

FACTORY AUTOMATION

Mitsubishi Electric Logic Simulator MELSOFT Mirror

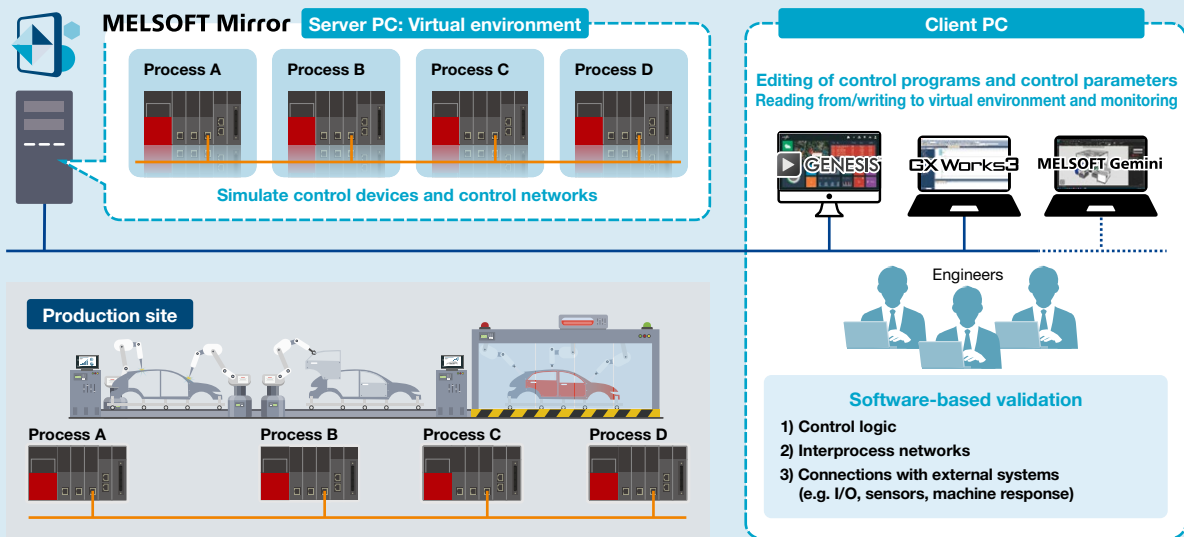


 **MELSOFT Mirror**

MELSOFT Mirror

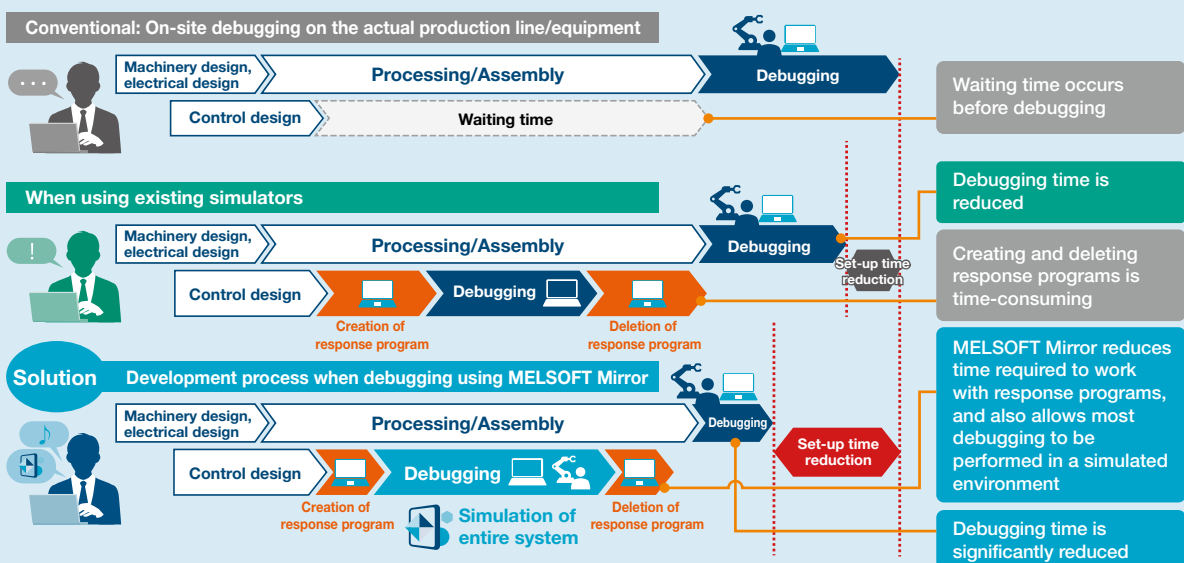
MELSOFT Mirror is software that can perform simulation of the entire control system at the production site.

