MELSOFT

MELSOFT - Industrial Automation Software

Transparent in Every Detail

MELSOFT - The Progressive Software Concept from MITSUBISHI ELECTRIC

Around the globe, state-of-the-art automation systems from Mitsubishi Electric are contributing to technological progress and economic success. The legendary reliability and user-friendly operation of Mitsubishi Electric's hardware components are also key features of the integrated **M**itsubishi **EL**ectric **SOFT**ware concept MELSOFT.
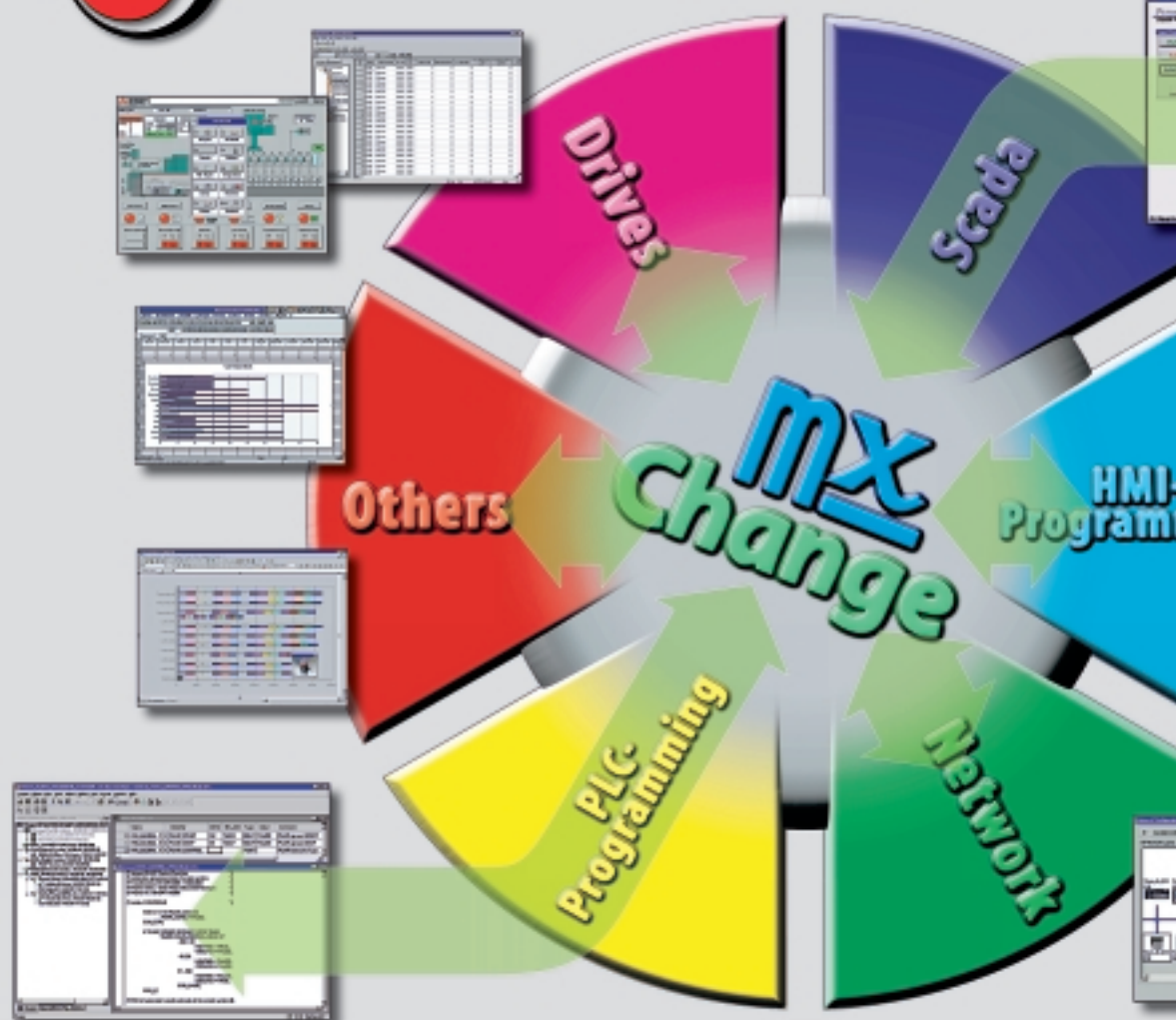
Data and programs are fully compatible and portable between all the many software packages within the MELSOFT system. The foundation for this transparent data exchange is the MX Change package.

In recent years growing requirements and new specifications have almost doubled automation development costs. Networks,

positioning, analog signal processing, open bus systems, control units and complete process visualisation links are now all standard components of automation systems. Many projects have become so complex that the project teams must now include a large number of skilled workers to write the PLC programs, program the control units and create the

The MELSOFT concept encompasses the following software packages:

- *GX IEC Developer*
- *GX Developer*
- *GX Configurator DP*
- *E Designer*
- *GT Works*
- *GT SoftGOT*
- *E-View*
- *MX SCADA*
- *MX Components*
- *MX Monitor*
- *MX Chart*
- *MX OPC Server*

visualisation applications. MX Change helps to keep development and maintenance overheads, and thus the system price, within reasonable limits. It does this by handling the entire data management within your project team, co-ordinating the transparent exchange of data and code between the individual MELSOFT programs. It even supports links to other systems, such as CAD systems.

MX Change's efficient performance is achieved with several different program

*MELSOFT is a fully-integrated concept encompassing all industrial automation levels.*

modules. The foundation is the MX Change server, which is a database that can be accessed by all programs integrated in the system. It is used both as a local server and as a network server. A variable declared in any program connected to MX Change can be accessed by all the other programs in the system. If the declaration causes a data conflict all the programmers are informed automatically, eliminating the time-consuming search for the problem during the system commissioning phase.

