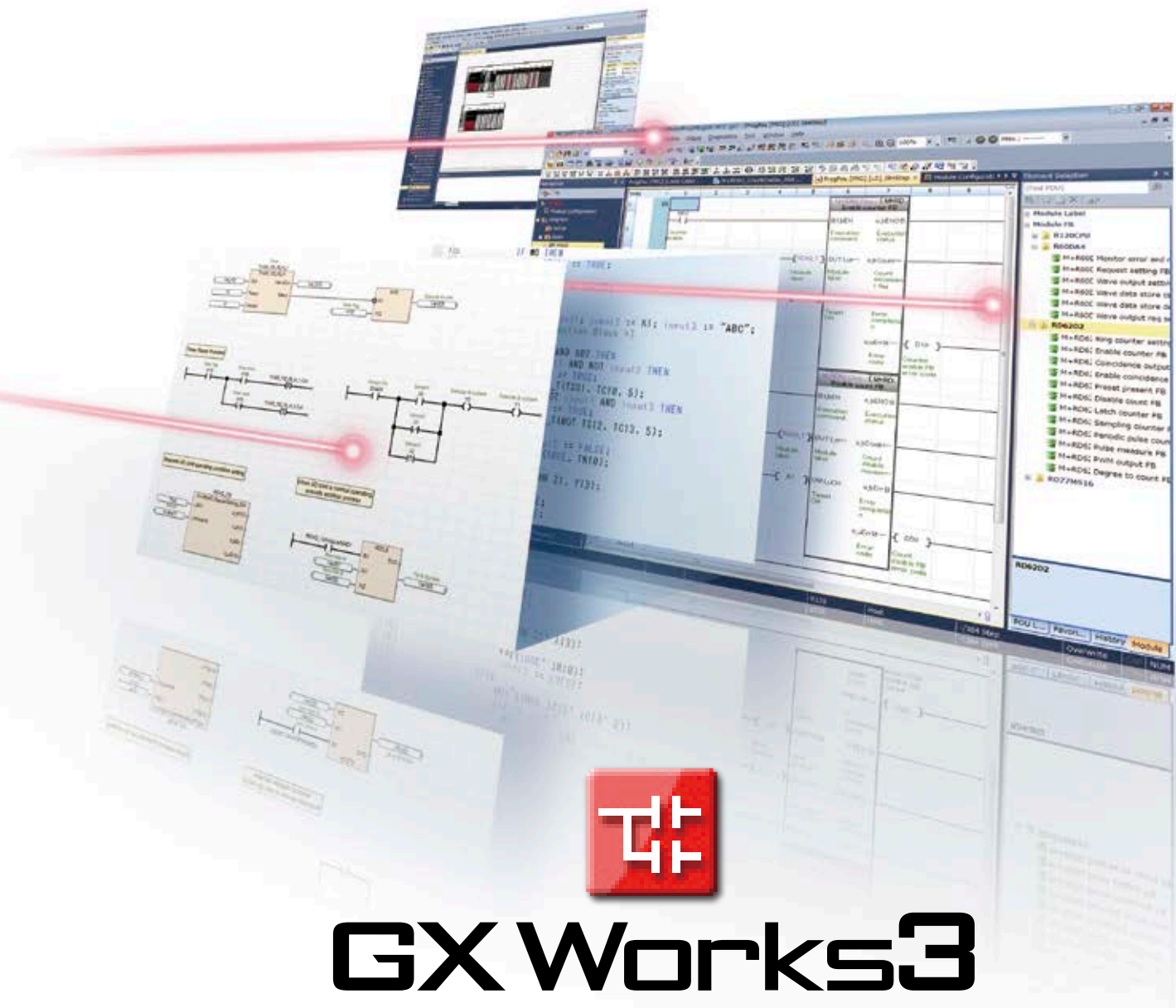


## Programmable controller engineering software MELSOFT GX Works3



# GX Works3

— One Software, Many Possibilities —

# 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.

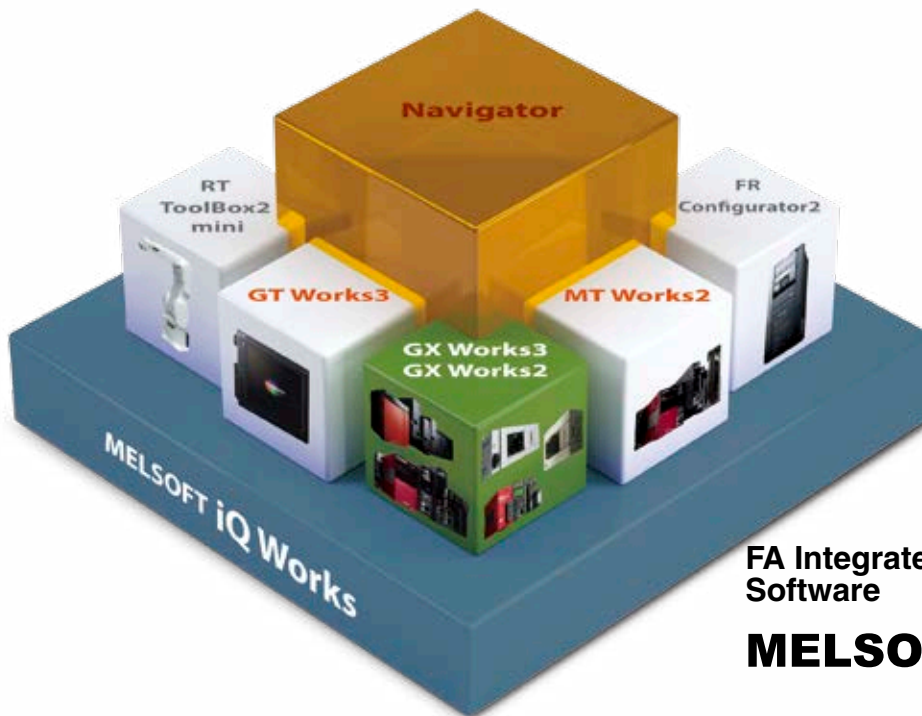
### **Industrial Automation Systems**

Maximizing productivity and efficiency with cutting-edge automation technology.