By connecting to engineering software (GX Works3), SCADA (GENESIS™), or user's original software, the behavior of production lines and machinery can be validated without actual devices. It can achieve front-loading of development processes thus accelerating development speed.



Problems can be solved through software-based validation.

Front-loading of the development process and shortening the set-up period is possible.



Glossary

■ Response program

It is prepared to simulate the responses of external devices and networks.

For software-based validation, it is necessary to edit the control program used in the actual machines, which means creating and deleting response programs.

Solve manufacturing-site troubles with MELSOFT Mirror



Issue 1 When performing desktop verification

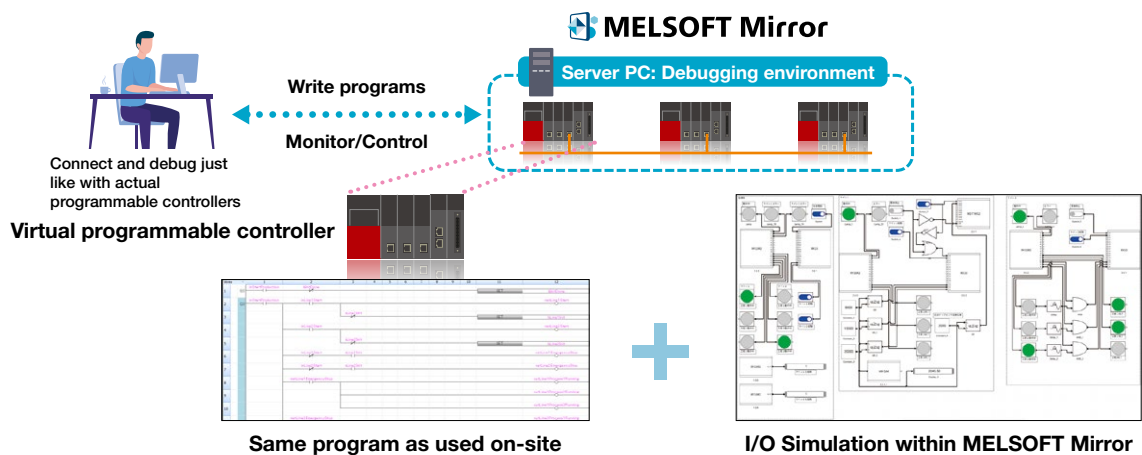
It takes time and effort to modify programs to debug the system without the actual equipment.
Program modifications can affect scan time, and there is a risk of forgetting to delete them.



MELSOFT Mirror can achieve high-accuracy simulation with minimal effort.

Advantage

MELSOFT Mirror can be used to set-up a debugging environment without modifying the verification target program.



Issue 2 When preparing for desktop verification

You want to debug a system that includes multiple programmable controllers.
Preparing a debugging environment by gathering actual devices is time-consuming.



MELSOFT Mirror can simulate the entire system without actual devices.

