MITSUBISHI ELECTRIC

Changes for the Better

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

"Changes for the Better" represents the Mitsubishi Electric Group's attitude to "always strive to achieve something better", as we continue to change and grow. Each one of us shares a strong will and passion to continuously aim for change, reinforcing our commitment to creating "an even better tomorrow".

Our advances in AI and IoT are adding new value to society in diverse areas from automation to information systems. The creation of game-changing solutions is helping to transform the world, which is why we are honored to be recognized in the 2019 "Forbes Digital 100" as one of world's most influential digital corporations.

#41
2019 Forbes
TOP 100 DIGITAL COMPANIES

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 ToolBox3 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 repetitive tasks, cutting down on errors while helping to reduce the overall TCO.
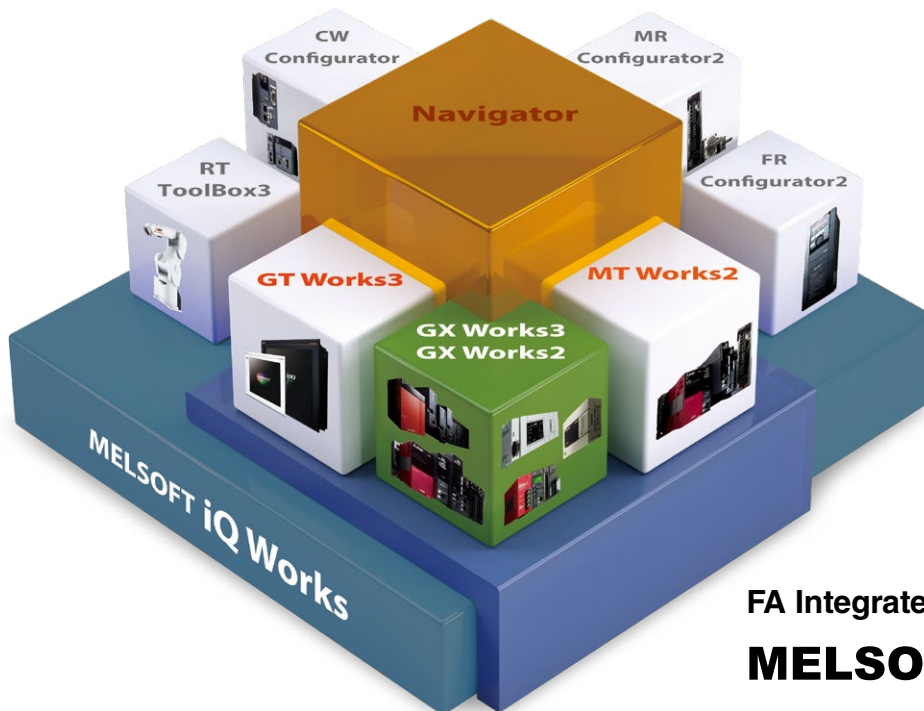
FA Integrated Engineering Software
MELSOFT iQ Works

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 operation ease—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 ToolBox3**

■ **Inverter setup software**

MELSOFT **FR Configurator2**

■ **C Controller setting and monitoring tool**

MELSOFT **CW Configurator**

■ **Servo setup software**

MELSOFT **MR Configurator2**

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.

GX Works3
One Software, Many Possibilities

Reduce engineering time by 60%[1]
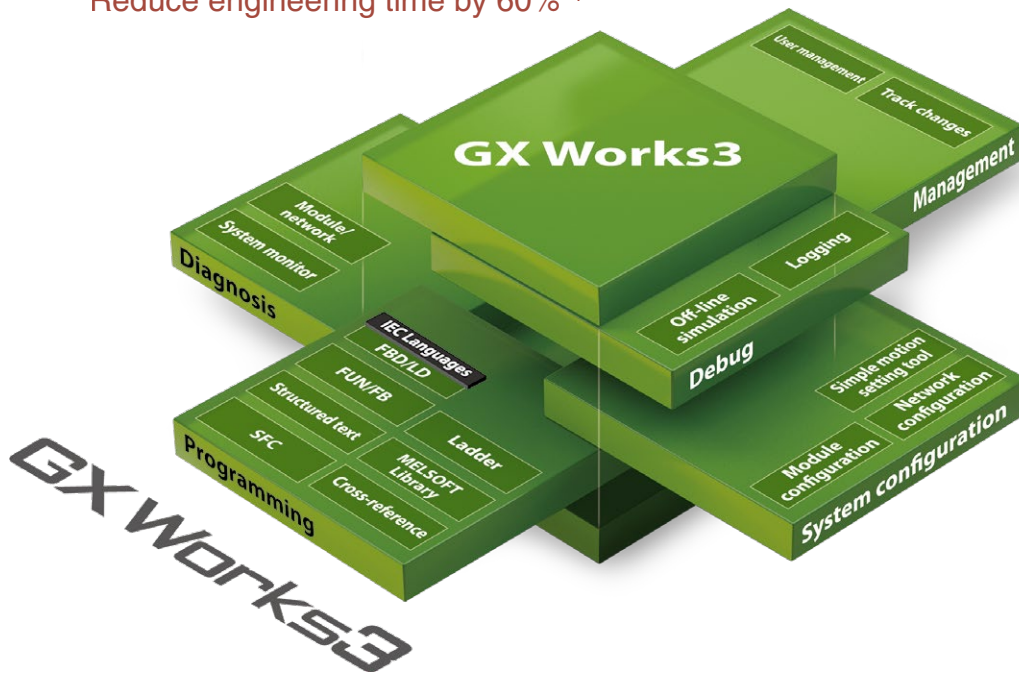
Intuitive engineering software covering the product development cycle

