion	Safety	Real-time monitor

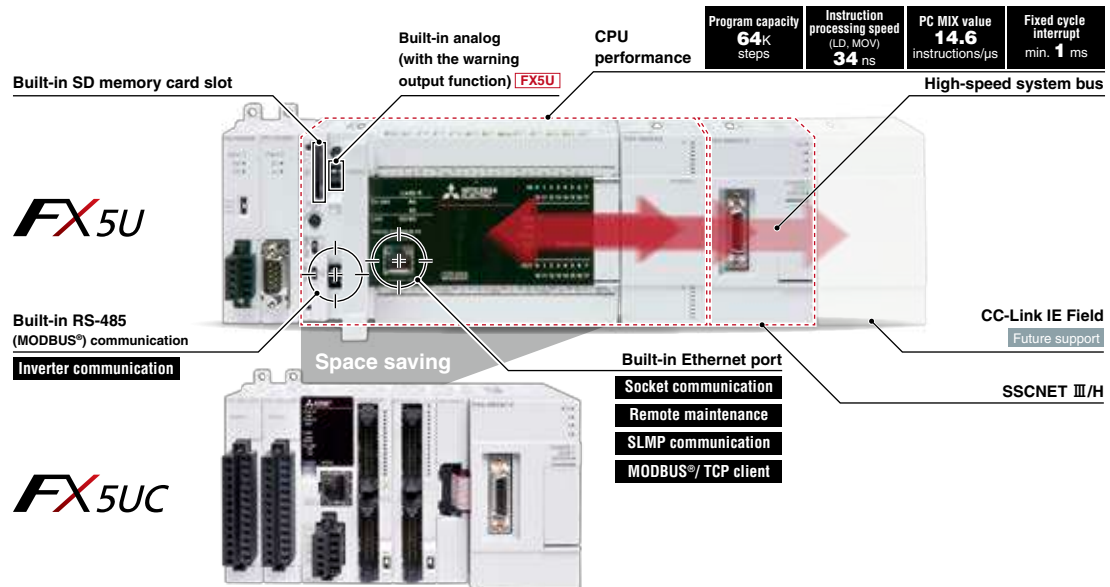


For further details, please refer to the "MELSEC iQ-F Series iQ Platform-compatible PLC" catalog.

HIME-L081

Integrated functions

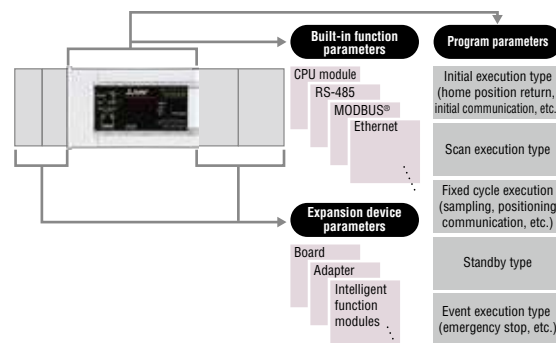
The high-speed system bus realizes faster communications speed of up to 150 times*1, increasing overall machine performance. The CPU module has many integrated features (Ethernet, RS-485 (MODBUS®RTU supported), analog I/O*2, SD memory card slot, etc.) providing greater flexibility and helping to reduce system costs.



*1: Compared to FX3U Series.
*2: Not available in FX5UC.

Easy parameter setup

With the MELSEC iQ-F, setting of parameters has been made even easier by the integration of parametrization functionality into GX Works3 engineering software. Setting of parameters for built-in functions, external devices, and program execution trigger are simply done.

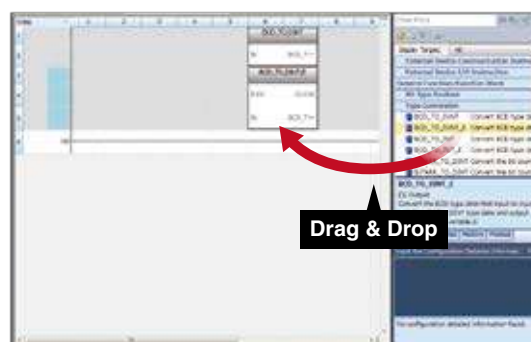


Settable parameters

- CPU parameters, Ethernet port, RS-485 communication port, I/O response time, expansion board, memory card, security key functions, etc.
- Expansion adapter, intelligent function module settings

Standard function/function blocks

Approx. 110 types of standard function and functions blocks are available to utilize in the control program. These functions/function blocks are conveniently located as parts library further helping to reduce overall engineering time.

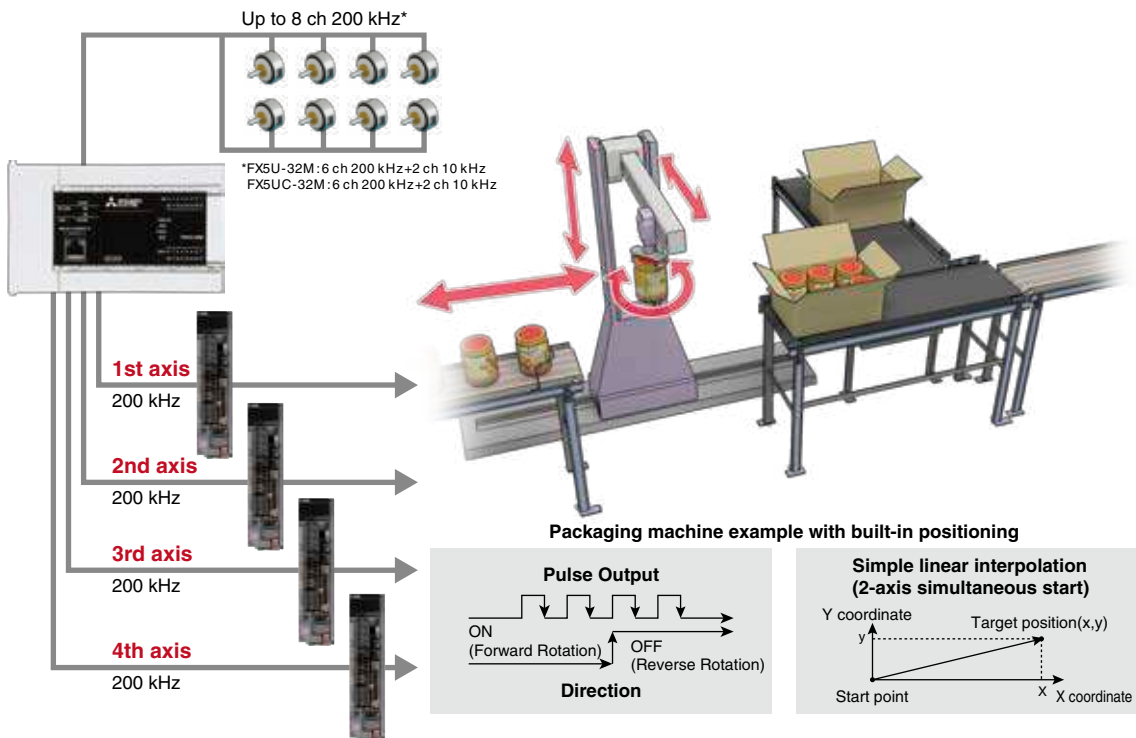


Positioning solution

Built-in positioning (4-axis built-in)

- Positioning that support 20 μ s high-speed startup

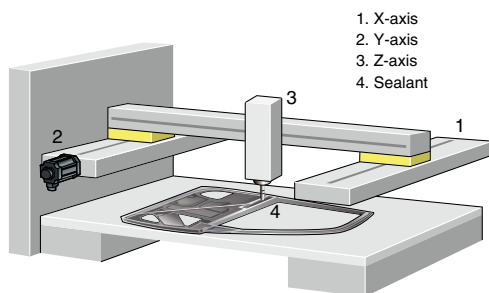
The built-in high-speed pulse inputs and outputs on the FX5U, with special positioning operations instructions, are designed to satisfy simple independent-axis positioning applications using servo and stepping motors with speed and precision. Positioning operations on different axes can also be started simultaneously.



Simple motion module (4-axis module)

- Positioning control via SSCNET III/H

Positioning control is easily executed using a point table. The machine can coat the work piece by using a combination of linear interpolation, 2-axis circular interpolation, and continuous trajectory control. A smooth trajectory can be traced with the S-curve acceleration/deceleration function.



Main functions

- Linear interpolation
- Circular interpolation
- Continuous trajectory control
- S-curve acceleration/deceleration

Application examples

- Sealing
- Vending machine
- Palletizer
- Grinding machine



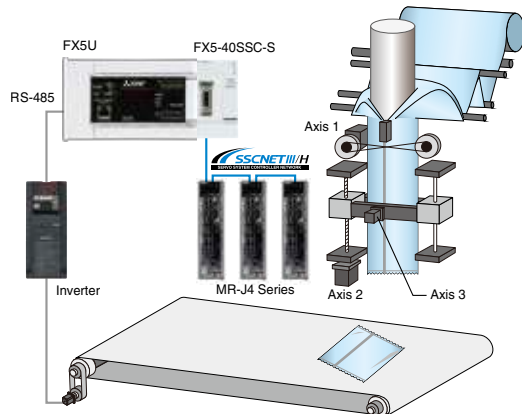
FX5-40SSC-S



Advanced motion control

Making Simple Motion with compactly packed extra functions

Similar to positioning modules, simple motion modules are capable of a wide range of high-precision control such as positional control, advanced synchronous control, cam control, and speed-torque control with setup being done easily by parameters and programming.



Packing machine example with Simple Motion

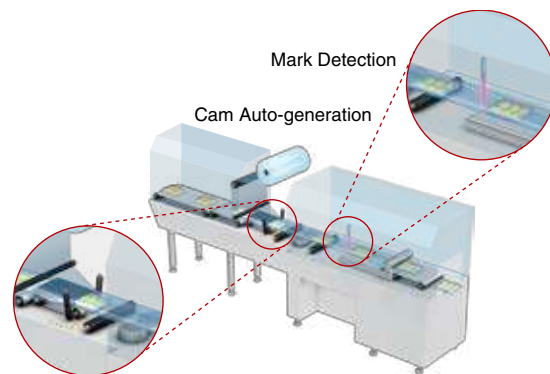
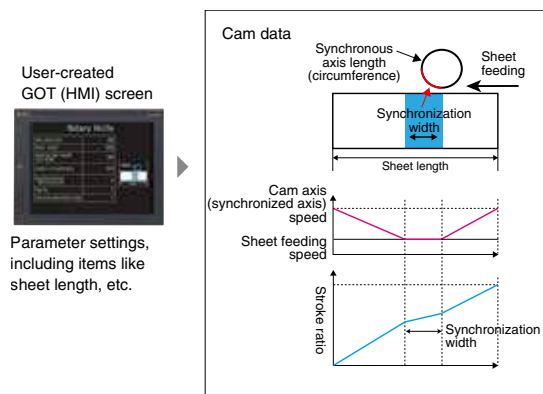
- Use synchronous control and cam functionality to make systems that work continuously and maximize output.
- With 64 cam profiles available, the same machine can be used for many different packing styles.
- Continuous operation without stopping the movement of the work piece

Advanced synchronous control

Software-based synchronous control can be used as an alternative to mechanical control, such as gear, shaft, transmission and cam. In addition, cam control is even easier with cam auto-generation. Synchronous control can be simply performed (start/stop) for each axis, allowing synchronous and positional control axes within the same program. Up to 4 control axes can be synchronized when using the synchronous encoder, such as that used for packing machines, for example.

Cam auto-generation

Cam data for a rotary cutter can be generated automatically simply by registering the sheet length, synchronization width, rotary cutter axis dimension, etc.