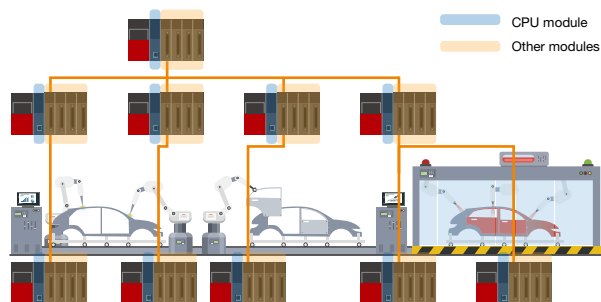
Advantage

It is possible to set-up systems including networks within a virtual environment. Before setting up any actual machines, it is possible to verify control programs without using any actual machines or setting up any hardware.

Number of supported modules for verification: Up to 50
(CPU module: Up to 30)

Configuration example: 10 CPU modules and 40 other modules*

*: Network modules, I/O modules, etc.

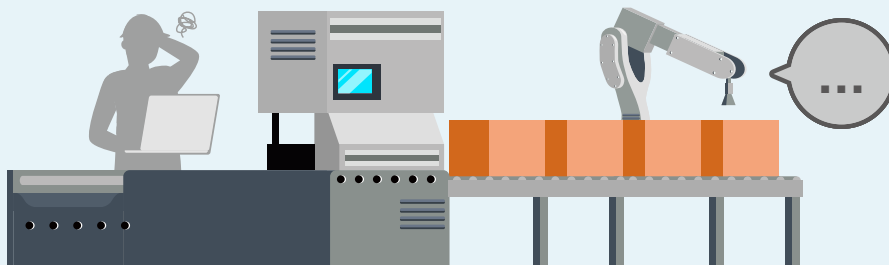


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Issue 3 Operation verification



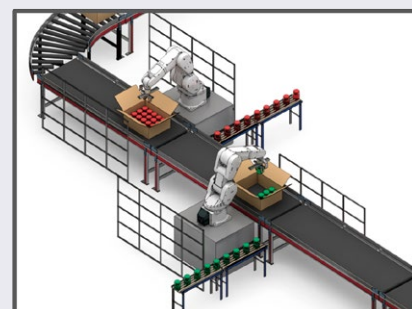
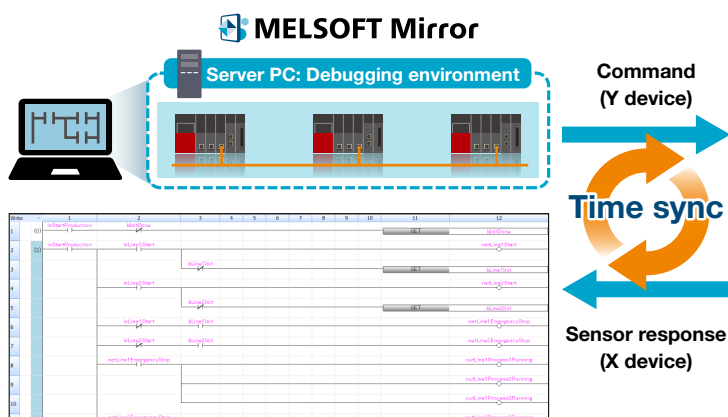
Mechanical checks and programmable controller program debugging are performed separately, which can result in on-site machine failures and rework. The more complex and faster the equipment, the greater the risk of problems; existing simulators may not provide sufficient verification.



 **MELSOFT Mirror** can accurately debug programs and equipment by time-synchronizing with an external tool.

Advantage

By synchronizing with 3D simulator MELSOFT Gemini, it is possible to manipulate devices in 3D space via the simulation of I/O and Simple Motion modules. It is possible to achieve a debugging environment that's closer to on-site conditions by providing the control program with feedback that accounts for the physical position of components and operational parameters of machines.