Graphic-based configuration realizing easier programming

Various intuitive features such as graphic-based system configuration and an extensive module library (module 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.

Complies with 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
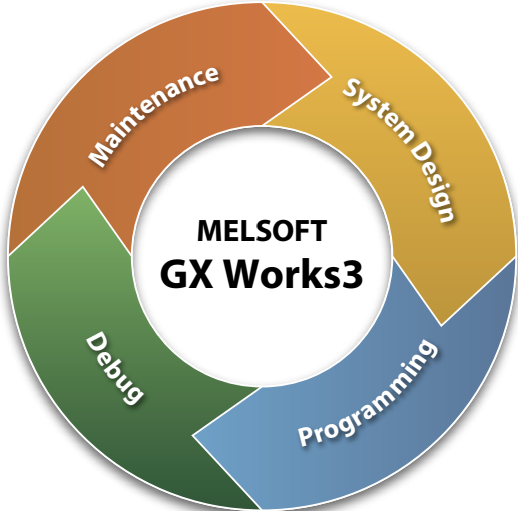· Automatically reflect changes in the layout to the module parameters

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 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.

Navigation window
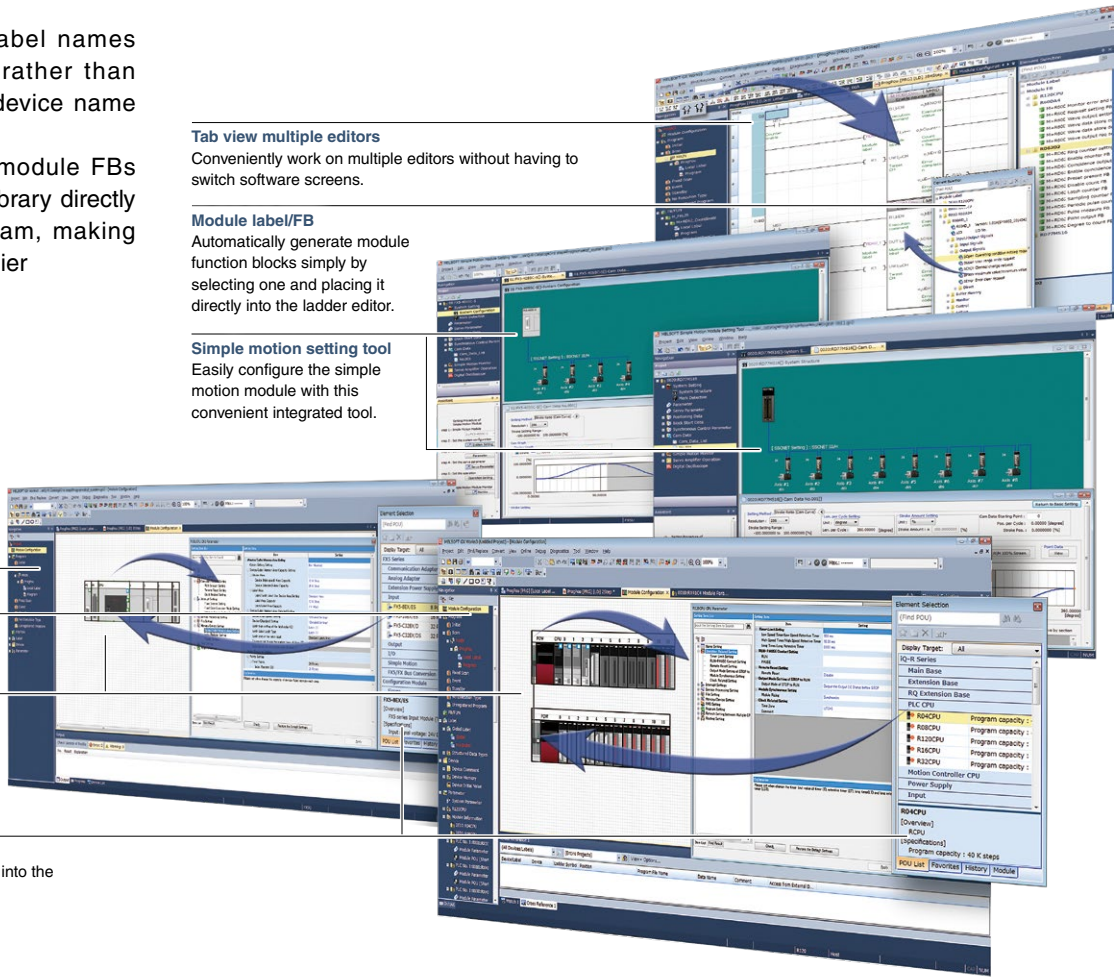Easily access project components Organize program file list.

