MITSUBISHI ELECTRIC

Changes for the Better

for a greener tomorrow

Programmable Controllers
MELSEC-L Series

Little on size, Large on performance

The new L series has a small footprint and is loaded with features.

Simple!

MELSEC *L series*

Compatible with Windows® 7

Simple

MELSEC L series

Convenience that fits in the palm of your hand.

The L series is the latest in a long line of MELSEC products renowned for exceptional performance and rock solid reliability.
Get the performance, functions, and capabilities required for today's most demanding applications in an incredibly small package.
MELSEC-L series greatly expands the range of functionality traditionally associated with compact PLCs and through user-centric design, pushes the limits of ease of use.

Maximum Functionality

The CPU module contains a diverse range of control functions.

A large variety of I/O types and features are built-in for convenience.
Due to an abundance of advanced functionality, L series CPUs are flexible enough to meet a wide variety of needs.

Maximum Performance

High speed, large memory capacity CPU

The CPU has a basic operation processing speed of 9.5ns*2 and 260k steps of program capacity are available for complex programs and equipment control.

Maximum Capabilities

Advanced capabilities focused on improving efficiency

The user-friendly display unit enables routine operations to be made without a computer. An SD memory card slot is included as standard for data logging and program storage. Write programs and manage L series controllers using GX Works2 and iQ Works, the most advanced and effective software for Mitsubishi controllers yet.

*1: Option (Sold separately)
*2: Included with L26CPU-BT, L26CPU-PBT

Built-in I/O Features ➡ P.5

Positioning	High-speed Counter	Pulse Catch
Interrupt Input	General Purpose I/O	

Every L series CPU module comes with 24 points of built-in I/O that support advanced features to meet challenges head on.

Built-in Connectivity ➡ P.7

Ethernet	USB	SD Memory Card
CC-Link Ver.2.0*2		

Convenient communication options and memory card storage are included with every CPU.

CPU Features*2 ➡ P.7

Program Memory: 260 k steps	Maximum number of I/O points: 8192 points	
Basic operation processing speed: 9.5 ns	Floating-point operation: 0.057 µs	MOV instruction: 19 ns

L series raises the bar for performance specifications in a compact PLC with 260k steps of program memory and a basic operation processing time of just 9.5 nanoseconds.

Display unit ➡ P.8

Multi-lingual Display: English / Japanese	
Display Size: 16 characters x 4 lines	Multi-color Backlight: Green(Normal), Red(Error)

The display unit allows for quick troubleshooting and diagnostic operations of the CPU and connected modules.

Programming Tools ➡ P.13

GX Works2	iQ Works

L series is compatible with the latest and most advanced programmable controller engineering software from Mitsubishi.

Compact Design ➡P.12

Integrated backplane	Mount on standard DIN rail

By eliminating the need for a separate backplane base unit, system design flexibility has been improved and overall size has been reduced.

Simple Motion Modules ➡P.39

Positioning	Speed Control	Torque Control
16-Axis Interpolation	Synchronous Control	Auto cam generation function

Control sophisticated motion applications with ease using proven and innovative features.

Analog Modules ➡P.33

Conversion Speed	Precision
20 µs/ch	±0.1%

Shorten takt times using high-speed analog conversion modules that operate at 20µs per channel.

Temperature Control Modules ➡P.35 NEW

Heating-cooling control	Peak current suppression function	Self-tuning function
Simultaneous temperature rise function	Selectable sampling cycle	Temperature input mode

Temperature control module with highly stable regulation performance.

Network Modules ➡P.49 NEW

CC-Link IE Field	CC-Link Ver.2.0	CC-Link/LT

Supports the FA network standard.
*The L26CPU-BT, L26CPU-PBT has CC-Link built-in.

GOT1000 Series ➡P.19

MELSEC-L Troubleshooting Function	Intelligent Module Monitor	Backup and Restore
Log viewer function	Ladder Monitor	System Monitor

New GOT models have been designed with connection to L series in mind. When used together, several template screens are available to enhance their combined operational functionality.

MELSEC L series

Flexible

The L series has the ability to flex to meet your application's requirements.

MELSEC L series has been designed with three key concepts in mind.
The first key is reliability.
Mitsubishi Electric products are world renowned for quality.
The second is ease of use.
We are committed enabling engineers and programmers to do their job as efficiently as possible to reduce costs.
The third key is flexibility.
L series systems expand to meet the application requirements without wasting money or space.
Save on total costs by designing the system that is a perfect fit.

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L series Built-in I/O Features

Every L series CPU comes with 24 points of built-in I/O standard. These I/O points are capable of many functions usually reserved for separate modules. Save on system costs by using the built-in functions rather than relying exclusively on additional modules.
The built-in I/O*1 comes in sink or source type format and may be chosen based on the application.

■ **L Series CPU Built-in I/O Functions**

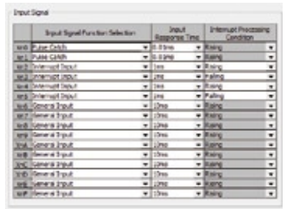
Positioning (Built-in control of 2 axes)	High-Speed Counter (Two channels built-in)	Pulse Catch	Interrupt Input	General Input / Output

Function		Features
Positioning*2	Number of axes: Maximum 2 axes	Maximum speed: 200kpulse/s High-speed activation: 30µs (Shortest activation time) S-curve acceleration and deceleration are supported.
High-Speed Counter*2	Number of channels: Maximum 2 channels	Maximum counting speed: 200kpulse/s Open collector, Differential line driver input High accuracy ON/OFF measurements with a resolution of 5µs High precision PWM control up to 200kHz (High speed pulse output)
Pulse Catch	Number of input points: 16 points	Minimum input response time: 10µs Pulse signals whose ON time is shorter than the scan time can be detected.
Interrupt Input	Number of interrupt points: 16 points	Built-in CPU provides high-speed processing. All input points support interrupt inputs.
General Input	Number of high-speed inputs: 6 points Number of standard inputs: 10 points	Minimum input response time of high-speed input: 10µs Minimum input response time of standard input: 100µs
General Output	Number of output points: 8 points	Output response time: 1µs or less

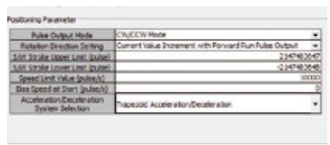
*1 The L02CPU and L26CPU-BT are sink type, and the L02CPU-P and L26CPU-PBT are source type.
*2 Points used by the positioning and high speed counting functions are fixed (as in A phase, B phase, near-point dog).
Custom points for these functions may not be assigned.

Easy setup of built-in I/O functions

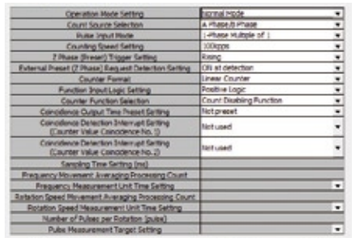
Configuring built-in I/O functions can be done easily by setting parameters using the programming tool.