The second MX Change program module is the project manager with integrated tag editor. This module is a powerful project navigator that gives the user full project transparency and consistency. It can display all variables in the entire project and its component programs. The user can copy any variable from one part of the project to another by drag & drop. A single click on a project button in the tag editor is all it takes to make a variable available to the associated program. The variable editing capabilities of the project manager and tag

editor opens up hitherto undreamed-of possibilities for programmers, combined with maximum flexibility.

MX Change also helps to cut costs in the system commissioning stage. For example, if an error is encountered you can use the appropriate strings in your visualisation system to open the GX IEC Developer to immediately start monitoring your program at the right point.

The Project Manager generates a comprehensive report of all the variables used in the project.

GX IEC Developer –
When Your Time Is Money
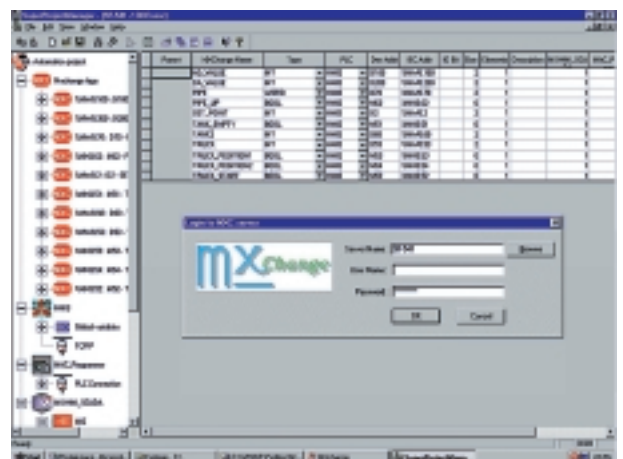
GX IEC Developer is much more than an IEC 1131.3/EN 61131-3 programming and documentation system.

GX IEC Developer is more than a powerful IEC 1131.3 programming and documentation package. It supports your entire MELSEC PLC implementation from the initial project planning to everyday operation, with a wealth of advanced functions that will help you to cut costs and increase your productivity.

The sophisticated program architecture comes with a range of new, user-friendly functions, including structured programming and support for function libraries.

Top-down application architecture

During the planning phase GX IEC Developer's structuring tools help you to organise your project efficiently: Use the intuitive graphical tools to identify and display tasks, functional units, dependencies, procedures and application structures. In addition to making your work easier, this also significantly reduces error frequency in later project stages.

Flexible implementation

In the engineering phase you then choose the programming language that best matches the structure of your project:
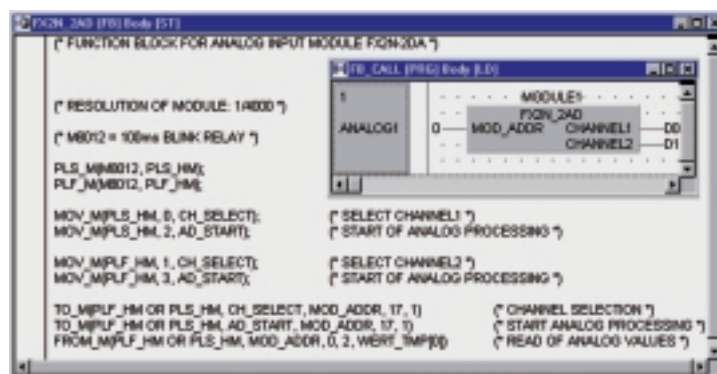
● **ST** (**S**tructured **T**ext)
● **SFC** (**S**equential **F**unction **C**hart)
● **LD** (**L**adder **D**iagram)
● **FBD** (**F**unction **B**lock **D**iagram)
● **IL** (**I**nstruction **L**ist)

Program frequently-used functions in function blocks and organise them in libraries. This gives you the confidence that comes with knowing you are using tested, reliable code. Password support helps you to protect your valuable expertise.

Simple configuration of control components

Configuration of controller components is performed quickly and efficiently in tables with interactive dialogs and graphical support. And this powerful support is available for standard and special function modules as well as for the controller CPUs. You no longer have to create application programs to configure your system.

Setting up the hardware and network configuration

Powerful testing and debugging tools provide information on the current status of the controllers and the network you are connected to. Network functions like status and error displays, remote SET/RST functions for controllers and

Graphical, animated display of PLC system status

Simultaneous online display of function block contents and call environment

peripherals, Live List, Cycle Time, Connection State and more enable you to locate and correct errors quickly and get your hardware and networks up and running in record time.

Setting up the application program

GX IEC Developer comes with everything you need to get your applications installed, set up and running as quickly as possible, including comprehensive online programming functions, fast and informative monitoring displays, the ability to manipulate device values with the graphical editors, manual and automatic step mode execution in IL, the display of manipulated device values in the EDM (Entry Data Monitor) and much more.

Normal operation

During normal daily operation you can also use GX IEC Developer to display important system status information, either in stand-alone mode or called by another program in the control room. The automated SFC functions and the ability to display internal and external function block status information simultaneously are particularly useful. This provides a valuable additional view of the system, between the functions of a straight code monitor and an animated machine representation.
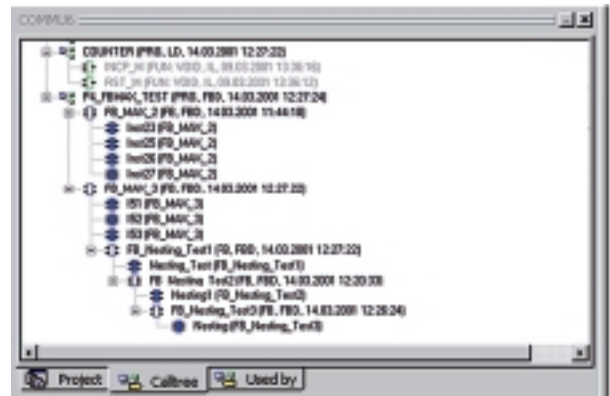
Installation and maintenance

Top-down architecture, structured programming, comprehensive printed documentation and support for user-defined help for your function blocks all help to reduce the learning curve. You can make the information needed for installing and maintaining the system available to the operators quickly and efficiently, with minimum training overheads.