Module configuration
Easily parameterize each module directly from the configuration editor.

Module list
Simply drag & drop modules directly into the module configuration.
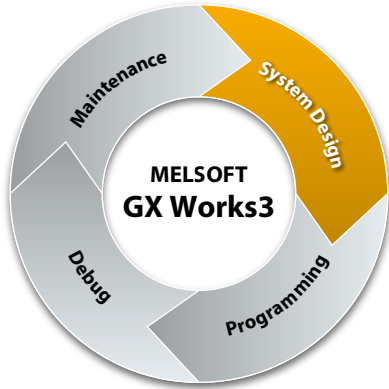
Global realization by multi-language support

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

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.
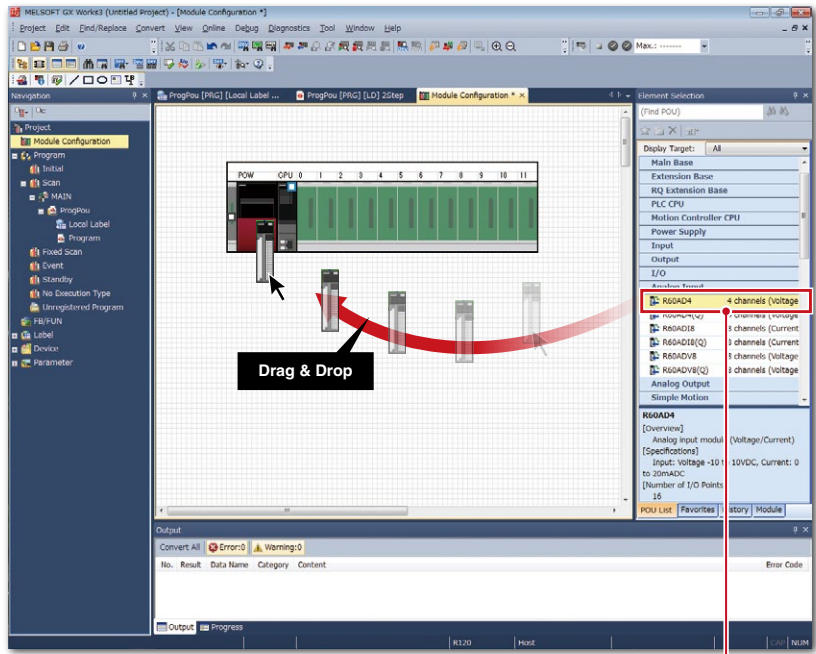
Drag & Drop

Simply drag & drop when adding a module

Double click

Module parameter window appears
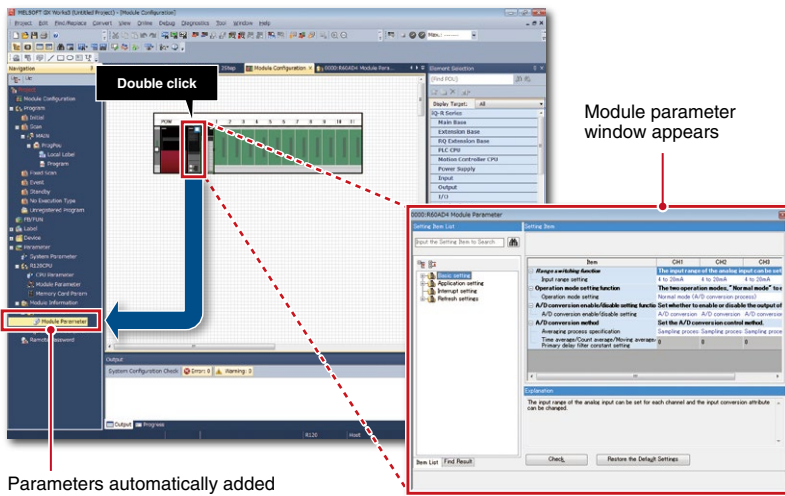
Parameters automatically added to navigation pane