[Built-in I/O function example parameter settings]
Pulse Catch: 0.01ms (response time)
Interrupt Input: 1ms (response time)



[Positioning function example parameter settings]
Pulse Output Mode: CW/CCW mode
Rotation Direction Setting:
Current Value Increment with Forward Run Pulse Output



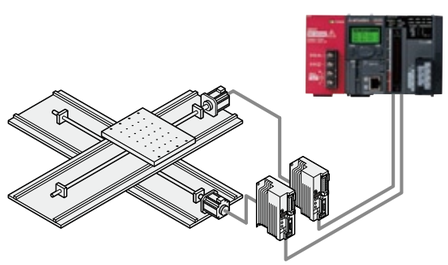
[High-speed counter function example parameter settings]
Pulse Input Mode: 1-Phase Multiple of 1
Counting Speed Setting: 100kpps

Built-in CPU positioning control function

Positioning | High-Speed Counter

[Positioning Function]
The built-in positioning function has a start time of just 30µs with a maximum high speed output of 200k pulses per second.
Furthermore, it supports S-curve acceleration and deceleration for applications that require minimal machine vibration.

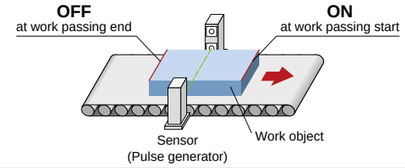
[High-Speed Counter Function]
Two channels support the high speed counting function. The differential line driver inputs support counting speeds up to 200k pulses per second.

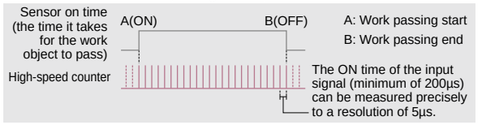


Make highly accurate measurements with a resolution of 5µs

High-Speed Counter

Using pulse measurement mode, where the input signal ON/OFF time is 200µs or greater, highly accurate measurements in units of 5µs or greater are possible.
For example it is possible to calculate length by knowing the "work object passing speed" and measuring the ON time of the sensor.





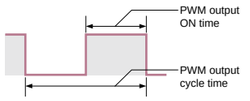
High precision PWM control up to 200 kHz

High-Speed Counter

Using the pulse width modulation control function of the high speed outputs, cycle times as fast as 5µs can be created. Simply input the ON time and cycle time to drive a wide range of devices from lighting dimmer control, motors, and heaters to precision inspection equipment requiring high resolution performance.

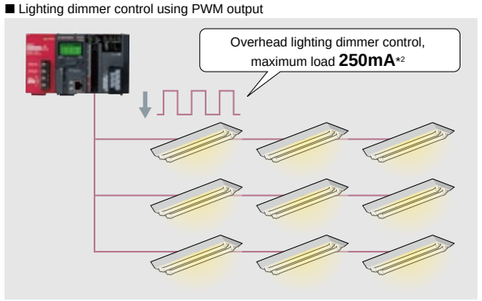
	Setting Range	Description
PWM output ON time*1	0 or 10 to 10000000*1 (0.1µs)	Set the ON time of output pulse
PWM output cycle time*1	50 to 10000000*1 (0.1µs)	Set the cycle time of output pulse

*1 The PWM output ON time must be ≤ the PWM output cycle time.



$$D = \frac{T}{T}$$
D : Duty Cycle
T : ON time
T : Cycle time

■ Lighting dimmer control using PWM output

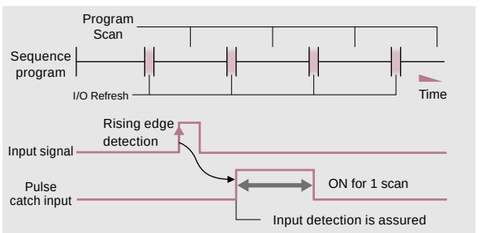


*2 In cases where the first six digits of the serial number are "120722" or later.
Previous serial numbers of the CPU module are applied to 100mA.

Guaranteed input pulse detection

Pulse Catch

Typical PLC input devices are unable to detect pulse signals whose ON time is shorter than the scan time or do not occur during I/O refresh periods. The pulse catch function allows these signals to be reliably detected and passed to the sequence program. This function is different from the interrupt input function in that it does not require any special programming. Pulse catch inputs may be used in programs exactly the same as traditional input (X) signals.

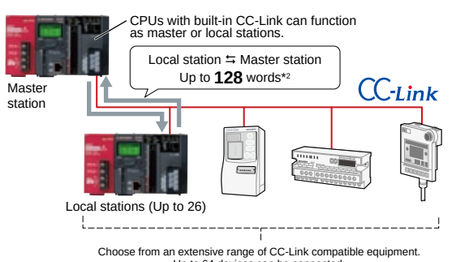


CPU with built-in CC-Link network connectivity*1

*1 L26CPU-BT, L26CPU-PBT only.

L series CC-Link ready CPUs are compatible with the latest generation of CC-Link devices and support connections with over 1,000 different product types. Without adding a module, these CPUs can perform high-speed communication with a maximum of 128 words between a master station and a local station. CC-Link is the dominate FA network standard in Asia and continues to gain support worldwide.

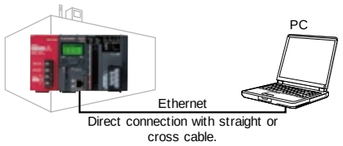
CC-Link V2



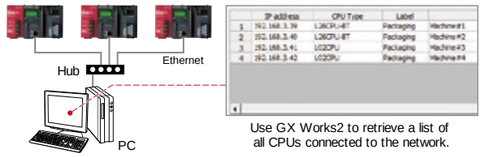
*2 When the number of occupied stations is 4 and the extended cyclic setting is octuple in the Remote net Ver.2 mode.

USB and Ethernet connections standard

Use the USB 2.0 interface or Ethernet to connect directly at the instillation site. The Ethernet interface supports direct connection with either a cross or straight LAN cable and does not require any configuration of the PLC or PC to operate (patent pending).

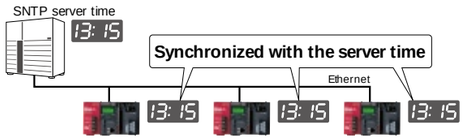


All CPUs connected to the same hub can be searched and displayed in a list.
By selecting the access target CPU from the list, it can be connected to even if the IP address is unknown.



Synchronize systems on an Ethernet network using an SNTP*1 server. Highly precise time synchronization can be achieved to enable simultaneous operations, quality control, or error tracking.

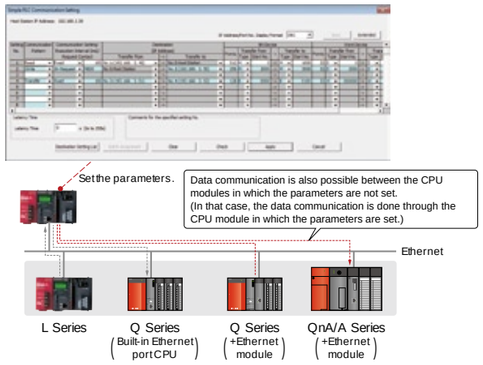
*1 SNTP: Simple Network Time Protocol



Program-less device data transfer NEW

[Simple PLC communication function*1]
Using the programming tool, a simple parameter setting is all that is needed to transfer device data such as production information with no programming required. This function makes it possible to easily establish communications not only with L Series, but also Q Series and QnA/A Series controllers.