Rotary cutter control example with mark detection and cam data

Mark detection

The actual position of the servo motor can be obtained based on the registration mark printed on the high-speed moving film. Compensation of the cutter axis position, based on the registration marks, keeps the constant cutting position.

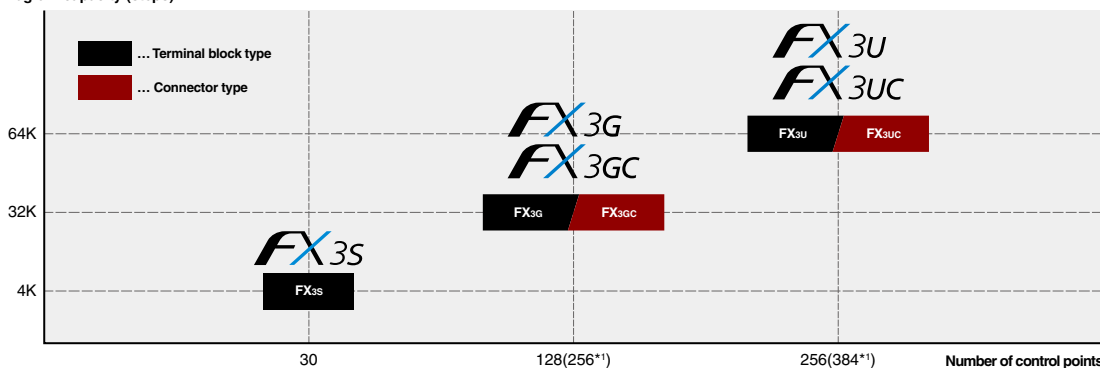
MELSEC-F

All-in-one model with built-in power supply, CPU, and I/O

The third generation of micro programmable controller, the FX3 Series

The FX Series is renowned for its speed, capacity, performance and extensive features. Integrated with many features including analog, communication, Ethernet, and positioning, the FX3 Series realizes high-performance in many different applications.

Program capacity (steps)



*1: Number of maximum I/O points including remote I/O.

System configuration



Main units



- FX3U/FX3UC
- FX3G/FX3GC
- FX3S

Special adapters



- Analog I/O
- Communication
- Data collection
- High-speed I/O

Expansion units



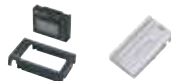
- I/O extension block
- Analog I/O block
- Temperature control block
- Temperature sensor input block
- Positioning control block
- Communication/network block
- Extension power supply unit

Expansion boards



- Communication
- Analog I/O
- 8-point variable analog potentiometer
- Extended I/O
- Special adapter connection

Options



- Display module
- Memory cassette
- Battery
- Extension cable
- Conversion adapter

*2: Connectable special adapters, extension units, expansion boards, and other options differ by the models. For details, please refer to the manual of the relevant product.

■ Main features/applications

Line manufacturing	Machine control	Distributed control	Small-scale I/O control	Large-scale I/O control	Space/cost saving	Security
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C programming	Data logging	IT gateway	Motion control	Advanced motion	Safety	Real-time monitor

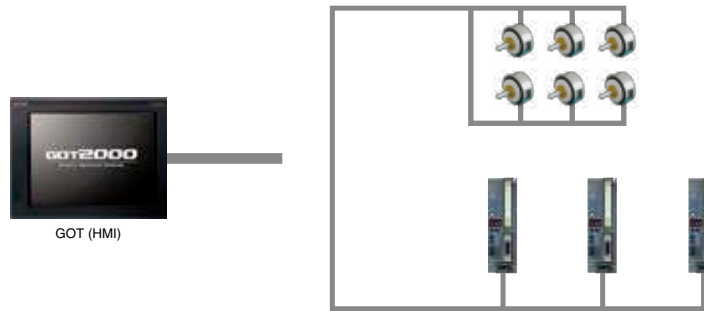


For further details, please refer to the "PROGRAMMABLE CONTROLLERS MELSEC-F FX Family Catalog"

HIME-B215

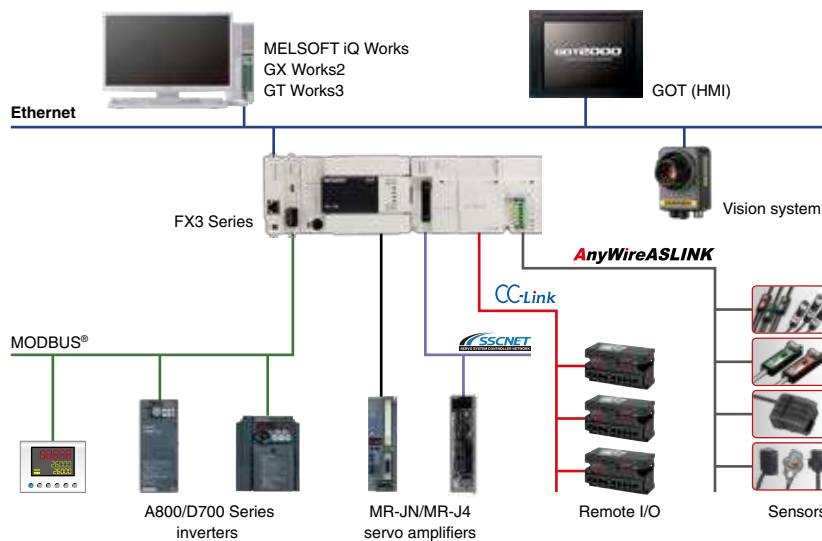
Extensive built-in functions

Including high-speed counter, positioning, high-speed I/O, communication ports, 24 V DC power supply, and other built-in functions, the main control unit can be easily connected with various different external control devices.



Combining with other Mitsubishi Electric factory automation products

In addition to its extensive built-in functions, the FX Series is highly scalable by being connectable to various different devices such as analog, positioning, communication networks, and sensor control through its expansion unit capability.



Compatibility

FX Series compatibility

The FX3 Series shares the same size with the FX1S, FX1N/FX1NC, and FX2N/FX2NC Series supporting various different extension blocks

Reusing the existing programs

The dedicated programming tool enables any existing program to be converted, just as simply by changing the PLC type.

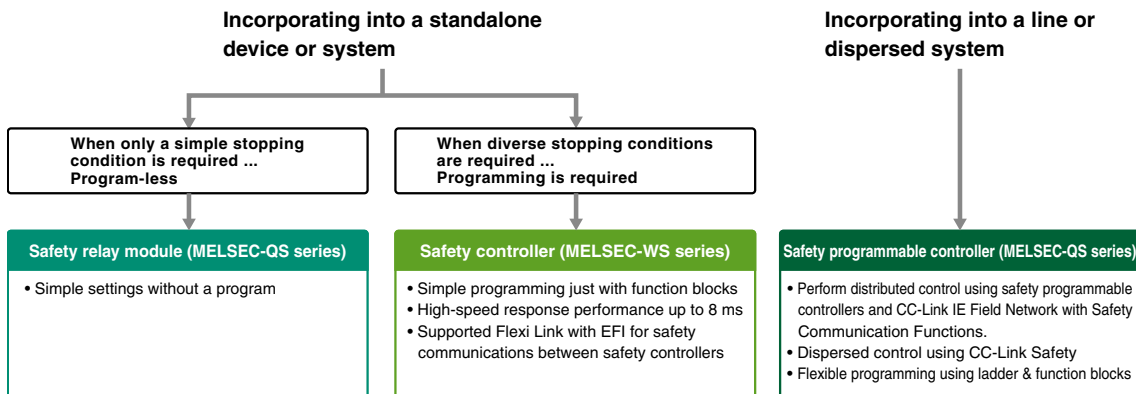


Integrating safety control on the shop floor

Mitsubishi Electric's total safety solution

The concept of safety is shifting from human intervention based "zero accidents" to risk assessment based "zero risk". To follow this shift, Mitsubishi Electric has introduced the MELSEC Safety solution, which realizes safety control*1 while keeping compatibility with the MELSEC Programmable Controllers. This solution supports the "zero risk" system required today.

*1: Safety control: Control performed to protect a human being from danger of machines.



■ Main features/applications

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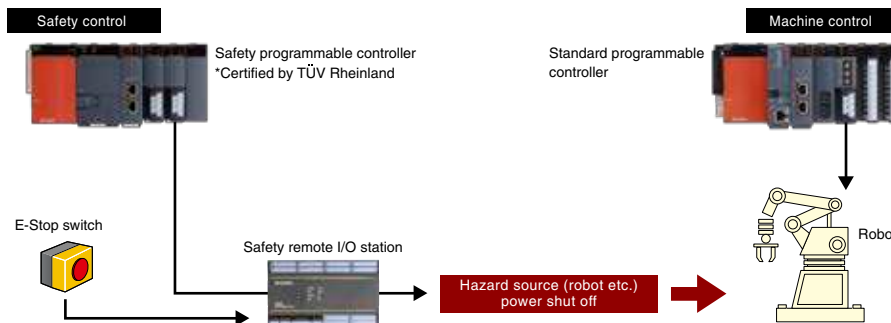


For further details, please refer to "Safety Programmable Controller/Safety Controller Safety Relay Module" catalog.

L(NA)08192E

MELSEC safety programmable controller

The MELSEC safety programmable controller is an ISO certified safety controller that ensures safety at production sites. Often connected to safety devices, such as emergency stop switches and light curtains, the safety programmable controller disconnects the power supplied to an abnormally operated machine, for example to a robot, which could be a danger to the whole system if left alone. A safety shutoff sequence program can be custom made by the user. The safety programmable controller is different from a general programmable controller in a way that it performs self-diagnosis. When a failure is detected in the self-diagnosis, the safety programmable controller automatically and forcefully turns its safety outputs off. This means that any unsafe status will be never left alone.



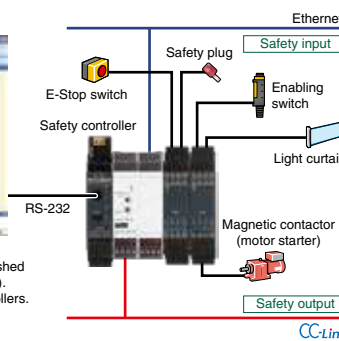
Safety controller

The safety controller is an expandable compact controller suitable for the safety control of small to medium-sized devices and systems. The controller can be expanded to a maximum 144 safety input/output points (single channel) and two network interface units. The dedicated "Setting and Monitor Tool" is equipped with safety sensors, switch connections, and safety-dedicated function blocks, allowing a safety system to be structured easily.

■ Dedicated "Setting and Monitor Tool"

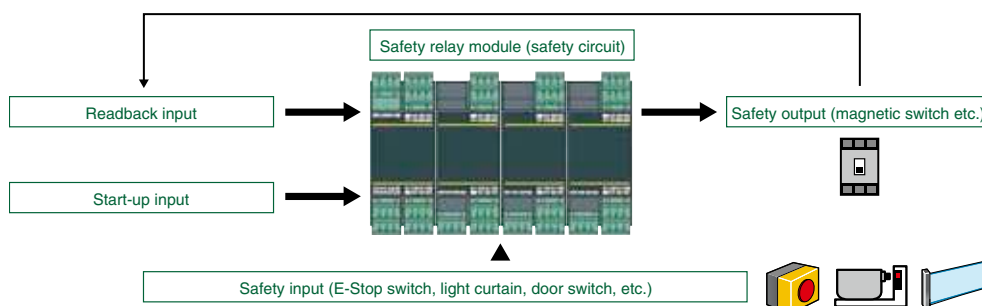


• CPU module (WS0-CPU1) supports Flexi Link with EFI for safety communications between safety controllers. Safety communications between safety controllers can be easily established at a low cost just by connecting the CPU modules with dedicated cables (Flexi Link cables). Using Flexi Link, safety communication can be conducted between up to four safety controllers.