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.
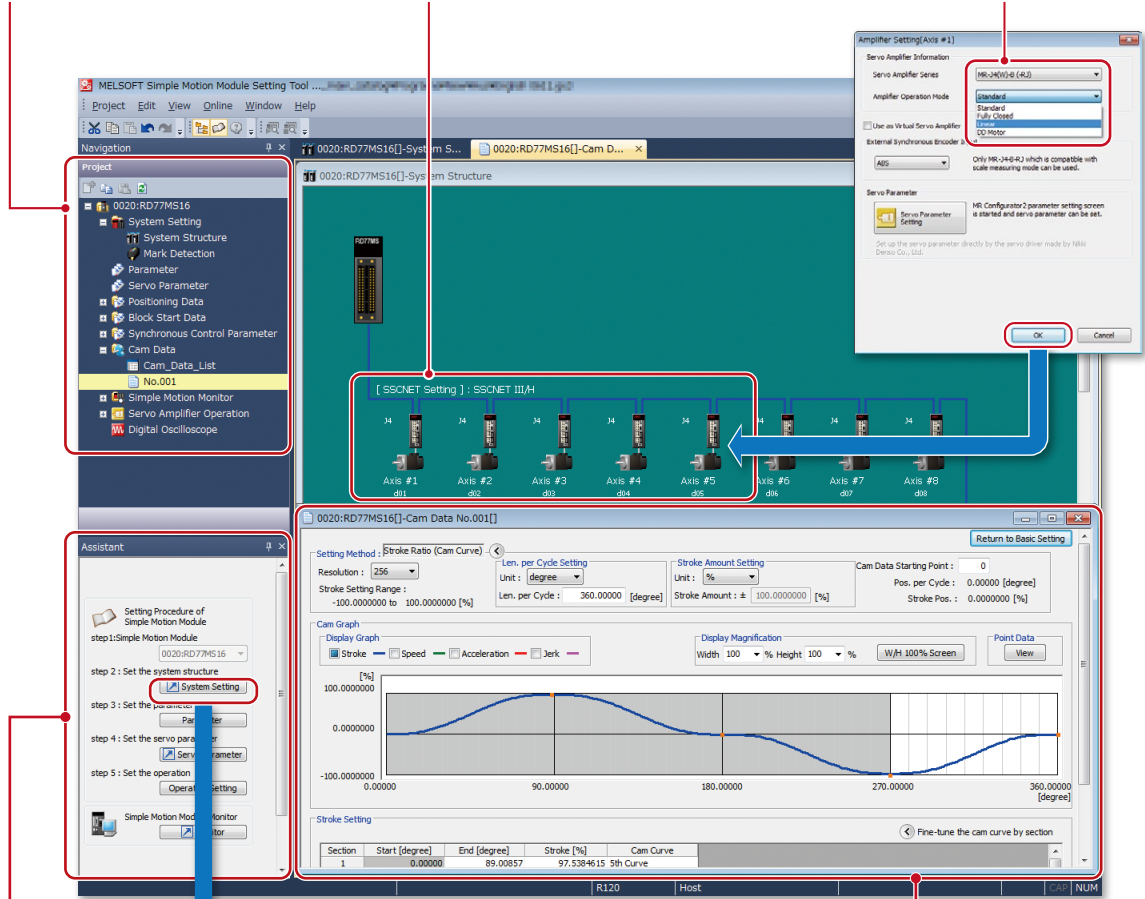
Project window
Easy to use navigation pane

Servo amplifier information
Quickly visualize type of servo amplifier and motor model

Servo amplifier setup
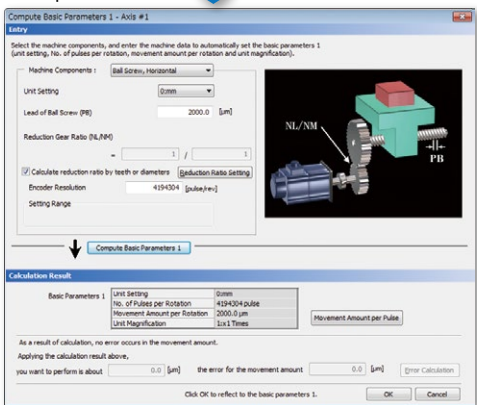Select the servo amplifier and operation mode for each axis.