# FA Integrated 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.



FA Integrated Engineering  
Software

**MELSOFT iQ Works**

### 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**

GX Works3 is the latest generation of programming and maintenance software offered by Mitsubishi Electric specifically designed for the MELSEC iQ-R Series control system. It includes many new features such as graphic-based system configuration, integrated motion control setup, multiple language support, providing an intuitive engineering environment solution.

### HMI/GOT screen design software

#### MELSOFT **GT Works3**

This graphic operation terminal (GOT) screen creation software is designed with three main features; simplicity, graphics design and easy operation that help to create graphic screens in fewer steps.

### Motion controller engineering software

#### MELSOFT **MT Works2**

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

### Robot engineering software

#### MELSOFT **RT ToolBox2 mini**

This robot setup software 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**

This software 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.



## 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 Series control system. It includes many new features and technologies to ensure a trouble-free engineering environment solution.

# GX Works3

## One Software, Many Possibilities

Reduce engineering time by 60%\*1



### 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 labels/function blocks) 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.

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

## Simple point and click programming architecture

### System Design

#### 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

### Programming

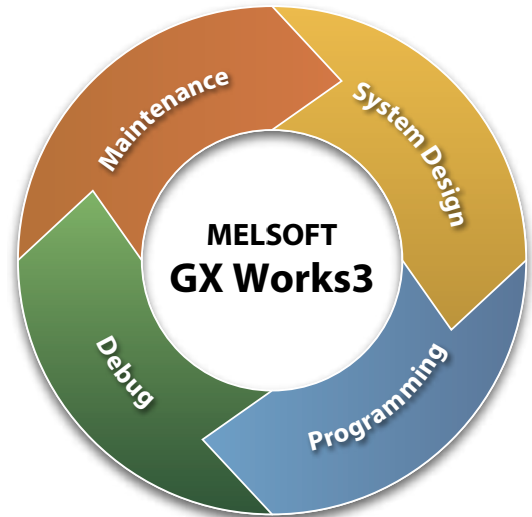
#### MELSOFT library enables efficient programming through “Module Label/FB”

- 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

### Debug, Maintenance

#### Extensive version control features

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



#### Tab view multiple editors

Conveniently work on multiple editors without having to switch between 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

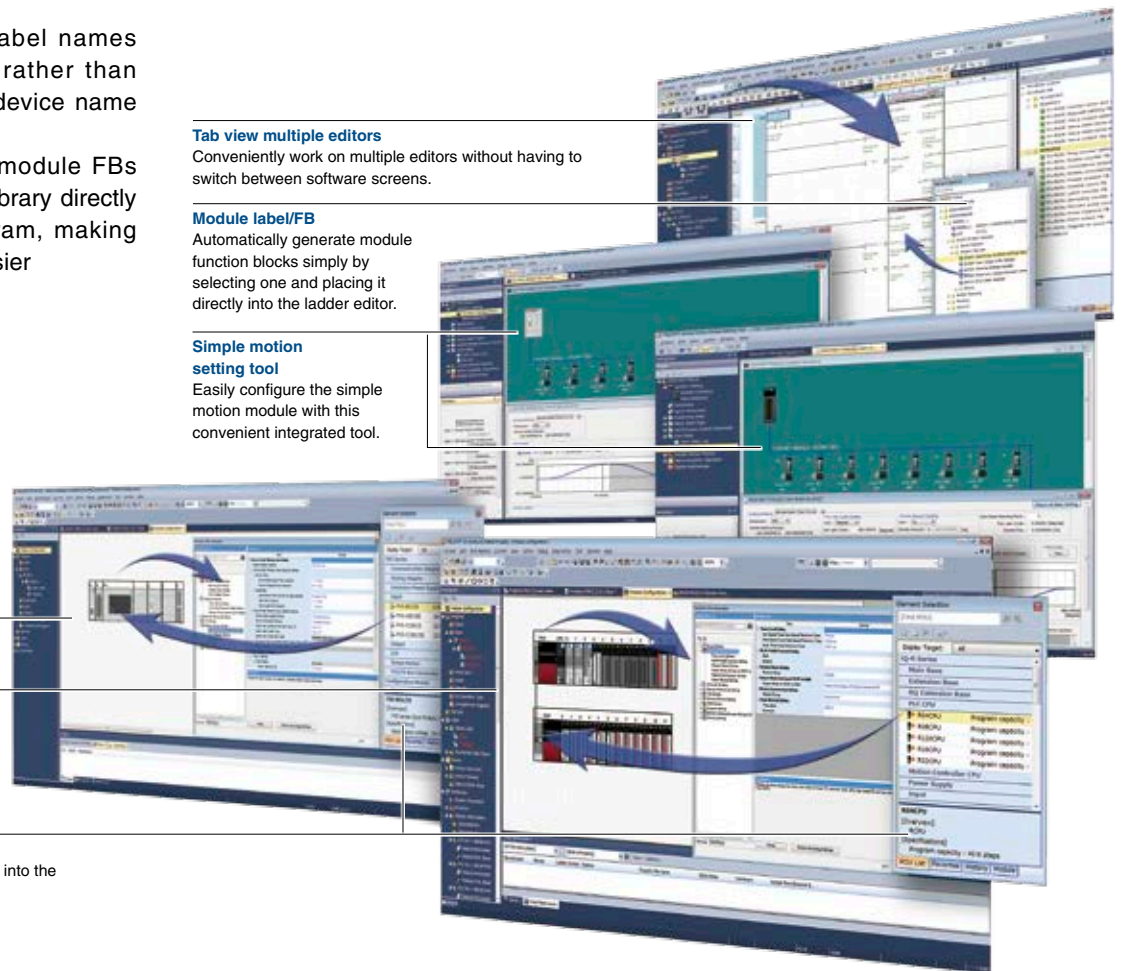
Easily configure the simple motion module with this convenient integrated tool.

#### Module configuration

Easily parameterize each module directly from the configuration editor.