*1 A CPU module whose first five serial number digits are "13042" or later is required.



SD Memory Card special features

Use the SD/SDHC compatible memory card to quickly and easily back-up the CPU programs and parameters.
The backups can then be just as easily restored or used to program other CPUs. The memory card can also be used to hold data captured with the data logging function*1.

*1 For details about the data logging function, refer to page 9.

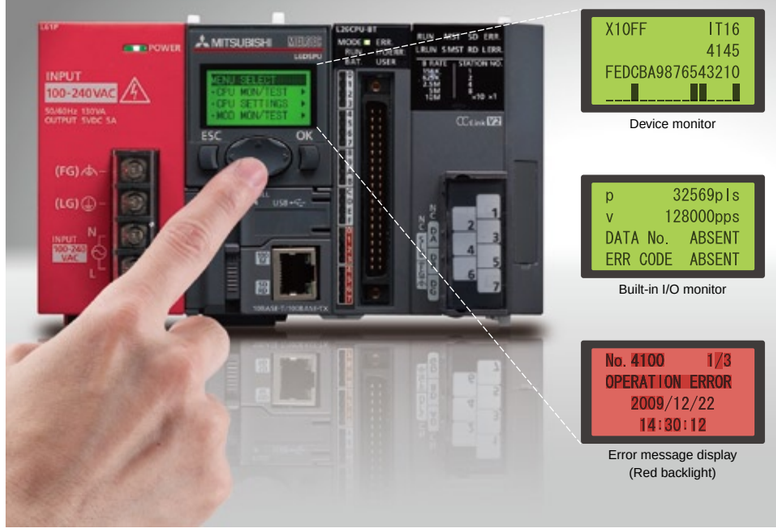
Incredible performance in a compact design*1

*1 L26CPU-BT, L26CPU-PBT only

With a program capacity of 260k steps and basic operation (LD instruction) speed of 9.5ns, L series CPUs have the performance necessary for highly demanding applications. Furthermore, the double-precision real number operation instruction is also available to reduce operation errors in complicated mathematical formulas.

		L26CPU-BT, L26CPU-PBT NEW	L02CPU L02CPU-P NEW
Basic operation processing speed		9.5ns	40ns
Floating point operation speed Addition instruction (E+)	Single precision	0.057μs	0.18μs
	Double precision*2	4.3μs	4.8μs
MOV instruction		19ns	80ns
Program capacity		260k Steps	20k Steps
Total device capacity		413k Words	93k Words

*2 Minimum value

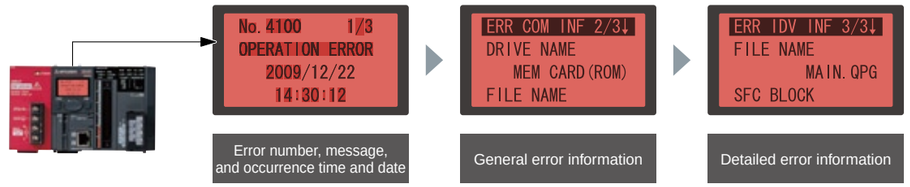


Feature rich and easy to use display

Check the system status and make setting changes directly from the display. Error status is clearly identified and troubleshooting and error investigation can be performed all without the need for any connections or engineering software.

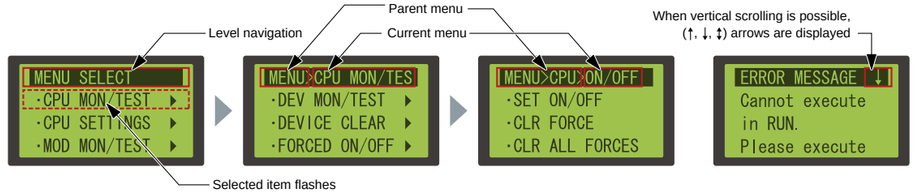
Instant error information check

Error history and detailed error information is available directly from the display unit.



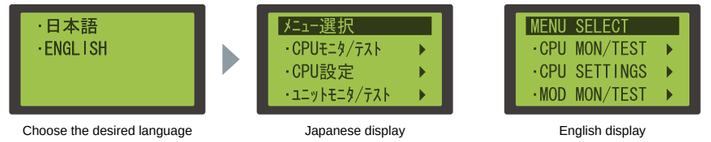
Intuitive menu navigation

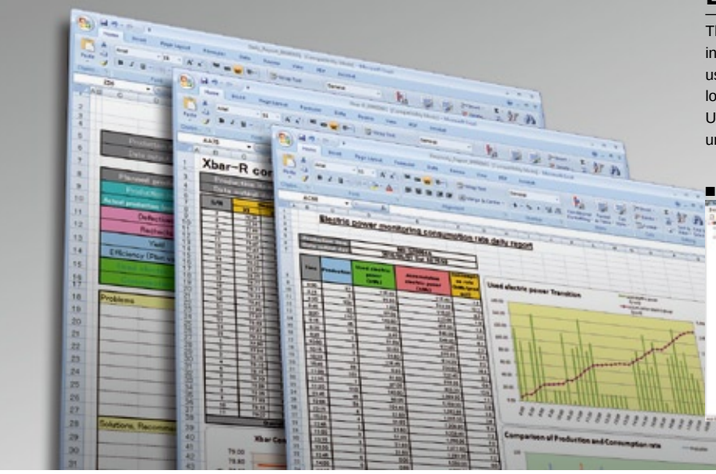
The menu navigation guide shows the current menu tree location and an arrow to indicate the scroll direction at the top of the display.



Multilingual operation

The display unit language can be selected (Japanese or English).

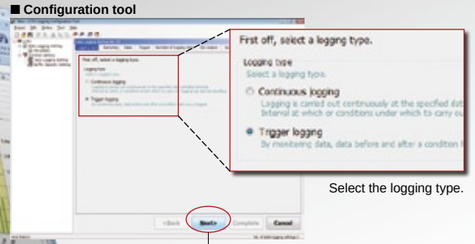




Data logging function

The built-in data logging function provides an easy way to collect information for troubleshooting, performance evaluation, and other uses. The included configuration tool makes setting up the data logging function a breeze with a step-by-step wizard like interface. Using GX LogViewer, the captured data is easy to interpret and understand.

■ Configuration tool



Select the logging type.

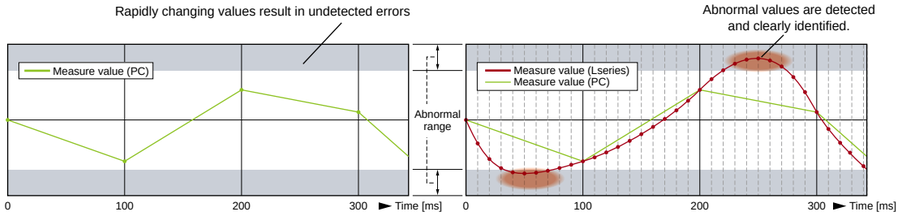
Make the desired settings on each screen and click the [Next] button until all settings are complete.

High speed data sampling

The high speed data logging function has the power to synchronize with the sequence program scan, ensuring that every value available to the program is logged for analysis. Using this method it is possible to perform detailed operational analysis and identify existing or potential problems.

