MITSUBISHI ELECTRIC

Mitsubishi Integrated FA Software

Changes for the Better

MELSOFT

PLC

HMI

CNC

Motion

Servo

Inverter

EDM

Robot

Integrated FA Software

Advancing to new stages with MELSOFT.

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance managememt systems)

ISO 14001
JACO

UKAS
ENVIRONMENTAL
MANAGEMENT
051

BVQi
ISO 9001

UKAS
QUALITY
MANAGEMENT
008

FA-LAND
FA LAND
MELFANS web
www.MitsubishiElectric.co.jp/melfansweb

Integrated software supporting various scenarios from improvement of shop floor productivity to reduction of engineering time.
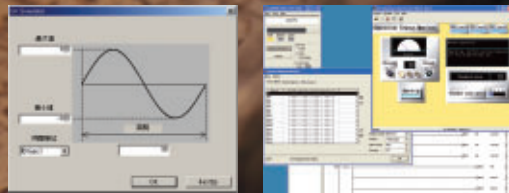
ENGINEERING

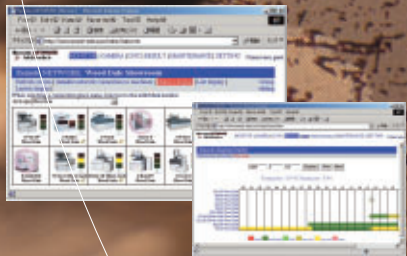**GX Developer, a common programming tool for the PLC, now also supports motion controller, CNC and inverter**

DEBUG & INSTALLATION

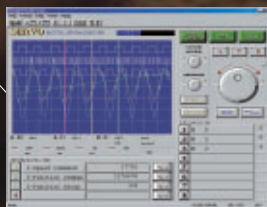**Debugging environment on a PC requiring no real machine**

OPERATION

Direct real-time link to shop floor data from the office

MAINTENANCE

Speedy recovery in case of trouble or emergency

ENGINEERING
DEBUG & INSTALLATION
MAINTENANCE
OPERATION

MELSOFT

Integrated FA Software

Offering wide variety of functions and ease of use, MELSOFT is a powerful integrated software suite which will help to improve your daily operations in 4 key areas ; "Engineering", "Debug & Installation", "Operation" and "Maintenance".

Contents

MELSOFT Family-dramatically enhances system efficiency in various applications

MX MX Component · · · · P.19

Easily create user applications using Microsoft® Visual Basic® or Excel.

GX GX Developer · · · · · · P.5

PX PX Developer · · · · · · · P.7

Programming is possible without worrying about redundant CPUs.

■Automatic program transfer NEW

· Both program and parameters created using GX Developer and PX Developer can be automatically transferred to the standby system. This ensures that the program does not have to be downloaded twice, therefore reducing total setup and design time.

GX Developer
PX Developer

Program downloaded to both systems automatically

Control system
Standby system

Tracking cable
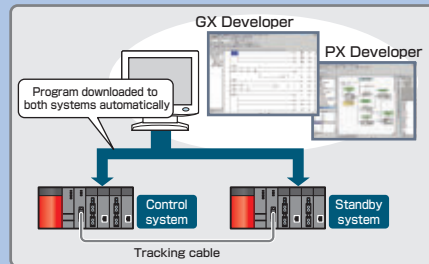
■Continuous operation even at system switching NEW

· If system switching occurs due to a stop error inside the CPU, the access target is automatically switched to the other system. This enables continuous operation so that the user need not pay attention to system switching.

System switching

GX Developer | Connected to control system
GX Developer | Connected to control system

Ethernet
Ethernet

Tracking cable
Tracking cable

Control system | Standby system
Control system → STOP | Standby system → Control system

Ethernet

Personal computer (Remote control HMI)
MX Component

Personal computer (Factory Department)
GX Developer
MX Component

Ethernet

Ethernet

Personal computer (Design Department)
GX Simulator
GT Simulator2

Mobile personal computer
GX Explorer

GT SoftGOT2

MELSECNET/H

MELSECNET/H PLC to PLC network [Note 2]

Internet or intranet

(Engineering environment)
GX Developer
PX Developer

Control system
Standby system

Tracking cable

QCPU redundant system [Note 1]

Motion CPU
MT Developer

GOT
GOT

GX RemoteService-I

MR Configurator

[Note 1] Redundant I/O system must be configured by the customer, while the remote I/O station is not designed for redundant I/O system.
[Note 2] When the system includes the AnUCPU, Q4ARCPU, AnACPU or QnACPU, the MELSECNET/10 PLC to PLC network is required.

MELSECTNET/H remote I/O network

Redundant power supply module

GX Developer
+
GX Configurator

GT Designer2

●Connect the GOT to the remote I/O station by directly connecting the network module or via the serial communication module (QJ71C24N (-R2, -R4)).

GOT

CC-Link

CC-Link

AJ65BT-64DAV (D/A conversion)
AJ65BT-D62 (High-speed counter)
FREQROL-□500/□700
FR Configurator

CC-Link

AJ65BT-64AD (A/D converter)
AJ65BT-G4-S3 (Peripheral device connection module)
GX Developer

GT GT Designer2 · · · · · · P.21

Supporting design work from GOT screens to debugging.

GX GX Configurator · · · · P.9

Carry out settings and monitoring with package operations without creating a ladder program to run the intelligent function module.

Application development
Programming/startup
Startup
Debugging
Remote maintenance

A seamless connection can be established via CC-Link with either GX Developer or GX Explorer.

GX GX Simulator · · · · · · · P.8

GT GT Simulator2 · · · · · P.23

A virtual sequence can be started on the personal computer to confirm the operation and debug ladders and GOT screen creation data.

GT GT SoftGOT2 · · · · · · P.24

Production site conditions can be monitored from the office.

GX GX Explorer · · · · · · · P.15

GX GX RemoteService-I · · P.16

Ladders can be monitored and programs can be rewritten via the internet or intranet.

MT MT Developer · · · · · · P.25

Improve productivity in motion control design and maintenance work.

MR MR Configurator · · · P.27

Easily setup the servo.

FR FR Configurator · · · P.28

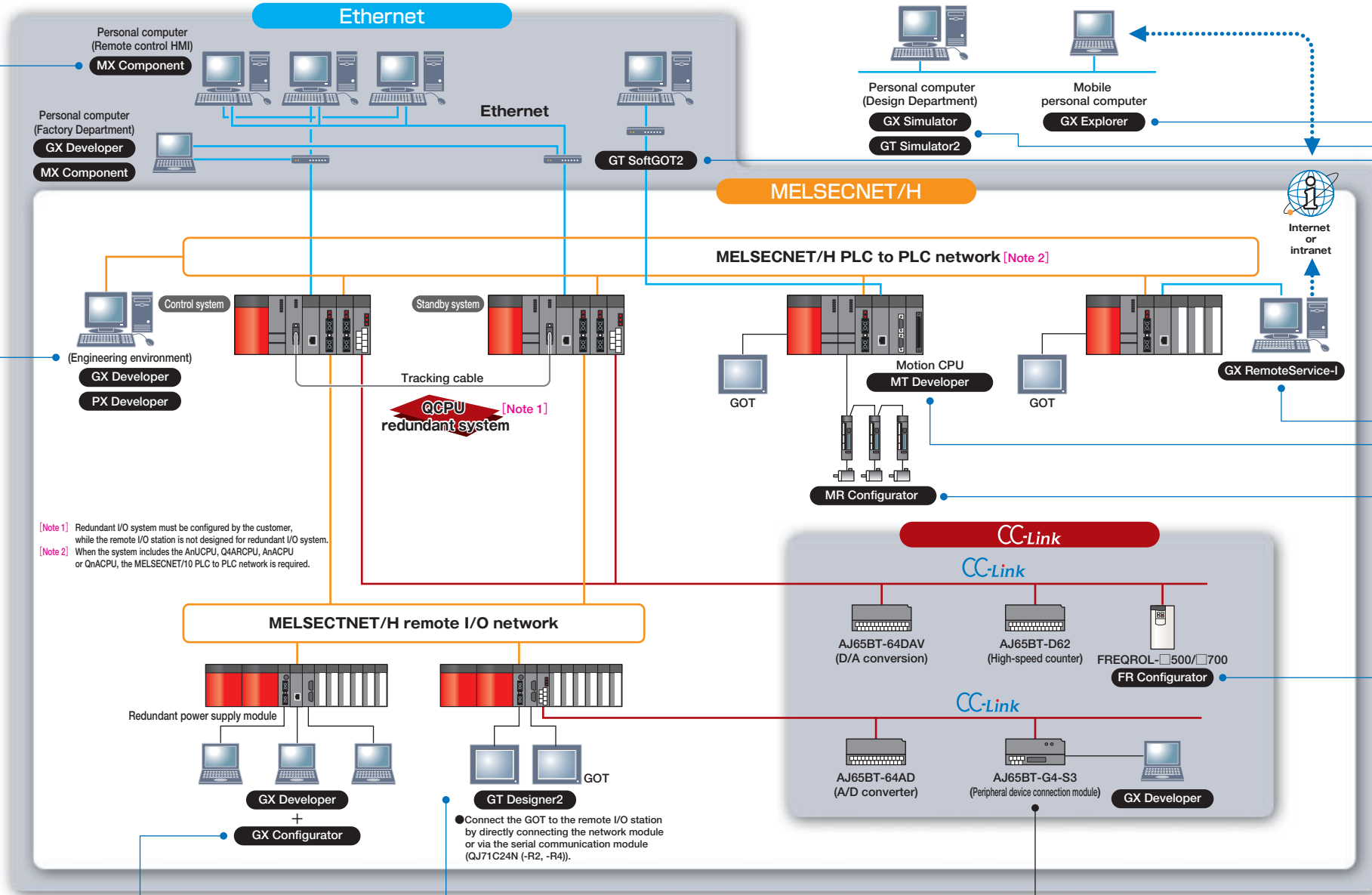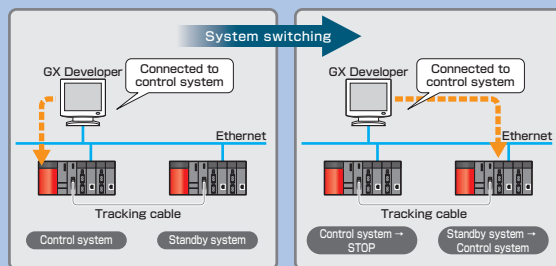Supporting operations from inverter startup to maintenance.

QCPU redundant system

· Programming and monitoring is possible without worrying about redundancy.
· When trouble occurs, the program can be automatically traced and operation continued without considering the changeover between the control system and standby system.

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

PLC

Improving productivity of PLC design and maintenance tasks

GX Developer

Supporting all MELSEC modules in Q, QnA, A, and FX Series

Outline

GX Developer is an integrated programming tool that uses the Windows® operability and greatly improves work efficiency in all areas from design, debugging to maintenance.

GX Developer enables sequence programming with ladder diagram, list, SFC (Sequential Function Chart) and ST (Structured Text) languages.

The other functions are shown below.

- ・Network parameter setting and network operation status monitoring.
- ・Sequence program monitoring, program change, data change and forced I/O ON/OFF on-line.

■Dramatically improving operability by utilizing Windows® functions.

- ・With compliance to Windows® 95, Windows® 98, Windows® Me, Windows NT® 4.0, Windows® 2000 Professional and Windows® XP programs can be easily designed and debugged using Windows® user-friendly operability.
- ・Multiple programs and comments, etc., can be edited and monitored simultaneously.
- ・Program copy, paste and undo operations can be carried out with a mouse. Copying circuit blocks and commands is available between programs.
- ・Data can be input in list format on the ladder display screen. (Data is automatically converted into a circuit.)
- ・Data can be easily registered from ladder screen with drag & drop, and debugging is available with simple operation such as device tests using Shift + double-click on the ladder.
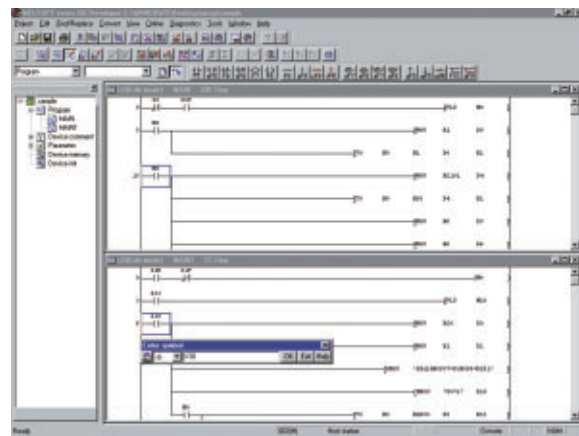
■Q/QnA/A/FX Series program editing is possible with one package

- ・As editing and debugging can be carried out with the same operations for the MELSEC-Q, QnA, A and FX Series, there is no need to learn specified operations for each series.
- ・Programs can be converted and re-used among the Q, QnA and A Series. Programs can also be converted and re-used between the A and FX Series.
- ・As the program can be edited with ladder diagram, lists or SFC in each series, designs are suitable for specific application.
- ・Comments can be set for each device, to improve the program readability.

■Supporting QCPU redundant system *NEW*

- ・Both program and parameters created using GX Developer and PX Developer can be automatically transferred to the standby system. This ensures that the program does not have to be downloaded twice, therefore reducing total setup and design time.

■Supporting motion controller, CNC and inverter

- ・The PLC functionality built-in inside the following motion controller, CNC and inverter products can be programmed with GX Developer.

◆Compatible models

| Motion controller	A171SHCPUN, A172SHCPUN, A173UHCPU, A273UHCPU
CNC	M60S Series, M600 Series, C6/C64 Series
Inverter	FR-C500 Series

■Label programming for improving design efficiency

- ・Programs can be standardized by programming with labels.
- ・Programs can be created without having to consider the actual device.
- ・Programs for other systems can be used easily just by changing the device assignment to match the device configuration.
- ・Devices are automatically assigned to labels used internally, so there is no need to consider the devices. (Target CPU: Q Series and QnA Series)
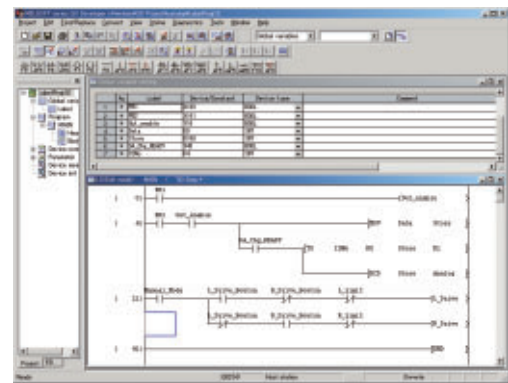

■Improved design efficiency with function blocks

- ・Common programs can be translated as parts with function blocks.
- ・Large-scale programming can be structured easily.
- ・Programs can be reused to eliminate coding mistakes.
- ・Standard programs are displayed as blocks, making the program easy-to-view, and thereby improving the editing and debugging efficiency.
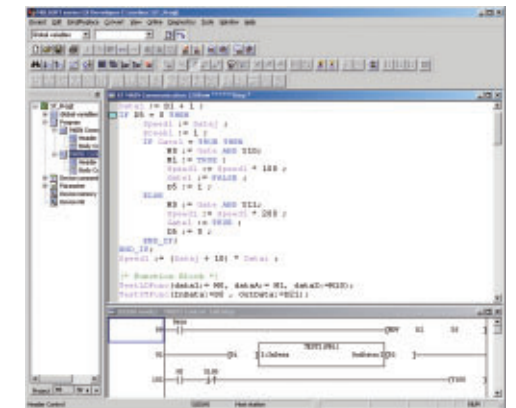- ・Function block can work with ladder diagram and ST. (Target CPU: Q Series and QnA Series)
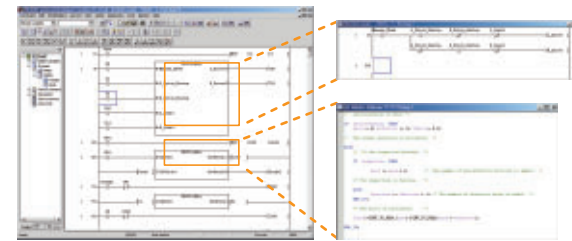
■Cross reference to clarify the usage state of devices and labels

- ・The usage of devices or labels is listed.
- ・Used devices can be easily checked and distinguished between unused devised.
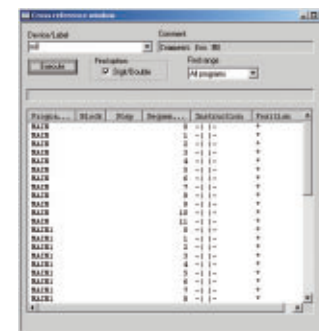
■Structured text for easy programming of data and communication processes

- ・Processes that are difficult to represent with ladders can be programmed easily using structured text (ST).
- ・Design efficiency can be improved by representing control processes with ladders, also operation processes, data processes and communication processes with ST.
- ・ST programming is equivalent to high level language. The same programming style is applicable for PLC.
- ・Design efficency using parts can be improved as function blocks created with ladders or ST can be utilized by ST. (Target CPU: Q Series)
- ・When used in combination with GX Simulator, break points can be set in the ST program enabling one-line execution of programs. This results in efficient debugging of ST programs.
  ※GX Simulator Ver. 6.16 or higher is required.