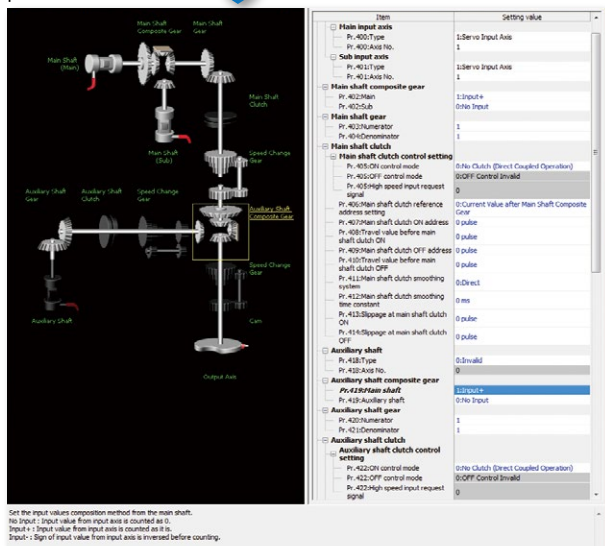**Assistant window**
Selective tools further simplifying setup
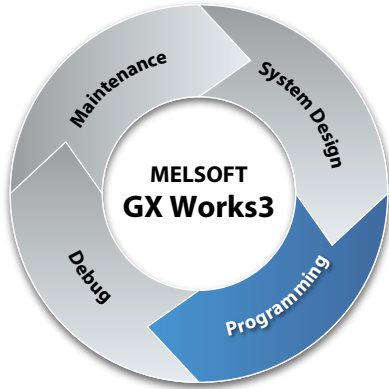
Cam data
Fine-tune cam curve data

Basic parameters

Synchronous parameters

Programming

MELSOFT
GX Works3

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. 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.

Global label editor

Local label editor

Module label

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.
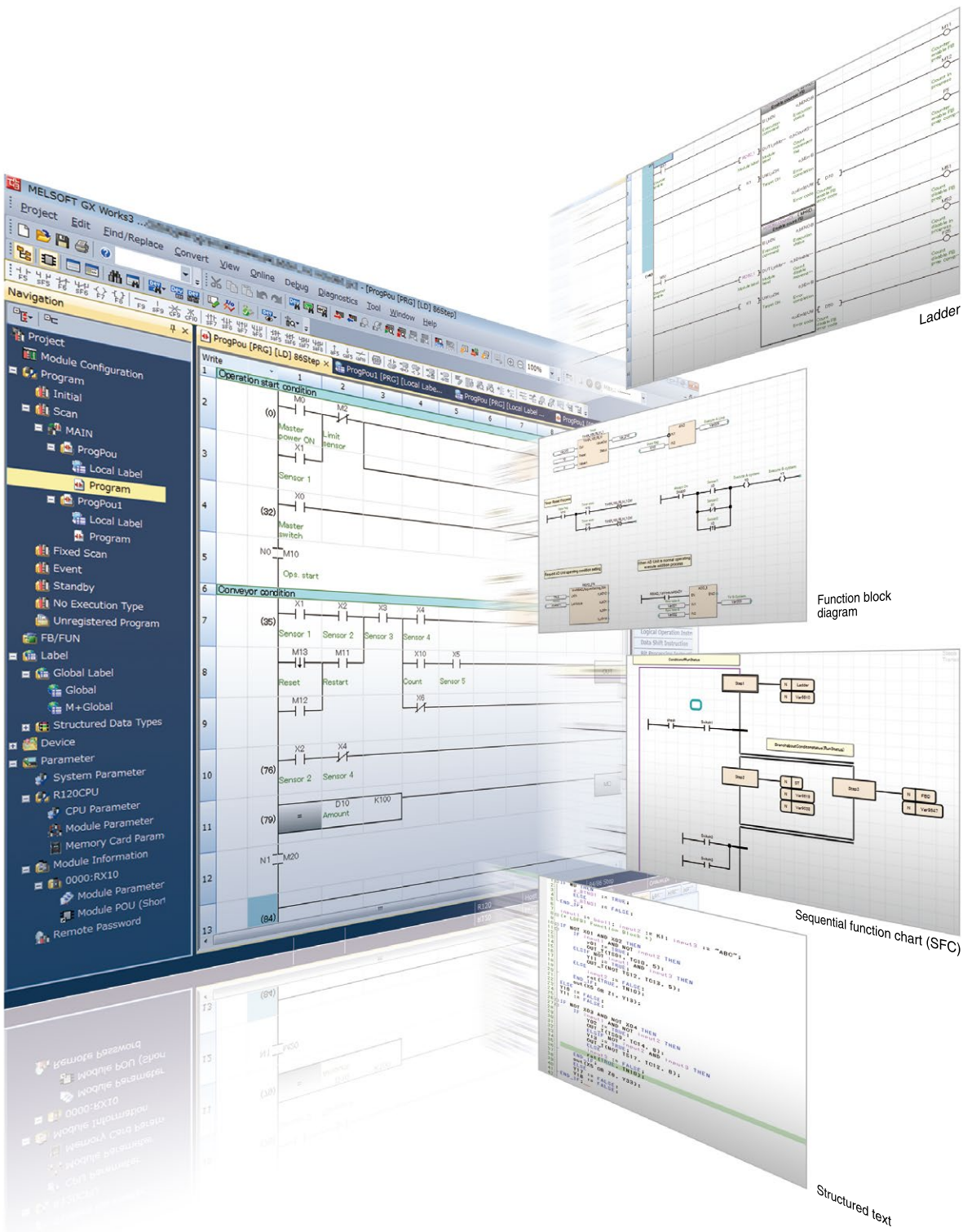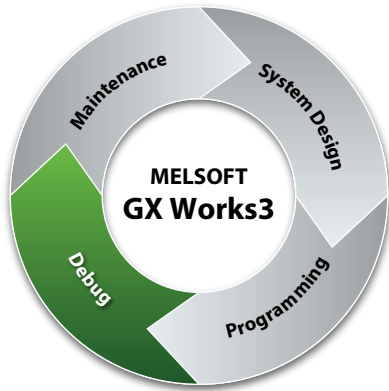
Ladder