Safety relay module

The safety relay module integrates the emergency stop circuit and the restart circuit with a double safety relay. A basic safety function can be realized with just wiring, eliminating the need for programming and parameter settings. Furthermore, the number of I/O points can be increased by adding extension modules.





For further details, please refer to "MELSEC PROCESS CONTROL/REDUNDANT SYSTEM" catalog.

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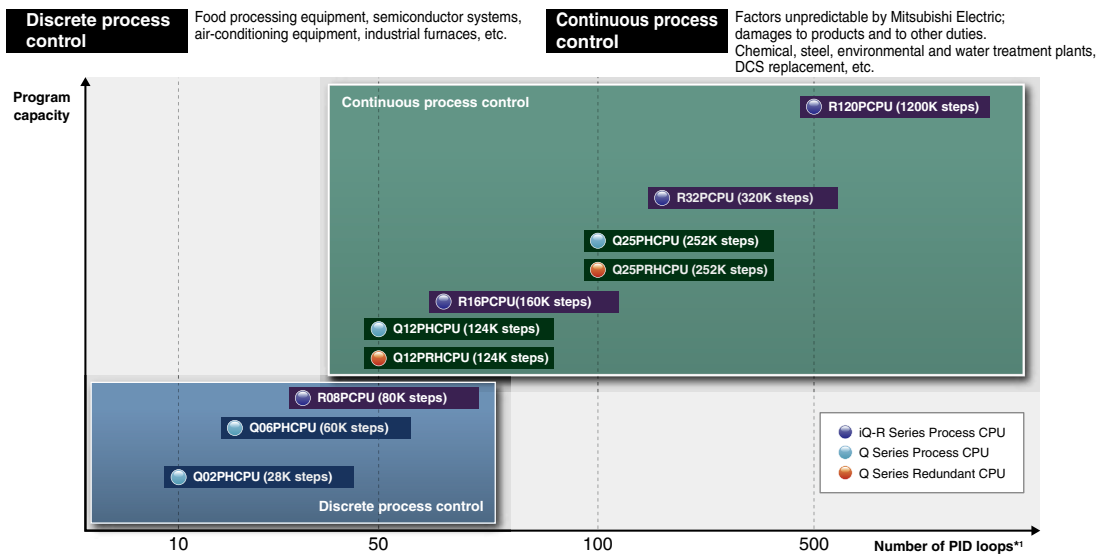
MELSEC PROCESS CONTROL

High-speed processing for full-scale monitoring and control

iQ-R Series **Q Series**

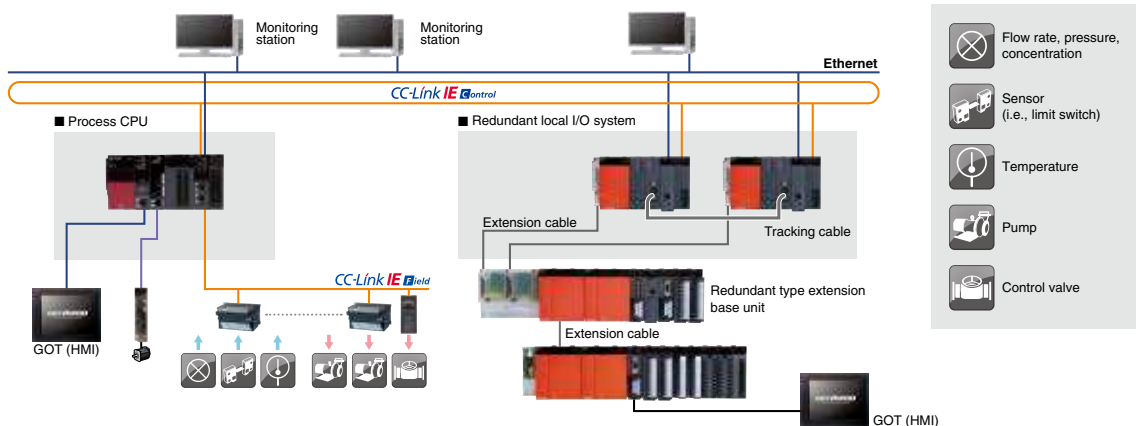
Flexible process control in a cost-efficient automation control solution

The MELSEC process control system consists of a number of specialized controllers specifically designed for use in process automation such as petrochemical refinement and food/beverage production. The CPUs include a specialized set of proportional-integral-derivative (PID) algorithms, and are highly flexible utilizing standard automation control system features rather than highly-specialized distributed control system (DCS) solutions that can be costly to replace and maintain. The system is available in two types, general and high-reliability; the latter of which is in applications such as water treatment and waste incineration.



*1: The maximum amount of usable PID loops may change depending on the actual program size used. Please refer to the relevant manuals for further details.

The MELSEC process CPU includes dedicated algorithms such as two-degree-of-freedom PID, sample PI, and auto-tuning. In addition, a high-reliability version is available which consists of dual CPU, power supply module, and network modules used together with a specialized high-reliability base unit. With high reliability, bumpless switch-over is achieved when a failure occurs such as in the CPU, network or power supply failure, ensuring continuous control where it is needed.





For further details, please refer to "iQ Platform C Controller" catalog.
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C Controller **iQ** Platform

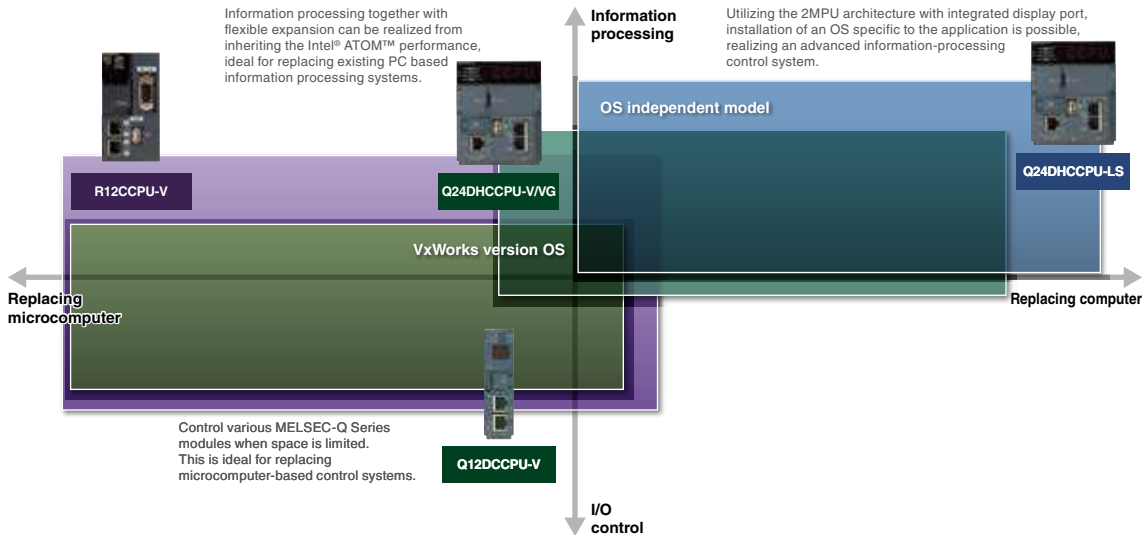
Expand on the embedded capabilities of the C Controller

iQ-R Series

Q Series

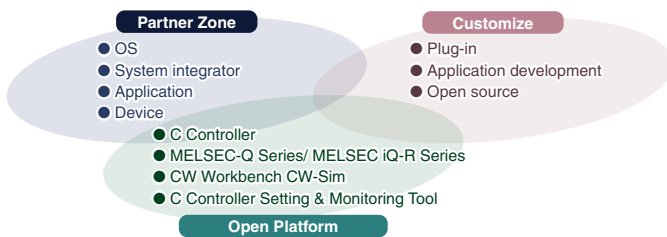
Robust and deterministic alternative to microcomputer/computer based systems

The MELSEC C Controller product range is capable of programming using C language and offers a realistic alternative to mainstream microcomputer/computer based systems. Being part of the MELSEC Series, the C Controller utilizes its robust industrial design and long product life cycle, offering an easy way to realize a cost-efficient solution together with supporting partner products, open source and custom-made applications. This lineup is further enhanced with the new MELSEC iQ-R Series multi-core ARM®-based C Controller.



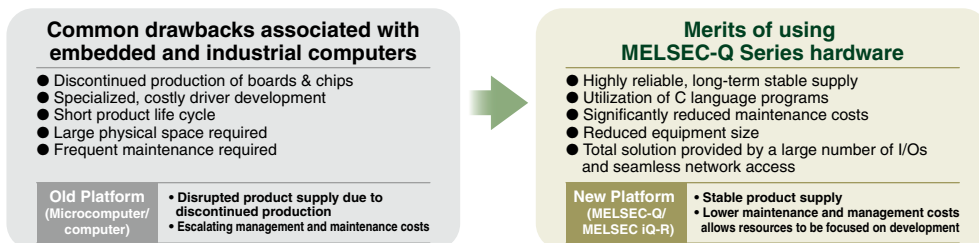
Generic platform utilizes partner products and open source applications

Highly customizable solution enables the integration of partner products, open source applications, and OS-independent capabilities onto a generic open platform.



Reduce common overhead expenses realizing a cost effective solution

The C Controller platform is a solution that realizes computer-level functionality without the burden of high maintenance costs usually associated with computers. In addition, by being based on the MELSEC control system, the C Controller has a robust design that is ideal for industrial environments.





SERVO SYSTEM CONTROLLER **iQ** Platform

Total system performance leads to maximum performance

- iQ-R Series**
- Q Series**
- L Series**
- iQ-F Series**

Lineup capable of responding to versatile sizes and applications

A full lineup of servo system controllers from Simple Motion modules to Motion Controllers supports all types of system configurations. Simple Motion modules are ideal for simple positioning control, and Motion Controllers are capable of controlling high-speed, multi-axis systems.

Simple motion module

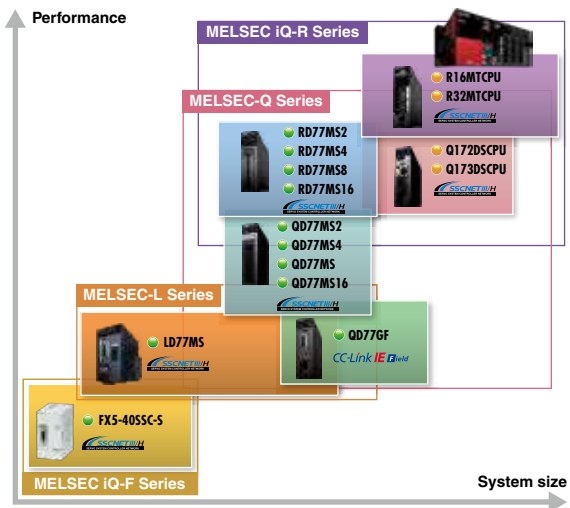
- MELSEC iQ-R Series
- MELSEC-Q Series
- MELSEC-L Series
- MELSEC iQ-F Series

- Simple positioning is executed simply by setting sequence programs
- Advanced synchronous control and cam control are available
- Safety system can be configured using the Functional Safety Unit.

Motion controller

- MELSEC iQ-R Series
- MELSEC-Q Series

- Increases productivity by supporting the iQ Platform
- Advanced synchronous control and cam control are available
- Safety system can be configured using the Functional Safety Unit.



Total system performance leads to maximum performance

Mitsubishi Electric servo system controllers bring a revolutionary change to machine systems, with outstanding features including multiple CPUs connected through iQ Platform, advanced communication between servo amplifiers and motors, and partnerships with third-party companies.