Specifications

◆Compatible CPU

Q Series	Q00（J）,Q01,Q02（H）,Q06H,Q12H,Q25H,Q02（H）-A,Q06H-A,Q12PH,Q25PH,Q12PRH *NEW* ,Q25PRH *NEW*
QnA Series	Q2A,Q2AS（H）,Q2AS1,Q2AS（H）S1,Q3A,Q4A,Q4AR
A Series	A0J2H,A1S,A1FX,A1SJ,A1SH,A1SJH,A1N,A2C,A2CJ,A2N（S1）A2S,A2SH,A171SH,A172SH,A3N,A2A（S1）,A3A,A2U（S1）,A2AS（S1）,A2USH-S1,A3U,A4U,A273UH
FX Series	FX0（S）,FX0N,FX1,FX1（S）,FX1N（C）,FX2（C）,FX2N（C）

※The following CPUs are not compatible with GX Developer A1, A2, A3, A3H, A3M, A3V, A52G, A73, A0J2 and F Series.

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

PX Developer

Simple engineering of PID loop control

Outline

By using FBD language (IEC61131- 3 compliant) loop control program can be created easily. This incorporates pasting and connecting FBs, also drag & drop functions. (No ladder program needed.) The control loops can be easily tuned and monitored by utilizing tags, using the standard monitor screen.

Programming tool

Connection

Drag & drop

Monitor tool

Parameter setting

PID tag monitor and tuning
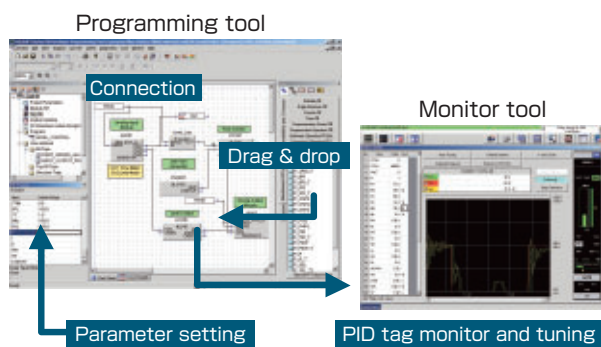
■Plenty of FB/functions for loop control are provided as a standard
・Simple to complicated loop control with the following FB and function line up.
 (1) FBs corresponding to process control instructions in process CPU
 (2) FBs that combine process control instructions to provide easier programming.
 (3) FBs for accessing analog modules and input/output modules

■Simple standardization and reuse of programs
・IEC61131-3 compliance allows FBD programs to be put in hierarchal format and reused (user's original FB can be created). This makes it easier to standardize and reuse programs.

■Easy communication with sequence control
・By using logical names (label names), data exchange is available between the programs created in FBD and ladder. This allows the constants of loop control tags and SV values to be changed, etc., easily from the ladder program.
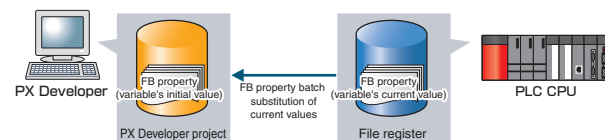
■Powerful tuning and monitor functions
・Various screens (faceplate, tuning panel, alarm, list of events) for tuning and monitoring the created control loops are provided as standard. Tuning and monitoring can be started right after creating the program.

■Supporting QCPU redundant system NEW
・Both program and parameters created using GX Developer and PX Developer can be automatically transferred to the standby system. This ensures that the program does not have to be downloaded twice, therefore reducing total setup and design time.
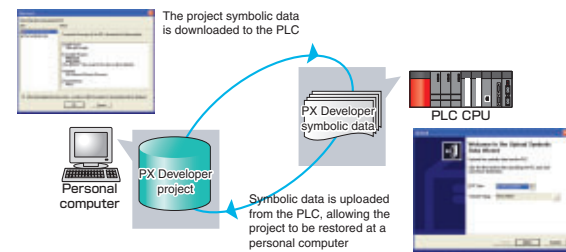
■Improved FB Property Management NEW
・FB property current values in the PLC CPU can be read and substituted in batch as initial values in the project, thereby preventing individual FB property values from being overlooked. This feature saves backup works. (Previously, FB property current values had to be substituted individually for each FB part in order to use them as initial values in the project.)

PX Developer

FB property (variable's initial value)

PX Developer project

FB property batch substitution of current values

FB property (variable's current value)

File register

PLC CPU

■New PLC Uploading / Downloading Function For Project Symbolic Data NEW
・This function allows a project to be restored on any personal computer even if the project data is not saved at the personal computer. (The symbolic data required to restore the project must first be downloaded to the PLC CPU.)

The project symbolic data is downloaded to the PLC

PX Developer symbolic data

PLC CPU

Personal computer

PX Developer project

Symbolic data is uploaded from the PLC, allowing the project to be restored at a personal computer
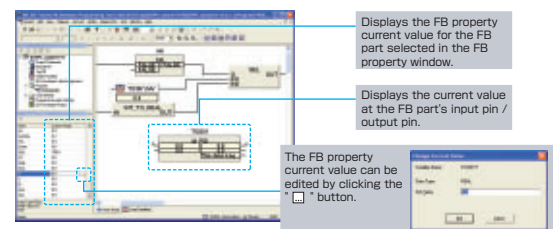
■Improved Monitor Function NEW
・The following new features have been added to the existing monitor function in order to simplify operations such as debugging, etc.
 (1) Current value monitor / editing from FB property window
　Current values can be edited and monitored without having to register the monitored items at the Variable Entry Monitor Window, resulting in more efficient debugging.
 (2) Input variable / output variable current value display at FB part
　This feature also permits input variable / output variable display switching.

Displays the FB property current value for the FB part selected in the FB property window.

Displays the current value at the FB part's input pin / output pin.

The FB property current value can be edited by clicking the "□" button.

GX Simulator Version7 Ver.UP

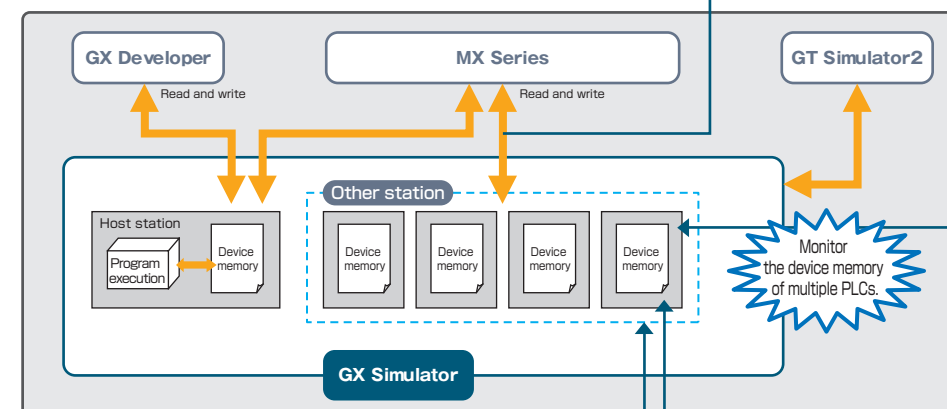## Debugging sequence programs on a personal computer

Outline

GX Simulator allows you to call a virtual PLC on the personal computer and to debug the sequence program. Debugging can be carried out on the personal computer immediately after designing without waiting for the PLC input/output wiring.
This feature dramatically reduces backward Engineering process.

■Debugging the sequence with one personal computer
・The Q/QnA/A/FX Series can be debugged with one package.
・As the operation is carried out as a virtual PLC, the ladder can be easily executed at the site. (There is no need to prepare test devices.)
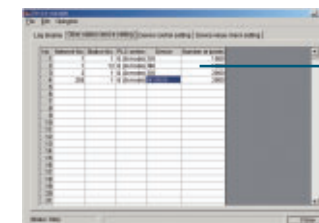・Sufficient debugging can be carried out without preparing the actual machine.

■Supporting offline debugging of user applications having MX Series
・The operation of user applications using MELSOFT middleware (MX Component, MX Sheet) can be easily confirmed without using the actual machine.

■Check written device values NEW
・Check whether values written from the user application to the host station or other station device are within the range expected by the user. Use this function to check for mistakes in the creation or settings of the user application.
・Check the error details with the log. The date, network number, station number, PLC series, device, device value and error code message for up to 100 errors can be displayed in the log.

Only the input of incorrect values is recorded.
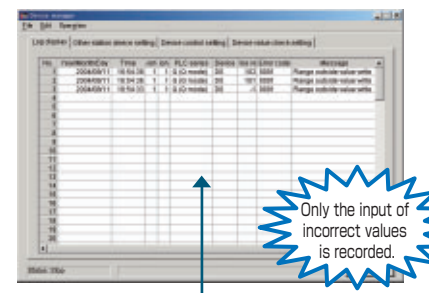
■Device memory monitoring NEW
・During simulations, the device memory of multiple PLCs can be monitored simultaneously.
・The following device memory monitoring formats are available.
 Bit & word
 Bit multi-point
 Word multi-point
 Time/count
・Display up to 8 windows

GX Developer

MX Series

GT Simulator2

Read and write

Read and write

Host station

Program execution

Device memory

Other station

Device memory

Device memory

Device memory

Device memory

Monitor the device memory of multiple PLCs.

GX Simulator

■Simulate access to multiple PLC devices NEW
・This function now provides simulation of multiple PLC devices connected over a network. Consequently, it is now easier for GX Simulator to debug applications that access multiple PLCs via a network.
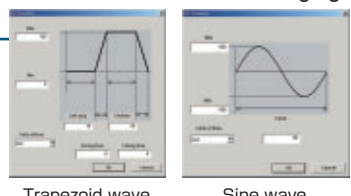・Register up to 1024 PLCs.

Simulate the device memory of multiple PLCs connected over a network.

■Confirm reading operation by host station and other station devices NEW
・The operation of user application based on device values which change according to the pattern can be checked without creating a debugging program that changes the device values.
・The reading operations from host stations and other station devices can be confirmed without changing the user application.

Write device values.

Trapezoid wave

Sine wave

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

GX Configurator

Easily use high-performance PLC in Windows® integrated environment

Outline

GX Configurator is simple setting software for running the Q Series intelligent function module without a program.

(1) Initialization without programs.
(2) Adjustment for the analog modules.
(3) Automatic tuning of the temperature control module.
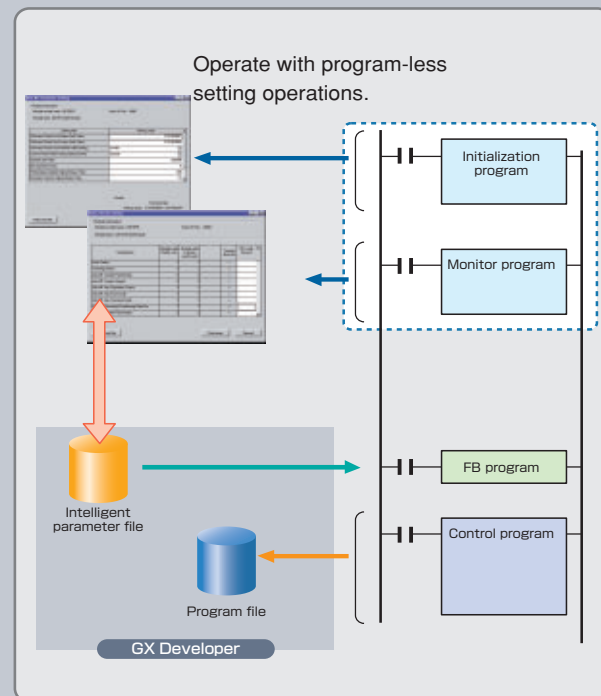(4) Writing initialize data into flash memory.

※GX Developer is required as GX Configurator runs as add-on software. (Excluding GX Configurator-QP, AP and CC).

Add-on software
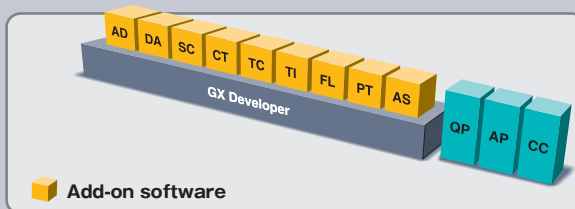
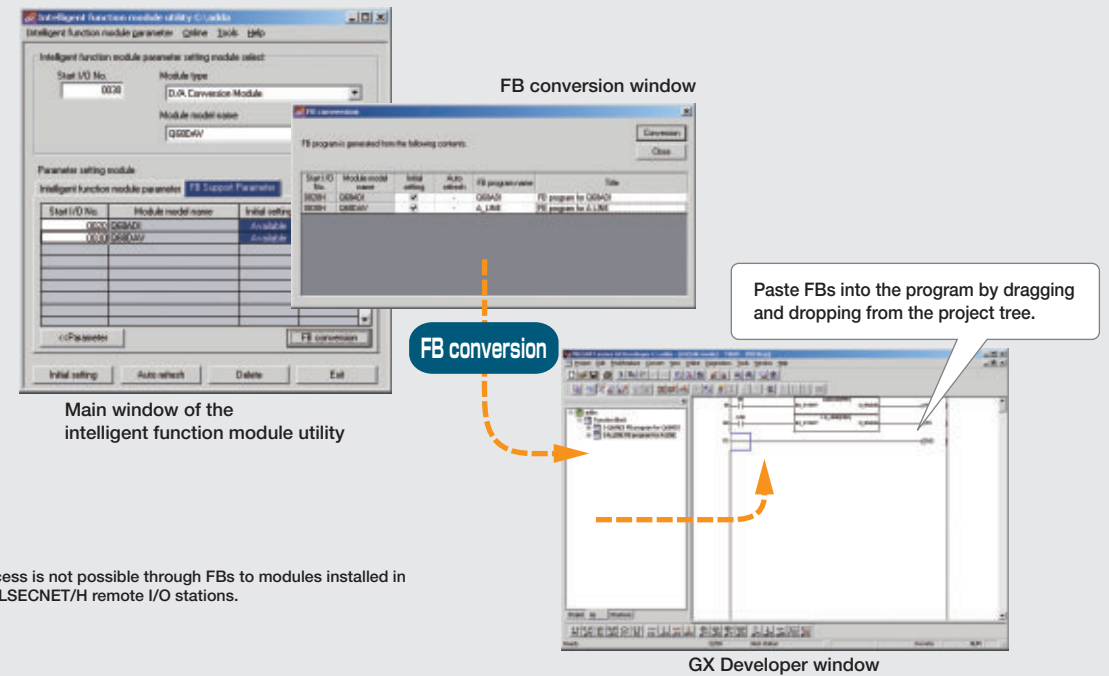| Product name	Outline
GX Configurator-AD	MELSEC-Q dedicated: A/D conversion setting and monitoring tool
GX Configurator-DA	MELSEC-Q dedicated: D/A conversion setting and monitoring tool
GX Configurator-SC	MELSEC-Q dedicated: Serial communication setting and monitoring tool
GX Configurator-CT	MELSEC-Q dedicated: High-speed counter setting and monitoring tool
GX Configurator-TC	MELSEC-Q dedicated: Temperature control setting and monitoring tool
GX Configurator-TI	MELSEC-Q dedicated: Temperature input setting and monitoring tool
GX Configurator-FL	MELSEC-Q dedicated: FL-Net setting and monitoring tool
GX Configurator-PT	MELSEC-Q dedicated: QD70 setting and monitoring tool
GX Configurator-AS	MELSEC-Q dedicated: AS-i master unit setting and monitoring tool
GX Configurator-QP	QD75P/D/M positioning module setting and monitoring tool
GX Configurator-AP	AD75P/M positioning module setting and monitoring tool
GX Configurator-CC	MELSEC-A dedicated: CC-LInk module setting and monitoring tool

The Q Series intelligent function module is operated with GX Configurator, so settings and monitoring are applicable with package operations even without creating an initial program.
In addition, function blocks can be automatically generated from the set parameters and used with the sequence program. **NEW**

Operate with program-less setting operations.