Control logic testing

Takt time testing

Mechanical interference testing

Interlock testing

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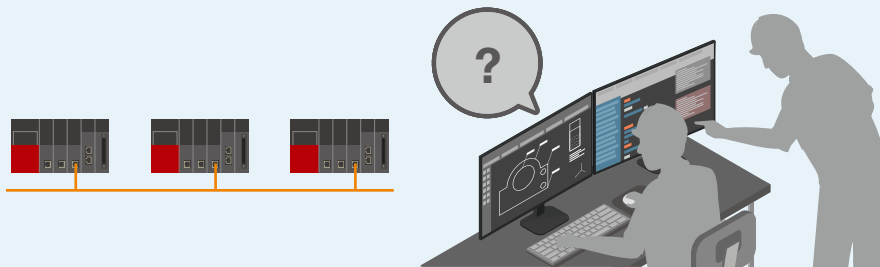
Issue 4 Collaborative work



When multiple people work on a project and a failure occurs, explaining how to reproduce the failure and setting up/debugging large systems in multiple parts is time-consuming.

Localized simulations limit effective data sharing and collaborative work.

It is also difficult to verify logic that depends on other nodes due to limitations in simulation scale.

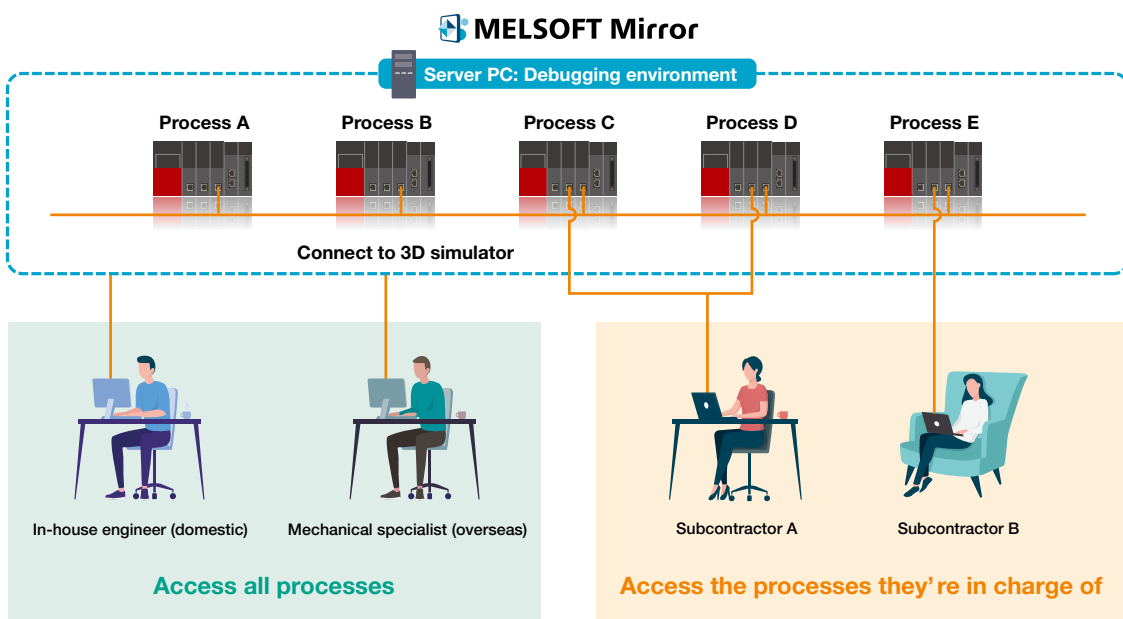


 **MELSOFT Mirror** allows multiple people to access the same debug environment concurrently.

Advantage

With one instance of MELSOFT Mirror, multiple people regardless of their location can simultaneously access the simulation and take part in debugging.

By accessing the same debugging environment, it is easier to debug collaboratively and to share information, improving debugging efficiency, overall quality of the system, and shrinking lead times.

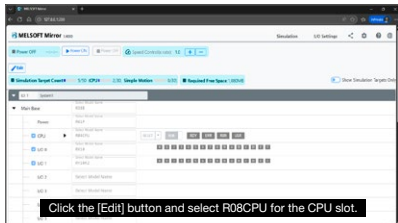




Benefits of MELSOFT Mirror ①

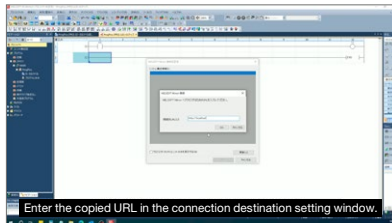
Intuitive operation for smooth simulation and device visualization

From opening a browser to monitoring in GX Works3, the setup steps are shown in video guides.