Easy-to-use engineering environment

Programming efficiency is essential for optimal productivity. The MELSEC iQ-R Series optimizes all procedures, from design and debugging to startup.



Works perfectly with PLC CPU

Connected via the high-speed system bus, the programmable controller CPU and motion CPU work together performing machine and motion control, respectively.

High-speed system bus Approx. 40 x faster	Operation cycle Approx. 1.5 x faster 6 axes/0.222 ms
Data exchange cycle with PLC CPU Approx. 4 x faster 0.222 ms	Event task fixed cycle Fastest 0.222 ms (compared to previous model)

Partnership for higher productivity

Equipped with advanced dual engines that are only possible with our cutting-edge iQ platform technology, the MELSEC iQ-R Series is one step ahead of competitors, accelerating equipment evolution by collaborating with partner companies.



SSCNET Partner Association

High-performance servo amplifiers

Connecting amplifiers to "SSCNET III/H" optical networks for highly accurate high-speed control when using the MR-J4 dedicated engine and high-resolution encoder.



AC servo MELSERVO-J4 Series

Speed frequency response of servo amplifier 2.5 kHz	SSCNET III/H communication speed 150 Mbps
---------------------------------------------------------------	-----------------------------------------------------



For further details, please refer to "Mitsubishi Servo System Controllers MELSEC IQ-R Series" and "Mitsubishi Servo System Controllers" catalogs.

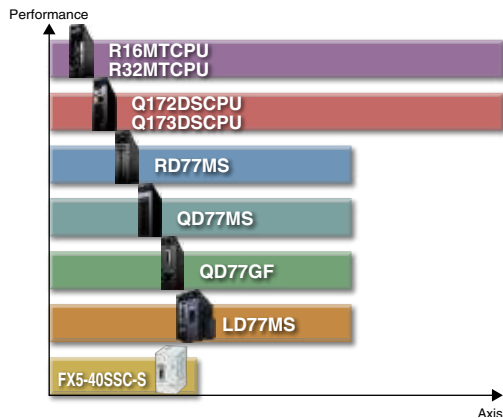
L (NA)03100ENG, L (NA)03062

Extensive motion control

Positioning, speed-torque (press-fit) and advanced synchronous control among other forms of motion control for various equipment, including X-Y table, packaging and press-fitting machines. Ideal features designed to provide optimal solutions for machines and applications.

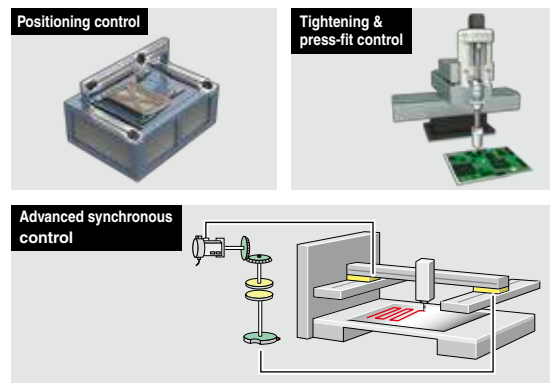
Performance

An extensive lineup covers different performance, function, and programming needs.



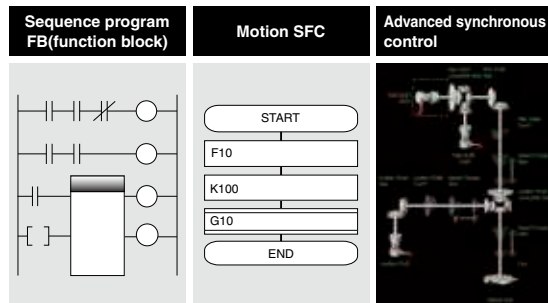
Control

Versatile motion control support different machine operations.



Programming language

Choose from various programming languages provided to meet user preferences.



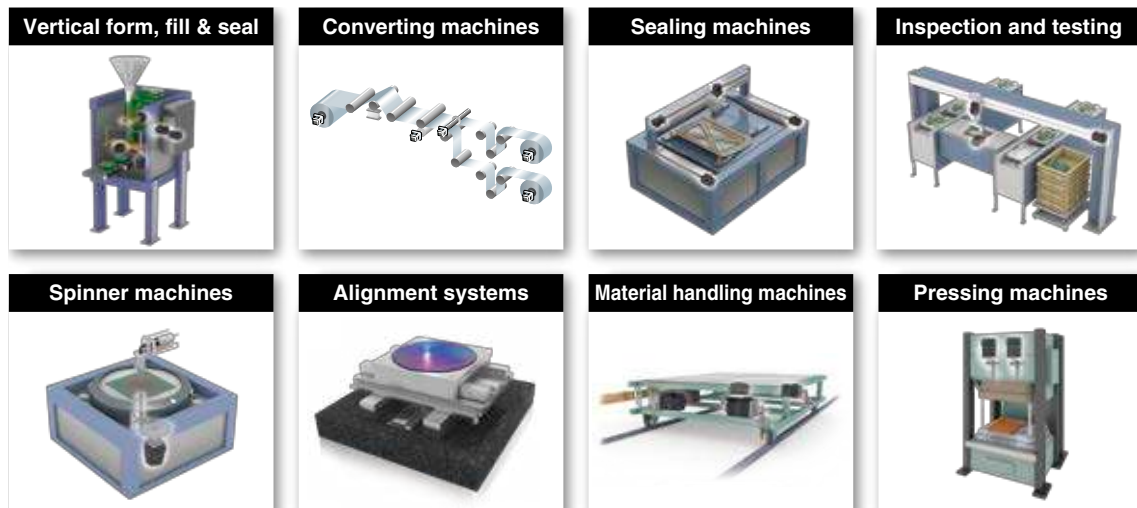
Functions

Select the functions best suited to match equipment requirements from an extensive list of options.

Cam auto-generation	Mark detection function	Optional data monitor	Absolute position system
Unlimited length feed	Target position change function	Safety observation function	M-code output
Digital oscilloscope function	Master-slave operation	Vision system	

Upgrading different equipment

Wide range of motion control applications adaptable for machines of different types and sizes.





For further details, please refer to "Mitsubishi INDUSTRIAL ROBOT MELFA F Series" catalog.

L(NA)09067ENG

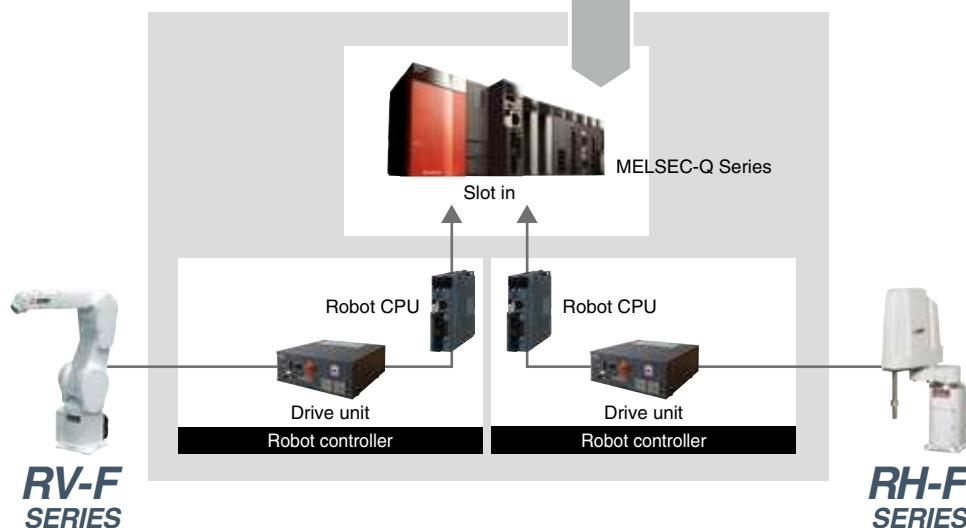
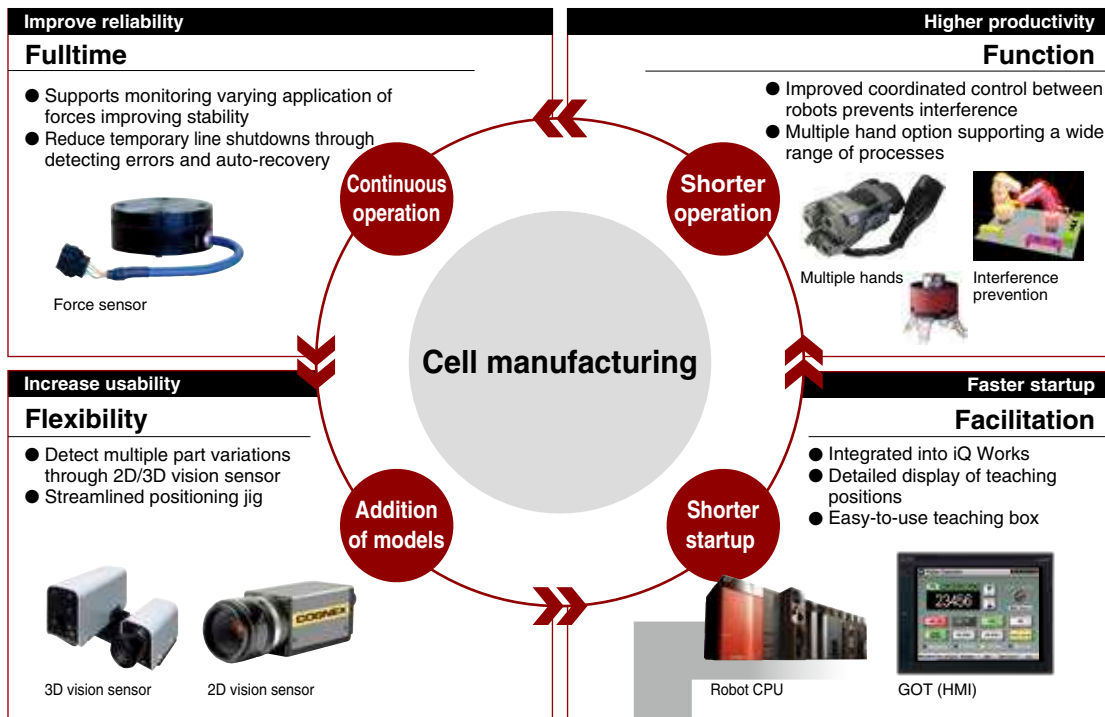
ROBOT CONTROLLER **iQ** Platform

Opening up multiple communication options through integration to the iQ Platform

Q Series

Leveraging the integration of robots into manufacturing lines

By integrating the use of MELFA robots into the iQ Platform, it's possible to leverage communication with the automation controller, motion control and HMI. Utilizing the multi-CPU capabilities and integrated network/engineering environment, optimizing productivity can be achieved regardless of how complex or demanding the application.