#### Module list

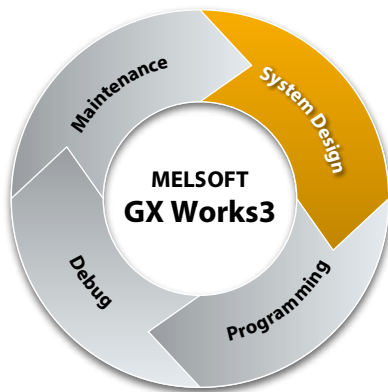
Simply drag & drop modules directly into the module configuration.



## 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

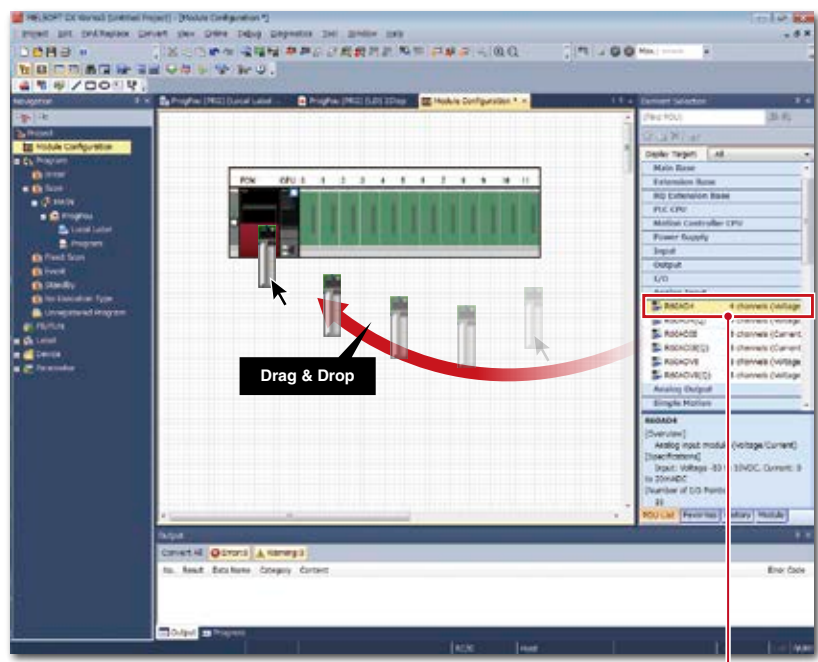
language software menu system to device comment language switching features.



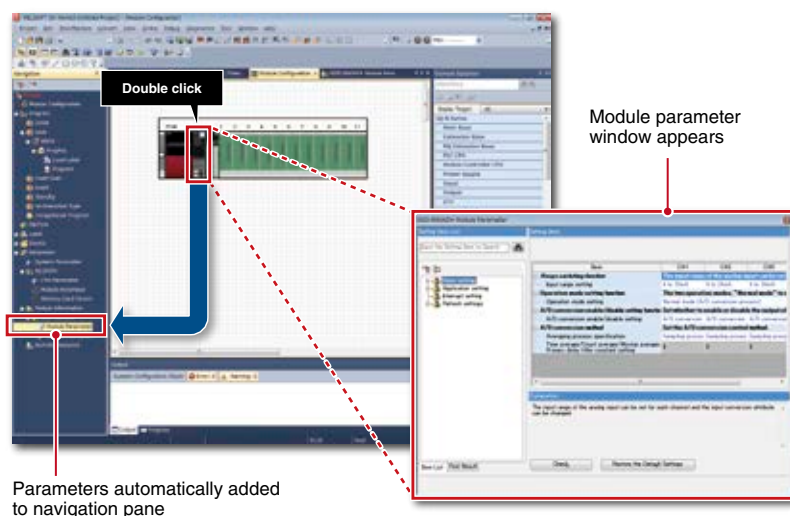
## System Design

### System design with a convenient parts library

Most projects start from system design, so having a software application that caters to this initial stage is important. GX Works3 incorporates a system design feature that enables system components to be assembled directly in the programming software. It includes a parts library consisting of MELSEC iQ-R Series modules that can be used to simplify system creation.



Simply drag & drop when adding a module



Parameters automatically added to navigation pane

Module parameter window appears

### Register module parameters on the fly

Another useful feature is the ability to register parameters automatically. Simply double-click on the desired module and the corresponding parameters will be registered in the project. A window with an easy-to-use parameter settings screen opens, enabling module parameters to be modified as needed.

## Integrated motion setup tool

GX Works3 is equipped with a special motion setup tool that makes it easy to change simple motion module settings such as module parameters, positioning data and servo parameters. Also, debugging is simplified using the fine-tuning cam data generation feature.