Function block diagram

Sequential function chart (SFC)

Structured text

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
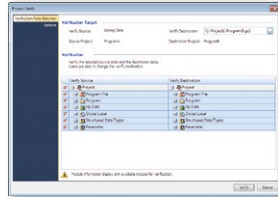
Verification results
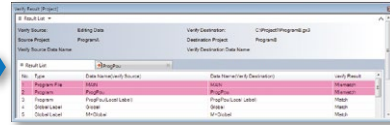
Graphical representation of differences

■ : Unmatched Line   ■ : Source Only   ■ : Dest. Only
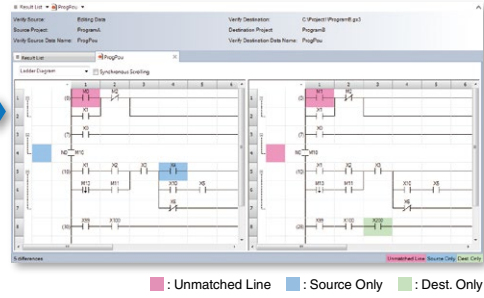
Hardware simulation

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
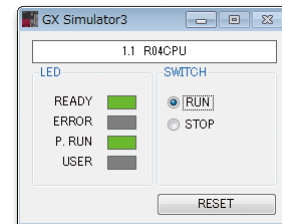
Directly debugging on the computer

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 and module status to monitoring at the network level; for examp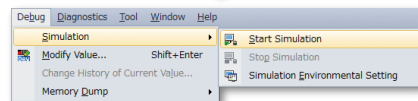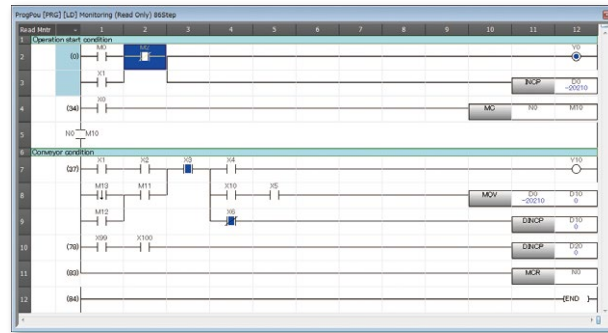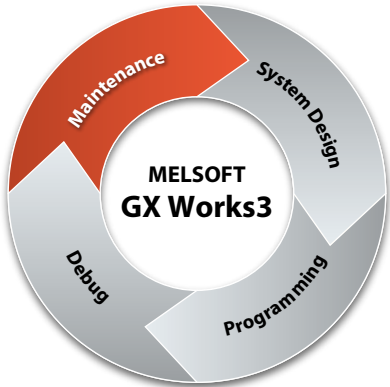le, detailed operations that show where programs or parameters have been changed in the CPU and the monitoring of system events, which also includes a useful historical function that can be exported as a CSV file.