For further details, please refer to
"iQ Platform CNC C70 Series" catalog.
K-KL2-9-C0050-G

CNC CPU iQ Platform

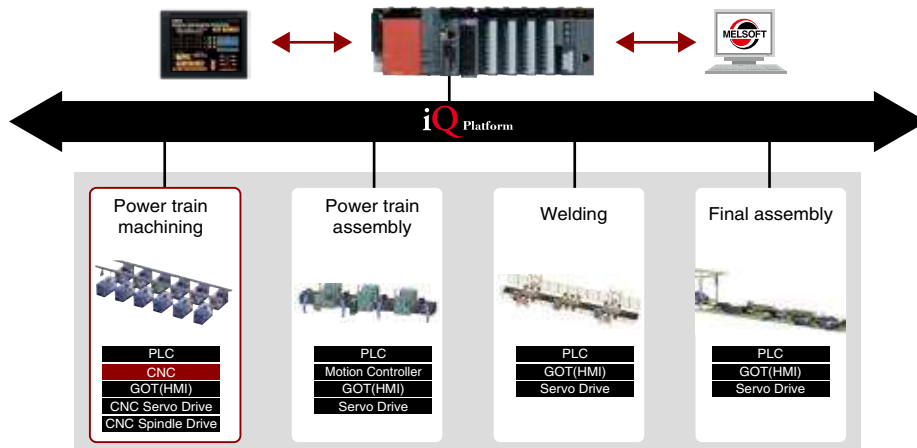
Providing maximum reduction in TCO

Q Series

Integrating high-performance CNCs and high-speed programmable controllers

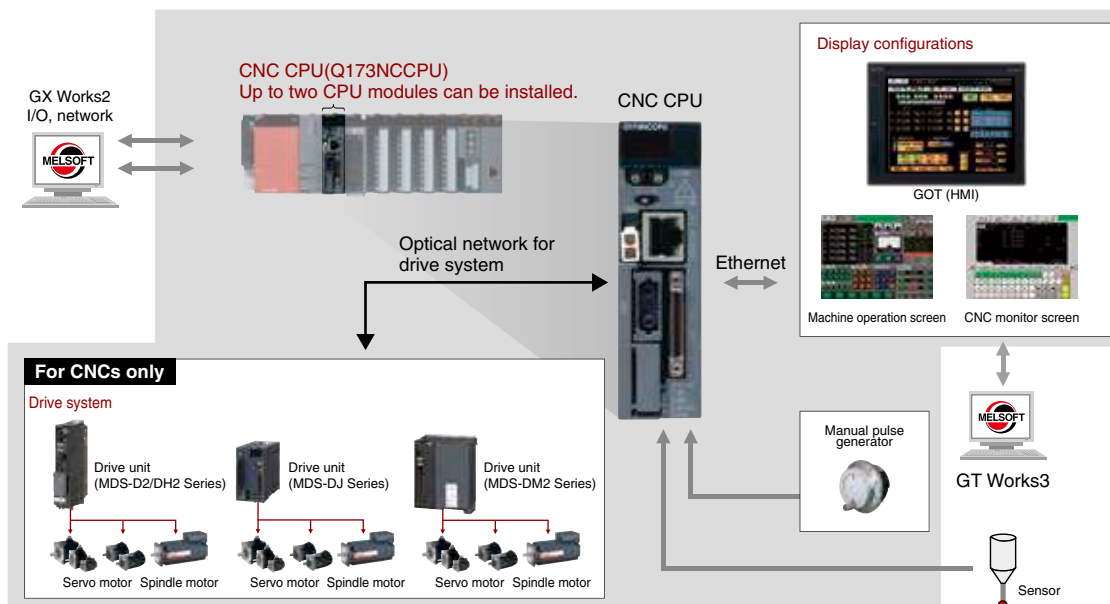
Integrate high-performance CNCs with the iQ Platform and experience substantially enhanced overall control system operation time, improving performance and enhancing productivity. Using standard modules contributes to reducing maintenance costs even further as replacements are generally available.

iQ Platform makes it possible to optimize controller use for various lines.



High-speed communication between CNCs and programmable controllers

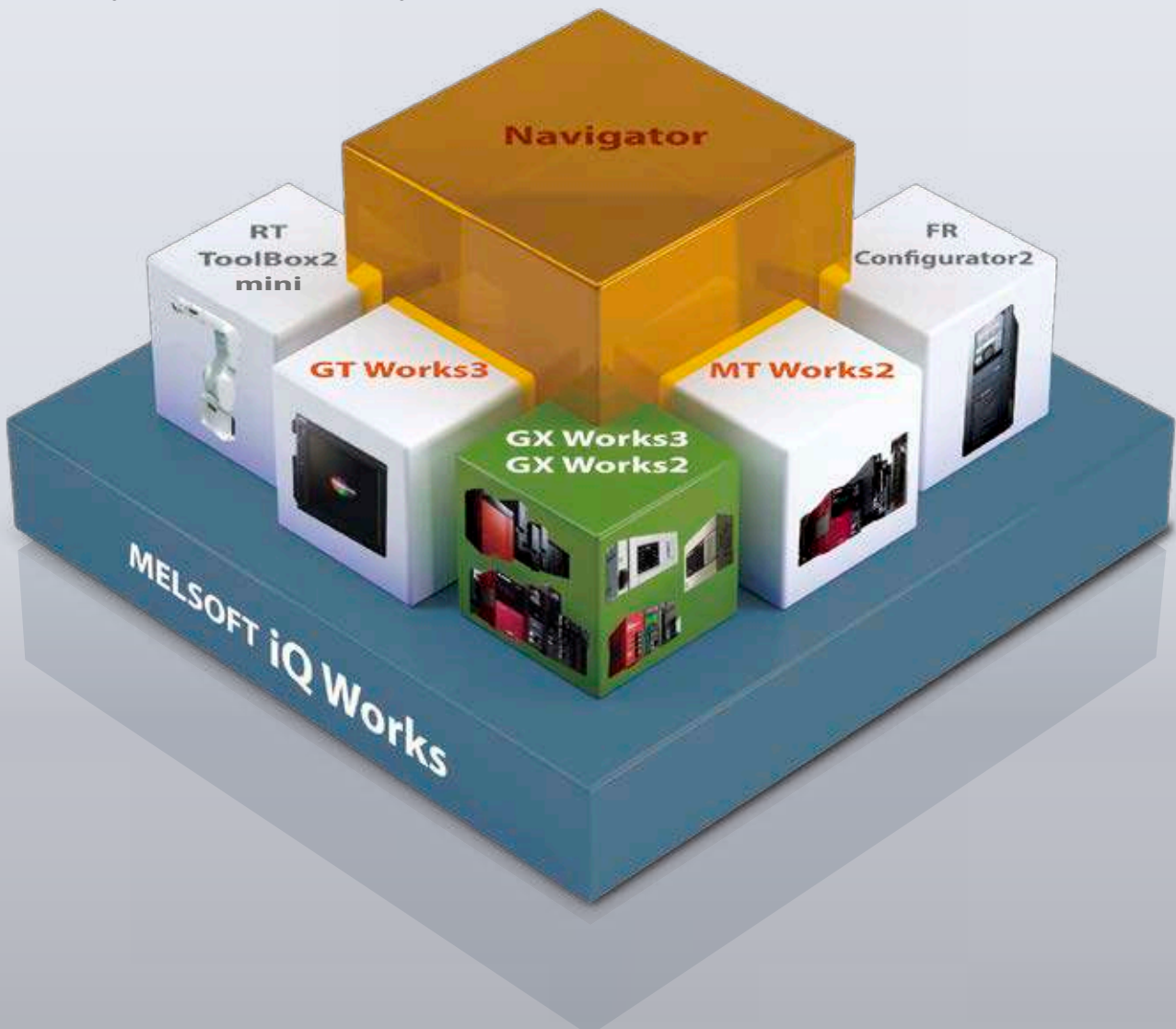
High-speed CPU processing supported by fast communication bus speeds enable high-speed communication between controllers.



Programmable controller engineering software

MELSOFT iQ Works

MELSOFT iQ Works is an integrated software suite consisting of GX Works3, MT Works2, GT Works3, RT ToolBox2 mini and FR Configurator2, which are programming software for each respective product. Integration is further enhanced with MELSOFT Navigator as the central system configuration incorporating an easy-to-use, graphical user interface with additional project-sharing features such as system labels and parameters. The advantages of this powerful integrated software suite are that system design is made much easier with a substantial reduction in repetitious tasks, cutting down on errors while helping to reduce the overall TCO.





For further details, please refer to "MELSOFT iQ Works" catalog.
L(NA)08232ENG

System management software

MELSOFT Navigator

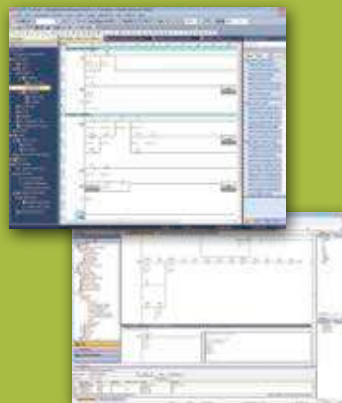
System level graphic-based configuration tool that simplifies the system design by providing a visual representation of the system. System management features such as system-wide parameterization, labels and block reading of project data are also included.



Programmable controller engineering software

MELSOFT GX Works3

Latest generation of software available for the MELSEC iQ-R and iQ-F Series control systems. Includes a graphic-based system configuration, integrated motion control setup, multiple language support, in addition to extensive diagnosis and troubleshooting functions.



MELSOFT GX Works2

Incorporating backward compatibility of programs created with GX Developer, GX Works2 further improves its functionality resulting in reduced engineering costs.

HMI/GOT screen design software

MELSOFT GT Works3

The GOT (Graphic Operation Terminal) screen creation software is designed with three main features; Simplicity, Graphics Design, and Easy-Usability, further helping to create graphic screens in fewer steps.



Motion controller engineering software

MELSOFT MT Works2

The motion control design and maintenance software includes intuitive graphic based programming together with a digital oscilloscope simulator.



Robot engineering software

MELSOFT RT ToolBox2 mini

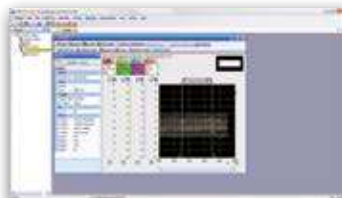
Supports various steps from programming, to commissioning, evaluation, and maintenance. In addition, improved preventative maintenance is realized through the use of an integrated 3D robot simulator.



Inverter setup software

MELSOFT FR Configurator2

Simplifies the setup and maintenance of AC inverters. Parameters can be registered easily and distributed to multiple inverters when replacing, and activation of the PLC function all from one setup screen.



Programmable controller engineering software

GX Works3

Reducing development costs through intuitive engineering

The engineering software is sometimes considered a fundamental part of the control system in addition to the hardware components. The core of the system, it includes various steps of the product life cycle, from the design stage all the way to commissioning and maintenance of the control system. Today, intuitive, easy-to-use software suites are expected as a standard for modern manufacturing needs. GX Works3 is the latest generation of programming and maintenance software offered by Mitsubishi Electric specifically designed for the MELSEC iQ-R and MELSEC iQ-F Series control system. It includes many new features and technologies to ensure a trouble-free engineering environment solution.

Intuitive engineering software covering the product development cycle

Graphic-based configuration realizing easier programming

Various intuitive features such as graphic-based system configuration and an extensive module library (module label/FB) provided as standard.

Integrated motion-control system configuration

From setting simple motion module parameters and positioning data setup to servo amplifier configuration, everything is packaged into an easy-to-use engineering environment.

Conforms to IEC 61131-3

GX Works3 realizes structured programming such as ladder and ST, making project standardization across multiple users even easier.

Simple point and click programming architecture

System design / Programming / Debug/maintenance

Straightforward graphic based system configuration design

- Simply drag and drop from the module list to easily create system configuration
- Directly setup parameters for each module
- Automatically reflect changes in the layout to the module parameters

System design / Programming / Debug/maintenance

MELSOFT library enables efficient programming through "Module Label/FB"

- Assign convenient label names to internal devices, rather than manually entering a device name every time
- Simply drag & drop module FBs from the MELSOFT Library directly into the ladder program, making programming even easier.

System design / Programming / Debug/maintenance

Extensive version control features

- Flexibly register program change (historical) save points
- Easily visualize and confirm program changes

Global realization by multi-language support

To adhere to today's global production needs, GX Works3 supports multi-language features at various levels, from the multiple language software menu to the device comment language switching feature.