Errors and down times

In combination with MX Change, GX IEC Developer can be configured to start automatically when an error is encountered. It loads the affected controller program and monitors the routine where the error occurred in the editor. This makes it possible to find and correct errors very quickly, drastically reducing system down times.
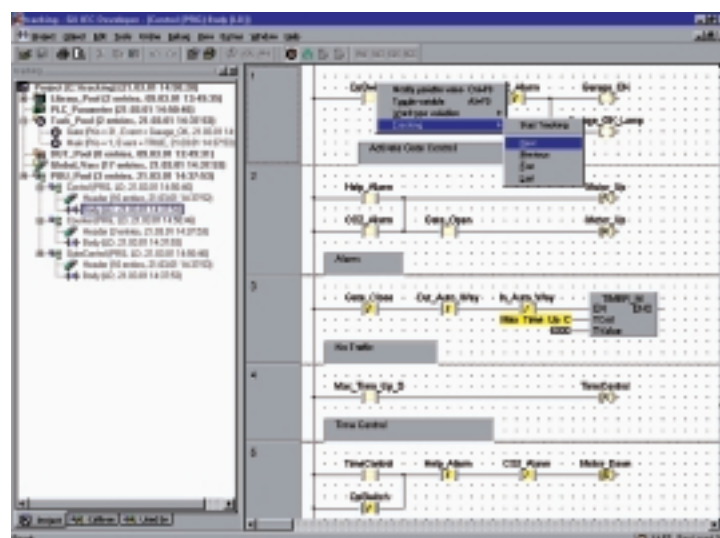

In addition to this the Tracking function enables you to determine the origin of a signal state, which frequently reveals the cause of a system stop.

Clear display of overall project structure
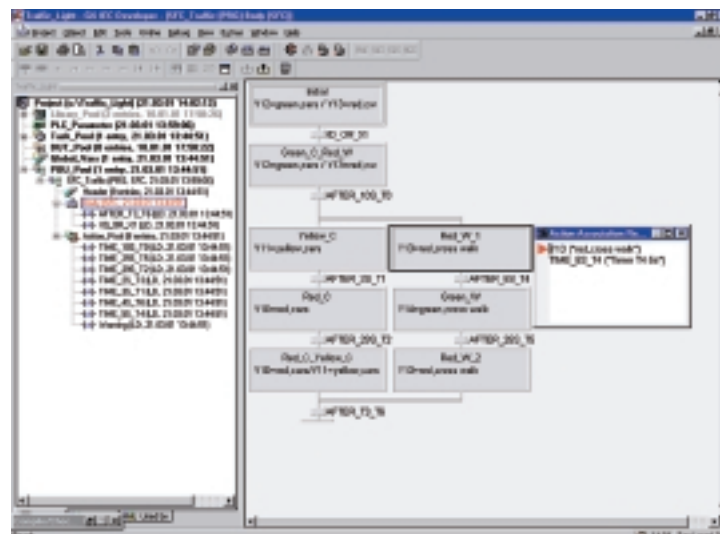
Easily comprehensible display of applications in sequential function chart language (SFC)

Tracking enables logical tracing of signals

GX Developer supports all MELSEC controllers, from the MELSEC FX to the MELSEC System Q.

GX Developer – Programming and More

GX Developer supports all MELSEC controllers from the MELSEC FX series to the MELSEC System Q. This software shines with a simple, intuitive interface and a short learning curve.

GX Developer supports the MELSEC instruction list (IL), MELSEC ladder diagram (LD) and MELSEC sequential function chart (SFC) languages. You can switch back and forth between IL and LD at will while you are working. You can program your own function blocks (MELSEC QnA/QnAS/System Q series), and a wide range of utilities are available for configuring special function modules for the MELSEC System Q. And "configure" is the operative word here – you no longer need to program special function modules, you just configure them.

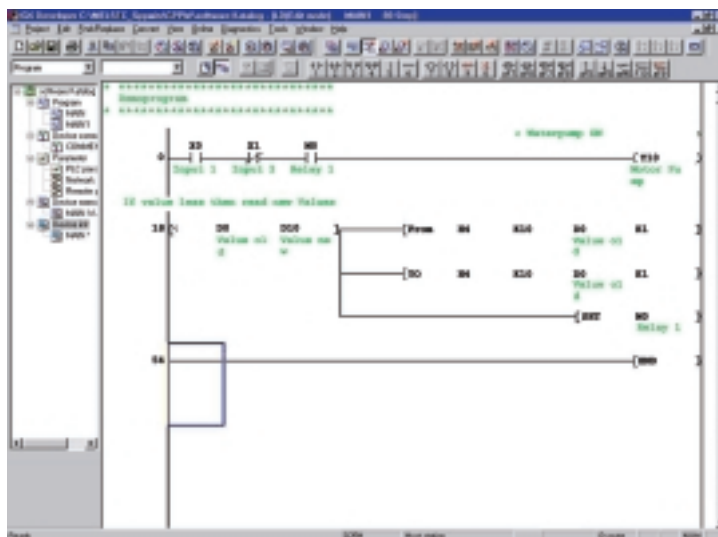The package includes powerful editors and diagnostics functions for configuring your MELSEC networks and hardware, and extensive testing and monitoring functions to help you get your applications up and running quickly and efficiently.