Initialization program

Monitor program

FB program

Control program

Intelligent parameter file

Program file

GX Developer

■Graphical network display

The GX Configurator-CC graphically displays the CC-Link connection state.
The CC-Link line can be tested and the station status can be monitored easily.
(※This function is for the A Series. GX Developer offers the similar function for Q and QnA series.)

GX Configurator-CC

GX Configurator-AD/DA Version2 **Ver.UP**
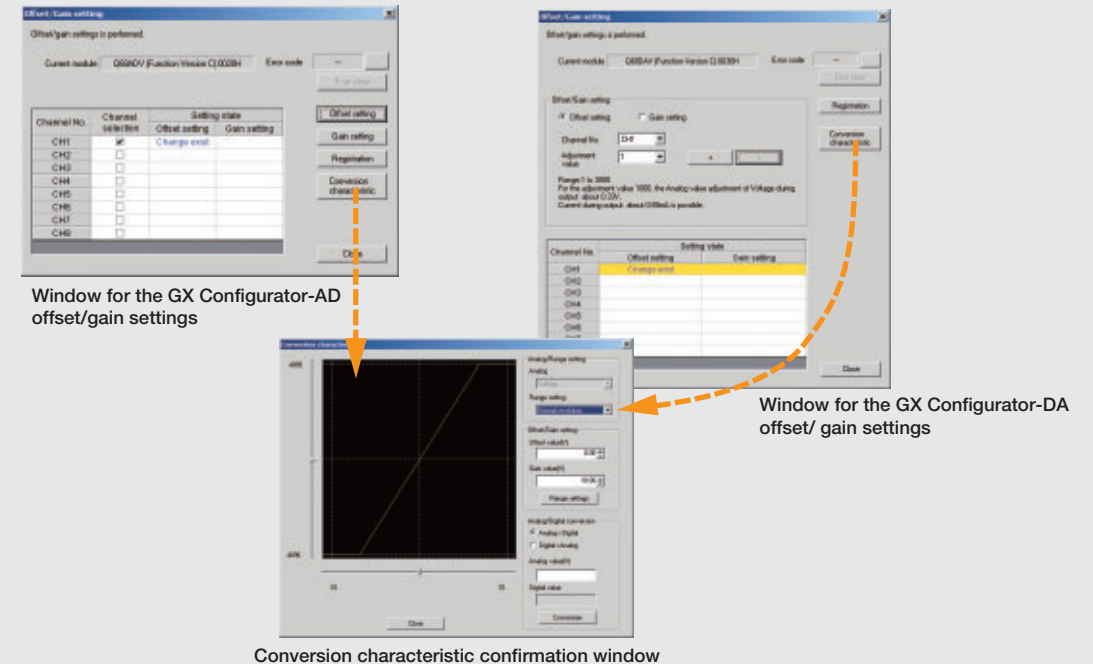
■FB Function **NEW**

FB programs are generated automatically from the intelligent-function-module parameters, and the initialization and auto-refresh settings are possible without any concern for the size of the buffer memory or the I/O interface. These are reusable initial programs as components.

FB conversion window

FB conversion

Paste FBs into the program by dragging and dropping from the project tree.

Main window of the intelligent function module utility

※Access is not possible through FBs to modules installed in MELSECNET/H remote I/O stations.

GX Developer window

■Simpler offset/gain settings **NEW**

The offset/gain settings are easier, and reduce adjustments.
The analog to digital transfer characteristics are shown as a graph.

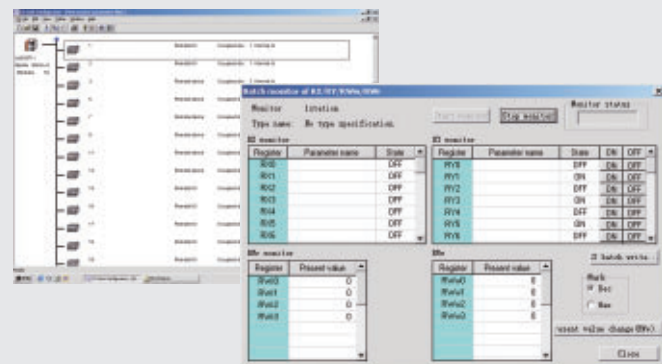Window for the GX Configurator-AD offset/gain settings

Window for the GX Configurator-DA offset/ gain settings

Conversion characteristic confirmation window

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

GX Configurator / GX Converter

Easily use high-performance PLC in Windows® integrated environment

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

GX Configurator-SC Version2 [Ver.UP]

■FB Function [NEW]

[Automatic generation of communication control program]
・Without creating complicated sequence programs, equivalent function block programs can be created only by making simple on-screen settings.

GX Configurator-SC Version2 (Including Protocol FB Function)

Convert to FB

Set packet information, packet data and PLC information on each screen.

Paste a function block from the project tree to a program by drag and drop.
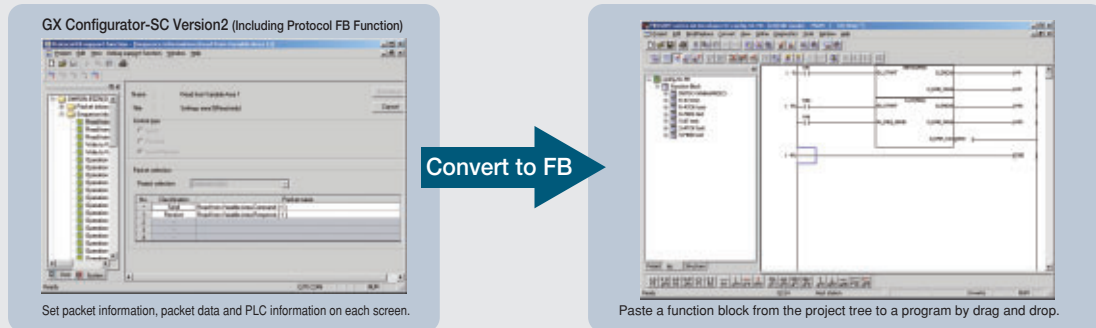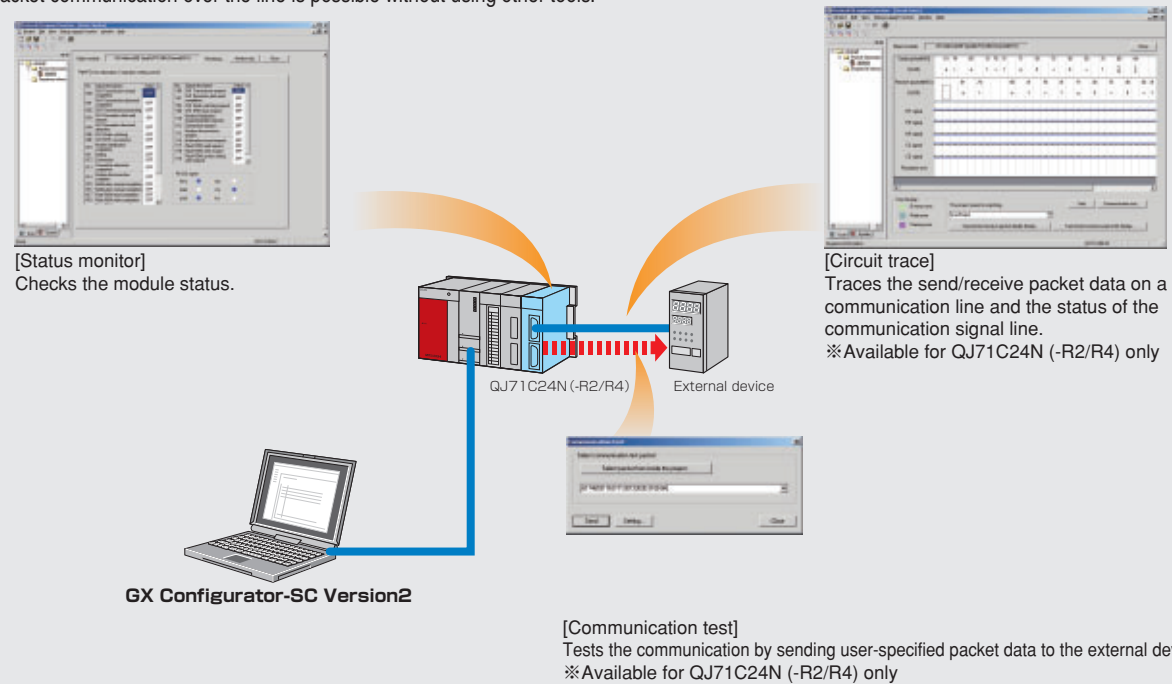
[Supporting other device controller brands]
・Data for various brands of device controllers, such as temperature controllers, are available, so the user can create communication control function blocks just by executing FB conversion.

■Reduced debugging work [NEW]

・A debugging function for communication between the Q Series C24 module and device controller, required for starting up the system, is available. Packet communication over the line is possible without using other tools.

[Status monitor]
Checks the module status.

[Circuit trace]
Traces the send/receive packet data on a communication line and the status of the communication signal line.
※Available for QJ71C24N (-R2/R4) only

QJ71C24N (-R2/R4)   External device

GX Configurator-SC Version2

[Communication test]
Tests the communication by sending user-specified packet data to the external device.
※Available for QJ71C24N (-R2/R4) only


GX Configurator-QP

■Program-less settings

GX Configurator-QP is a development tool that uses the Windows® operability to greatly improve the positioning module setting, programming and monitoring efficiency.

〔Setting parameters and data for positioning〕
・Parameter Input screen displays values changed from the default in color, and it offers operations to be carried out and viewed easily.
・The selection input method simplifies editing the positioning data.

〔Simulation with positioning data〕
・The simulation function without a real machine, graphically traces and displays the input positioning data.


Parameter Input screen

Positioning Data Edit screen
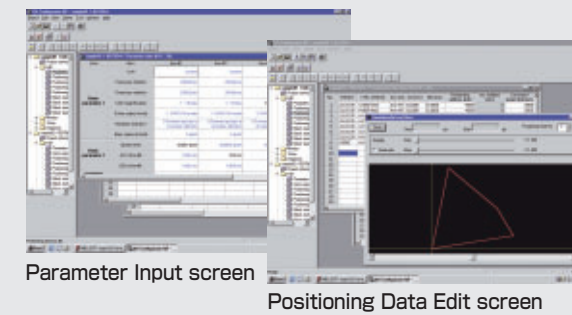
〔Test operation of positioning control〕
・The external I/O signal monitor function allows you to confirm easily external I/O status.
・JOG operation can be used for easy operations before sequence operations.

〔Monitoring of positioning control status〕
・The status of I/O signals to/from the PLC CPU is also easy-to-view.

Connection Confirmation screen

Operation Monitor screen
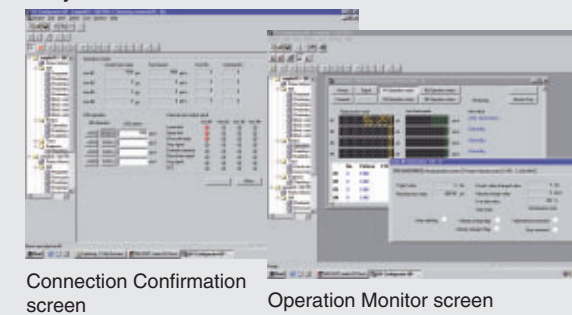
GX Converter

■Easy document creation

GX Converter data conversion software package for Windows is a software designed to convert other format data (text format data, CSV format data) to GX Developer format data (instruction list, device comment). It allows CAD data to be utilized on GX Developer for equipment design or GX Developer data to be utilized for design on CAD, increasing design efficiency.

●Operating environment
Since GX Converter is an add-in software to GX Developer (SW3D5F/C-GPPW-E or later), GX Developer must be installed in advance.

●Data conversion function
The follwing data can be converted by GX Converter.

Conversion Factor	Conversion Data
CSV format data -> GX Developer format data	Instruction list Device comment
Text format data -> GX Developer format data	Instruction list Device comment
GX Developer format data -> text format data	Instruction list Device comment
GX Developer format data -> CSV format data	Instruction list Device comment

PLC

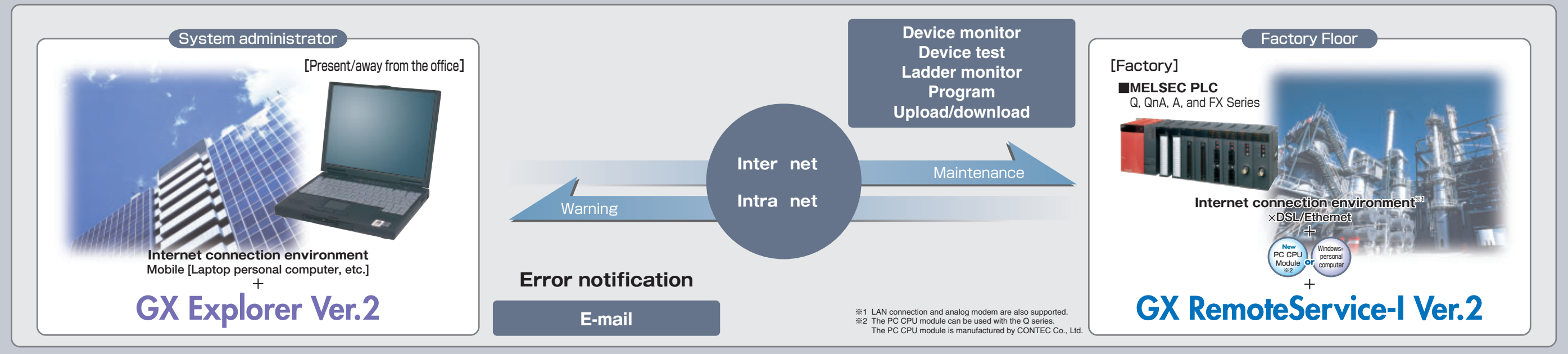**Connect to internet away from the office.**

Presenting solutions with MELSOFT
Remote Maintenance

MELSEC compatible remote maintenance tool

Outline

- The high-function MELSOFT products realize complete maintenance.
- This tool allows e-mailing, device monitoring, device testing, ladder monitoring and program uploading/downloading via the internet to realize advanced diagnostics and preventive maintenance.

E-mail | **Device monitor** | **Device test** | **Ladder monitor** | **Program** upload/download

System administrator
[Present/away from the office]

**Device monitor
Device test
Ladder monitor
Program
Upload/download**

Factory Floor

[Factory]
■**MELSEC PLC**
Q, QnA, A, and FX Series

Inter net
Intra net

Maintenance

Warning

Internet connection environment[3]
×DSL/Ethernet
+
New PC CPU Module[2] or Windows personal computer
+

Internet connection environment
Mobile [Laptop personal computer, etc.]
+

GX Explorer Ver.2

Error notification

E-mail

※1 LAN connection and analog modem are also supported.
※2 The PC CPU module can be used with the Q series.
The PC CPU module is manufactured by CONTEC Co., Ltd.