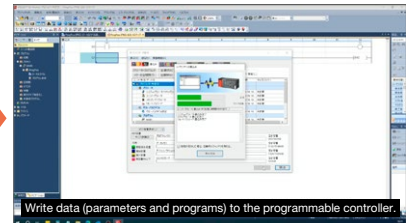
Setting system configuration

Open the MELSOFT Mirror hardware configuration window in a browser and select the programmable controller model from a dropdown list.



Connecting GX Works3 to MELSOFT Mirror

Copy and paste the URL of MELSOFT Mirror in the connection destination setting window of GX Works3.



Reading, writing, and monitoring control programs

Connect GX Works3 to MELSOFT Mirror in the same way you connect GX Works3 to a physical programmable controller, and read, write, and monitor control programs on MELSOFT Mirror.



Benefits of MELSOFT Mirror ②

Simulation speed control

You can change the simulation speed of the control program running in the virtual environment, achieving efficient desktop verification.

▶▶ Fast-forward (×4, ×2)

Shortens the time until verification starts by fast-forwarding to a specific point.

▶▶ Slow-motion (×1/2, ×1/4)

Enables detailed observation of data and control operation.

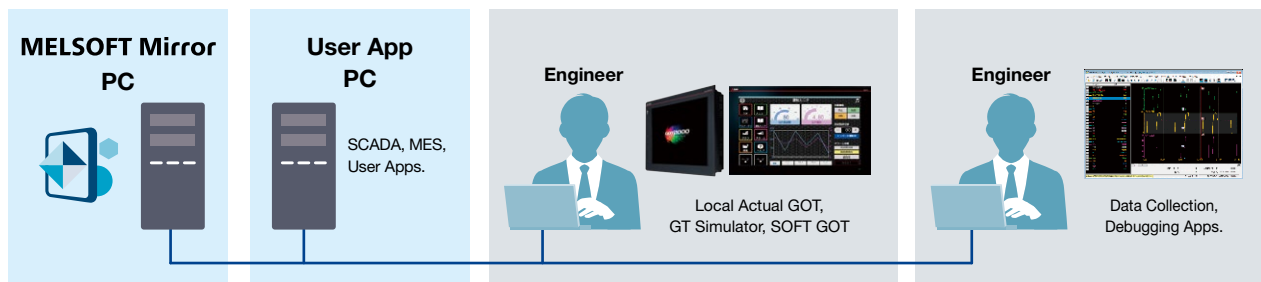
Multilingual support

The display language can be switched via the menu (Japanese/English/Chinese (Simplified)).



Benefits of MELSOFT Mirror ③

Connect external simulators or applications to debug in an environment similar to on-site environments



Debug both the control programs as well as other parts of the system (e.g. GOT, SCADA) without actual Programmable controllers and devices, as a complete system in an environment similar to on-site conditions. Additionally, improve debugging efficiency by connecting to data collection software.

Supported protocols **SLMP** (Seamless Message Protocol), MC Protocol, FMI (Functional Mock-up Interface), MELSOFT Connectivity