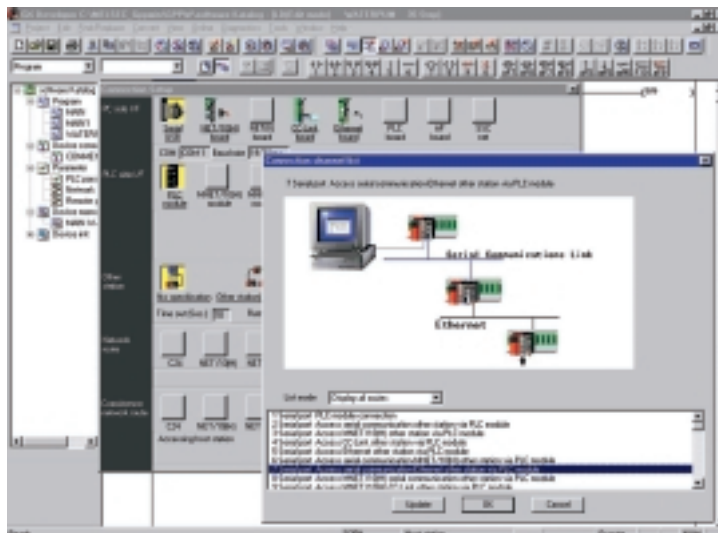You can also test all of your program's key functions before they are implemented with the GX Simulator offline simulation mode. GX Simulator also enables you to simulate all your devices and application responses for realistic testing.

You can import programs written with our older DOS software packages (like MELSEC MEDOC) into GX Developer. The package supports the exchange of data with the Microsoft world.

Intuitive user interface with Project Navigator for fast, efficient programming

▼ *Simple network programming*

▼▼ *Offline simulation*

Simple configuration of communication paths by selecting their graphical representations
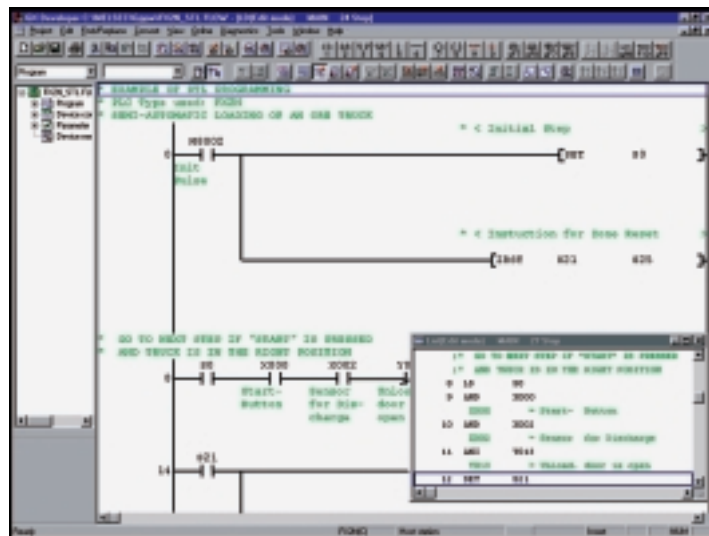
GX Developer FX –
MELSEC Programming the Easy Way

GX Developer FX is specially designed for the needs of the MELSEC FX user and supports all FX controllers. The package supports MELSEC instruction list (IL), MELSEC ladder diagram (LD) and MELSEC stepladder (STL) programming. You can switch between IL and LD at will while working on a project.

The GX Simulator offline simulation mode enables you to test all of your program's key functions before actually

installing the application. GX Simulator enables you to simulate all your devices and

application responses for realistic testing. GX Developer FX is compatible to GX Developer.

GX Developer FX supports all the MELSEC controllers of the FX series.

Simultaneous ladder diagram and instruction list display
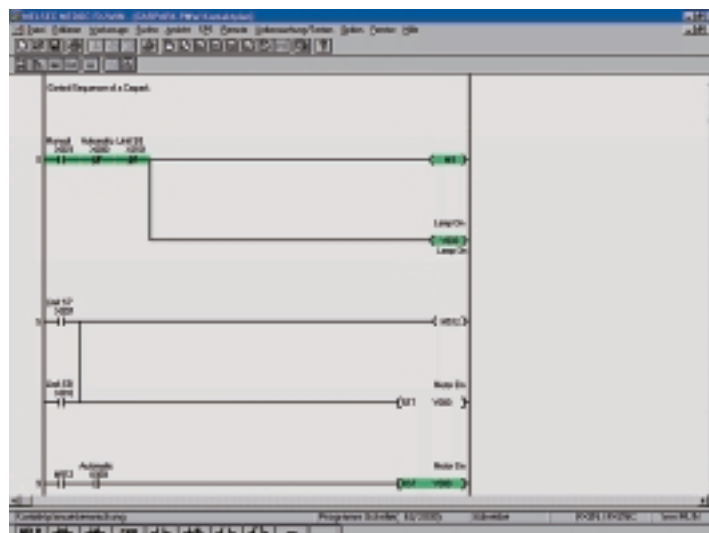
FX-PCS/WIN -
For all FX Controllers

FX-PCS/WIN supports the following programming languages, with conversion between the individual languages:
● Ladder diagram (LD)
● Instruction list (IL)
● Stepladder (STL)

The package is installed with support for five user interface languages (GB, D, F, I, E). Powerful online diagnostics and testing functions like sampling trace and the ability to force the settings of outputs and relays provide maximum transparency. The system can program FX controllers via the computer's serial ports (COM1 – COM4) or by modem.

Support is also included for importing and editing programs written with MELSEC MEDOC, ensuring that you can continue to use

your valuable pool of established code and expertise when you upgrade to FX-PCS/WIN.

FX-PCS/WIN is the easiest way to get into Windows programming for all compact MELSEC controllers.

Programming the FX series with the ladder diagram editor.

IDR-BLOK – Graphical Programming for Control Loops

IDR-BLOK integrates closed-loop controller functionality in PLCs, with graphical user-friendliness.

IDR-BLOK is a user-friendly development tool for PLC-based closed-loop control systems. To set up a control loop with this package, you just arrange the graphical function blocks on the screen. The integrated compiler then generates the necessary code for the PLC. The package uses an open concept that enables the user to change the control parameters with the PLC program at any time during the process. Function blocks with autotuning and fuzzy logic are available as optional extras.

IDR-BLOK turns an ordinary sequential PLC into a multi-loop controller. IDR-BLOK is the standard closed-loop control programming software for all AnSH controllers.