GX RemoteService-I Ver.2

■System Equipment

Access method	Internet/intranet
System administrator	Personal computer + GX Explorer Version2

Factory

MELSEC PLC	+ PC CPU※1 module	+ GX RemoteService-I Version2	+ Modem
●Q Series	Web server software ●PWS ●IIS		●Modem ●×DSL ●Broadband router

or

MELSEC PLC	+ Personal Computer	+ GX RemoteService-I Version2	+ Modem
●Q Series ●QnA Series ●A Series ●FX Series	Web server software ●PWS ●IIS		●Modem ●×DSL ●Broadband router

Points for selecting factory side connection devices

- A new system can be newly structured with the Q series by using modulized PC CPUs.
- This system is perfect when a PERSONAL COMPUTER cannot be installed due to the installation environment.
- When using the QnA, A or FX series, or when adding to an existing configuration, the system can be easily configured by installing a PC.

■Supporting almost of all CPU series Ver.UP

- The Web functions and MELSOFT connection functions can access almost of all CPU series and CPU types supported by GX Developer. ※3

■Supporting motion controller, CNC and inverter

◆Compatible models

Motion controller	A171SHCPUN, A172SHCPUN, A173UHCPU, A273UHCPU
CNC	M60S Series, M600 Series, C6/C64 Series
Inverter	FR-C500 Series

Specifications

◆Compatible CPU

Q Series	Q00(J), Q01, Q02(H), Q06H, Q12H, Q25H, Q02(H)-A, Q06H-A, Q12PH, Q25PH
QnA Series	Q2A, Q2AS(H), Q2AS1, Q2AS(H)S1, Q3A, Q4A, Q4AR
A Series	A0J2H, A1S, A1FX, A1SJ, A1SH, A1SJH, A1N, A2C, A2CJ, A2N(S1), A2S, A2SH, A171SH, A172SH, A3N, A2A(S1), A3A, A2U(S1), A2AS(S1), A2USH-S1, A3U, A4U, A273UH
FX Series	FX0(S), FX0N, FX1, FX1(S), FX1N(C), FX2(C), FX2N(C)

※3 The following CPUs are not compatible with remote maintenance tools A1, A2, A3, A3H, A3M, A3V, A52G, A73, A0J2, Q12PRH, Q25PRH and F Series.

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

PLC

Connect to internet away from the office.

GX Explorer Version2 `Ver.UP`

### Providing convenient and highly necessary functions for maintenance

Outline

GX Explorer unifies and controls personal computer and PLC project data bi-directionally.
Project data can be easily read and written with intuitive operations.
With similar operations, programs can be downloaded/ uploaded to a network PLC.
Also PLC diagnostics, ladder monitoring, timing charts and device monitoring can be carried out.
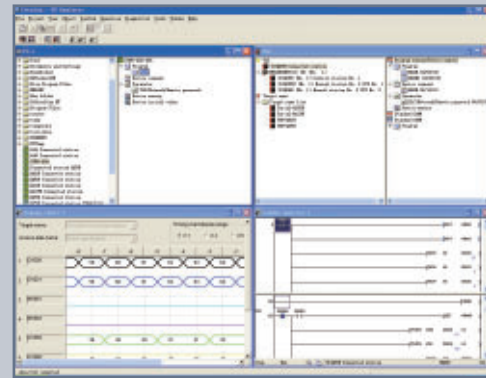
■Network Configuration can be easily confirmed

・GX Explorer uses graphical displays so that the network No., station No. and data details can be viewed at a glance. Even if the network configuration is not clear, program maintenance and diagnostics can be carried out easily.
・Even if the schematics are not available and the network configuration is unknown, the configuration can be confirmed with GX Explorer. Data read out at the site can be confirmed online at the design office.

■Program read/write can be easily carried out even by beginners

・GX Explorer incorporates intuitive drag & drop operations to read and write the programs, so even beginner for GX Developer can interchange programs.
・When the program or comment icon is double-clicked, GX Developer will start automatically and editing will be enabled. When the PLC data is double-clicked, the PLC data will be automatically read.

■Anyone can carry out PLC and network diagnostics via the network

・With GX Explorer, various diagnostics can be carried out just by selecting the target station and clicking on the right mouse button.
・Diagnostics target: PLC diagnostics, MELSECNET/H, MELSECNET/10 diagnostics, CC-Link diagnostics, system monitor

■A full lineup of ideal functions for maintenance is available.

・Conventional diagnostic and monitor functions, etc., have been expanded for use in maintenance applications to convey necessary information with ideal displays. `Ver.UP`

Designating clients and managing access device settings with names

Device monitors enabling monitor of multiple CPUs simultaneously

Error diagnostics of user-defined error help and troubleshooting displays

Maintenance functions using timing charts and ladder monitors

Fault diagnostic function using detailed sampling conditions and analysis conditions

#### ■Project management functions have been expanded. `Ver.UP`

・Various functions from project search to reference are supported for use as the main function when making corrections. The operation range has been expanded enabling use not only between a personal computer and PLC, but also between personal computers (FTP transfer).

Provision of only necessary data with project search

Connection with user document system

Display of consistency check results with ladder

On-line change while transferring data

■Remote access is supported. `NEW`

・For the execution environment, remote access using the internet or intranet is supported in addition to the CPU direct access method.
※A personal computer with GX RemoteService-I Ver. 2 installed is required.

Internet
Intranet
CPU direct connection
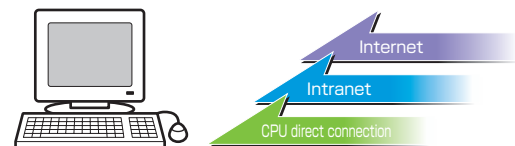
■Setting a security function is feasible. `NEW`

・Use of each function, designation of the connection and selection of access devices can be set for each user setting. Set data can be protected by setting a password.

GX RemoteService-I Version2 `Ver.UP`

Execute GX Explorer maintenance functions via the internet or intranet.

Outline

Remote maintenance, including e-mail notification to cellular phones, and system diagnosis using cellular phones can now be carried out easily without a program.

■MELSOFT connection functions are provided. `NEW`

・When GX RemoteService-I Ver. 2 is installed in the server, the PLC system can be remotely accessed from the MELSOFT software via the internet or intranet.
※Maintenance functions are enhanced by using Ver. 2 with GX Explorer Ver. 2.

■Compatible networks have been expanded. `Ver.UP`

・Intranet can now be used in addition to the conventional internet. Various connection methods including analog modem or ×DSL can be selected. This makes it easy for the user to structure an ideal system or incorporate this software into an existing system.

Internet
●Analog modem
●×DSL
OR
Intranet

■The operating environment has been expanded. `NEW`

・This software is compatible with the PC CPU as well as the conventional Windows® personal computer. The system configuration can be selected according to the user's execution environment. Additional equipment does not need to be prepared when using equipment already incorporating a PC CPU. Furthermore, since I/O points are not required, even the parameters do not need to be changed.

New
PC CPU
or
Windows personal computer

Select a system that matches the user environment
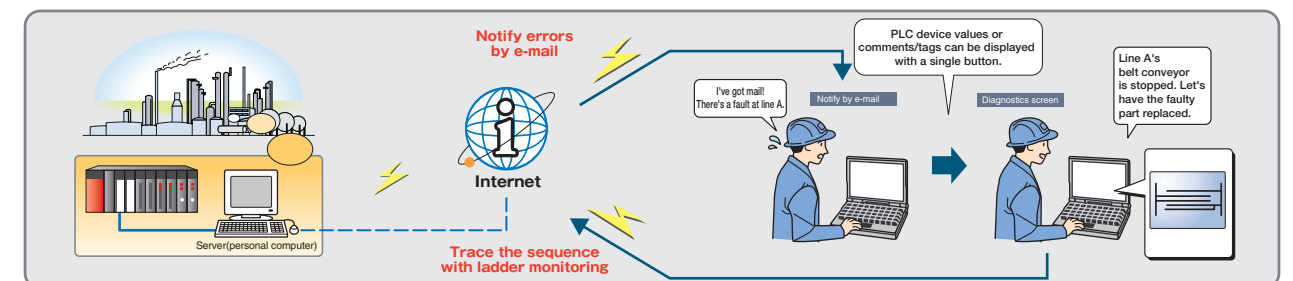
■Security has been strengthened. `NEW`

・An authentication function, with user name and password, is executed when connecting the client and server to prevent illegal accessing of the server. Security has been strengthened for both the Web functions and MELSOFT connection functions. A setting that enables connection even without a user name or password can also be selected for operation over the intranet.

■Automatic e-mail transmission when system error occurs

・When a system error occurs, the system status is automatically notified by e-mail. As e-mail can be automatically sent to the person in charge or service or maintenance when a system error occurs, primary diagnosis can be made quickly, and the recovery work time can be shortened.

■Primary diagnostics of system using cellular phones

・Primary diagnostics can be made from a remote location using the cellular phone's mobility. A detailed diagnostics can be completed by having the person in charge of service or maintenance diagnose the actual system from a remote location.

■Easy setup without a program

・Absolutely no complicated programming is required. Just answer the questions in the Wizard settings to setup the system.

■Web functions

・Device monitoring and device testing are possible by starting up GX RemoteService-I Ver. 2 with the Web server on the server in which it is installed, and accessing the corresponding URL from the client's web browser or cellular phone.
・The corresponding URL supports methods to automatically send mail by setting trigger conditions in the server, or methods to send mail manually.

Notify errors by e-mail
Internet
Server(personal computer)
Trace the sequence with ladder monitoring
PLC device values or comments/tags can be displayed with a single button.
I've got mail! There's a fault at line A
Notify by e-mail
Diagnostics screen
Line A's belt conveyor is stopped. Let's have the faulty part replaced.

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

PLC

Directly links FA data with office and accelerates operation tasks

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service
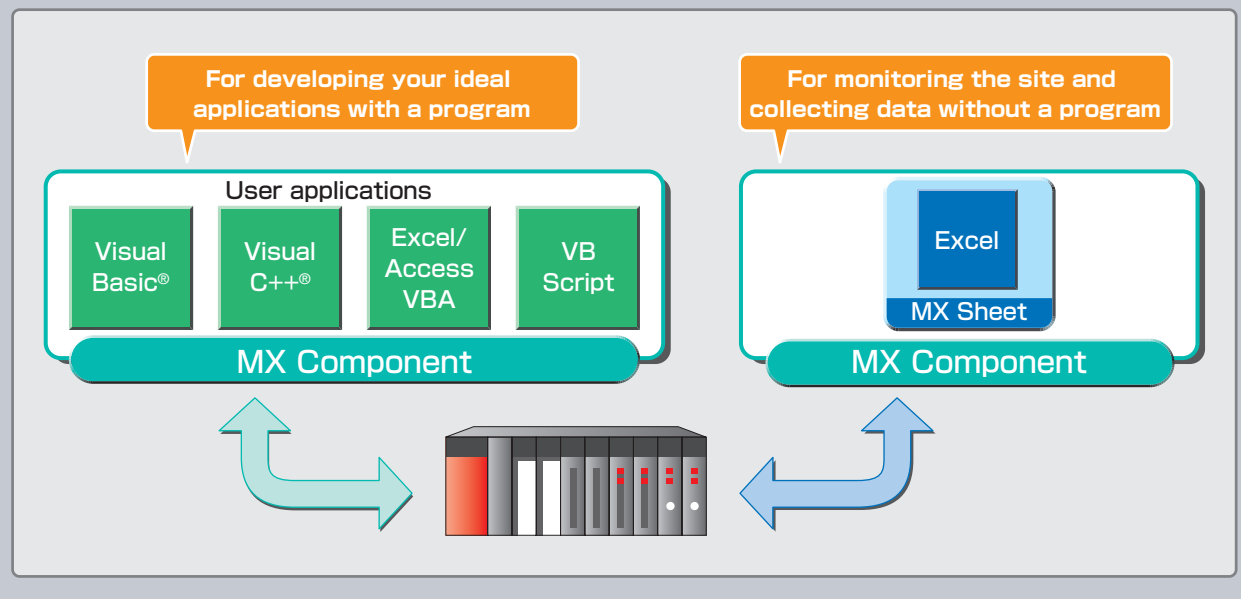
Presenting solutions with MELSOFT

MX Series

MX Component MX Sheet

Simplifying program creation and communication with PLC

Outline

MX Series helps to easily develop a system without being aware of the complicated protocol for Ethernet communication or serial communication. The MX Series have a wide range of functions, such as collecting on-site data with Excel without programming, and developing advanced user applications.

For developing your ideal applications with a program

For monitoring the site and collecting data without a program

User applications

| Visual Basic® | Visual C++® | Excel/ Access VBA | VB Script |

MX Component

Excel

MX Sheet

MX Component

■Increasing user application development efficiency

［MX Component］

・MX Component recognizes differences in protocol by the communication path, and uses the same method for communication with the PLC and personal computer. This greatly improves the system development efficiency.
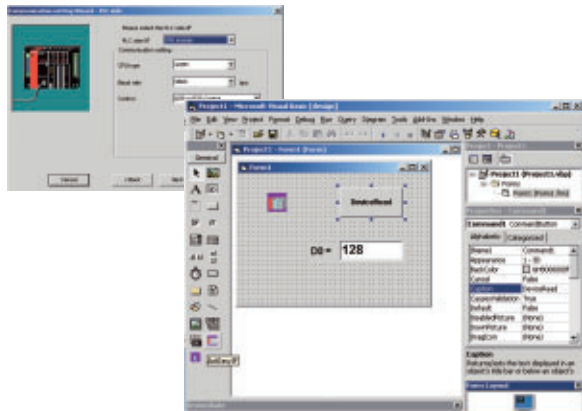
■Program-less data collection

［MX Sheet］

・Monitoring and logging of the on-site PLC data is realized without an extra program needed. This is done by setting various attributes from Excel as the commonly used office software.

■Supporting almost of all CPU series

・MX series can access almost of all CPU series and CPU types.

◆Compatible CPU ※1

Q Series	Q00 (J),Q01,Q02 (H) ,Q06H,Q12H,Q25H,Q02 (H) -A,Q06H-A,Q12PH,Q25PH,Q12PRH NEW ,Q25PRH NEW
QnA Series	Q2A,Q2AS (H) ,Q2AS1,Q2AS (H) S1,Q3A,Q4A,Q4AR
A Series	A0J2H,A1S,A1FX,A1SJ,A1SH,A1SJH,A1N,A2C,A2CJ,A2N (S1) A2S,A2SH,A171SH,A172SH,A3N,A2A (S1) ,A3A,A2U (S1) ,A2AS (S1) ,A2USH-S1,A3U,A4U,A273UH
FX Series	FX0 (S) ,FX0N,FX1,FX1 (S) ,FX1N (C) ,FX2 (C) ,FX2N (C)
Motion controller	A171SHCPUN、A172SHCPUN、A173UHCPU、A273UHCPU

※1 The following CPUs are not compatible with MX Series A1, A2, A3, A3H, A3M, A3V, A52G, A73, A0J2 and F Series.
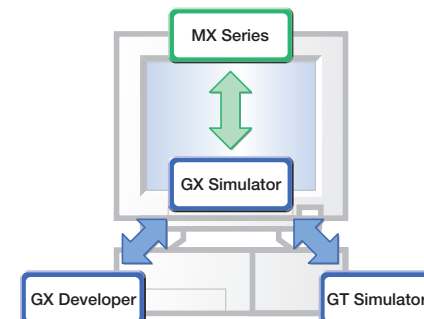
■Wide range of communication paths

The MX Series supports a wide selection of communication paths between the personal computer and PLC, therefore realizing easy system design that meets the customer's requirements.

Connect to the A motion CPU.

NEW

MELSECNET/H,10,II

Ethernet

CC-Link

Serial communication
(Computer link connection, CPU direct connection, CC-Link, G4 connection)

Bus connection
(AF board, CPU board)

Modem connection

Connect to othre controller brands with gateway connection function.