## Project window

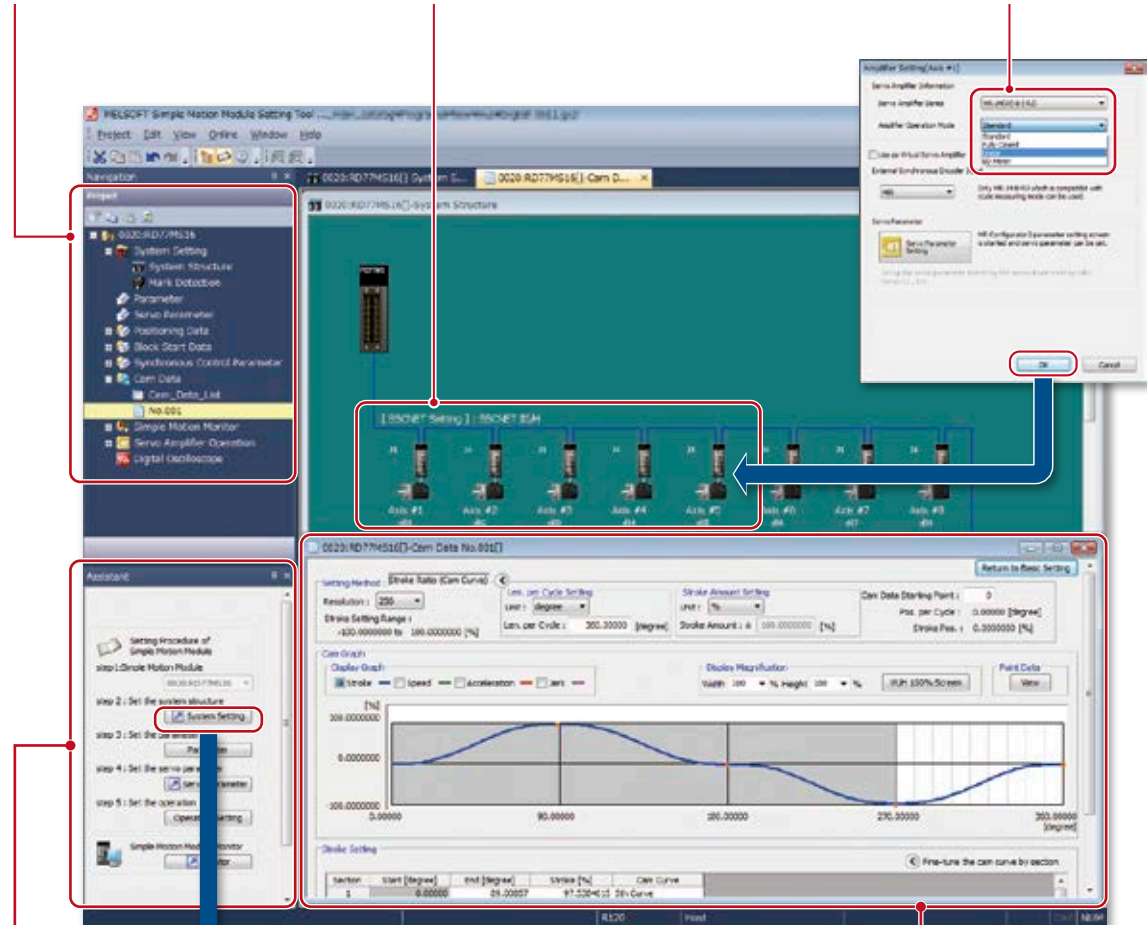
Easy to use navigation pane

### Servo amplifier information

Quickly visualize type of servo amplifier and motor model

### Servo amplifier setup

Select the servo amplifier and operation mode for each axis.



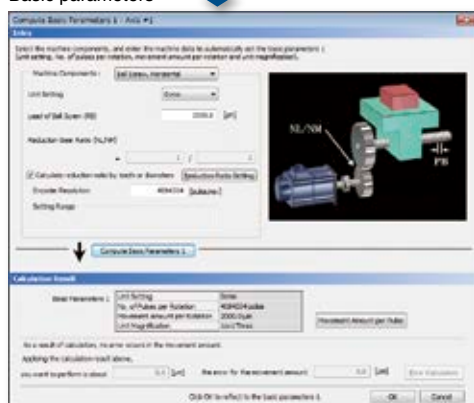
### Assistant window

### Selective tools further simplifying setup

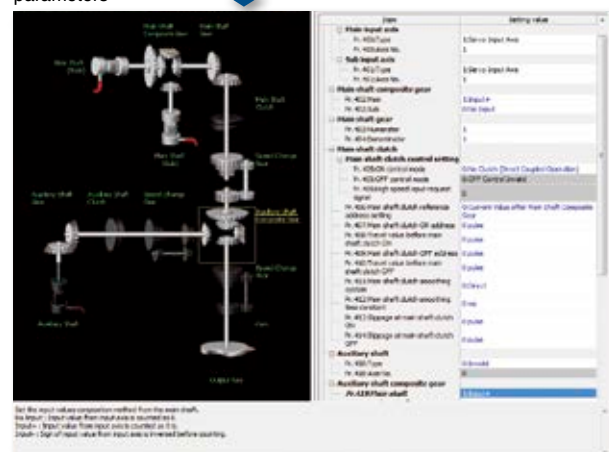
### Cam data

### Fine-tune cam curve data

## Basic parameters



Synchronous  
parameters



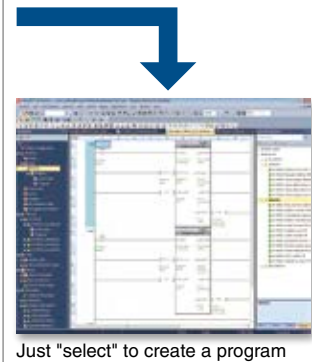
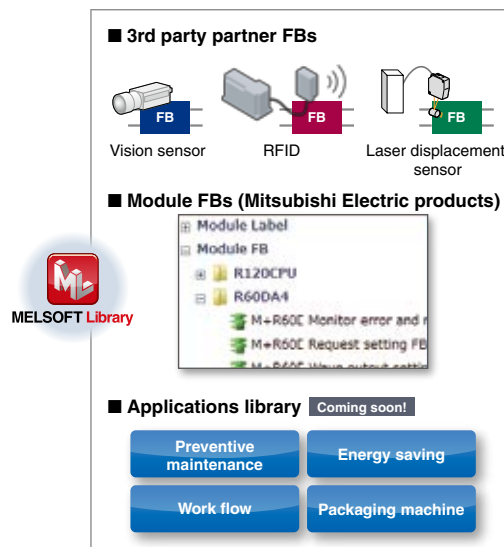