GX Configurator DP and GX Monitor DP – Transparency for Network Technology
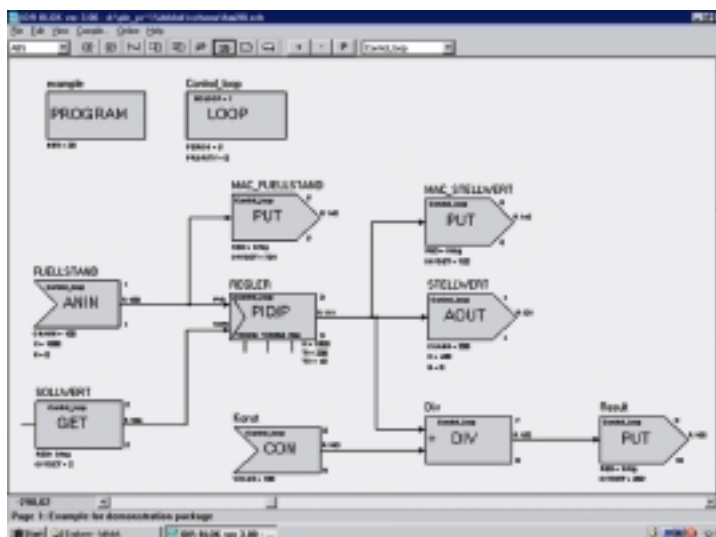
GX Configurator DP is a user-friendly configuration software package for the open network PROFIBUS/DP. GX Monitor DP is a system for remote diagnostics, including diagnostics via the Internet.

GX Configurator DP can be used to configure all Profibus/DP modules of the MELSEC AnS/QnAS/QnA/System Q series. In addition to MELSEC PLCs it also supports connection of Mitsubishi frequency inverters, the E series of graphical control units and remote I/O modules.

Integrating slave modules from third-party manufacturers is as easy as importing the GSD data. GX Configurator DP makes Profibus/DP very easy to handle. To configure your network with this software system you just drag ready-to-use graphical images of your devices onto the Profibus/DP network representation on the screen. Then you enter the device station numbers and specify which PLC addresses you want to allocate to the remote Profibus/DP slaves. A wide range of user parameters are supported for the Profibus/DP-Slaves; configuration is handled transparently with the GSD files.

Program building blocks for the network are generated automatically by GX Configurator DP, and can then be integrated in your programs with the GX IEC Developer programming software package, cutting programming overheads for the PLC to an absolute minimum. You can upload configurations to the Profibus/DP very easily, either via the programming port of the CPU or via networks like Ethernet or MELSECNET.

The new GX Monitor DP software package provides remote diagnostics for Profibus/DP networks and PLCs – in plain text and with informative graphical displays. It is accessible with standard browsers like Microsoft Internet Explorer, guaranteeing direct access and intuitive operation from any location and on virtually any PC platform.

E Designer – Fast MAC E Programming

The E Designer programming software package makes it very easy to create and edit projects for the control units of the MAC E series. The Block Manager provides a complete graphical overview of the project, and the package comes complete with a library of ready-to-use symbols and objects. Drivers for all MELSEC PLCs and many third-party PLCs are available directly. Drivers can be updated online via the Internet without exciting E Designer.

You can create multilingual projects with up to ten user-selectable languages. In RUN mode the operator can then choose the language he or she prefers to use. Selecting a different language changes all text objects, alarm messages and system texts. All the necessary special characters required by the different languages are supported, including accents etc. All texts can be easily exported and imported with the Application Languages Manager.

With the included HMI-Tools for exchanging data like HTML Internet pages or recipe alarm files between the control unit and the PC.

These data links can be realised via serial and Ethernet (FTP) interfaces.

Highlights:
- Multi-language hardware and software support
- New graphics objects
- Dual driver support

E Designer is a programming software package for the control units of the MAC E series.

GT Works – Powerful & User-friendly GOT Programming

The GT Works software package includes everything you need for programming the control units of the A900GOT and F900GOT series. The integrated GT Designer module gives you full control of all functions, making it amazingly easy to produce powerful applications, particularly with the help of the big library of ready-to-use objects. Simple, intuitive menus combined with a huge array of functions leave no wish unsatisfied.

Using GT Designer you can even develop programs for the GT SoftGOT system, which you can then test either in GT SoftGOT itself or with GT Simulator, the integrated package's offline simulator module that allows you to test all your projects for the A900GOT series and GT SoftGOT directly on your PC. This has great advantages and cuts development time significantly – for example, you can always test immediately, you don't need to upload your project to the control unit or the project PC every time you make a small change.

All MELSEC PLCs and controllers from other leading third-party manufacturers can be integrated with this system. You can also write your projects in multiple languages and then switch language versions on the control unit at the touch of a button. And the available fonts include around 26,000 different characters, with which you can produce projects in virtually every language.

Highlights:
- Support for all international languages (depending on Windows character sets)
- Large graphics library
- Offline simulation
- Supports F900GOT, A900GOT and GT SoftGOT
- Develop multi-lingual projects

GT Works is a programming software package for the control units of the GOT series.

MELSOFT - Thorough Programming

GT SoftGOT – Intelligent HMI Solutions for Industrial PCs

The PC visualisation software package GT SoftGOT is the ideal complement for the GOT control units. This improved system combines the advantages of the GOT's with the flexibility of a PC, and the ability to use all your existing GOT applications without any changes. The PC implementation is now able to store large amounts of data, send e-mails or mobile SMS text messages and exchange files via FTP.

Easy project design and management

GT SoftGOT gives the programmer the freedom to design his applications in the same way as for a control unit, with the added advantage of full PC functionality. The decisive advantage is access to the PC's mass storage, for example for storing recipes or scheduled and timed actions, which can be edited with MS Excel. The programmer can use existing applications for A900GOT control units without any changes, providing direct access to the data. This saves time and development overheads while making it possible to start building applications on a PC-based control unit.