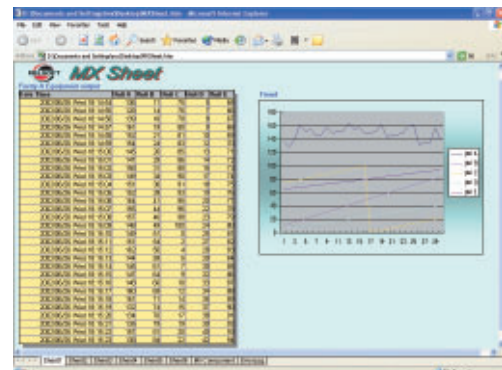### ■Powerful Debugging Environment

・In combination with GX Developer, GX Simulator and GT Simulator, the MX series can perform system simulation and debugging by a single personal computer without actual devices. This remarkably improves system development efficiency.

MX Series

GX Simulator

GX Developer   GT Simulator2

Specifications

●Development environment

◆MX Component

Corresponding software	Operating System
Visual C++® 6.0/.net、 Visual Basic® 6.0/.net、 VBA（Excel 2000/2002/2003） Access 2000/2002/2003) VB Script	Windows® 95 / Windows® 98 / Windows® Me Windows NT® 4.0 / Windows® 2000 Professional Windows® XP Professional / HomeEdition

◆MX Sheet

Corresponding software	Operating System
Excel 2000/2002/2003	Windows® 98 / Windows® Me Windows NT® 4.0 / Windows® 2000 Professional Windows® XP Professional / HomeEdition

※MX Component Version 3.01B or higher is required to run MX Sheet.

MX Component

Active X® Library for PLC Communication

Outline

MX Component is an ActiveX® control library that supports all communication paths, from the personal computer to the PLC, and enables communication via simple processing without being aware of the different protocols used by various communications. MX Component provides efficient development of applications by reducing the man-hour needed for designing a communication program. This feature is ideal when fast system implementation/maintenance for on-site applications is required. MX Component also enables the development of a wide variety of applications by supporting various languages, such as Visual C++®, Visual Basic®, VBScript, and VBA for Microsoft® Access and Excel.

■Simple programs

・Using MX Component (Example of program that reads PLC device values with Visual Basic®)

(1) Set communication path as instructed by the Wizard. (Option for setting the program without using Wizard are also available.)

(2) Paste the MX Component control icon into the form, and set the logical station number set in (1) as the property for that control.
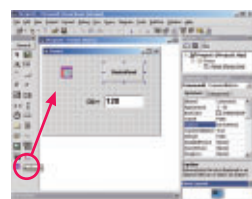
(3) Describe the program for reading the program.
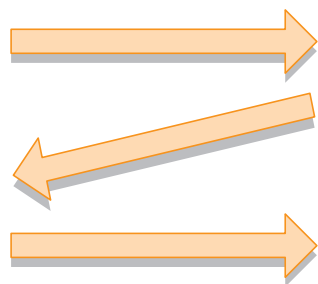
Completed!

■Remote monitoring/ operations via internet/ intranet

Just by accessing the Web Pages created with VBScript (ASP function) using IE (Internet Explorer) or mobile devices,the factory's PLC can be remotely monitored and operated.

■Supporting QCPU redundant system NEW

[Simple communications settings]

・The communications settings are oblivious of the redundant systems. There is no programming required to switch communications if the control system goes down.

[Utilizing existing software]

・Existing MX Component projects are utilized for the redundant system by just simply changing the communication settings for that project.

■Easy applications development with VBA

・The offset and gain can be set with simple setting methods that do not required complicated operations.

・The input/output characteristics in respect to the digital/analog values can be confirmed on a graph.
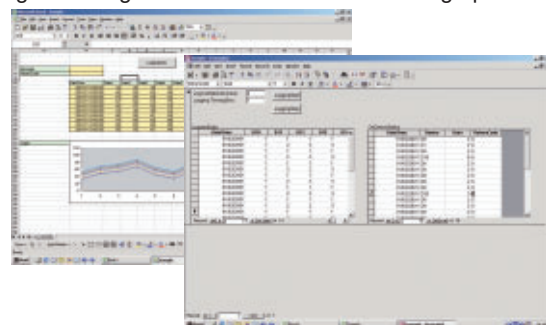
■Supporting the latest programming languages

| Development language	Range of support
Microsoft® Visual Studio®.NET 2003	Additional Visual Studio®.NET languages supported ・Visual Basic®.NET ・Visual C++®.NET
Microsoft® Office 2003	Additional support for Excel 2003 and Access 2003 VBA

MX Sheet

Easy collection of shop floor data with Excel

Outline

MX Sheet is a software package that provides monitoring, logging, alarm data collection, setting changes, etc. for the PLC system by only simple setting without the need for programming.

■Simple and program-less settings

・Settings required to run MX Sheet can all be made easily from the Microsoft® Excel menu. This realizes program-less communication between the PLC and Excel.
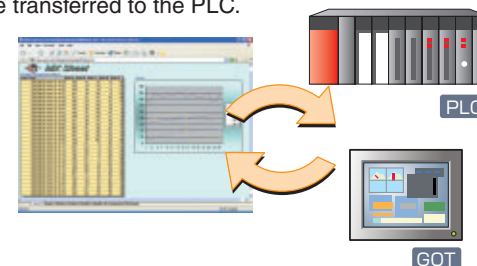
[Step1]   [Step2]
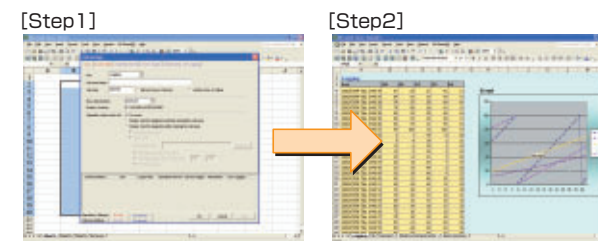
Start up the setting utility, select the functions and set the target device conditions.

Then, just arrange the screens and execute to start data collection.

■Directly connect the office

・The device data in the PLC can be monitored and logged in real-time with Excel, and recipe data, etc., can be transferred to the PLC.
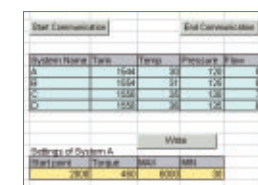
PLC

GOT

■Security NEW

・Password protection is now available for your MX Sheet settings.

■Simple button operations NEW

・Buttons for the opening-, closing-, and one-shot communications are pasted on an Excel sheet.

・Opening, closing and one-shot communications are possible with only clicking a button.

■Collect the on-site data history

・This function logs the PLC device data on Excel. The on-site quality/temperature result data, etc. can be collected and analyzed easily.
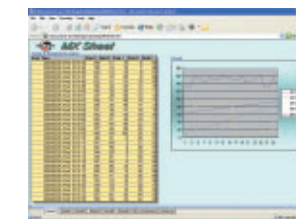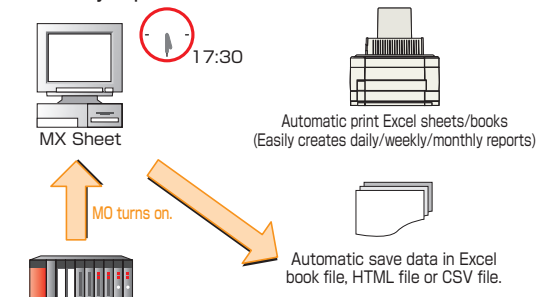
・Data is collected at 0.1 sec. pitch. Ver.UP

■Represent data values as comments

・By converting the device data values into corresponding comments, the on-site operation state, etc., can be checked quickly.
The alarm information can be stored as a historical data. This can be later used to analyze the line operation rate, etc.

■Automatic creation of daily reports, etc.

・This function automatically saves and prints the data displayed on Excel at a specified time or triggered from the condition of a PLC device. It can automatically print and save daily report and test results.

17:30

Automatic print Excel sheets/books (Easily creates daily/weekly/monthly reports)

MX Sheet

M0 turns on.

Automatic save data in Excel book file, HTML file or CSV file.

・Multiple settings for automatic save and automatic print. Ver.UP

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

HMI

Supporting design work from GOT screen creation to debugging

GT Designer2 Version2 Ver.UP

Reduction in development time by half with integrated screen drawing software!
(Mitsubishi comparison)

Outline

GT Designer2 is a screen creation software package common for the GOT1000 and 900 Series, and can be used for creating screens for the GOT1000, GOT-A900 Series and the GOT-F900 Series.
GT Designer2 Version 2 has an advanced screen creation environment and operability to respond to customer's imminent demands for "reducing screen creation time".

■Features
・ **Reduction in development time by half**
・ **Windows® standard operability and menu configuration**
・ **Data compatibility with GT Designer**

・ The entire screen's configuration can be viewed in tree format, and the screens can be added, deleted, copied and moved.
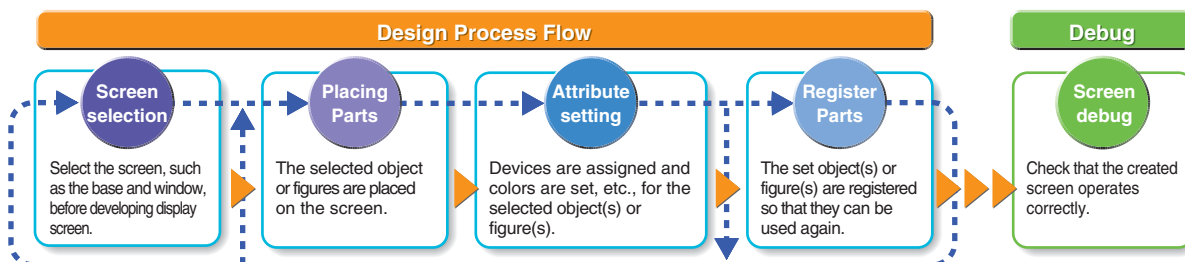・ A project unit, category unit or library unit can be selected by changing the tabs.

WORK SPACE

・ Attribute setting for the selected object or figures are displayed.
・ Various settings can be modified on the property sheet.

PROPERTY SHEET

・ This screen is used to set object or figures' display attributes.
・ This screen opens when the object or figures are double-clicked on.
・ Each setting item can be customized.

DIALOG BOX

・ This screen is used to edit template.
・ The user-created library can be reedited easily.

LIBRARY EDITOR

・Objects and figures can be temporarily stored when creating the screens or changing the screen layout.

TEMPORARY AREA NEW

■Flow of screen development
・ With GT Designer2, the screen is selected and then created by placing and setting objects and figures.
The screen can also be debugged with GT Simulator2.
The screen development process time can be greatly reduced by using this integrated screen development software.
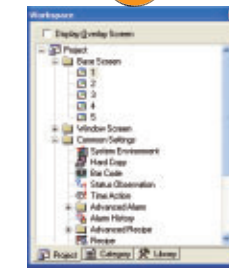
Design Process Flow   **Debug**

Screen selection → **Placing Parts** → **Attribute setting** → **Register Parts**   **Screen debug**

Screen selection	Placing Parts	Attribute setting	Register Parts	Screen debug
Select the screen, such as the base and window, before developing display screen.	The selected object or figures are placed on the screen.	Devices are assigned and colors are set, etc., for the selected object(s) or figure(s).	The set object(s) or figure(s) are registered so that they can be used again.	Check that the created screen operates correctly.

■Easy to select required editing screen (Drawing)
・ It's easy to see the entire project so the screen to be edited can be selected right away.
・ System settings can also be changed right away with common settings.

Screen Selection

Project Workspace

■Fast setting without opening dialog boxes (Drawing)
・ Figure and object attributes can be set without opening the object setting screen.

Placing Parts

Property Sheet

■Direct color change reduces setting mistakes (Drawing)
・ Settings can be confirmed on the property sheet or dialog.
・ Result of setting change is displayed instantly.
・ Window screen display can be confirmed.

Placing Parts

View Change directly
Window preview NEW

■Debugging on the personal computer (Debugging)
・ GOT screens can be simulated on the personal computer and debugged.※1
・ The PLC program and GOT screens can be debugged simultaneously.※2

Screen Debug

Simulation Debugging※2

■Easy to select, quick to place (Drawing)
・ The entire project can be seen easily, and the required figures or object can be selected quickly.

Placing Parts

Library Workspace

High-quality design
Parts Library NEW

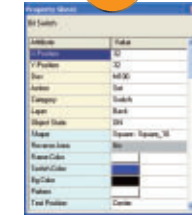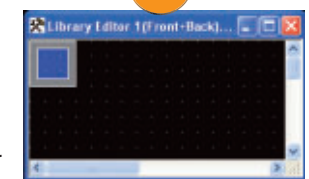### ■Set similar objects attributes together (Drawing)
・ Similar objects can be selected, and the color and font size can be set in one go.

Placing Parts

Property Sheet

■Modifying parts is easier! (Drawing)
・ Editing a part couldn't be more simpler, just double-click on part to enter the Library Editor.
・ Part contents are automatically updated after editing is completed.

Register Parts

Library Editor

■Complete GOT settings NEW
・ The communication I/F and screen save time, etc., can be set. (Compatible only with GOT1000)

■Data compatible with conventional model
・ GT Designer data compatible with GT Designer2.※3
Projects created with GT Designer can be used with GT Designer2.
・ GOT-900 data compatible with GOT1000.※4
GOT-900 project data can be used with GOT1000.

※1：GT Simulator2 and GX Simulator are required for simulation debugging.
※2：Applicable for the Mitsubishi PLC and Mitsubishi motion controller only.
※3：There are some data and functions that cannot be used.
※4：The GOT1000 screen data cannot be used with the GOT-900.

GT Simulator2 Version2 Ver.UP

Create and debug screens with just one personal computer!

Outline

The GOT-A900 Series screen can be simulated on a personal computer to debug the screen. If the screen needs to be modified as a result of debugging, it can be done with GT Designer2 and the result can be checked with GT Simulator2 immediately, so debugging time can be reduced drastically.

Installation

GT Works2 Version2
(GT Simulator2)

GX Developer

GX Simulator

GX Simulator

GT Simulator2

GT Simulator2 simulates with moving screens.

GX Developer
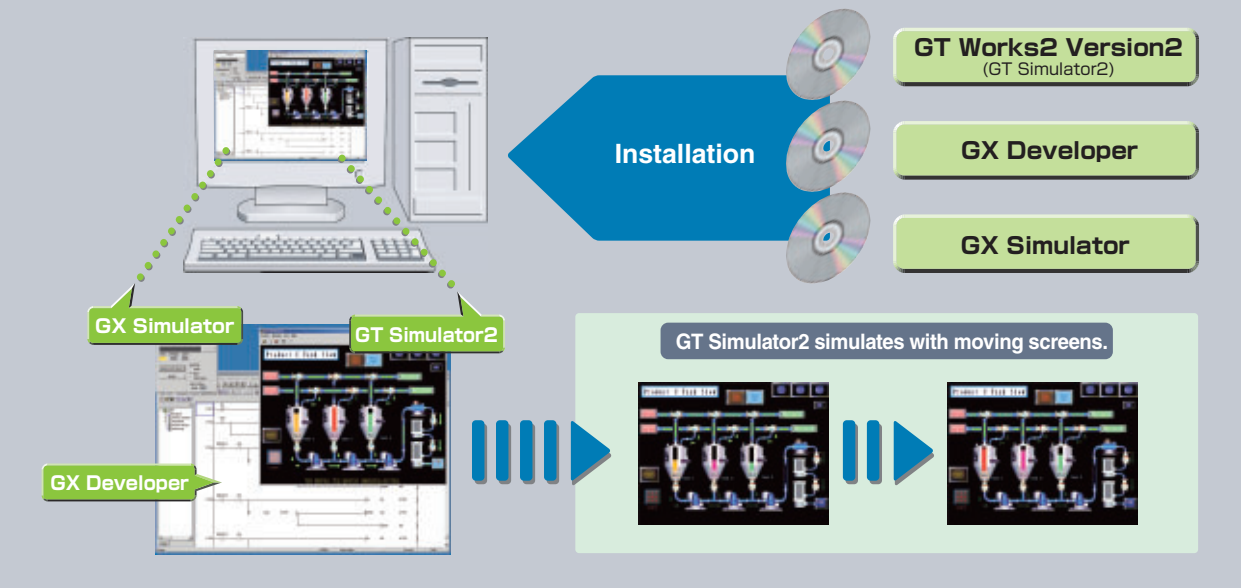
■Debug screens with one personal computer

・The GOT, PLC, and motion controller that are required to create the screens, to confirm the operation and to make revisions are no longer required. GT Simulator2 allows debugging screen data without connecting to devices in a factory.