■ Generic sample data from a PC or external device at 100ms intervals

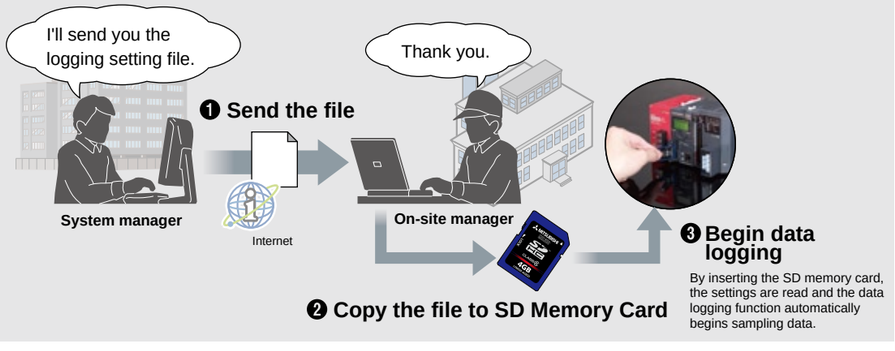
■ L series data logging function is capable of sampling data at much higher resolutions to detect quickly changing values.



Auto logging function

Data logging configuration settings are stored on the SD Memory Card and when the auto logging function is enabled, data sampling will begin immediately after the SD Memory Card is inserted.
Even when data sampling is required at a remote location, it is easy to configure a logging settings file and send it to the remote location via e-mail, for example.
The user then only needs to copy to the file to an SD Memory Card and plug it in. (Patent pending)

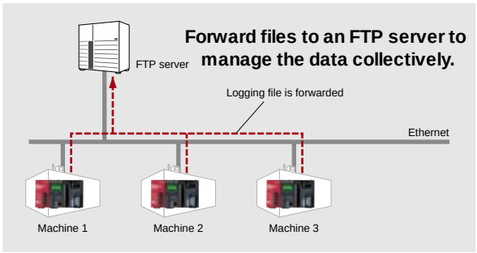
Example: Configure the data logging feature and capture data in a remote location



Automatically forward logging files to an FTP server

Data logging files stored on the SD memory card can be forwarded to an FTP server just by making a simple setting with the LCPU logging Configuration Tool.
Maintenance and management work can be reduced by batch-managing multiple logging files.

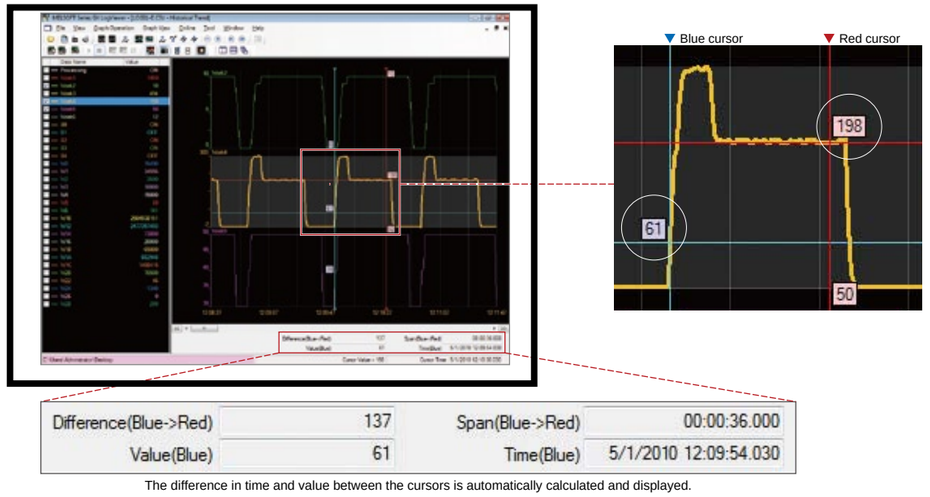
■ File transfer feature*1



*1 Using a CPU module with the first 5 digits of the serial number "12112" or later.

Easy-to-see graphical display

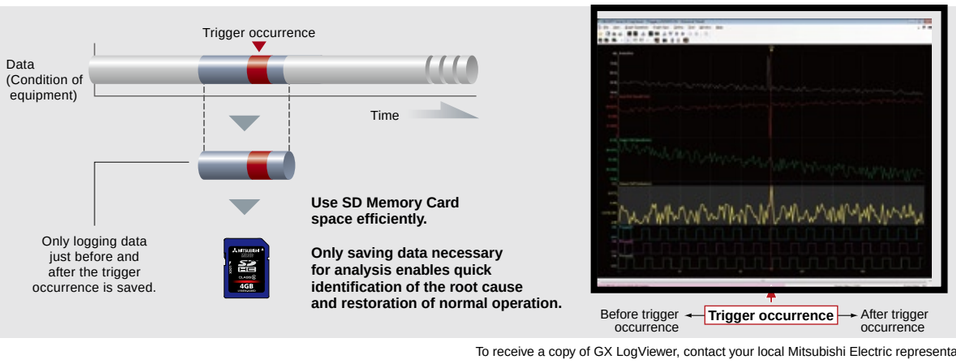
Sample data can be displayed using the dedicated software tool, GX LogViewer. The tool allows the user to freely change colors, super-impose graphs, and use multiple color-coded cursors to instantly identify shifts in value and time.



The difference in time and value between the cursors is automatically calculated and displayed.

Trigger logging function

By only recording data when abnormalities occur, even high speed data logging files do not occupy a large space on the SD Memory Card. Perhaps more importantly, the process of investigating why the abnormality has occurred and identifying solutions is greatly simplified.



To receive a copy of GX LogViewer, contact your local Mitsubishi Electric representative.

Universal Design

The L series has been designed from the ground up to be easy to use

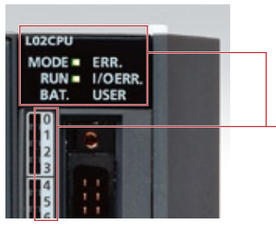
The L series module labeling design has been created to ensure clear legibility and identification of information at glance to avoid mistakes.

Gain more flexibility with an integrated system bus structure.

Save space in control panels by utilizing the integrated system bus structure. Flexibility in system design is made possible by choosing only the required expansion modules for the application.

Universal design

[Adopting a universal font]
A high visibility font has been chosen for characters printed on system modules.



■ Regular Gothic font

0 1 2 3 4
5 6 7 8 9
A B C D E

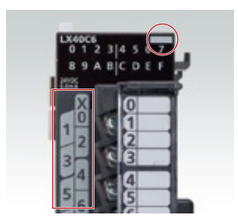
The characters are thick enough, however the numbers “3, 6, 8, 9” and the alphabet “C” are not clearly distinguishable because the spacing indicated with a red circle is not large enough.

■ Font for L series

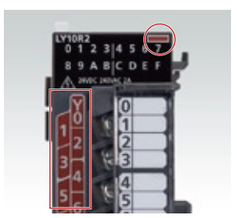
0 1 2 3 4
5 6 7 8 9
A B C D E

The space indicated with a red circle has been enlarged.
The numbers “3, 6, 8, 9” and the alphabet “C” are clearly distinguishable.
Characters are legible even in small print.