Highlights:
- Freely-definable user interface with save/load capability
- Drivers for all MELSEC PLC systems
- Also runs on the MELSEC System Q PC module with communication via the Q-BUS
- All A900GOT run without modifications
- No limit on the number of I/O devices
- Choice of different graphics resolutions
- E-mail functionality
- Ability to save alarms and scheduled/timed actions on mass storage
- Exchange data using data exchange lists in MS Excel

E-View – HMI Based Visualisation Software with a Wealth of Functions

E-View – the new visualisation software package from Mitsubishi Electric – is positioned between hardware control units and SCADA systems. It combines the simple operation and programming of the MAC E series with the flexibility and power of a PC. Key advantages: You can save large amounts of data on the hard disks, send e-mails and SMS text messages, exchange files via FTP and use all the facilities of the PC environment.

Development made easy

E-View includes a wealth of basic functions that are accessible in an object library. They are based on ActiveX®, which means you can also import and use new ActiveX® components. In turn, this means fast and easy integration with standard Windows® applications, which can then be called directly from the E-View system.

The Object Inspector keeps the user informed at all times about all settings and editing options of the selected components. The integrated high-level language editor, which is based on Visual Basic®, gives you the freedom to develop your own applications and functions, with calculation functions conditions and many other programming features.

A range of ready-to-use functions like Alarm Management, Recipe Handler and Trend Charts makes it very easy to sort, filter and store machine data.

MX SCADA – Fast, User-Friendly Process Visualisation

MX-SCADA has an intuitive user interface and a short learning curve. The Quick Start tutorial provides a fast, effective grounding in all the basics of system development. Online help with answers to all your questions is always available with a single mouse click. The integrated symbol library with pumps, valves, buttons etc. enables you to create process diagrams in record time with Drag & Drop. The online configuration feature enables you to optimise and extend your process images, add or edit I/O points and modify alarm and quality conditions without interrupting the process. The user-editable toolbox facilitates program operation and the powerful scripting language enables you to automate simple or complex instruction sequences quickly and easily.

Simple operation

Create impressive on-screen graphics with existing symbols (dynamos) or create your own with the graphics tools and an unlimited colour pallet. Use the historical trend logging feature to collect, store and display process data in real time. Work in the confidence that you will not be interrupted thanks to the 100% data integrity. Use the bi-directional DDE interface to exchange your process data with MS Excel® or MS Word®. Use the SPC (Statistical Process Control) system to optimise your process data. Other highlights include alarm management, password access protection and recipe management.

Flexible expansion options

Expanding the system is very easy. The distributed client/server architecture makes it possible to access your data throughout your company. A diagnostics tool for MELSEC PLCs is also available.

MX-MMI (Man-Machine-Interface) is a complete software package for industrial automation, designed for smaller applications with up to 300 I/O points. MX-MMI can be used as a stand-alone solution or in larger networks.

MX-SCADA Server is directly linked to your process and maintains the process points of your MX database. The server can be used as a stand-alone solution or in a networked configuration to share data with other MX-SCADA Servers, MX-VIew, MX-TV or MX-MMI within your process environment.

MX-Remote enables authorised users to dial into your MX system and access process data from any location.

MX-TV is a universal data viewer that provides immediate access to real-time and historical data – including relational databases, DDE servers, MMI, live videos, logs and ASCII lab data. MX-TV delivers you all the information you need to make fast, efficient decisions.

MX-View is the ideal solution for additional operator stations. An MX-View station can be networked with one or more MX-SCADA stations. It has full read and write access to all the data on the MX-SCADA servers without maintaining a copy of the database.

The intuitive graphical user interface enables you to make complex processes clear and comprehensible for easier analysis.
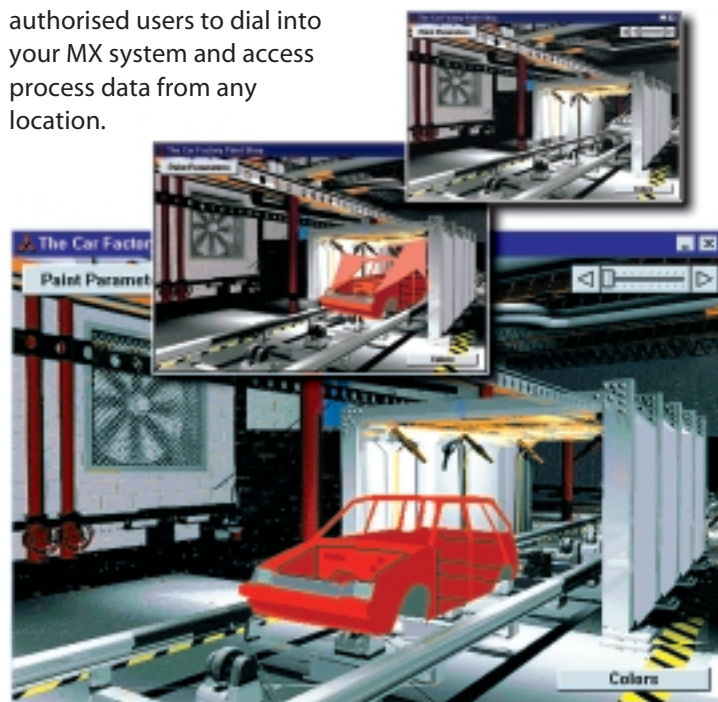
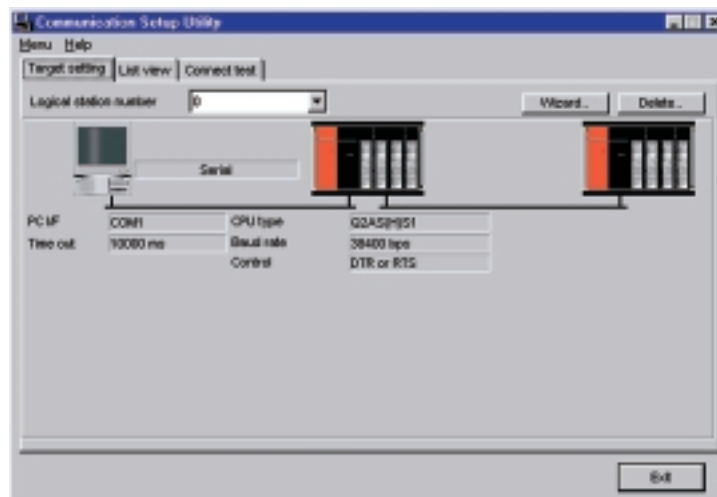*The very best in precision process visualisation*

MX Components –
Modular User Software

MX Components is a communications software package that you can configure easily for your individual needs.