Module configuration

Easily parameterize each module directly from the configuration editor.

Module list

Simply drag & drop modules directly into the module configuration.





For further details, please refer to
 "Programmable controller engineering software
 MELSOFT GX Works3.
 L(NA)08334ENG

GX Works3

One Software, Many Possibilities

Reduce engineering time by 60%*1

Tab view multiple editors

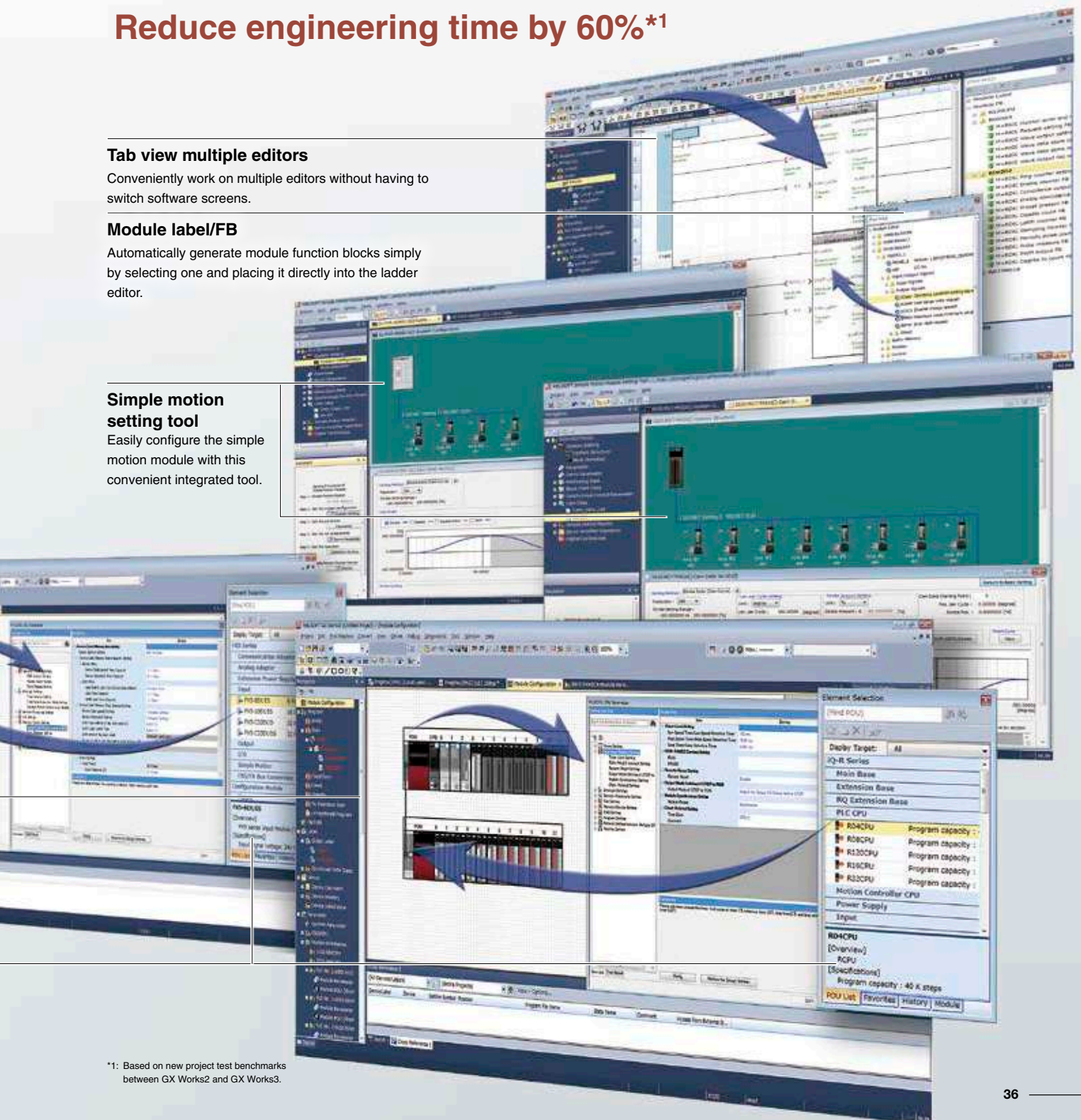
Conveniently work on multiple editors without having to switch software screens.

Module label/FB

Automatically generate module function blocks simply by selecting one and placing it directly into the ladder editor.

Simple motion setting tool

Easily configure the simple motion module with this convenient integrated tool.



*1: Based on new project test benchmarks between GX Works2 and GX Works3.

Programmable controller engineering software

GX Works2

The image shows the GX Works2 software interface with several key features highlighted by red boxes and lines pointing to descriptive text:

- Parameter:** A tree view on the left side of the interface, showing various settings like "Intelligent Function Module" and "Global Device Comment".
- Initial Program:** A section within the parameter tree, containing options like "Initial prog.", "Scan Program", and "Standby Program".
- Program:** A section within the parameter tree, containing options like "Auto", "Cycle Operation (Right)", and "Restart Operation".
- Connection Destination:** A button at the bottom of the parameter tree.
- Sample comments:** A text box in the ladder logic editor showing comments like "CH1 A/D", "CH1 A/D", and "Analog for data".
- A comment for a word device:** A text box in the ladder logic editor showing a comment for a word device, "Analog for data".
- In-line ST:** A text box in the ladder logic editor showing a comment for a word device, "Analog for data".
- Offline debugging:** A window titled "GX Simulator2" showing "Tool Options" with "Switch" (RESET, STOP, RUN) and "LED" (MODE, RUN, ERR., USER) indicators.
- Intuitive cross-reference list:** A table at the bottom of the interface showing a list of devices used in the program.

Sample comments are available to quickly input comments

A comment for a word device can be set at bit level, differentiating similar devices

In-line ST for directly inserting operation instructions into the ladder

Easily setup intelligent function modules

Title display enables program contents to be checked at a glance

Project tree view showing the engineering process

Easily switch connection targets within the same window

Offline debugging with hardware emulation

Intuitive cross-reference list displays devices used in the program



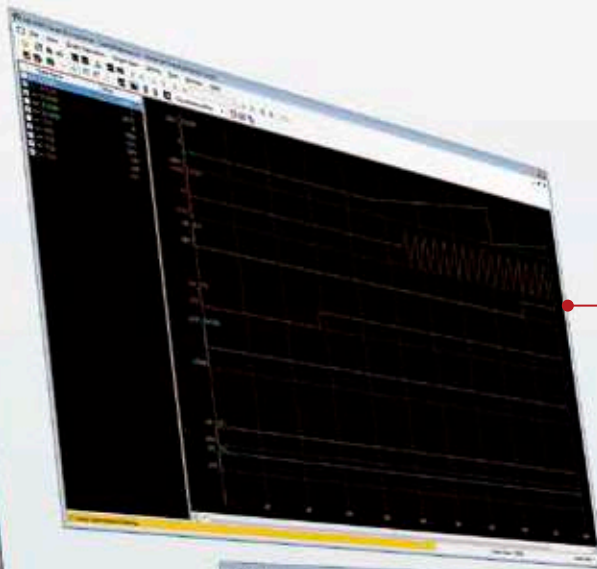
For further details, please refer to "iQ Platform Compatible Programmable Controller Engineering Software MELSOFT GX Works2" catalog.

L(NA)08122E

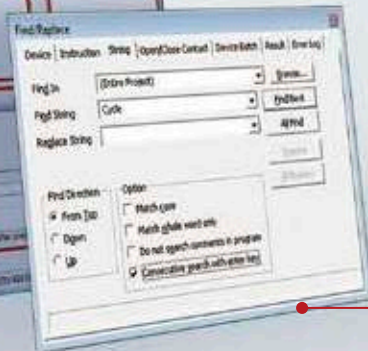
Engineering software designed for easy usability

GX Works2 has been designed to realize intuitive programming, maintenance, and debugging through various integrated features. The software supports IEC 61131-3 programming amongst the compatible programming languages, making it easy to use across multiple applications. It has an extensive maintenance features set, allowing easy setup of the control system, connected networks, and various intelligent I/O. GX Works2 is designed with customers in mind including consolidated "all-in-one" packaged programming that integrates programming, configuration and simulation tools.

Watch window for quick device/label monitoring



Sampling trace enables reduced setup and maintenance



System monitoring provides easier maintenance



Further simplify debugging with device search functionality

Intuitive project management

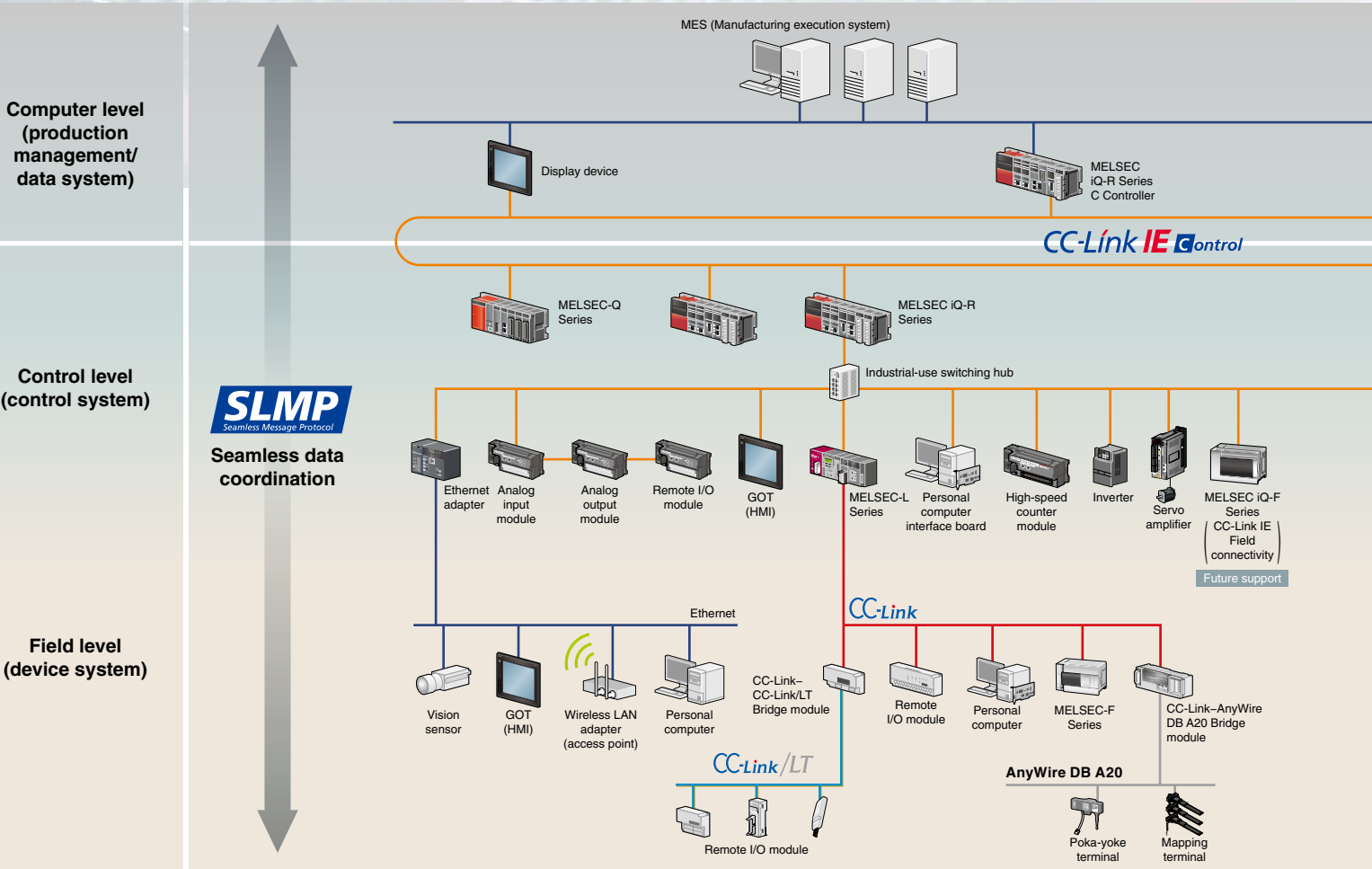
The project tree view, which is situated to the left of the docking window, enables easy understanding and management of the entire project. Various features such as viewing titles and handling multiple projects enable a very efficient and cost-effective way to manage projects, substantially reducing the overall engineering time. Project restoration is also easy using the back-up and restore feature.