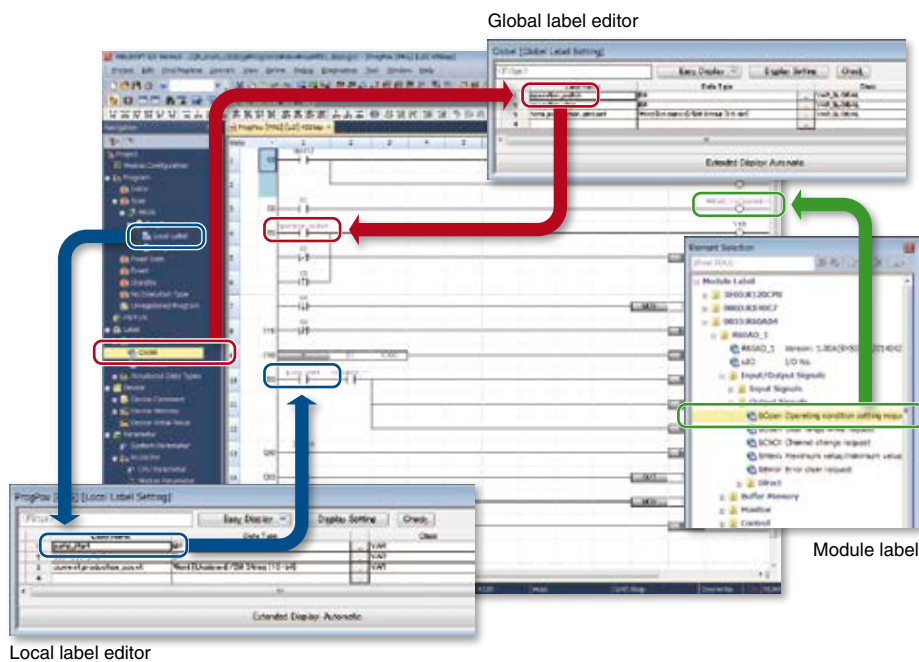
## Programming

### Central parts library

GX Works3 comes with an updated object library pre-installed in the software consisting of a module library with current modules at time of software release although this can be added to as newer modules become available. A variety of other objects are available such as third-party partner function blocks and an applications library (future release). The library can be fully shared across multiple projects.



Just "select" to create a program



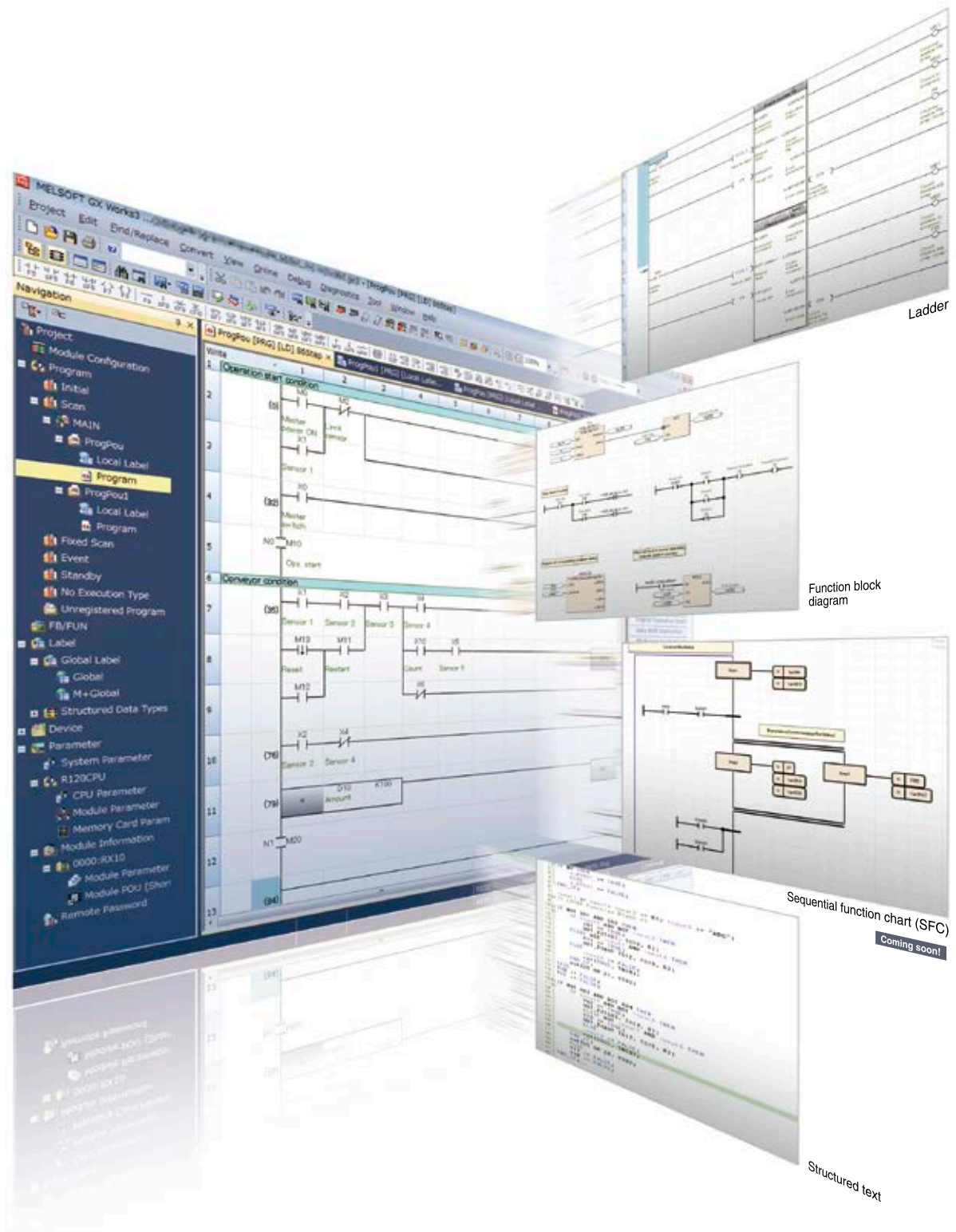
### Reduce repetitive program tasks

Global and local variables (labels) are supported providing an easy way to share device names across multiple projects, other MELSOFT software and third party SCADA. The variables can be registered into either the current program, function block as a local variable or within the project as a global variable to share across multiple programs within the same project. Variables specific to a particular module are also available, and can be used immediately, further reducing engineering time and cost.



## Main programming languages supported

The main IEC languages are supported by GX Works3. Various different programming languages can be used within the same project simultaneously and can be viewed easily via the menu tab. The variables and devices used in each program can be shared across multiple platforms, with user defined function blocks supported.





## Debug

### Easy version management

Being able to visually see and manage different versions of the same project can help to reduce debugging processes. Even with a number of engineers are working on the same project, changes made are easily recognized directly from the program or as an automatically generated verification results list. This feature is available for locally stored projects on the computer, and between the program stored in the programmable controller CPU.