System monitor

CC-Link IE Field 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
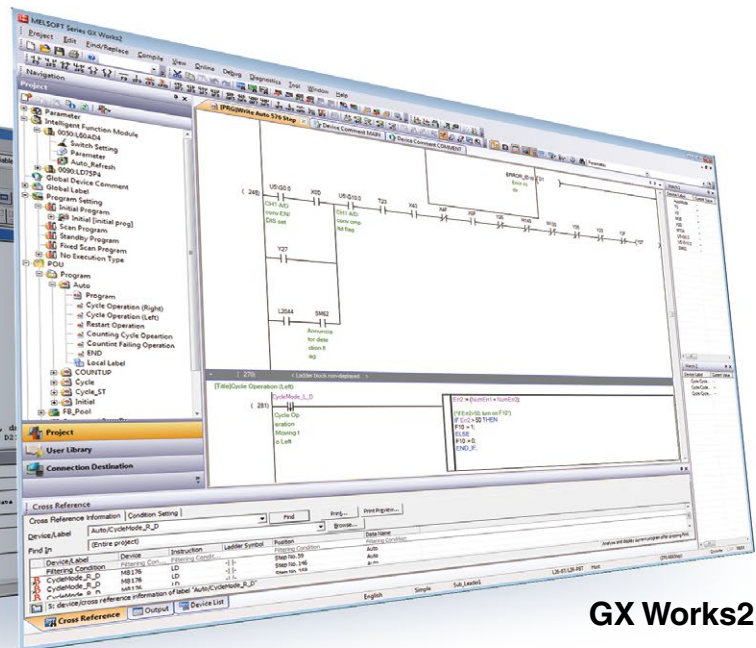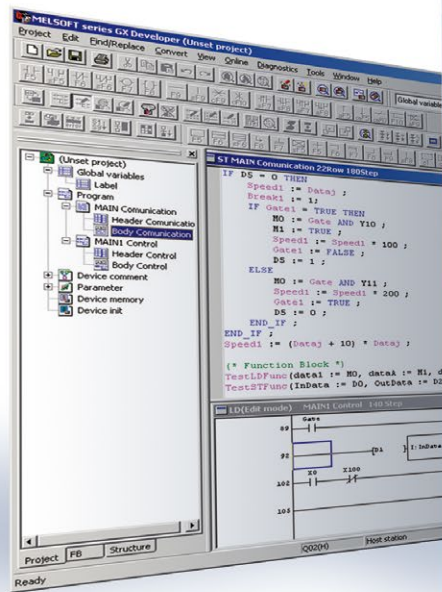
GX Works2

■ 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*1

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
Required memory	
64-bit edition	2 GB or more recommended
32-bit edition	2 GB or more recommended
OS (English version)	
Microsoft® Windows® 10 Home Operating System	●
Microsoft® Windows® 10 Pro Operating System	●
Microsoft® Windows® 10 Enterprise Operating System	●
Microsoft® Windows® 10 Education Operating System	●
Microsoft Windows 10 IoT Enterprise 2016 LTSB	●*2
Microsoft® Windows® 8.1 Operating System	●
Microsoft® Windows® 8.1 Pro Operating System	●
Microsoft® Windows® 8.1 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	●

*1: For information about software operating environment, refer to PX Developer Version 1 Operating Manual (Monitor Tool).
*2: 32-bit edition is not supported.

■ MELSOFT GX Works3-supported CPU modules

Item	Model	
MELSEC iQ-R Series Programmable controller CPU	R00CPU R01CPU R02CPU R04(EN)CPU	R08(EN)CPU R16(EN)CPU R32(EN)CPU R120(EN)CPU
MELSEC iQ-R Series Process CPU	R08PCPU R16PCPU	R32PCPU R120PCPU
MELSEC iQ-R Series SIL2 process CPU	R08PSFCPU R16PSFCPU	R32PSFCPU R120PSFCPU
MELSEC iQ-R Series Safety CPU	R08SFCPU R16SFCPU	R32SFCPU R120SFCPU
MELSEC iQ-F Series*3 Programmable controller CPU	FX5U FX5UC	

*3: 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*4 • System Management Software: MELSOFT Navigator • Controller Programming Software: MELSOFT GX Works3*5, GX Works2, GX Developer • Motion Programming Software: MELSOFT MT Works2 • HMI Programming Software: MELSOFT GT Works3 • Robot Programing Software: MELSOFT RT ToolBox3*6 • Inverter Setup Software: MELSOFT FR Configurator2 • Servo setup software: MELSOFT MR Configurator2 • C Controller setting and monitoring tool: MELSOFT CW Configurator • MITSUBISHI ELECTRIC FA Library
MELSOFT GX Works3	SW1DND-GXW3-E (DVD-ROM edition)	• Controller Programming Software: MELSOFT GX Works3*5, GX Works2, GX Developer, PX Developer*7 • MITSUBISHI ELECTRIC FA Library

*4: For detailed information about supported modules, refer to the manuals of the relevant software package.
*5: The MELSOFT GX Works3 menu is switchable between Japanese, English, and simplified Chinese.
*6: RT ToolBox3 mini (simplified version) will be installed if iQ Works product ID is used. When RT ToolBox3 (with simulation function) is required, please purchase RT ToolBox3 product ID.
*7: Includes both programming tool and monitor tool for process control.

FA Integrated Platform
"iQ Platform" Movie

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.