・GX Simulator is linked with the simulation sequence program on simulation, but the GOT can also be simulated without a sequence program. This allows effective use even when connecting to a controller other than a MELSEC controller.

■Debug Special Module by connecting with PLC or motion controller

・Highly accurate debugging is available by connecting the RS-232C port of the personal computer with the actual PLC CPU. This allows GT Simulator2 to display data of special modules or PLCs in the network as same as the actual GOT.

■Screen images for documentation

・Copying and pasting screen images into a document and manuals can be done easily in a short time. Used together with GX Developer, GX Simulator, and GT simulator device monitor, device values can be forcibly changed to obtain the required screen image.

■Support more debugging functions

・The alarm history data is stored in the personal computer's hard disk.

・The status monitor function, time action function and recipe function can be simulated.

GT Simulator2 is included in GT Works2.

GT SoftGOT2

How about using the personal computer as a GOT?

Outline

GT SoftGOT2 is software which implements the GOT-A900 functions on a personal computer. Screen data created with the GOT drawing software (GT Desinger2) can be used.
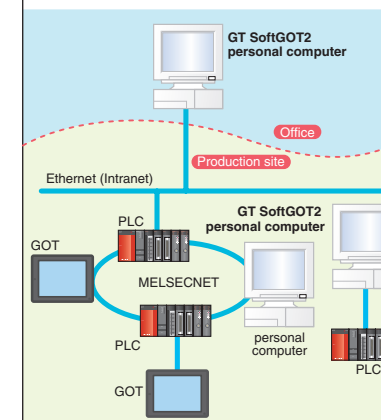
Display colors
256 colors

Resolution
1280 × 1024 dots (SXGA)
1024 × 768 dots (XGA)
800 × 600 dots (SVGA)
640 × 480 dots (VGA)

■Remote monitoring

Remote monitoring by intranet LAN

Production site conditions can be monitored from the office.

GT SoftGOT2
personal computer

Office

Production site

Ethernet (Intranet)

PLC

GOT

MELSECNET

GT SoftGOT2
personal computer

PLC

personal computer

GOT

PLC

Effectve utilization of the Internet by combination with general software

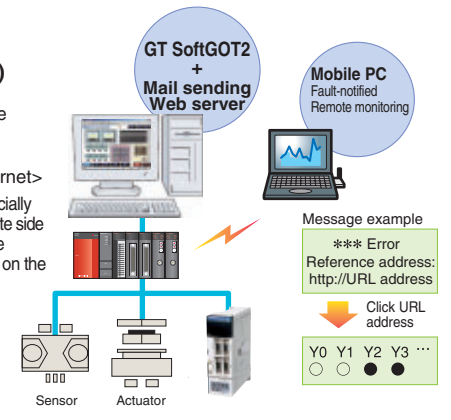**Alarms and on-site status are collected at anytime from remote locations (mail function)**
Alarm occurrence/recovery, alarm history data, recipe data and screen image can be sent by e-mail.

Remote monitoring by the Internet (remote device monitoring function)
The device status being monitored by GT SoftGOT2 can also be monitored on a Mobile PC or desktop PC.

<Example of remote monitoring via the Internet>
By installing the remote control software ※(commercially available) on the host side (production site) and remote side (office) respectively, host side GT SoftGOT2 can be monitored/operated if GT SoftGOT2 is not installed on the remote side.

※ :The remote control software confirmed by Mitsubishi to operate properly is pcAnywhere 10.0. The firewall setting must be changed depending on the connection.

GT SoftGOT2
+
Mail sending
Web server

Mobile PC
Fault-notified
Remote monitoring

Message example
＊＊＊ Error
Reference address:
http://URL address

Click URL address

Y0 Y1 Y2 Y3 ····
○ ○ ● ●

Sensor   Actuator

■Reduce design time

[Reduce design costs by utilizing screen data]
・Design costs are reduced by sharing monitor data created on GT Designer2 for GOT with GT soft GOT2.

[Monitoring screens can be created simpler and cheaper]
・A monitoring operation screen for the personal computer can be created more easily and cheaper than the monitoring software such as SCADA or Visual Basic®.

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

Motion Controller

Improving productivity of Motion controller design and maintenance tasks

MT Developer

Integral start-up support software for Windows® environment Motion controller Q Series

Outline

MT Developer is integral start-up support software used to structure and service a system using the Motion controller.
A program design environment and maintenance environment are provided for use in the design, start-up and maintenance of the Motion controller.

System design programming

Start-up debugging

MT Developer

Document creation

Maintenance and operation

■System design

・The system settings and servo data can be set intuitively with graphical screens.
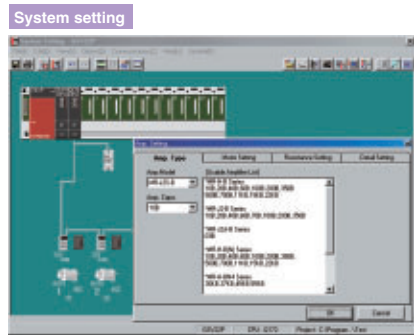
System setting

●Set the system configuration by clicking the mouse

Servo data setting
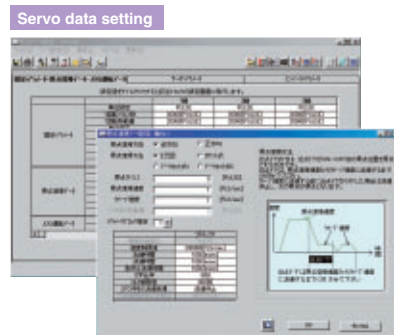
●Set the servo parameters

## ■Programming environment matching the application

・Various operating system software corresponding to the machine and control details is available with the Motion controller.
 A programming environment matching each application can be used.
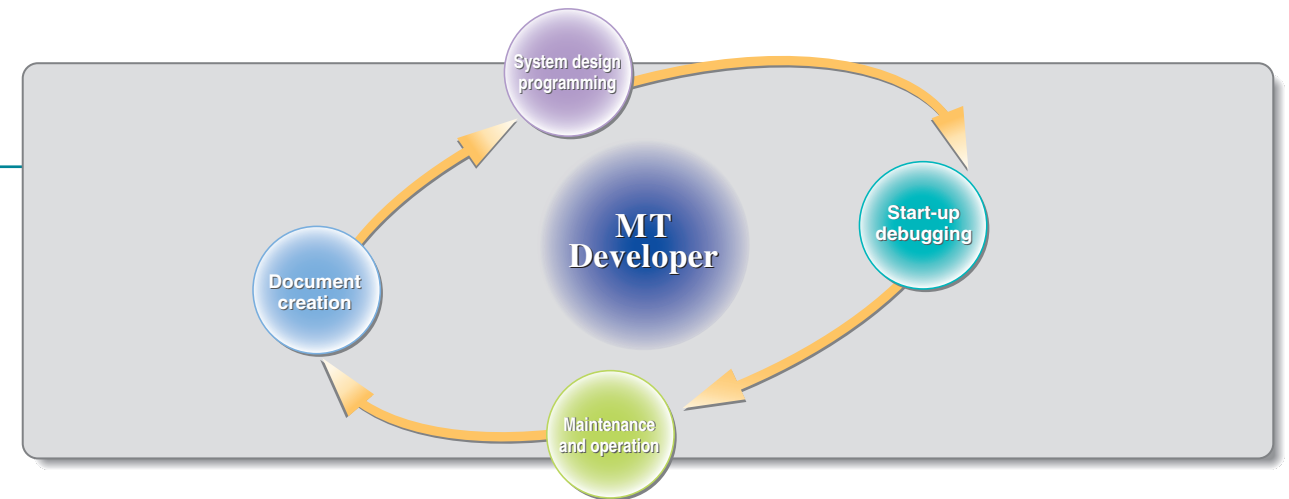
Motion SFC program editing
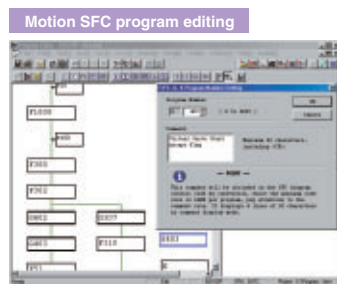
●Edit the program to match the Motion SFC.

Mechanical system editing
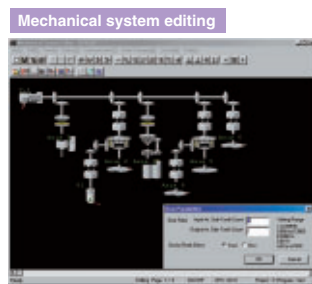
●Edit the mechanical support language optimum for complicated synchronous control.
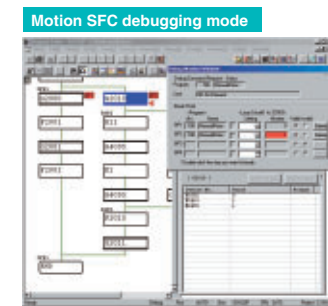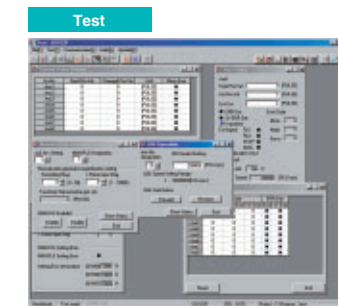
Cam data setting
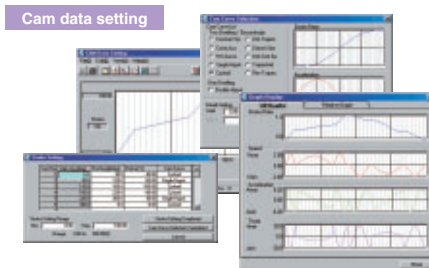
●Creation of software cam.

■Start-up and debugging

・The start-up time can be shortened by using various system tests and program debugging.

Motion SFC debugging mode

●Greatly reduced debugging time with powerful debug function.

Test

●Various tests, such as home position return and JOG operation by clicking mouse.

■Maintenance and operation

・The system and program operation state can be checked with the monitor function and digital oscilloscope function, etc., and trouble can be resolved quickly.
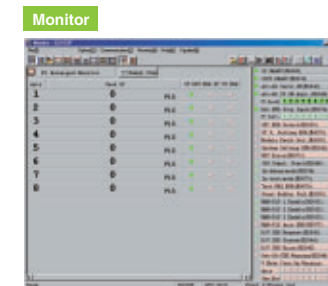
Monitor

●Confirm the Motion controller's operation state.

Digital oscilloscope

●Collect and confirm the motion system's time-series operation state without using a real oscilloscope.

Program editing monitor mode
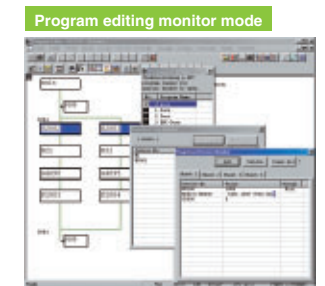
●Monitor the program's operation state.

■Document creation

・Documents can be created by outputting the Motion controller various parameters and programs to a popular Word/Excel file format.

Document creation
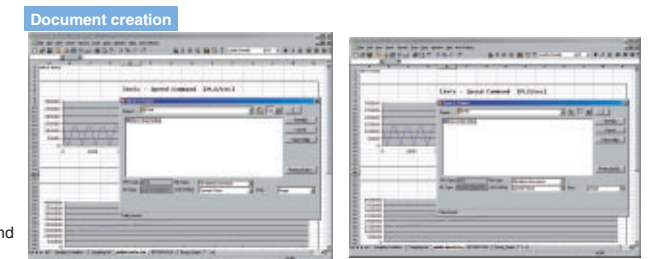
●Convert the system settings, programs and parameters into Word or Excel file.

MR Configurator

Optimum tuning with personal computer and setup software

Outline

This software supports all operations from servo setup to maintenance. Various operations, including monitor display, diagnostics, parameter writing and reading, and test operation, can be carried out easily with this software.

■Optimum control
- A screen that allows the response setting value to be set with a single button has been prepared so that the servo's "high level real-time automatic tuning" function can be used easily.

■Ample monitor functions
- The graph display function allows the servomotor state, such as the command pulse, droop pulse and rotation speed, etc., to be displayed at the input signal trigger.

■Test run using the personal computer
- The servomotor can be test run easily using a personal computer.

■For high-performance adjustments
[Machine analyzer function]
- The personal computer automatically accelerates the servomotor and analyzes the machine system's frequency characteristics. The "machine resonance suppression filter" can be set easily based on the results.

[Gain search function]
- The gain is automatically changed with a personal computer to set the gain with the shortest operation time and smallest overshooting and vibration value.
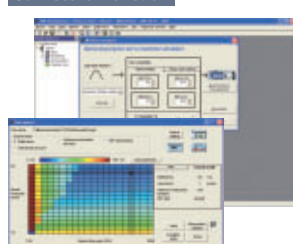
[Machine simulation function]
- When considering replacing a servomotor, the operation can be confirmed without actually replacing the motor. The results of the machine analyzer can be read into the simulation model, and the response can be simulated with the user's machine system.
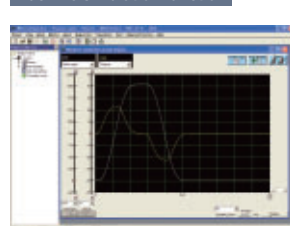
Machine analyzer function
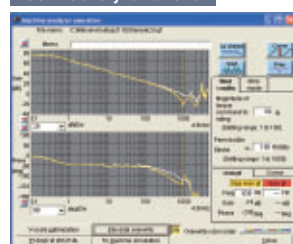
Gain search function

Machine simulation function

※The screens are the MRZJW3-SETUP211E (for MR-J3) screens.

Specifications

Monitor	Group display, high-speed display, graph display
Alarm	Alarm display, alarm history, data before alarm occurrence display (graph before alarm display)
Diagnostics	DI/DO display, cause of non-rotation display, power ON count display, software No. display, monitor information display, tuning data display, ABS data display, VC automatic offset display (※), axis name setting
Parameters	Parameter setting, list display, change list display, detailed information display, tuning
Test operation	JOG operation, positioning operation, motor-less operation, DO forced output, program operation with simple language
Advanced functions	Machine analyzer, gain search, machine simulation
File operation	Data read, save, print
Miscellaneous	Automatic operation, help display

※ Not compatible with MR-J2M.

FR Configurator

Software for a pleasant inverter operation environment

Outline

FR Configurator (Windows® 95, Windows® 98, Windows® Me, Windows NT® 4.0, Windows® 2000, Windows® XP compatible) is available as a effective tool to support operations from startup to maintenance of the inverter. Parameters can be set and operation can be monitored, etc., efficiently from the personal computer's Windows® screen. The compatible models are FR-V500 Series, FR-A500, F500, E500, S500 and F500J.

■Machine analyzer system
- The motor is automatically accelerated and the machine system's resonance frequency is analyzed. (FR-V500 dedicated function)
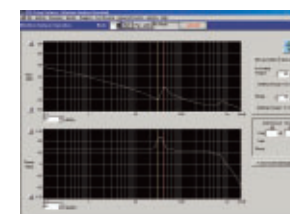
■Trace function
- Emulate an oscilloscope by using this function together with the trace card option T-TRC50. The data can be measured and operations can be analyzed. (FR-V500 dedicated function)
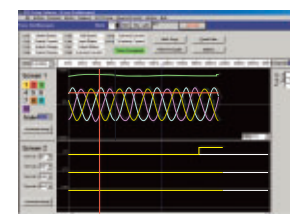
■Parameter setting and editing
- The list method, function list method, individual list method and simple setting method have been prepared.