MX-Components is a simple and yet very powerful tool that enables you to connect Mitsubishi PLCs with the Microsoft PC world, quickly and easily.

Key features of Software MX Components:

● Support for Access®, Excel® (VBA), Visual Basic® and C++

● PLC monitoring via HTML pages using the standard Windows browser

● PLC monitoring via intranets or the Internet with support for ASP technology (Active Server Pages)

Data monitoring in MS Excel®

Remote diagnostics via www/HTML pages

Remote diagnostics via the World Wide Web

Write your own Visual Basic® programs

● Supports Windows® 98, NT4 and 2000 (XP in preparation)

Using the COMMUNICATION SETUP UTILITY you can very easily configure and test the link to your Mitsubishi PLC. Supported connection modes: Serial (CPU port), serial via Computer Link (RS-232C, RS-422), Ethernet and CC-Link. All MELSEC networks are also supported. On the new MELSEC System Q you can also use the USB port (Windows® 98 and 2000).

You have read/write access all the controller's devices with Microsoft programs like MS Visual Basic®, MS C++® etc., via the pre-configured communication paths or via ActiveX elements with their own communication.

MX CHART

Do you want fast, simple access to your PLC data? MX Chart enables you to display your PLC data in MS Excel®.

MX MONITOR

MX Monitor makes it very easy to create a graphical user interface with MS Visual Basic® or MS C++®. All you need to do is set the required parameters for the ready-to-use visualisation objects.
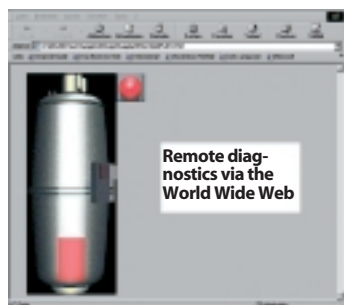
MX OPC SERVER

Provides simple and secure access to any OPC-capable software on all Mitsubishi controllers. OPC Server standardises the connection between your plant visualisation system and the MELSEC controllers.
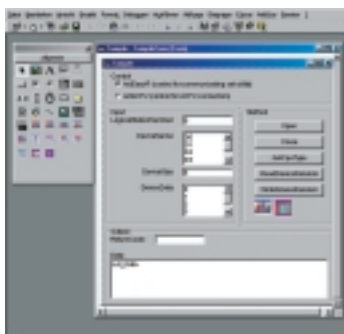
VFD – Configuration Software for Frequency Inverters

The VFD Setup software package is a powerful frequency inverter configuration and management tool. It runs under Windows® 3.11, 95 and 98, making it possible to manage your inverters with a standard PC. You can configure, operate and monitor multiple frequency inverters simultaneously via a network with a PC or notebook computer. The software supports all Mitsubishi frequency inverters of the FR-A 500 and FR-E 500 series.

The PC can be connected to the inverters either via an RS485 network or directly with the optional SC-FR PC adapter cable.

Functions

● System management:
The inverters' network support makes it possible to manage up to 32 frequency inverters with the software package.

● Parameter settings:
You can check and adjust a variety of parameters quickly and easily. Includes both tabular and function-based display options.

● Display functions:
The intuitive display functions include data, analog, oscilloscope and alarm displays.

● Diagnostics:
Effective inverter status analysis for fast, efficient troubleshooting.

● Test mode:
Test mode enables realistic simulation and calibration with the autotuning function.

● File management:
Parameters can be stored in files on the PC and output to the printer.

Help:
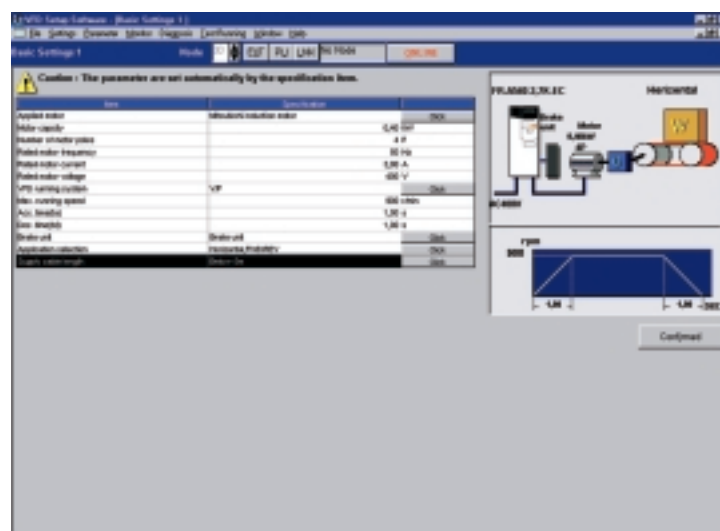The program has comprehensive online help with answers to all your setup and operation questions.

The VFD Setup software package enables frequency inverter configuration and management with a standard PC.

Motor data display and monitoring

Drive system testing in jog mode

Frequency inverter parameter settings

COSIROP and COSIMIR - Robot Programming and Simulation Software

COSIROP is a programming software package for all MELFA robots.

COSIMIR is a 3D robot simulation system for all MELFA robots.

COSIROP

COSIROP runs under MS Windows operating systems. It is the programming, configuration, online and diagnostics software package for all Mitsubishi robots. It can be used to write programs in the MOVEMASTER COMMAND and MELFA BASIC languages and transfer them back and forth between the PC and the robot's controller. The

package comes with a comprehensive range of powerful functions that make the robot programmer's work faster, easier and more effective.