ERP (Enterprise resource planning)
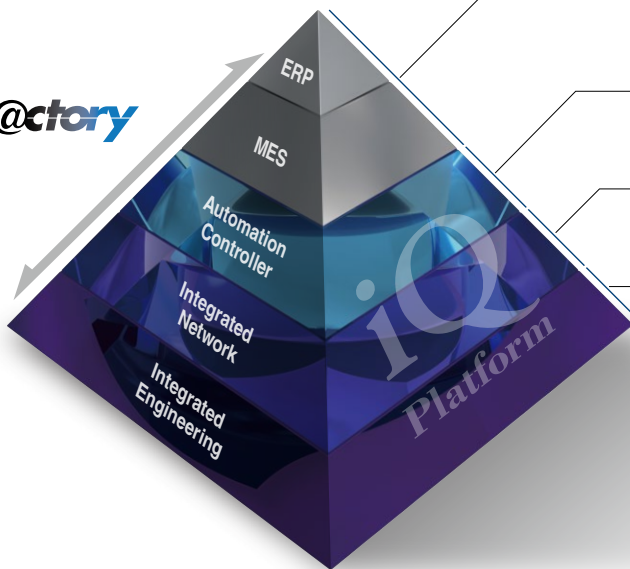MES (Manufacturing execution system)

PAC & HMI
Integration of automation controller and HMI

Network
Integrated network through seamless connectivity

Engineering
Centralized engineering environment

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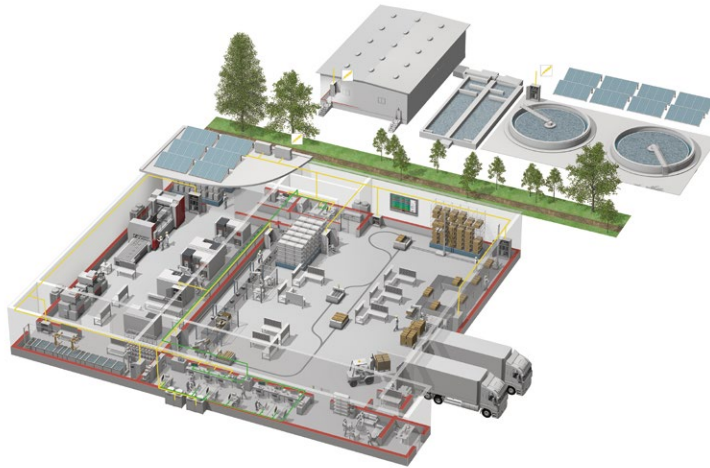
Mitsubishi Electric offers a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines.

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, established in 1921, 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 183 factories, laboratories and offices worldwide in over 140 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 146,000 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 Power Distribution Products

Transformers, Med-voltage Distribution Products

Power Monitoring and Energy Saving Products

Power (UPS) and Environmental Products

Compact and Modular Controllers

Servos, Motors and Inverters

Visualization: HMIs

Edge Computing Products

Numerical Control (NC)

Collaborative and Industrial Robots

Processing machines: EDM, Lasers

* Not all products are available in all countries.

Country/Region	Sales office	Tel/Fax
USA	MITSUBISHI ELECTRIC AUTOMATION, INC. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100 Fax : +1-847-478-2253
Mexico	MITSUBISHI ELECTRIC AUTOMATION, INC. Mexico Branch Boulevard Miguel de Cervantes Saavedra 301, Torre Norte Piso 5, Ampliacion Granada, Miguel Hidalgo, Ciudad de Mexico, Mexico, C.P.115200	Tel : +52-55-3067-7512
Brazil	MITSUBISHI ELECTRIC DO BRASIL COMERCIO E SERVICOS LTDA. Avenida Adelino Cardana, 293, 21 andar, Bethaville, Barueri SP, Brasil	Tel : +55-11-4689-3000 Fax : +55-11-4689-3016
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Taiwan	SETSUYO ENTERPRISE CO., LTD. 6F, No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan	Tel : +886-2-2299-2499 Fax : +886-2-2299-2509
Korea	MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD. 7F to 9F, Gangseo Hangang Xi-tower A, 401, Yangcheon-ro, Gangseo-Gu, Seoul 07528, Korea	Tel : +82-2-3660-9569 Fax : +82-2-3664-8372
Singapore	MITSUBISHI ELECTRIC ASIA PTE. LTD. 307 Alexandra Road, Mitsubishi Electric Building, Singapore 159943	Tel : +65-6473-2308 Fax : +65-6476-7439
Thailand	MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD. 12th Floor, SV.City Building, Office Tower 1, No. 896/19 and 20 Rama 3 Road, Kwaeng Bangpongpang, Khet Yannawa, Bangkok 10120, Thailand	Tel : +66-2682-6522-31 Fax : +66-2682-6020
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