■Monitor
- The data display method, meter display method, oscilloscope display method and alarm history method have been prepared.

■Test operation
- The test operation function and automatic tuning operation function have been prepared.
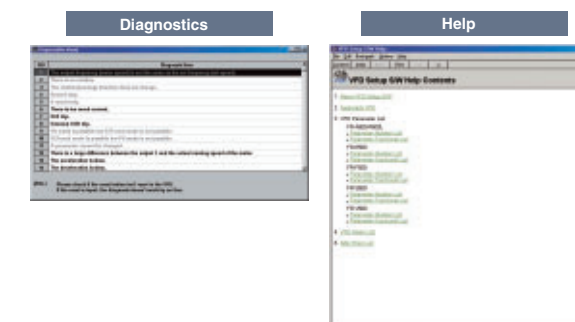
■Diagnostics and help
[Diagnostics]
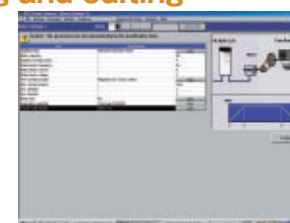The internal diagnostics and fault diagnostics methods have been prepared.

[Help]
The operation methods are displayed on the screen.

Diagnostics

Help

■System setting
- System settings to write and read the data for several units has been prepared.

■File
- Files can be saved on a hard disk or floppy disk, read out and printed.

■Window
- Multiple windows can be displayed.

PLC

HMI

Motion Controller

Servo

Inverter

CNC

Robot

Processing Machine

Trainer

Partner Products

Service

NC Designer

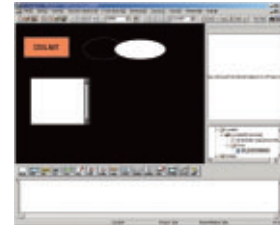## Easily create custom screens

Outline

NC Designer is GUI (Graphical User Interface) software which allows the user to create custom screens easily. NC Designer can create screens with the program-less method which creates screens with almost no program creation, or the programming method which automatically generates source codes from the screen data.

[Program-less method]

Project file — Macro data

[Programming method]

NC Desinger → Source code → Addition → Source code → Compile/link → CNC display unit

Original code

Assembly of execution modules into CNC display unit
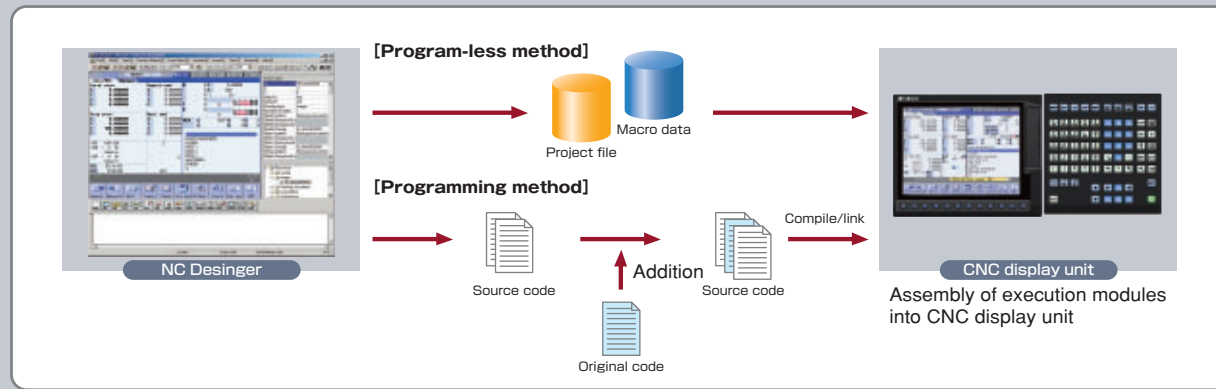
■Screen creation tool utilizing the advantages of Windows®
・The screen data can be created by laying out figures and parts with various functions onto the screen.

■Register created screens into NC menus
・The screens created with NC Designer can be registered in the main menu for the operation, setup and edit screens.
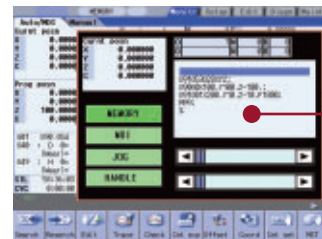
Display of custom screens.

■Easily add control processes with a macro function
・The macro function describes processes allowing various processes to be executed when the controls are operated. As the control processes can be described on NC Designer using macro language, control processes can be added easily without programming in C Language, etc.

■C Language library to powerfully support screen development
・In addition to drawing, this software supports window functions required for structuring GUI, such as the control of events such as the mouse and keys, and window systems.

Specifications

Properties windows	The properties for the controls, figures, projects, screens, windows and frames are set.
Resource view	The resource data is displayed as a tree. Resources can also be registered here.
Source code generation	The created screen data is generated as various source codes.
Interpreter data generation	The program-less type data is output.
Simulation function	The created screen data can be displayed and the operation simulated on a personal computer.
Edit function	Various editing functions, including copy, cut, paste, find and replace, can be executed.
Layout function	The screen items can be laid out, including position or size alignment and rotation.
Locale changeover	Up to 16 locales can be set for the control.
Error check	Various setting mistakes can be checked for.
Control list	The created controls and the property settings can be listed.

RT ToolBox

Program editing and total engineering support software for CR-500 Series

Outline

This software is for program editing, cycle time calculation, debugging when setting up the robot, and monitoring the robot's status and errors.
In addition to supporting robot engineering, this software can be used as training and educational tool.
MelfaRXM.ocx, which is an ActiveX® control that communicates with robot controller is also available in standard version.

■Windows® compatible
・Easily used in a general Windows® environment.
・Compatible with Windows® 95, Windows® 98, Windows® Me, Windows NT® 4.0, Windows® 2000 and Windows® XP

■Simulation
・Compatible with all models connected to the CR-500 Series controller.
・The program can be executed on the personal computer, which allows cycle time calculation.

1: Incompatible with mini version.

■Register created screens into NC menus
・This function is compatible with the MELFA BASIC IV and MOVEMASTER languages.
・The robot movements and operation status can be monitored.

■Remote maintenance
・The status can be remotely monitored using a telephone line.
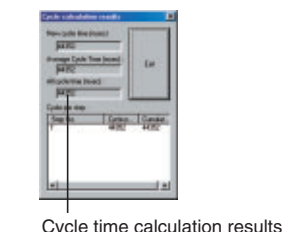・Centralized monitoring is possible using LAN.

■Program editing (editing, program management, debugging), Simulation, Maintenance, Remote maintenance, Monitoring (robot movement monitor, operation monitor, servo monitor)

[Program editing]
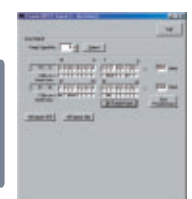・Programming on the Windows® screen is available.
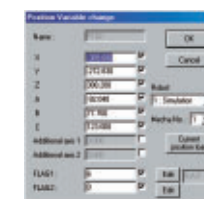
[Cycle time calculation]

Cycle time calculation results

[Debugging]
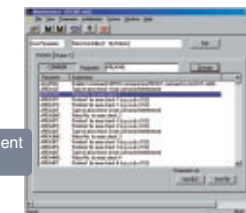・The input/output signals and various variables can be set and changed.

・Debugging
  step execution,
  direct execution
・Simulation
  automatic operation,
  cycle time calculation, JOG

[Maintenance]
・Programs and parameters in the robot controller can be backed up.

・Parameter management
・Backup

[Simulation]
・The robot program can be simulated on the personal computer.
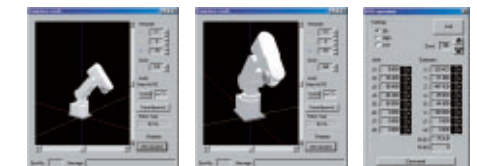
The simuration view robot can be operated by JOG operation dialog.

[Remote maintenance]

●Factory   ●Service company
            Quality Control Department
            Engineering Support
            Department, etc.

Personal computer   Modem   Modem   Personal computer

・The cause can be accurately analyzed when an error occurs, so prompt measures can be determined.
・Easy maintenance can be available with periodical diagnosis.
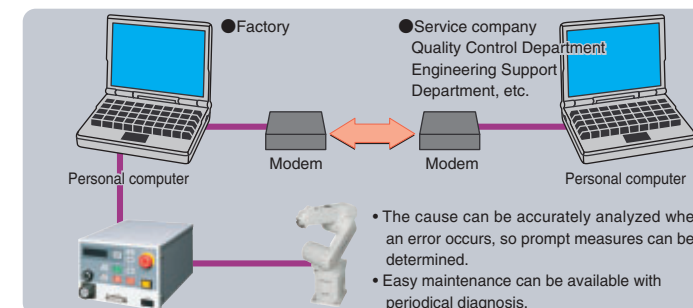
[Monitoring]
・The programs and parameters in the controller are backed up.
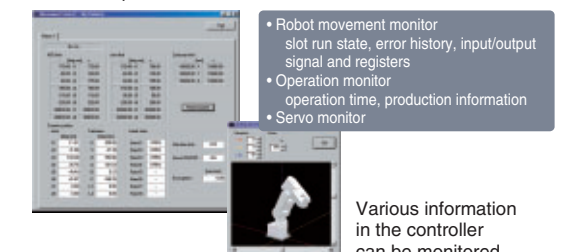
・Robot movement monitor
  slot run state, error history, input/output
  signal and registers
・Operation monitor
  operation time, production information
・Servo monitor

Various information in the controller can be monitored.

PLC
HMI
Motion Controller
Servo
Inverter
CNC
Robot
Processing Machine
Trainer
Partner Products
Service

29   30

EDM

Design and manufacturing solution software mainly for prossecing machines

CAD/W

CAD/CAM Providing comprehensive system support
- Automatic programming for wire-cut EDM

■IGES, DXF, BMI Data input
- CAD(2D) functions provided with MEDIAPT CAD/W enable the wire-cut EDM to be used to its fullest extent - Functions to create involute gears, cams, point sequence data, rack, etc.
- NC data is output to exactly fit the wire-cut EDM even while CAM functions are in use, and machine operation is confirmed by CAD - 3D NC check

■IGES, DXF, BMI Data input
- CAD data created with other CAD using the IGES, DXF, or BMI (option) function can be imported, by designating machining of a random position, NC data for machining can be generated using this imported data.
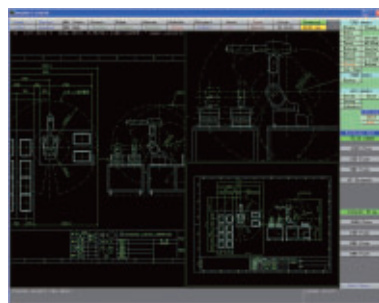
■Automatic Enlargement Machining
- Automatic enlargement machining is required for fine machining. Paths that are not coreless can be created automatically even for irregular shapes.

■Automatic Second Cut
- All machining conditions from the MITSUBISHI Wire-cut EDM G Series to the latest are standard. In second and third cuts with automatic second cutting. NC programs are generated with automatically selected optimum machining conditions and offsets.
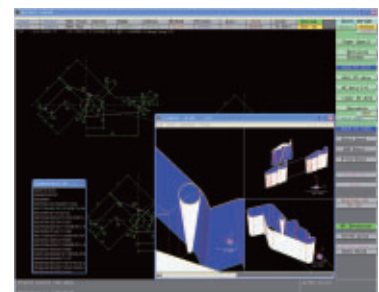
■3D NC Checker
- The new standard 3D NC check, and wire-cut EDM taper, offset and interference shapes not possible conventionally can now be confirmed together with the movements as actual machining.
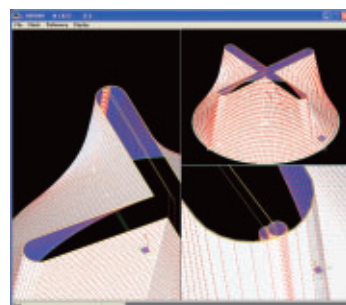
RemoteMagic

Machine management system of manufacturing premise

RemoteEDM has the following functions.
Batch watch of machine
Data transfer to machine
Collection of operation results of machine
Management of articles of consumption

Trainer

Create, Simulate and RUN your own ladder project with only your personal computer
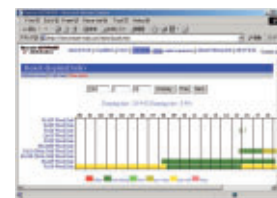
[PLC Training Software]

FX-TRN-BEG-E (Beginner Edition)

Master ladder programs with real "3D Simulation"!

Outline

The PLC Training software is suitable for beginners to advanced users of PLC control.
The 3D virtual machine simulates a program with real operations, so sequences can be studied and experienced with a single personal computer. It is almost as if the user is actually operating the machine.

Beginner Edition
- ON/OFF control
- Counter control
- Timer control

FX-TRN-BEG-E

- Even first-time users of sequence control can safely learn the methodologies.
- Start from the ABCs of sequence control, including contacts, NC contacts, timers and counters.
- Self-latching circuits and interlocks using PLC basic commands.

■Remote-controlled operation
- Guidance displays an outline of the training details, and the personal computer's key operations, etc.
- The training topic menu can be displayed and moved
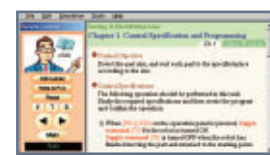
■Simulation window
- Check the program operation with moving 3D images
- Change the viewpoint to front, plane or inclined

Front
Plane
Inclined
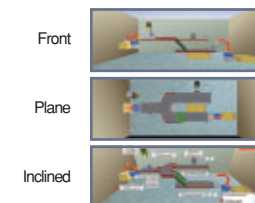
■Ladder tool window
- Read and write programs
- Monitor programs
- Save programs
- Print programs

[Monitor screen]

Current value is displayed in blue

The running contact (ON contact) is highlighted in blue

Counter coil Output coil
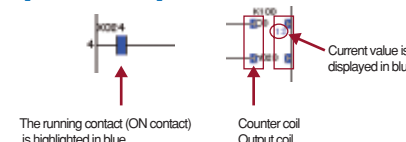
■Virtual PLC
- Transmit programs to virtual PLC in personal computer
- Display input/output ON/OFF and RUN states
- Monitor internal devices

■Operation panel window
- Operation switches such as RUN, start/stop
- Input numerical values with digital switches, and display numerical values on a 7-segment display

[Digital switch operation section] [7-segment display]

3
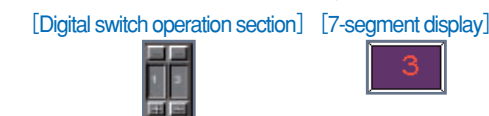
◆Compatible models

Beginner Edition	
Introduction	9 topics
Beginner	12 topics
Intermediate	8 topics
Advanced	1 topic
Total	30 topics

◆Operating environment

OS	Microsoft® Windows® 98 Microsoft® Windows® 98 SE Microsoft® Windows® ME Microsoft® Windows® NT® 4.0（SP3 or more） Microsoft® Windows® 2000 Microsoft® Windows® XP※1
CPU	Pentium 500MHz or faster recommended
Memory	64MB or more（12MB or more recommended）※2
Hard disk	150MB or more
CD-ROM drive	1 unit（For installation）
Display	XGA（1024_768）or larger required
Video	Direct3D compatible video card having 4MB or larger VRAM capacity（8MB or larger recommended）
Browser	Internet Explorer 4.0 or higher required

※1 Setup of Windows NT® 4.0, Windows® 2000 and Windows® XP and startup of the software must be carried out under the computer administrator's login.
※2 Memory larger than the recommended size should be selected for the applicable OS.
※3 The training software screen size is fixed to 1024 x 768 pixels.

Partner Products

Mitsubishi FA Communication Middleware

Service

Bringing the latest information to our customers

EZSocket

Introducing real FA applications for the workshop proposed
by Mitsubishi Electric and our partners.