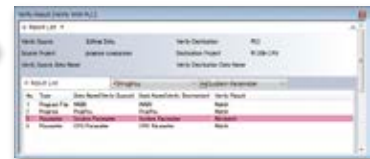
Online Data Operation



Graphical representation of differences Future support



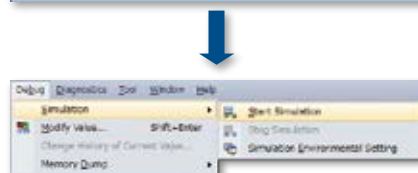
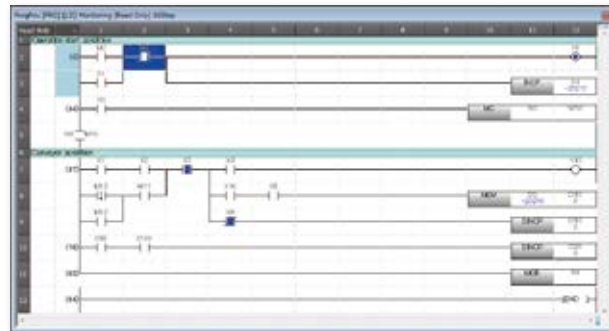
Verification results



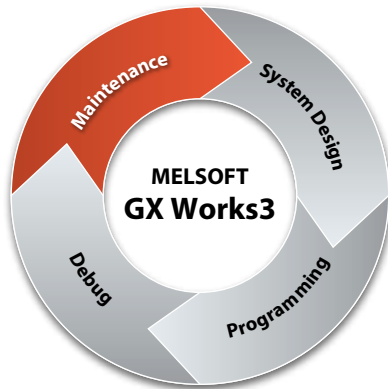
### Hardware simulation

GX Works3 features an integrated simulator which helps to visualize the operation of the program during the debugging process. Motion control CPU hardware can be simulated as well.

Offline debugging without a control CPU required



Directly debugging on the computer

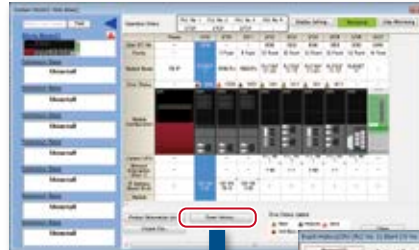


## Maintenance

### Simplified troubleshooting reduces downtime even further

GX Works3 incorporates various maintenance features helping to reduce downtime and keep productivity high. Various levels of maintenance are possible, from system-wide monitoring of errors an module status to monitoring at the network level; for example, detailed operations that show where programs or parameters have been changed in the CPU and the monitoring of system events, which also includes a useful historical function that can be exported as a CSV file.

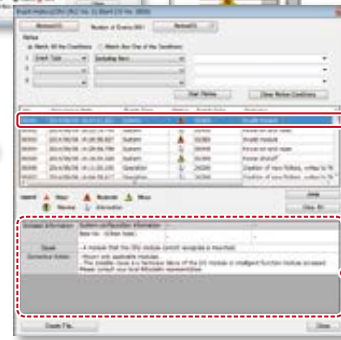
System monitor



CC-Link IE Control diagnosis window



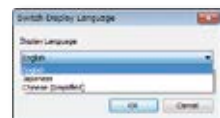
Event history



Detailed information including the cause and respective countermeasures are shown here

### Multi-language menu, ideal for global support

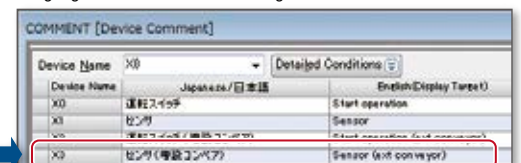
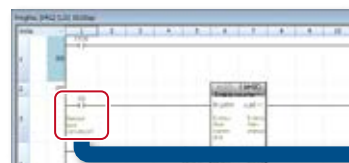
The menu system can be switched between various languages, enabling different locations to work on the same project with the same programming software version. In addition, device comments within the project can be switched between various languages without having to create multiple copies of the same project to support the comments in different languages.



Menu language switch



Language version of comments being switched



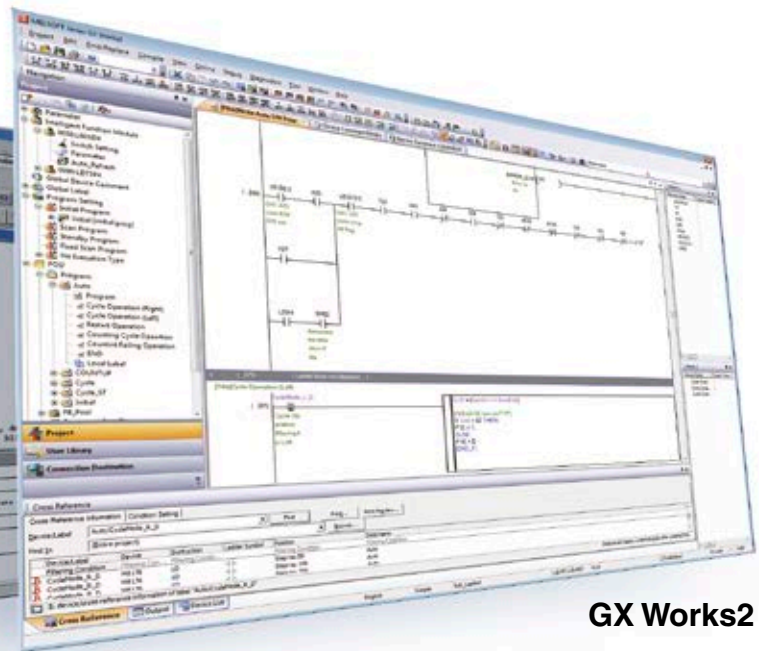
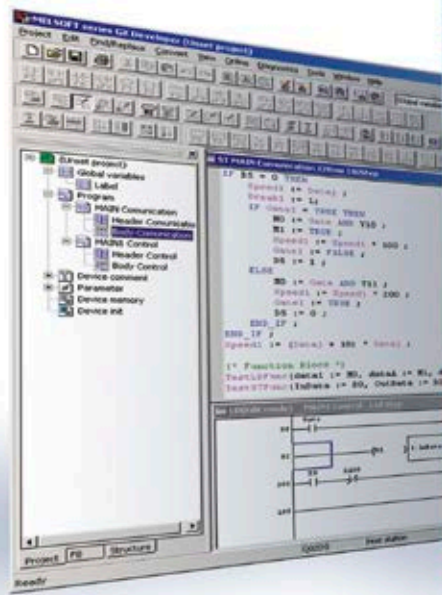


# GX Works2, GX Developer

Bundled with GX Works3

The GX Works3 software package includes GX Works2 and GX Developer, covering the MELSEC controller series lineup.