COSIMIR – Cell-oriented robot simulation with PCs

COSIMIR is the 3D robot simulation system for all Mitsubishi robots. It runs on all PCs with 32-bit MS Windows operating systems.

COSIMIR has functions for planning the robot work cell, checking the accessibility of all programmed positions and optimising the layout. All movement sequences and handling operations can be simulated without hardware to eliminate collisions and optimise cycle times. After thorough testing and simulation you can then download your programs directly to the robot's controller via the standard RS232 serial port or the optional Ethernet (TCP/IP) interface. The Ethernet interface can also be used to link the controller to the Internet, enabling you to modify programs and perform service functions from virtually any location.

COSIMIR supports full simulation of complete robot cells. This means that in addition to the robot's own movements you can also simulate its interaction with its environment. COSIMIR enables realistic simulation of

gripper and transport operations. To simulate the electrical connections between cell components in COSIMIR you just connect the inputs and outputs, just as you would in the real production cell. For example, to be able to activate a conveyor belt with an output signal in the robot program you just need to connect one of the robot controller's simulated digital outputs with the conveyor's input.

Programming in the robot's languages

COSIMIR supports all the robots of the Mitsubishi MELFA series. You can write your programs in the MOVEMASTER COMMAND or MELFA BASIC languages and then simulate them directly on the PC. You don't need to learn an additional simulation language in addition to robot programming language. This significantly shortens the learning curve with this powerful simulation software.

Control with a standard PC in online mode
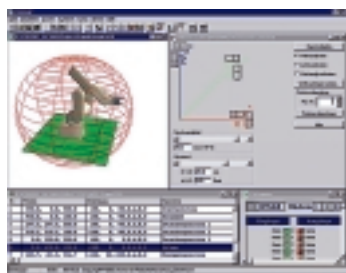
Creation of the robot cell using Explorer technology

Simulation of the robot program

Robot program simulation with collision checking

MELSHORT2 – The New Calculation Software for Low-Voltage Switchgear

MELSHORT2 is a software package that provides all the functions needed for planning and dimensioning switchgear systems.

Increasingly demanding technical specifications and accountability regulations are making switchgear configuration much more critical than it used to be. In the past, software for calculating and dimensioning switchgear was helpful – nowadays it's absolutely essential.

Mitsubishi Electric's MELSHORT2 is a complete software package that provides all the functions needed for successful switchgear system configuration and layout. It supports all modern international electrical engineering standards and shines with simple and reliable operation.

The program calculates the short-circuit levels and currents at all necessary points for all switchgear components, including the power supply transformer and circuit breakers, the emergency generators, the individual motor and capacitor group branch circuits and all the other power distribution circuits, down to the last circuit breaker. This makes it possible to select the ideal breaker for every task, for optimum performance and cost-efficiency.

MELSHORT2 has a comprehensive range of powerful, easy-to-use functions, including:

● Selective shutdown
● Backup protection
● Coordination with the main power supply systems
● Allowance for the start-up currents of electric motors

These functions make it possible to optimise the configuration of your switchgear equipment for the specific requirements of your applications.

The calculated results, the hardware model suggestions and the wiring diagram with all the relevant values can be processed and used as documentation for the switchgear installation. Another welcome extra is the free Internet update service.
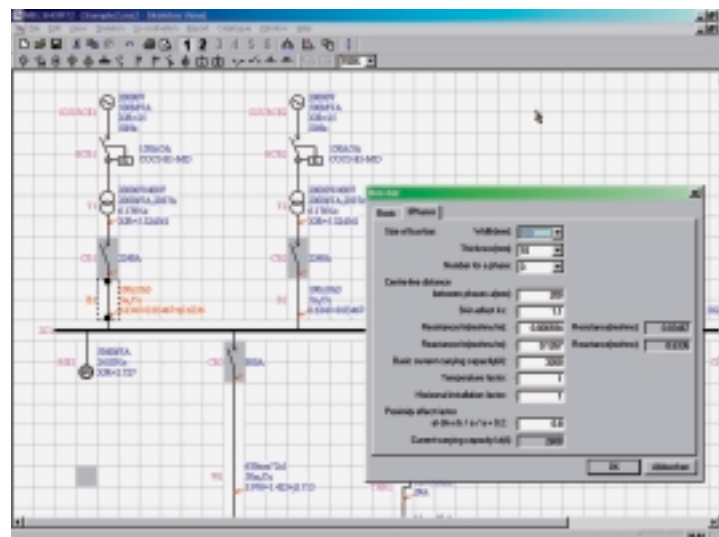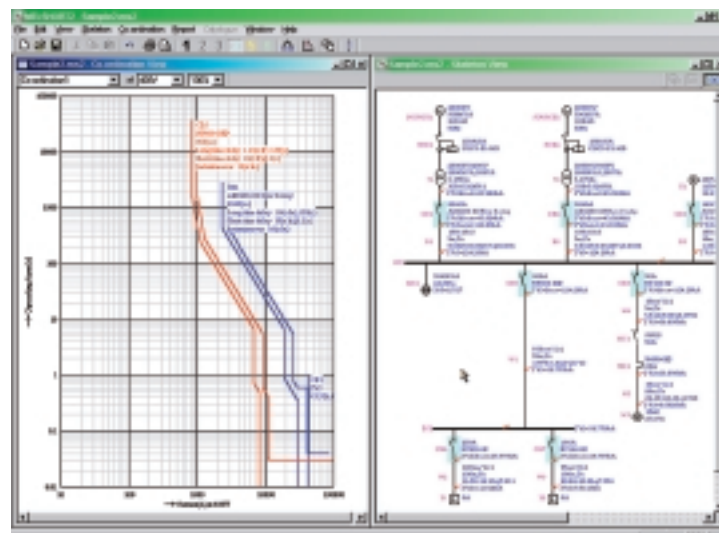

Circuit diagram of the network to be calculated, with input field

Display of the trip curves of a circuit breaker in the network

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