[Module design]
White and red are used to distinguish inputs from outputs respectively to allow for easy identification of terminal connection type.



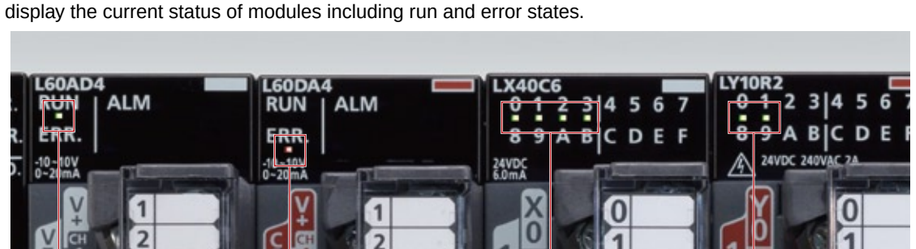
White for input module



Red for output module

Easily identify module status

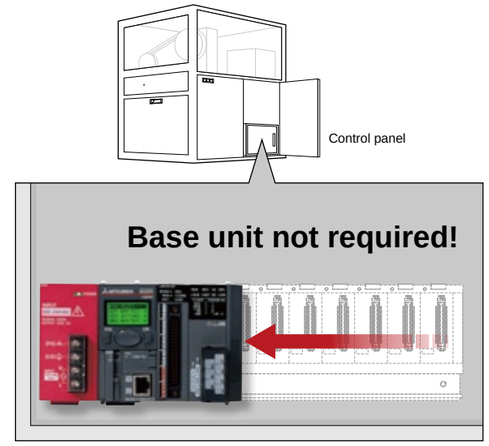
LEDs display the current status of modules including run and error states.



LEDs are located on the top front surface of the modules.

Expand L series systems with no base unit restrictions

L series modules do not require a base unit. The installation space is not restricted by base size, and the system can be installed with minimal required space.
Furthermore, the addition of modules to the system is not restricted by the number of available base unit slots and costs may be reduced due to the elimination of expansion base units.

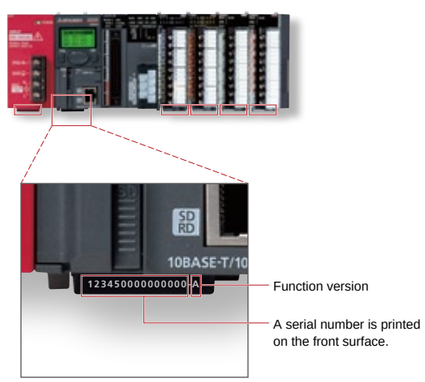


Installation space is reduced in the control panel

Identify important information easily

Every L series module has the serial number printed on the front surface of the module to allow viewing even during system operation (modules do not need to be removed).

*Serial numbers can also be checked using GX Works2.



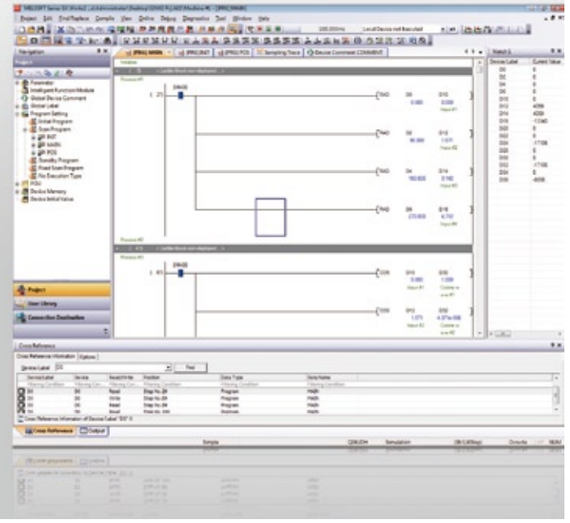
Increase productivity and lower the total cost of ownership.

Introducing the next generation of IA programming software:

GX Works2

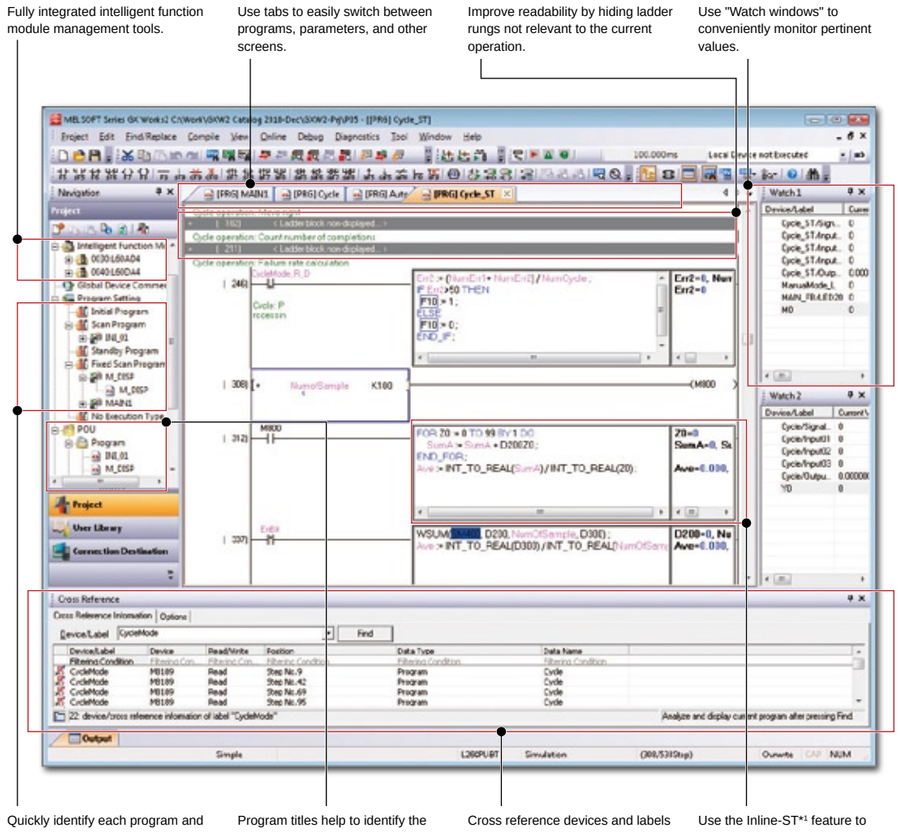
GX Works2 focuses on driving down total cost by including features that speed up commissioning, reduce downtime, improve programming productivity, and provide strong security.

Compatible with Windows® 7



User interface that is "easy to use" by design

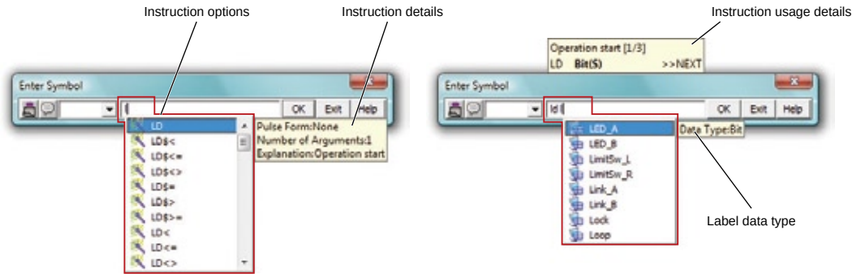
The programming tool GX Works2 has been developed from the ground up to be intuitive for all users and allow anyone to begin programming easily. The user interface and other functions provide a comfortable programming environment that enables improvements in design efficiency.