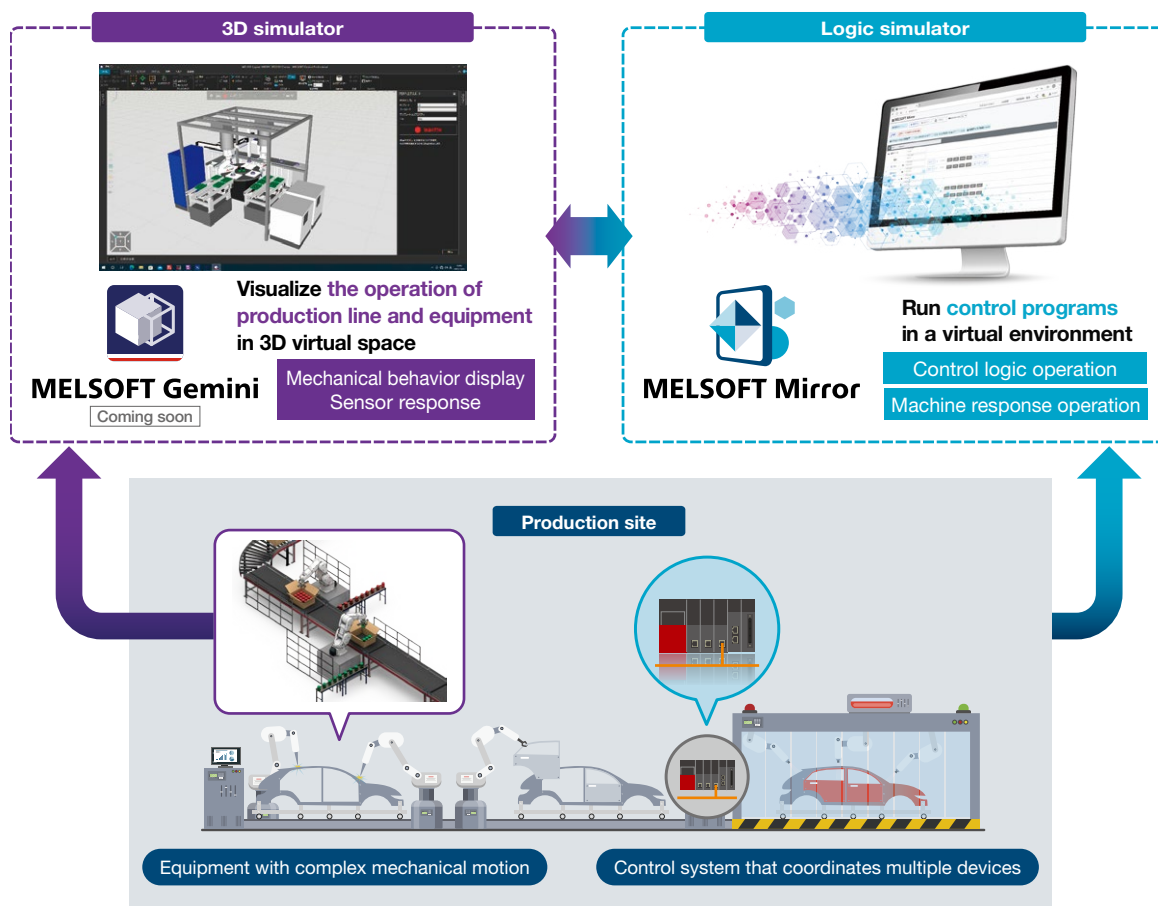


Synergies of MELSOFT Gemini and MELSOFT Mirror

Visualize equipment operation by using MELSOFT Mirror and a 3D simulator together

Link MELSOFT Mirror with a 3D simulator to visualize control-program execution in 3D and verify the operation of the entire production line and equipment.

Mechanical interference and collisions that are difficult to detect with just a logic simulator can be identified, helping to further reduce on-site adjustment work during commissioning.



License types and services

Licensing options are available to fit your budget and usage.

MELSOFT Mirror		
License Type	 Perpetual	 Subscription
License period	Unlimited	Annual renewal with notification of renewal timing
Supported number of modules	10, 20, or 50 modules 10-module add-on licenses are available.	10, 20, or 50 modules 10-module add-on licenses are available.
Services included with the license	The following services can be used during the license period. Support : Dedicated email support desk for users with license Version upgrades : New features, bug fixes	

*Customers with a perpetual license can temporarily increase the number of supported modules by purchasing additional subscription licenses.