■**Use of Mitsubishi's FA products and EZSocket compatible applications makes engineering environments more efficient, saves power and increases speeds**

・At production sites which continually advance, the needs for software used in production facilities and machine engineering continue to diversify. Mitsubishi Electric provides each of our partner vendors with the communicati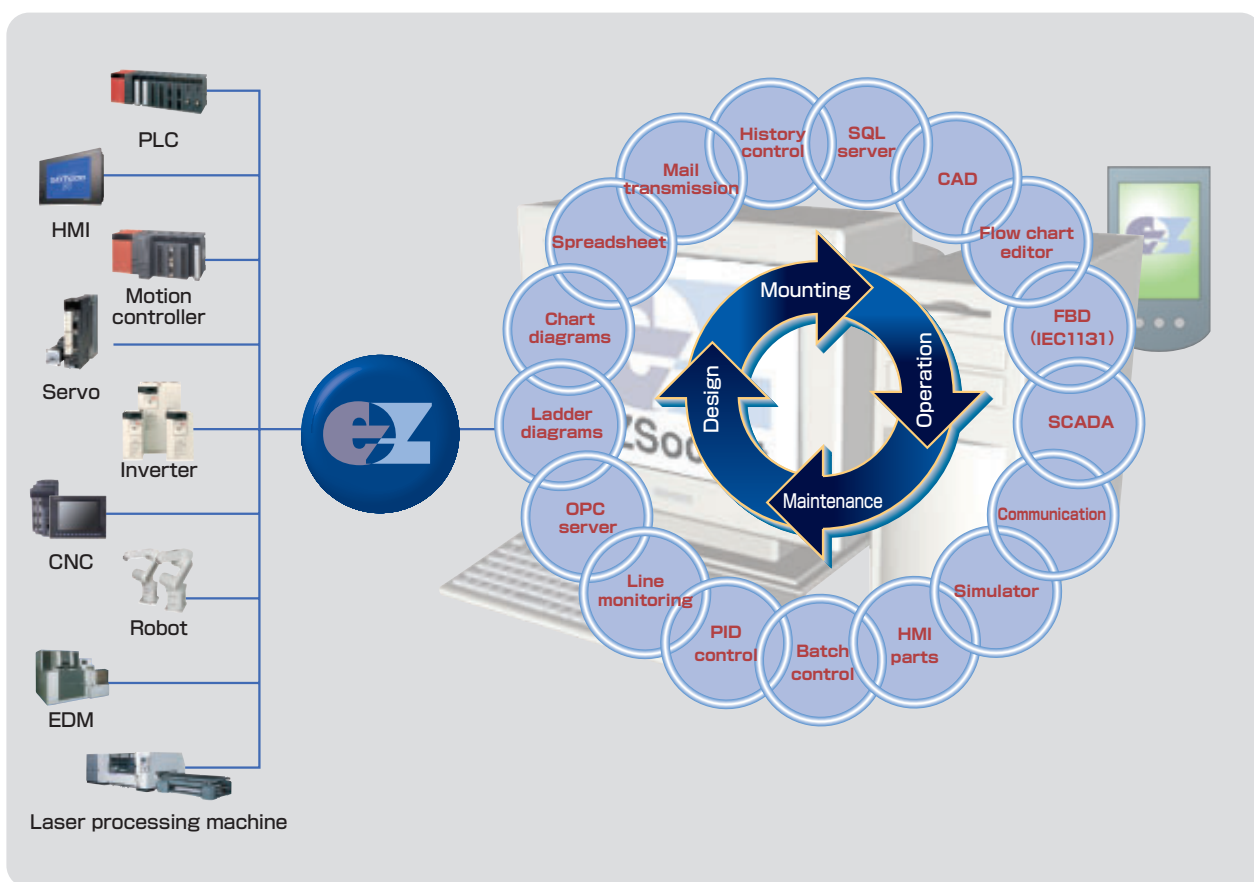on middleware EZSocket for use with Mitsubishi FA products. This realizes a reliable link with a variety of partner applications. Using EZSocket partner products makes engineering environments more efficient, saves power and increases speeds! Improve your productivity with this middleware.

■**List of EZSocket parteners and their products**

Company name	Category	Product	Website url	Contact
DISEC Corporation	SCADA	FactoryLink	http://www.disec.co.jp/index-e.html	info@disec.co.jp
Meiji Corpration	Data Collection	e-p@k	http://www.meijicorp.com	sales@meijicorp.com
TAKEBISHI Electric Sales Corporation	OPC Server	DeviceXPlorer MELSEC OPC Server	http://www.faweb.net/us/	fa-support@takebishi.co.jp
		MELDAS OPC Server		

Internet Service

Timely internet delivery of latest information to our customers

― **The latest information on our products is available at each website.** ―

MELFANSweb

http://wwwf2.mitsubishielectric.co.jp/melfansweb/english/

■**Online manuals**
・More than 2000 manuals can be referred to at any time. Our ever-growing library of online manuals currently has manuals in English and Chinese.

■**Download service**
・**Trial version download**
By registering your ID, the functions, operability and compatibility can be checked with a trial version before purchasing the actual version. The functions are the same as the product version, but the software can be used only for a limited time.
・**Software update service**
Purchased software can be updated and the functions updated free of charge. (Note that updates are available only for the same model.)

Register as a user on the web after purchasing MELSOFT!

After purchasing MELSOFT, register as a user at MELFANSweb to receive various services.

■**Priority version upgrades**
・Customers can upgrade their software versions at a low cost when new versions of priority version products are released.

■ **Various notices by direct mail**
・Information on new products and new services are provided by direct mail.

■**E-mail information service**
・The latest information on new products and campaigns, etc., is sent to users by e-mail.

DIAX-NET

http://www.diax-net.com/

■**Delivering valuable information to customers**
・This website is updated daily to provide our customers with the latest technical and industrial information as well as ever-advancing machining conditions and machining know-how. This website can also be used by members to exchange information.

PLC | HMI | Motion Controller | Servo | Inverter | CNC | Robot | Processing Machine | Trainer | Partner Products | Service

33　34

List of software products

Category	Product name	Model	Description	95	98	Me	NT	2000	XP
GX Series	GX Developer	SW□D5C-GPPW-E	MELSEC PLC programming software	●	●	●	●	●	●
	(v-up)	SW□D5C-GPPW-EV		●	●	●	●	●	●
	GX Simulator	SW□D5C-LLT-E	MELSEC PLC simulation software	●	●	●	●	●	●
	(v-up)	SW□D5C-LLT-EV		●	●	●	●	●	●
	GX Explorer	SW□D5C-EXP-E	Project control tool	●	●	●	●	●	●
	GX Converter	SW□D5C-CNVW-E	Excel/ text data converter	●	●	●	●	●	●
	GX Configurator-AD	SW□D5C-QADU-E	MELSEC-Q dedicated: A/D conversion setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-DA	SW□D5C-QDAU-E	MELSEC-Q dedicated: D/A conversion setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-SC	SW□D5C-QSCU-E	MELSEC-Q dedicated: Serial communication setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-CT	SW□D5C-QCTU-E	MELSEC-Q dedicated: High-speed counter setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-TC	SW□D5C-QTCU-E	MELSEC-Q dedicated: Temperature control setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-TI	SW□D5C-QTIU-E	MELSEC-Q dedicated: Temperature input setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-FL	SW□D5C-QFLU-E	MELSEC-Q dedicated: FL-net setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-PT	SW□D5C-QPTU-E	MELSEC-Q dedicated: QD70 setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-AS	SW□D5C-QASU-E	MELSEC-Q dedicated: AS-i master setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-QP	SW□D5C-QD75P-E	QD75P/DM positioning module setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-AP	SW□D5C-AD75P-E	AD75P/M positioning module setting and monitoring tool	●	●	●	●	●	●
	GX Configurator-CC	SW□D5C-J61P-E	MELSEC-A dedicated: CC-Link setting and monitor tool	●	●	●	●	●	●
	GX RemoteService-I	SW□D5C-RAS-E	Remote maintenance tool		●		●	●	●
	GX Works ($)	SW□D5C-QSET-E	GX Developer, GX Simulator, GX Explorer, GX Configurator-AD, DA, SC, CT 7-product set	—	—	—	—	—	—
		SW□D5C-GPPLLT-E	GX Developer, GX Simulator, GX Explorer 3-product set	—	—	—	—	—	—
PX Series	PX Developer	SW□D5C-FBDQ-E	FBD software package for instrument control	●	●	●	●	●	●
	PX Works ($)	SW□D5C-FBDGPP-E	PX Developer, GX Developer, GX Configurator-AD, DA, CT, TI 6-product set	—	—	—	—	—	—

Category	Product name	Model	Description	95	98	Me	NT	2000	XP
MX Series	MX Component	SW□D5C-ACT-E	ActiveX® library for communication	●	●	●	●	●	●
	MX Sheet	SW□D5C-SHEET-E	Excel communication support tool		●	●	●	●	●
	MX Parts	SW□D5C-PIC-B	Image data package	●	●	—	●	—	—
	MX Works ($)	SW□D5C-SHEETSET-E	MX Component, MX Sheet 2-product set	—	—	—	—	—	—
GT Series	GT Designer2	SW□D5C-GTD2-E	GOT900 Series screen creation software (GT Designer2) + SoftGOT function (GT SoftGOT2)		●	●	●	●	●
	GT Works2 ($)	SW□D5C-GTWK2-E	GOT900 Series screen creation software + SoftGOT function (GT SoftGOT2) + Simulator function (GT Simulator2)		●	●	●	●	●
	GTSoftGOT2 license key	A9GTSOFT-LKEY-P	D-sub 25-pin, parallel port license key						
		SW□D5F-SGLKEY-E	Personal computer CPU module dedicated license key						
MT Series	MT Developer	SW6RNC-GSVPROE	Integral startup support software for Q Motion		●		●	●	
		SW6RNC-GSVSETE	Integral startup support software for Q Motion + A30CD-PCF SSC I/F card + Q170CDCBL03M cable		●		●	●	●
MR Series	MR Configurator	MRZJW3-SETUP161E	Servo setup software for MR-J2S	●	●	●	●	●	●
		MRZJW3-SETUP211E	Servo setup software for MR-J3	▲	●			●	●
NC Series	NC Designer	—	Custom screen creation software for CNC M700					●	●
FR Series	FR Configurator	FR-SW1-SETUP-WE	Inverter setup software	●	●	●	●	●	●
FR Series	RT TOOL-BOX-E	3A-01C-WINE	Program editing and total engineering support software	●	●	●	●	●	●
	RT TOOL-BOX-mini-E	3A-02C-WINE							
EDM Solution	CAD/W	—	Cad/Cam for Wire EDM	●	●	●	●		●
	RemoteMagic	—	Network system for EDM				●	●	●
Training	FX-TRN-BEG-E	SW□D5C-FXTRN-BEG-E	PLC Training software (Beginner Edition)		●	●	●	●	●

(v-up) Version upgrade product   ($) Value sets

▲ Compatible only Windows® 95 Second Edition

Memo

Mitsubishi Integrated FA Software

Precautions for Choosing the Products

This catalog explains the typical features and functions of the Q series PLCs and does not provide restrictions and other information on usage and module combinations. When choosing the products, always check the detailed specifications, restrictions, etc. of the products in the Q series data book. When using the products, always read the user's manuals of the products.

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

⚠ For safe use

- To use the products given in this catalog properly, always read the "manuals" before starting to use them.
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

Country/Region	Sales office	Tel/Fax
U.S.A	Mitsubishi Electric Automation, Inc. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, USA	Tel : +1-847-478-2100 Fax : +1-847-478-2396
Brazil	MELCO-TEC Representacao Comercial e Assessoria Tecnica Ltda. Rua Correia Dias, 184, Edificio Paraiso Trade Center-8 ander Paraiso, Sao Paulo, SP Brasil CEP:04104-000	Tel : +55-11-5908-8331 Fax : +55-11-5574-5296
Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8 D-40880 Ratingen, GERMANY	Tel : +49-2102-486-0 Fax : +49-2102-486-7170
U.K	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire., AL10 8XB,U.K.	Tel : +44-1707-276100 Fax : +44-1707-278695
Italy	Mitsubishi Electric Europe B.V. Italian Branch Centro Dir. Colleoni, Pal. Perseo - Ingr.2 Via Paracelo 12, I-20041 Agrate Brianza (Milano), Italy	Tel : +39-039-60531 Fax : +39-039-6053312
Spain	Mitsubishi Electric Europe B.V. Spanish Branch Carretera de Rubi 76-80, E-08190 Sant Cugat del Valles (Barcelona), Spain	Tel : +34-93-565-3131 Fax : +34-93-589-2948
France	Mitsubishi Electric Europe B.V. French Branch 25, Boulevard des Bouvets, F-92741 Nanterre Cedex, France	Tel : +33-1-55685568 Fax : +33-1-55685685
South Africa	Circuit Breaker Industries LTD. Private Bag 2016, ZA-1600 Isando, South Africa	Tel : +27-11-928-2000 Fax : +27-11-392-2354
Hong Kong	Mitsubishi Electric Automation (Hong Kong) Ltd. 10th Floor, Manulife Tower, 169 Electric Road, North Point, HongKong	Tel : +852-2887-8870 Fax : +852-2887-7984
China	Mitsubishi Electric Automation (Shanghai) Ltd. 1-3/F., Block5, 103 Cao Bao Road, Shanghai 200233, China	Tel : +86-21-6120-0808 Fax : +86-21-6121-2424
	Mitsubishi Electric Automation (Shanghai) Ltd. Beijing Office Unit 917/918, 9/F Office Tower 1, Henderson Center, 18 Jianguomennei Dajie, Dongcheng District, Beijing 100005, China	Tel : +86-10-6518-8830 Fax : +86-10-6518-8030
	Mitsubishi Electric Automation (Shanghai) Ltd. Tianjin Office Unit909/910, 9/F Great Ocean Building, No.200 Shizulin Avenue, Hebei District, Tianjin 300143, China	Tel : +86-22-2635-9090 Fax : +86-22-2635-9050
Taiwan	Setsuyo Enterprise Co., Ltd. 6F No.105 Wu Kung 3rd RD, Wu-Ku Hsiang, Taipei Hsien, Taiwan	Tel : +886-2-2299-2499 Fax : +886-2-2299-2509
Korea	Mitsubishi Electric Automation Korea Co., Ltd. 2F 660-11, Deungchon-Dong, Kangseo-Ku, Seoul 157-030, Korea	Tel : +82-2-3660-9607 Fax : +82-2-3663-0475
Singapore	Mitsubishi Electric Asia Pte, Ltd. 307 Alexandra Road #05-01/02 Mitsubishi Electric Building Singapore 159943	Tel : +65-6470-2480 Fax : +65-6476-7439
Thailand	F. A. Tech Co.,Ltd. 896/19, 20, 21, 22 S.V.City Building, Office Tower 1, Floor 12, 14 Rama III Rd., Bangpongpang, Yannawa, Bangkok 10120, Thailand	Tel : +66-2-682-6522〜31 Fax : +66-2-682-6020
Indonesia	P.T. Autoteknindo Sumber Makmur Muara Karang Selatan, Block A/Utara No.1 Kav. No.11, Kawasan Industri Pergudangan, Jakarta-Utara 14440, P.O.Box 5045 Jakarta, Indonesia	Tel : +62-21-6630833 Fax : +62-21-6630832
India	Messung Systems Pvt.Ltd. Electronic Sadan NO:III Unit No15, M.I.D.C Bhosari,Pune-411026,India	Tel : +91-20-2712-3130,8927 Fax : +91-20-2712-8108
Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road, Rydalmere, N.S.W 2116, Australia	Tel : +61-2-9684-7777 Fax : +61-2-9684-7245

▲ MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: 1-8-12,OFFICE TOWER Z 14F HARUMI CHUO-KU 104-6212,JAPAN
NAGOYA WORKS: 1-14,YADA-MINAMI 5,HIGASHI-KU,NAGOYA,JAPAN

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