## GX Developer



GX Works2

### ■ MELSOFT GX Works2, GX Developer-supported CPU modules\*1

Series	GX Works2	GX Developer
MELSEC-Q Series Universal model	●	●*2
MELSEC-Q Series High Performance model	●	●
MELSEC-Q Series Basic model	●	●
MELSEC-Q Series Process CPU	●	●
MELSEC-Q Series Redundant CPU	●	●
MELSEC-L Series	●	●*3
MELSEC-F Series FXCPU	●	●
MELSEC-QS Series	●*4	●
MELSEC-QnA/QnAS Series	●*4	●
MELSEC-A/AnS Series	●*4	●
Motion Controller (SCPU)	●*4	●
CNC (M6 M7)	●*4	●

\*1: For detailed information about supported CPU modules, refer to the manuals of the relevant product.

\*2: Does not support high-speed Universal model CPU.

\*3: Supports L02CPU and L26CPU-BT.

\*4: Supported when using together with GX Developer.

## ■ Software operating environment

Item	MELSOFT GX Works3,
Personal computer	Windows® supported personal computer
CPU	Intel® Core™ 2 Duo Processor 2 GHz or more
Available hard disk capacity	5 GB
Display resolution	1024 x 768 pixels or higher
Communication interface (When a CPU module is directly connected.)	USB port, Ethernet port
<b>Required memory</b>	
64-bit edition	2 GB or more recommended
32-bit edition	1 GB or more recommended
<b>OS (English version)</b>	
Microsoft® Windows® 8.1 Operating System	●
Microsoft® Windows® 8.1 Pro Operating System	●
Microsoft® Windows® 8.1 Enterprise Operating System	●
Microsoft® Windows® 8 Operating System	●
Microsoft® Windows® 8 Pro Operating System	●
Microsoft® Windows® 8 Enterprise Operating System	●
Microsoft® Windows® 7 Starter Operating System	●
Microsoft® Windows® 7 Home Premium Operating System	●
Microsoft® Windows® 7 Professional Operating System	●
Microsoft® Windows® 7 Ultimate Operating System	●
Microsoft® Windows® 7 Enterprise Operating System	●
Microsoft® Windows Vista® Home Basic Operating System	●*1
Microsoft® Windows Vista® Home Premium Operating System	●*1
Microsoft® Windows Vista® Business Operating System	●*1
Microsoft® Windows Vista® Ultimate Operating System	●*1
Microsoft® Windows Vista® Enterprise Operating System	●*1
Microsoft® Windows® XP Professional Operating System SP3	●*1
Microsoft® Windows® XP Home Edition Operating System SP3	●*1

\*1: The 64-bit edition is not supported.

## ■ MELSOFT GX Works3-supported CPU modules

Item	Model
MELSEC iQ-R Series Programmable controller CPU	R04CPU
	R08CPU
	R16CPU
	R32CPU
	R120CPU
MELSEC iQ-R Series Process CPU	R08PCPU
	R16PCPU
	R32PCPU
	R120PCPU
MELSEC iQ-F Series*2 Programmable controller CPU	FX5U
	FX5UC

\*2: The full model name changes according to the required I/O points.

## Product List

### Product contents

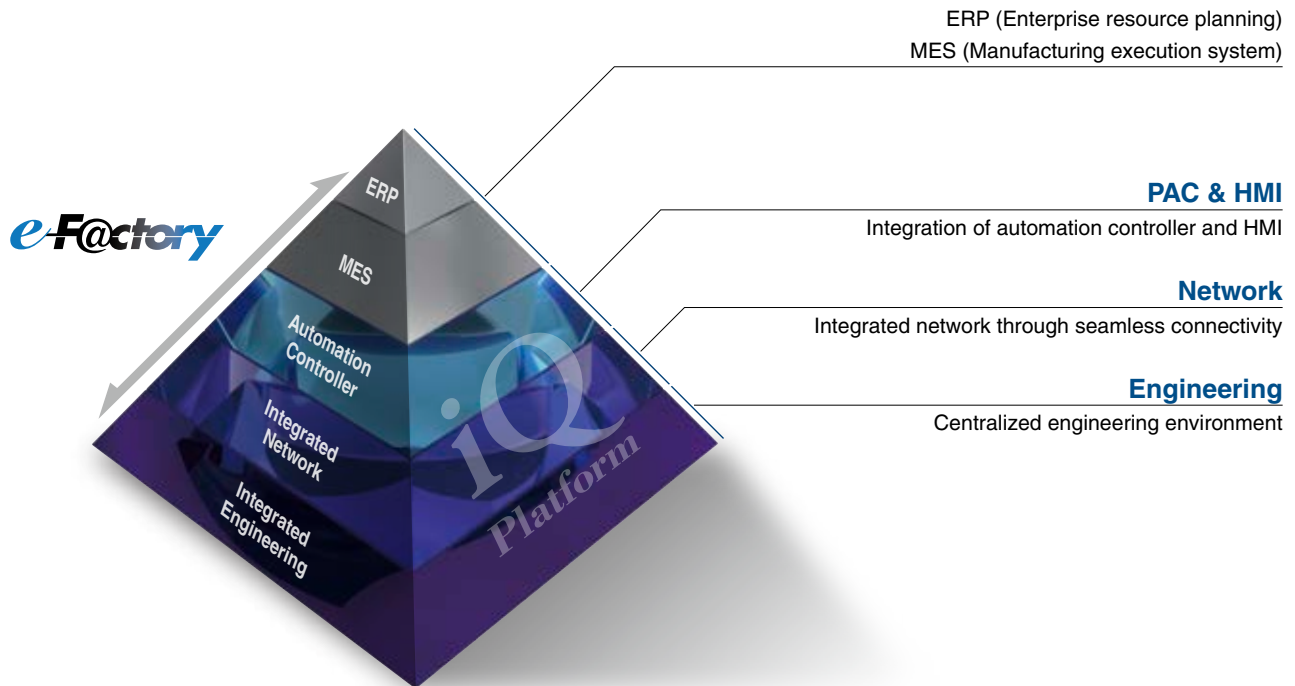
Type	Model	Outline
MELSOFT iQ Works	SW2DND-IQWK-E (DVD-ROM edition)	FA engineering software*3 • System Management Software: MELSOFT Navigator • Controller Programming Software: MELSOFT GX Works3*4, GX Works2, GX Developer • Motion Programming Software: MELSOFT MT Works2 • HMI Programming Software: MELSOFT GT Works3 • Robot Programming Software: MELSOFT RT ToolBox2 mini • Inverter Setup Software: MELSOFT FR Configurator2 • MITSUBISHI ELECTRIC FA Library
MELSOFT GX Works3	SW1DND-GXW3-E (DVD-ROM edition)	• Controller Programming Software: MELSOFT GX Works3*4, GX Works2, GX Developer • MITSUBISHI ELECTRIC FA Library