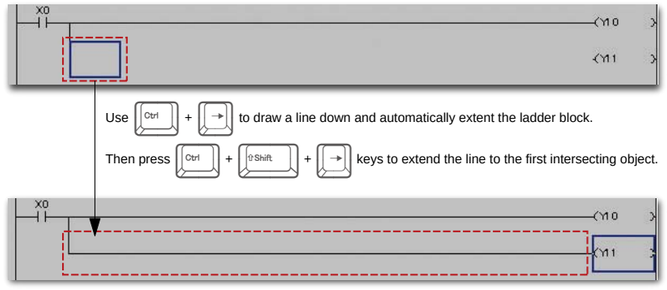
*1 In-line ST can be only be created in projects that use labels.

Time saving programming features

The dynamic list of instructions and labels prevents mistakes and saves time. There is no need to memorize all of these data as they can be found quickly using the list.

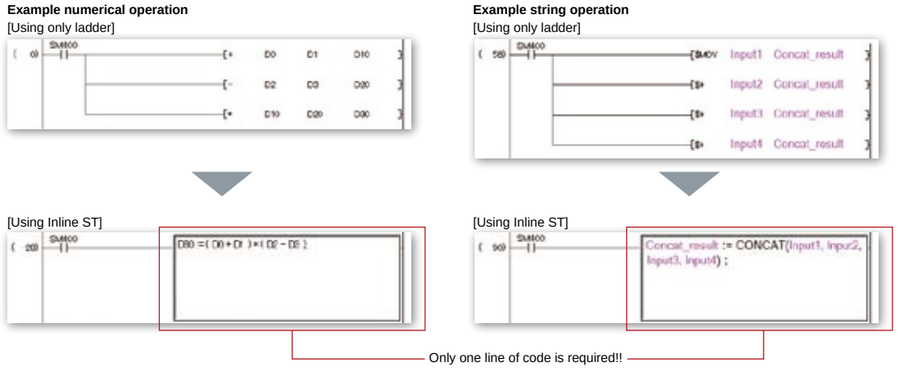


Hold down Ctrl and use the arrow keys (←, →, ↑, ↓) to draw and erase lines.
Use Ctrl + Shift + (←, →) to edit continuous lines.



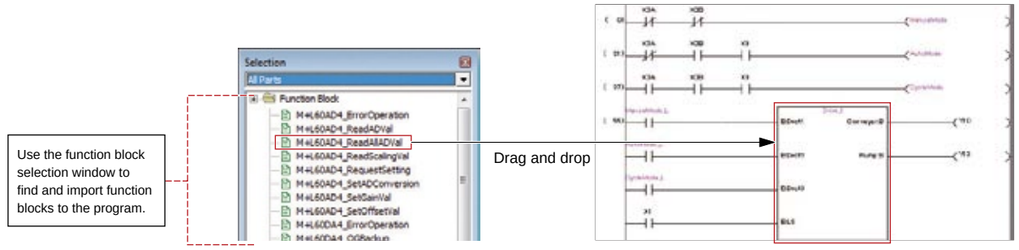
Crunch numbers easily in ladder programs

Using the Inline ST function it is possible to include structured text program code in ladder programs to simplify numerical and string operations. Using Inline ST can save time in the program development process and is more efficient with program memory.



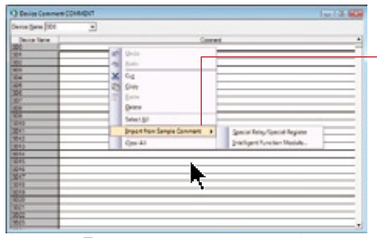
Use function blocks for common operations

Function blocks allow selections of commonly used code to be easily reused and shared among projects. Shared or created function blocks can be added to a program using simple drag and drop operation. Using function blocks effectively results in faster development times with fewer programming mistakes.

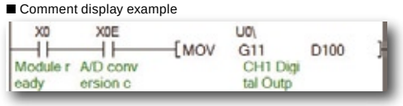


Eliminate the need to input comments

[Sample comment import feature]
Easily assign default comments for CPU special relays, special registers, and intelligent function module devices.

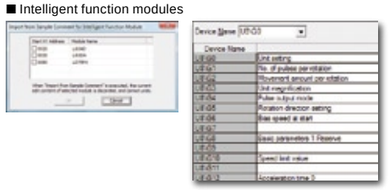


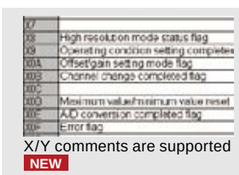
■ Comment display example



■ Special relays and registers

■ Intelligent function modules



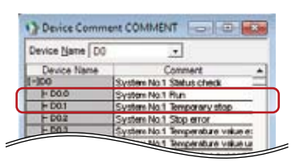


X/Y comments are supported NEW

Various ladder editor functions have been improved NEW

[Bit-wise commenting of word devices]
It is now possible for each bit of a word device to have its own comment, enabling comprehensive program documentation.

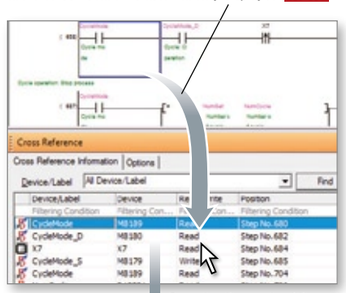
The comments of each bit in a word device may be displayed directly in the ladder diagram.



Easy project contents search

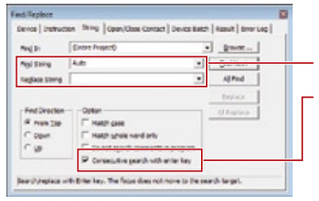
[Cross reference]
The cursor position can be used to automatically select a part of the program and perform a cross reference of devices/labels and display a list of the relevant sections. Easily jump from the cross reference results to the relevant parts of the program to confirm the locations.

Cross reference information for the device at the cursor location is automatically displayed. NEW



Jump to other parts of the program by double-clicking the results.

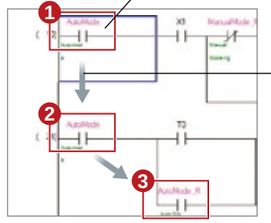
[Cross reference]



Label names may be batch replaced.

■ **Consecutive search with Enter key function** NEW
While performing a find operation, when the Enter key is pressed the cursor will jump to the next result.