Mitsubishi Electric Logic Simulator

MELSOFT Mirror

Product list

Model	Sales channel	Validity period	License type	Number of modules to be simulated simultaneously (up to 50)	
SW1DND-LCS-MA1	Distributor (for physical products)	Perpetual	Base	10	
SW1DND-LCS-MA2				20	
SW1DND-LCS-MA5				50	
SW1DND-LCS-MZ			Additional	+10	
SW1DND-LCS-MA1Q12		Subscription (one year)	Base	10	
SW1DND-LCS-MA2Q12				20	
SW1DND-LCS-MA5Q12				50	
SW1DND-LCS-MZQ12			Additional	+10	
SW1DND-LCS-MA1E		•Online store (e-commerce website) •Distributor (for digital products)	Perpetual	Base	10
SW1DND-LCS-MA2E					20
SW1DND-LCS-MA5E	50				
SW1DND-LCS-MZE	Additional			+10	
SW1DND-LCS-MA1EQ12	Subscription (one year)		Base	10	
SW1DND-LCS-MA2EQ12				20	
SW1DND-LCS-MA5EQ12				50	
SW1DND-LCS-MZEQ12			Additional	+10	
Included items	1) Installation Instructions: 1 copy 2) END-USER SOFTWARE LICENSE AGREEMENT: 1 copy 3) License Application Instructions: 1 copy 4) Entitlement ID Notification: 1 copy				

Supported modules and functions

Item		Specifications
UI		Configuration and status display Dedicated connection from GX Works3 to MELSOFT Mirror
Simulation engine	CPU module	RnCPU RnPCPU
		RJ71LP21-25 (MELSECNET/H) RJ71EN71 (CC-Link IE Control, CC-Link IE Field) RJ71GP21-SX (CC-Link IE Control) RJ71GF11-T2 (CC-Link IE Field)
	Network module	RD77MS□
		RX□, RY□
	Simple Motion module	SLMP (built-in Ethernet function of CPU module)
	I/O module	TCP/IP (built-in Ethernet function of CPU module) * Future support MELSOFT connection (built-in Ethernet function of CPU module)
External communication		Built-in function of MELSOFT Mirror
Machine response function		Fast-forward (x4, x2), slow-motion (x1/2, x1/4)
Simulation speed control		Japanese, English, Chinese (Simplified)
Supported language		

Recommended operating environment



Server PC on which the logic simulator is installed

Item	Specifications
Supported OS	•Microsoft® Windows® 11 (Pro, Enterprise) •Microsoft® Windows® Server 2022 •Microsoft® Windows® Server 2025
CPU	•Intel® Core™ i7 10th generation or later for the simulation of a system with up to 16 CPU modules •Intel® Core™ i9 10th generation or later for the simulation of a system with 17 or more CPU modules
Required memory	16GB or more
Storage	SSD (128GB or more free space) ¹⁾
File system	NTFS
Display resolution	800 × 600 or higher
Network ²⁾	Ethernet 1Gbps or faster

¹⁾1: A free space of 1GB or more is required on the system drive separately.
²⁾2: MELSOFT Mirror does not run if software that uses port numbers 5000 to 5010 is installed on the same personal computer.



Client PC

Item	Specifications
Supported OS	Microsoft® Windows® 11 (Pro, Enterprise)
Web browser	Microsoft Edge® (version 110 or later, IE mode not supported)
CPU	•Intel® Core™ i5 10th generation or later •Intel® Core™ i7 10th generation or later •Intel® Core™ i9 10th generation or later
Required memory	8GB or more
Storage	20GB or more free space
Display resolution	1600 × 1200 or higher
Network	Ethernet 100Mbps or faster



Mitsubishi Electric's e-F@ctory concept utilizes both FA and IT technologies, to reduce the total cost of development, production and maintenance, with the aim of achieving manufacturing that is a "step ahead of the times". It is supported by the e-F@ctory Alliance Partners covering software, devices, and system integration, creating the optimal e-F@ctory architecture to meet the end users needs and investment plans.



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