\*3: For detailed information about supported modules, refer to the manuals of the relevant software package.

\*4: The MELSOFT GX Works3 menu is switchable between Japanese, English, and simplified Chinese. (Traditional Chinese and Korean will be supported soon.)

## iQ Platform for maximum return on investment

Minimize TCO, Seamless integration, Maximize productivity, Transparent communications: these are common items that highlight the benefits of the iQ Platform and e-F@ctory. The iQ Platform minimizes TCO at all phases of the automation life cycle by improving development times, enhancing productivity, reducing maintenance costs, and making information more easily accessible across the plant. Together with e-F@ctory, offering various best-in-class solutions through its e-F@ctory alliance program, the capabilities of the manufacturing enterprise is enhanced even further realizing the next level for future intelligent manufacturing plants.



## Further reduce TCO while securing your manufacturing assets

### Automation Controller

Improve productivity and product quality

1. High-speed system bus realizing improved system performance
2. On-screen multi-touch control enabling smooth GOT (HMI) operations

### Integrated Network

Best-in-class integrated network optimizing production capabilities

1. CC-Link IE supporting 1 Gbps high-speed communication
2. Seamless connectivity within all levels of manufacturing with SLMP

### Centralized Engineering

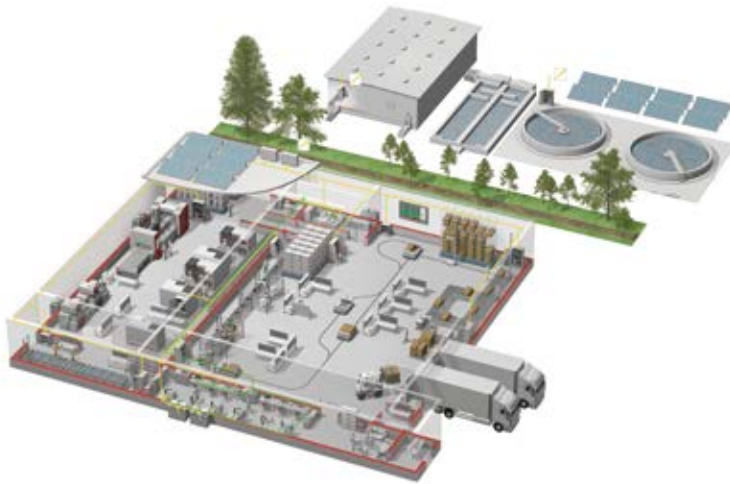
Integrated engineering environment with system level features

1. Automatic generation of system configuration
2. Share parameters across multiple engineering software via MELSOFT Navigator
3. Changes to system labels are reflected between PAC and HMI





# YOUR SOLUTION PARTNER



Mitsubishi Electric offers a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines.

## A NAME TO TRUST

Since its beginnings in 1870, some 45 companies use the Mitsubishi name, covering a spectrum of finance, commerce and industry.

The Mitsubishi brand name is recognized around the world as a symbol of premium quality.

Mitsubishi Electric Corporation is active in space development, transportation, semi-conductors, energy systems, communications and information processing, audio visual equipment and home electronics, building and energy management and automation systems, and has 237 factories and laboratories worldwide in over 121 countries.

This is why you can rely on Mitsubishi Electric automation solution - because we know first hand about the need for reliable, efficient, easy-to-use automation and control in our own factories.

As one of the world's leading companies with a global turnover of over 4 trillion Yen (over \$40 billion), employing over 100,000 people, Mitsubishi Electric has the resource and the commitment to deliver the ultimate in service and support as well as the best products.



Low voltage: MCCB, MCB, ACB



Medium voltage: VCB, VCC



Power monitoring, energy management



Compact and Modular Controllers



Inverters, Servos and Motors



Visualization: HMIs, Software, MES connectivity



Numerical Control (NC)



Robots: SCARA, Articulated arm



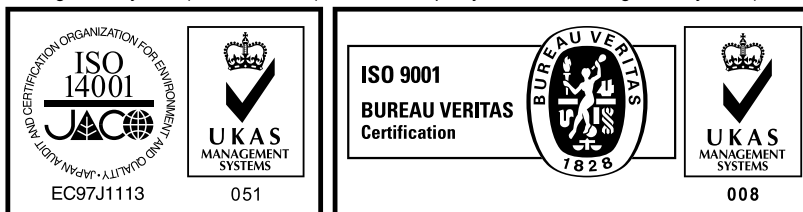
Processing machines: EDM, Lasers, IDS



Air-conditioning, Photovoltaic, EDS

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Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO 14001 (standards for environmental management systems) and ISO 9001 (standards for quality assurance management systems)



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