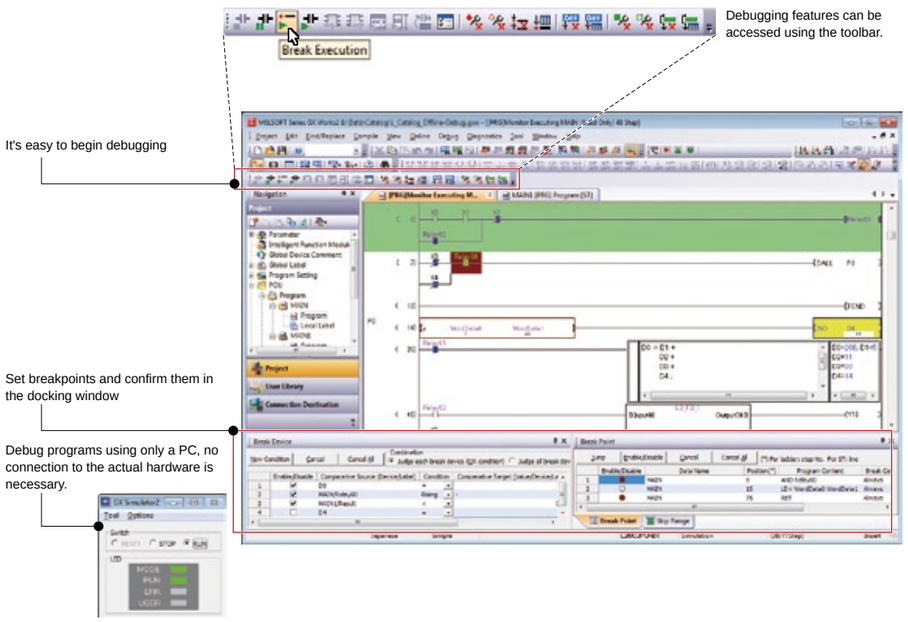
Ctrl + F The cursor moves to the first result for "Auto"



When the Enter key is pressed, the next result for "Auto" is selected.
(The cursor changes position.)

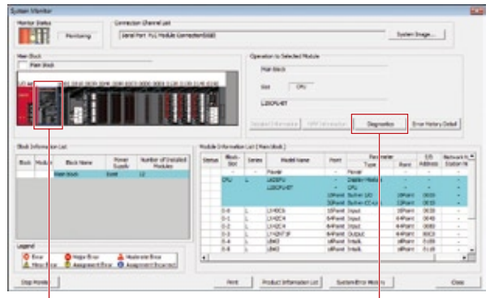
Offline debugging without physical hardware

The simulation function is a built-in part of GX Works2 and can be started with the push of a single button. Even when access to physical hardware is unavailable, programs can be easily debugged.



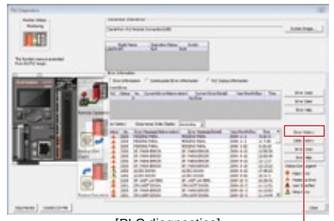
Advanced PLC diagnostics

The diagnostics screen provides a wealth of information about the currently connected controller. The main screen allows the operational status of the entire programmable controller to be seen at a glance, allowing the immediate identification of problems. Additional detailed information is available to help with routine maintenance and problem resolution.



Jump to the module information screen

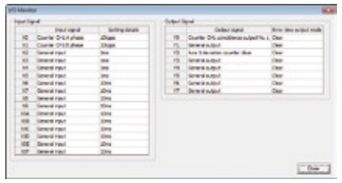
Jump to the PLC diagnostics screen



[PLC diagnostics]

Jump to the error history screen

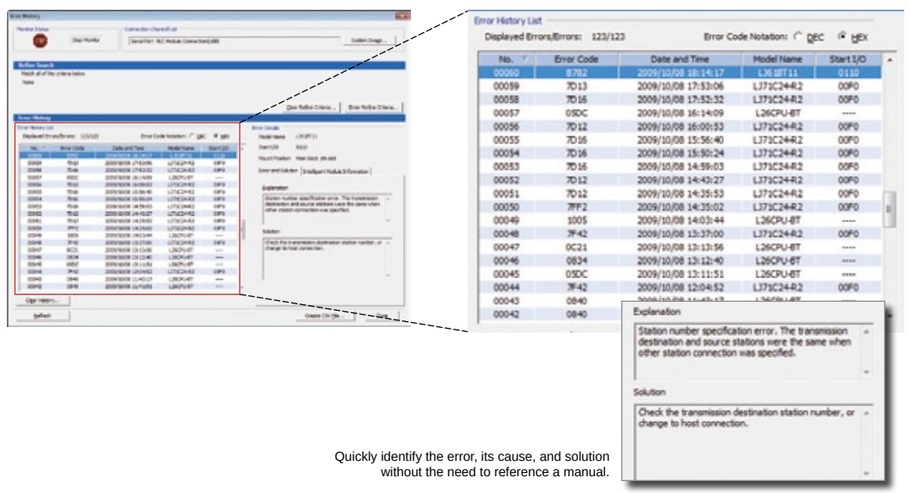
[Module information]



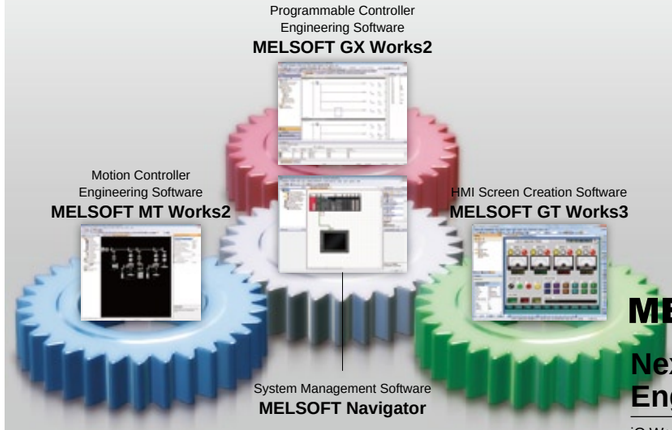
[Built-in I/O monitor]

Time-stamped error history list

Simplify troubleshooting with a combined, time-stamped, error history list for the CPU and all expansion modules. The details section provides explanations of error codes and suggested solutions.



Quickly identify the error, its cause, and solution without the need to reference a manual.



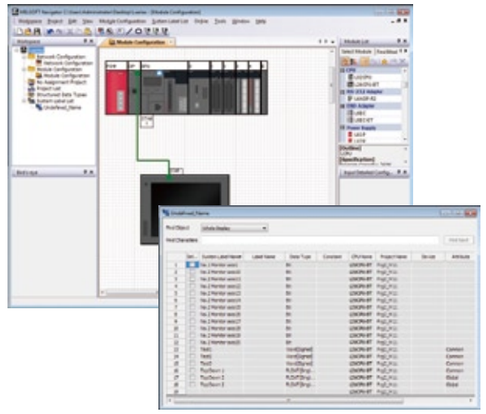
MELSOFT iQ Works

Next Generation Seamless Engineering Environment

iQ Works is the combination of Mitsubishi engineering software (GX Works2, MT Works2, GT Works 3) that allows for the sharing of design information to improve programming efficiency and reduce TCO.

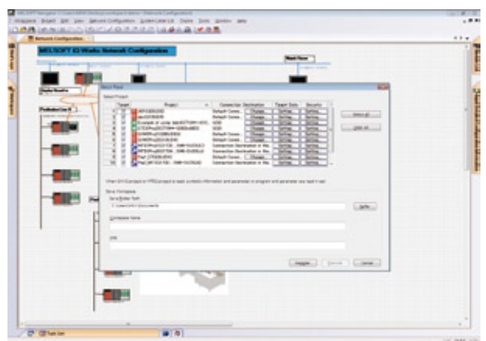
Graphical Project Management

The entire control system is represented using the "Network Configuration" and "Module Configuration" windows. System components are easily added using a drag & drop interface and the validity of the system can be confirmed using the check function to ensure parameters are configured correctly, the power supply is sufficient, etc.
Different project types can be grouped together (for example by factory, line, and cell) for central management.