Extensive program standardization

Program standardization is simplified using function blocks (FBs) within the program. The FBs make it easy to duplicate programming code that can be used multiple times in the project, or for other projects. This reduces programming time and realizes more efficient programming. A function library is also available, enabling standard FBs to be imported into projects, which saves on initial creation time.

Easy maintenance and debugging

Dedicated system monitoring and PLC diagnostics simplify control system maintenance and make error monitoring easy. Various security features are incorporated to protect intellectual property, such as controlling access to projects involving multi-person development teams using hierarchical-dependent access. Debugging using comments and project simulation is fairly easy, requiring no hardware.



Seamless connectivity within all levels of manufacturing

CC-Link IE Control

CC-Link IE Control is a high-reliability distributed control network designed to handle very large data communications (128 K word) over a high-speed (1 Gbps) dual-loop optical or twisted-pair cable topology.

CC-Link IE Field

CC-Link IE Field is a versatile gigabit Ethernet-based network integrating controller, I/O control, safety control, and motion control in a flexible wiring topology supporting star, ring, and line configurations.

BACnet™

Supporting the communication protocol standard BACnet™ client, this network is mainly used to monitor and control air-conditioning, lighting and fire detection, etc., in building automation applications.

CC-Link CC-Link Safety CC-Link/LT

CC-Link is a high-speed and highly reliable deterministic I/O control network that realizes reduced wiring. This open field network is a global standard, originating from Japan and Asia with more than 1,400 partner products.

AnyWire

AnyWire is a sensor level distributed control network that is designed to reduce installation costs by utilizing general-purpose wiring and robot cables.



SSCNET III/H is a dedicated high-speed, high-performance, and highly reliable servo system control network that offers flexible long-distance wiring capabilities based on optical-fiber cable topology.

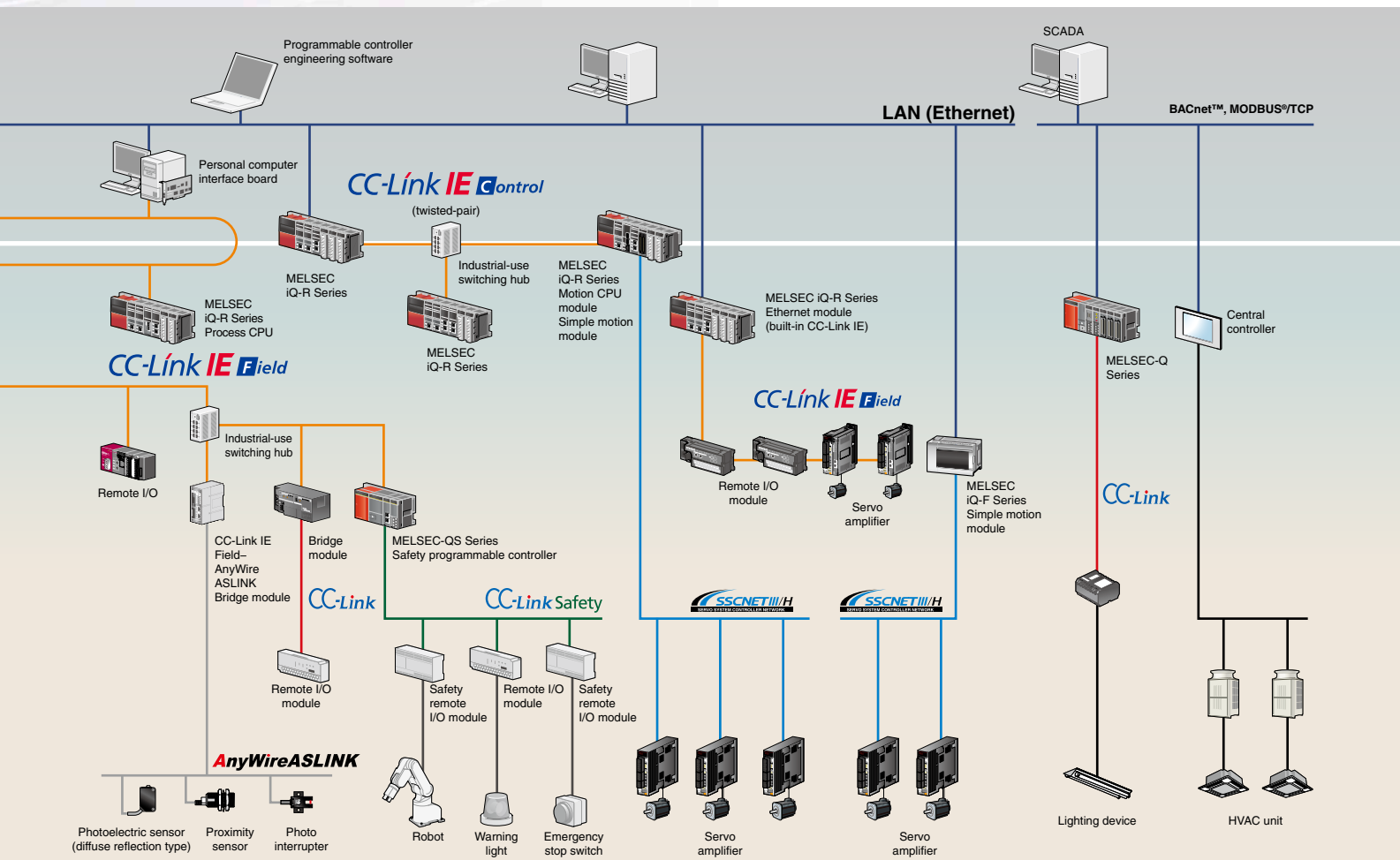
MODBUS®

MELSEC supports the MODBUS® protocol network, realizing easy communication, with various MODBUS® slave devices compatible with Ethernet MODBUS®/TCP or RS-232/422/485 serial communication.



For further details, please refer to "Ethernet-based Open Network CC-Link IE Product" and "Open Field Network CC-Link Compatible Product" catalogs.

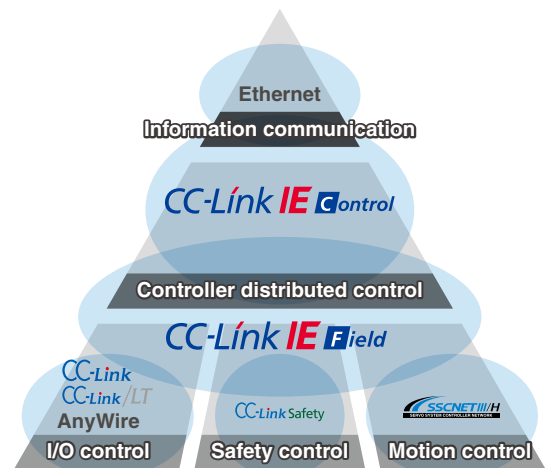
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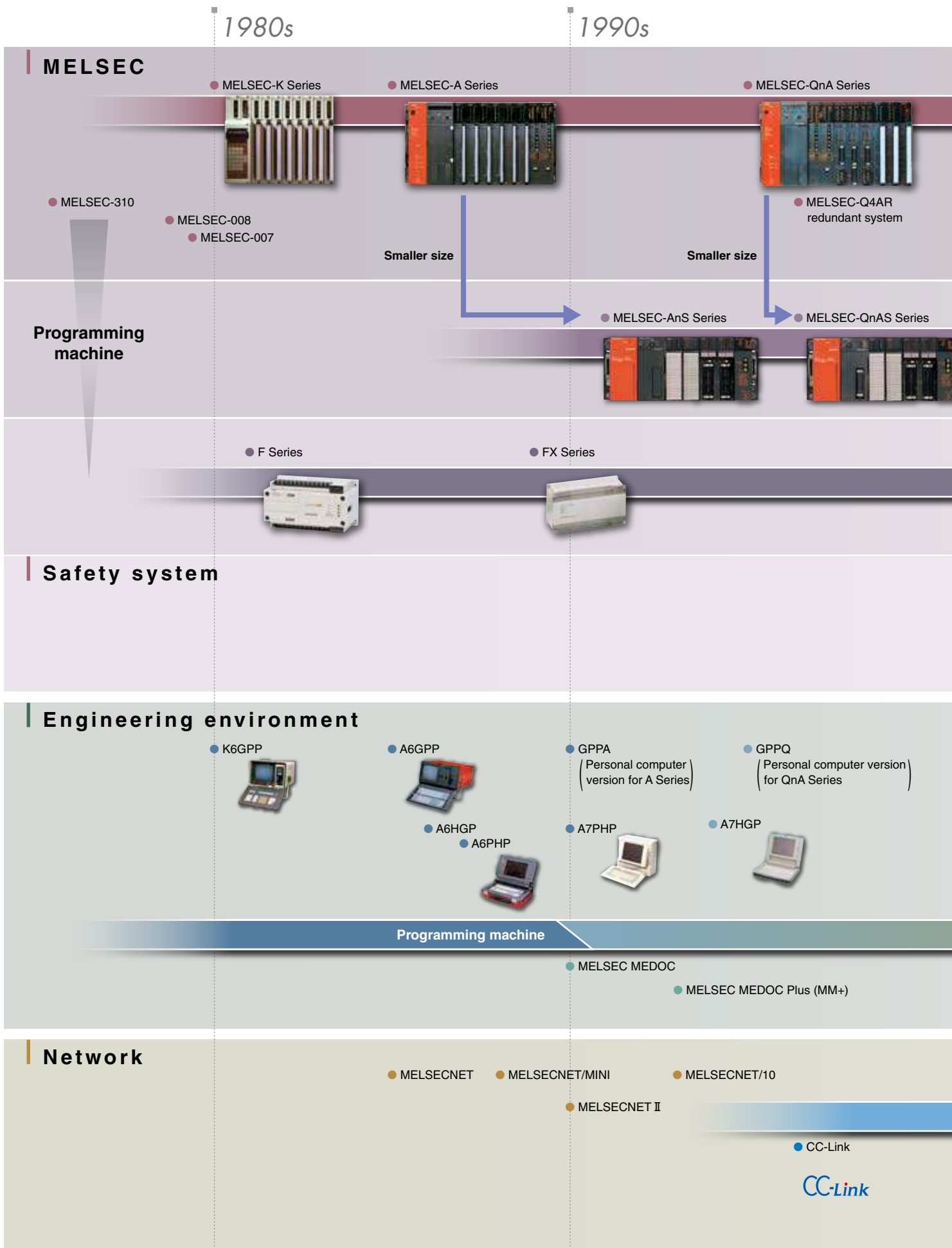
Reduce system configuration costs

Seamless connectivity is possible between production management systems, programmable controllers and other devices without having to worry about network hierarchies or boundaries. Monitoring and programming can be performed from virtually anywhere on the network, and on Ethernet devices supporting SLMP^{*1}, such as vision sensors and RFID controllers.

^{*1}: SLMP (Seamless Message Protocol): Is a client/server protocol that enables communications between Ethernet-ready and CC-Link IE compatible devices



MELSEC History



MELSEC with history and experience.
Satisfying new challenges while utilizing past expertise

2000s

2010s

● MELSEC-Q Series



- MELSEC-Q process CPU
- MELSEC-Q redundant system
- MELSEC-Q C Controller

Towards high functionality/performance

● MELSEC iQ-R Series



- MELSEC iQ-R C Controller
- MELSEC iQ-R Process CPU

Medium- to large-scale control

Towards high functionality/performance

● MELSEC-L Series



Small- to medium-scale control

● FX3 Series



Towards high functionality/performance

● MELSEC iQ-F Series



Small-scale and stand-alone

- MELSEC-QS Series Safety programmable controller
- MELSEC-WS Series safety controller



Safety control

● MELSOFT GX Developer (Windows® version GPP)



● MELSOFT iQ Works

● MELSOFT GX Works2



● MELSOFT GX Works3



Personal computer software

- MELSOFT GX IEC Developer

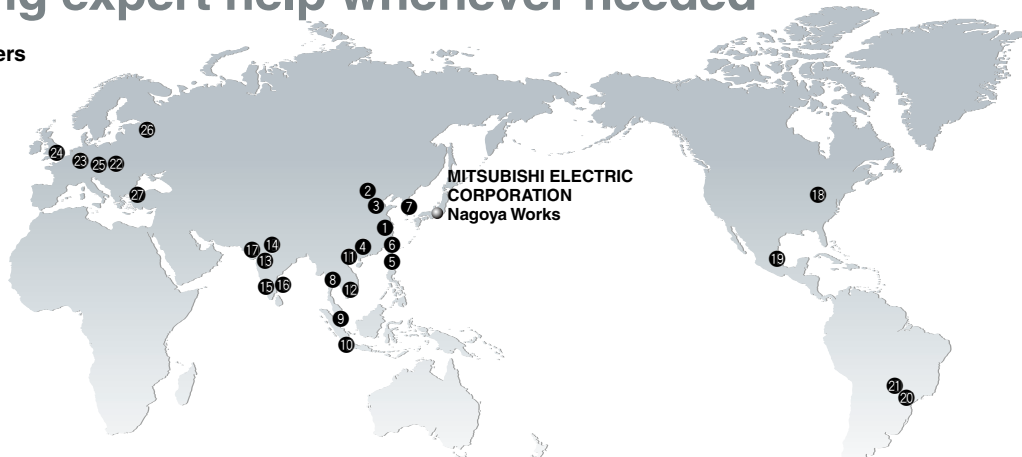
● MELSECNET/H

- CC-Link/LT
- CC-Link Safety
- CC-Link IE Field
- CC-Link IE Control supporting twisted pair cables
- CC-Link IE Control
- CC-Link IE Field safety communication function
- CC-Link IE Field motion function

CC-Link IE

Extensive global support coverage providing expert help whenever needed

■ Global FA centers



China

1 Shanghai FA Center

MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD.
No.1386 Hongqiao Road, Mitsubishi Electric Automation Center, Shanghai, China
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2 Beijing FA Center

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3 Tianjin FA Center

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4 Guangzhou FA Center

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Taiwan

5 Taichung FA Center

MITSUBISHI ELECTRIC TAIWAN CO.,LTD.
No.8-1, Industrial 16th Road, Taichung Industrial Park, Taichung City 40768, Taiwan, R.O.C.
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6 Taipei FA Center

SETSUYO ENTERPRISE CO., LTD.
3F, No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan, R.O.C.
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7 Korea FA Center

MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD.
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8 Thailand FA Center

MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD.
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Indonesia

10 Indonesia FA Center

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11 Hanoi FA Center

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12 Ho Chi Minh FA Center

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13 India Pune FA Center

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14 India Gurgaon FA Center

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18 North America FA Center

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19 Mexico FA Center

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20 Brazil FA Center

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21 Brazil Boituva FA Center

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26 Russia FA Center

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27 Turkey FA Center

MITSUBISHI ELECTRIC TURKEY A.Ş Umraniye Branch
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Factory Automation Global website

Mitsubishi Electric Factory Automation provides a mix of services to support its customers worldwide. A consolidated global website is the main portal, offering a selection of support tools and a window to its local Mitsubishi Electric sales and support network.

■ From here you can find:

- Overview of available factory automation products
- Library of downloadable literature
- Support tools such as online e-learning courses, terminology dictionary, etc.
- Global sales and service network portal
- Latest news related to Mitsubishi Electric factory automation

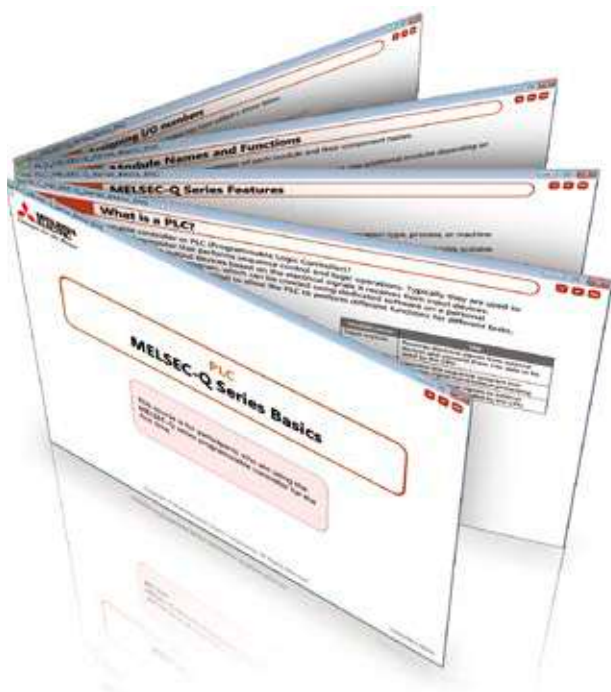
Mitsubishi Electric Factory Automation
Global website:

www.MitsubishiElectric.com/fa



Online e-learning

An extensive library of e-learning courses covering the factory automation product range has been prepared. Courses from beginner to advanced levels of difficulty are available in various languages.



■ Beginner level

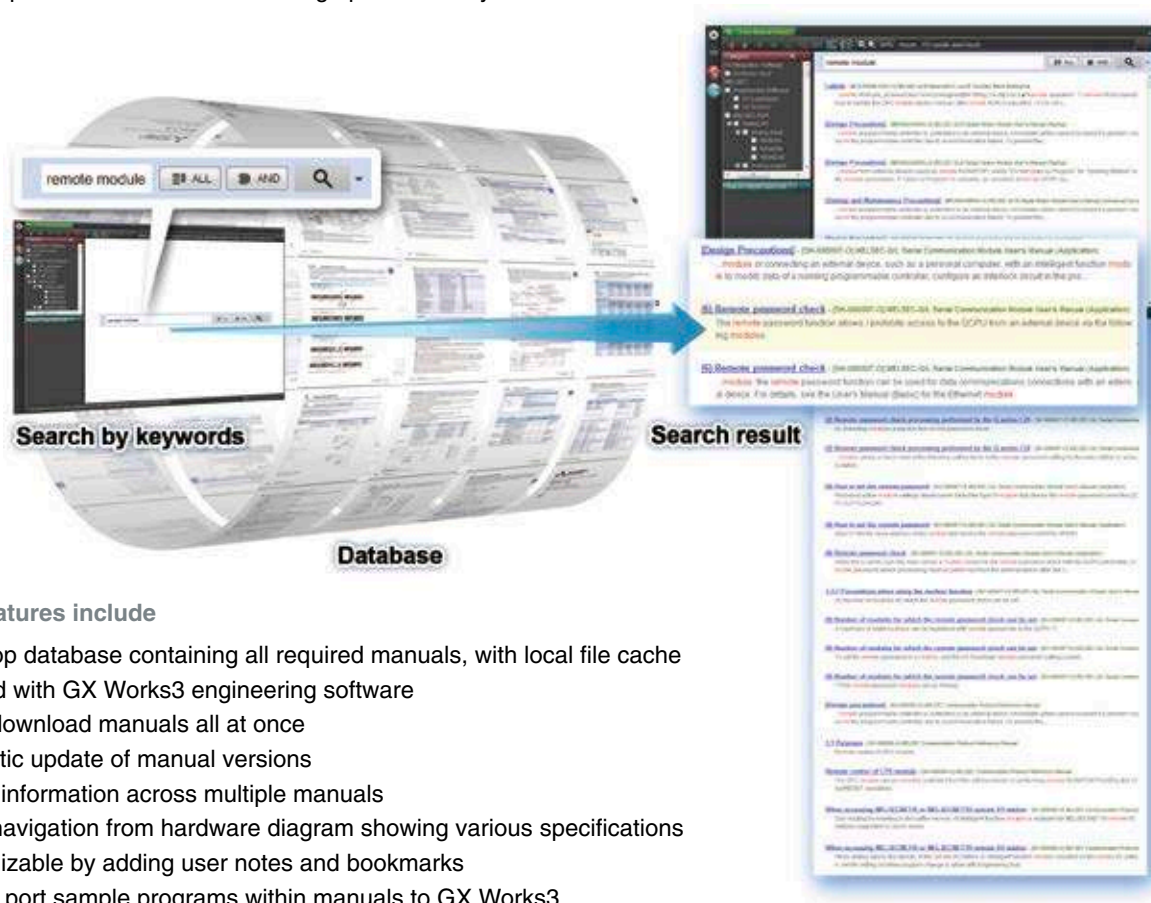
Designed for newcomers to Mitsubishi Electric Factory Automation products gaining a background of the fundamentals and an overview of various products related to the course.

■ Basic to Advanced levels

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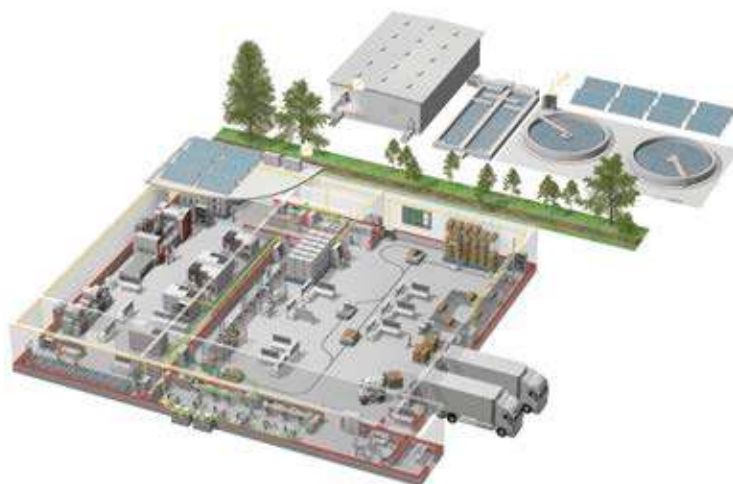
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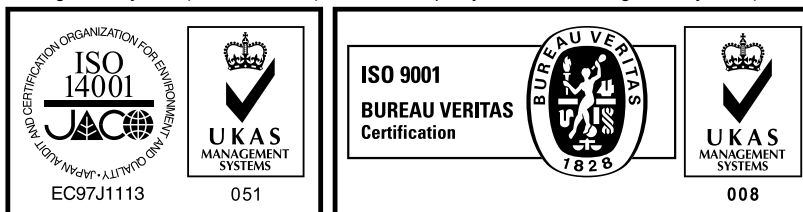
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