Batch Parameter Generation

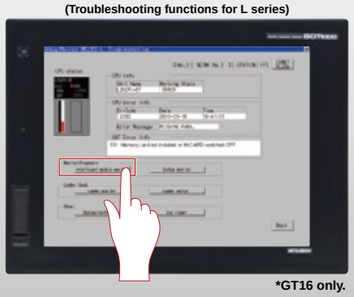
Greatly reduce engineering time by letting MELSOFT Navigator automatically generate the parameter settings for each project based on the graphical system configuration diagram.
With one operation, complex parameter settings for networks, I/O assignments, and multi-CPU systems are done for you, preventing mistakes and saving valuable time.
Additionally, programs and parameters from multiple CPUs and GOTs can be read in one operation using the batch read function.



Harness the power of L series and GOT combined

When connected to an L series system, Mitsubishi Graphic Operation Terminals are capable of advanced system maintenance and diagnostic functions that can reduce downtime.

Dedicated MELSEC-L series maintenance screen*
(Troubleshooting functions for L series)



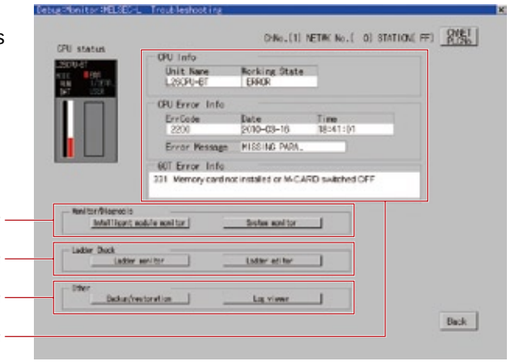
Jump from the L series maintenance screen to the intelligent function module monitor screen

***GT16 only.**

Save time by performing system maintenance functions directly from the GOT

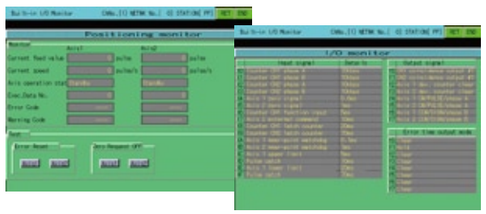
Graphic Operation Terminals include maintenance screens dedicated for the L series that let the user check CPU status and error information. No PC is required and no special screens need to be created for the GOT. Jump directly from the L series maintenance screen to other maintenance screens such as the intelligent function module monitor.

GT16



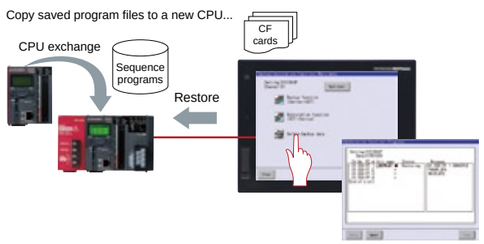
[Intelligent Module Monitor]
Monitor and test built-in I/O and expansion modules. This feature works with nearly all expansion module types from analog I/O to high speed counters and positioning.

GT16 GT15



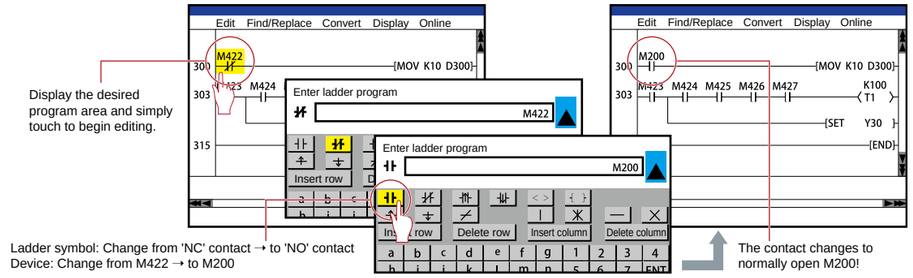
[Backup / Restore]
Using this feature, it's easy to create backups of sequence programs and other CPU data. It can even be configured for automatic operation. Create backups after programs are updated and restore programs in case of trouble. Because the data are stored on the GOT, no PC is required. (Patent pending)

GT16 GT15



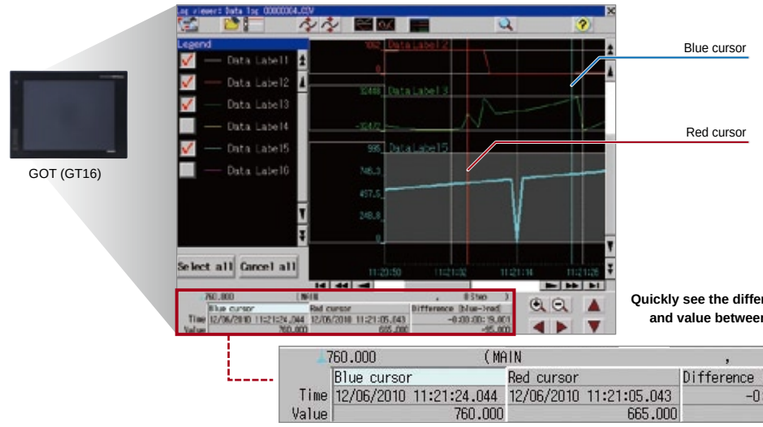
Make simple corrections to ladder programs using a GOT

GOTs enable ladder programs to be edited without the need for a PC. Furthermore, because it is possible to perform write during run operations using the GOT, ladder programs may be corrected without stopping the machine, even if it is in operation. (Ladder editing function) GT16 GT15



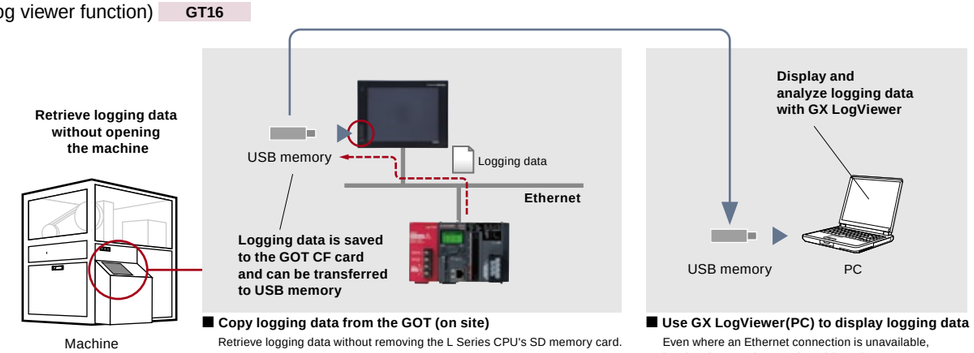
View logging data without a PC

For rapid support of troubleshooting activities, logging data can be analyzed using a GOT(GT16) even if no PC is available. The change in data values can be quickly identified using dual cursors, the same as using GX LogViewer. (Log viewer function) GT16



Retrieve logging data without opening any panels

The L Series CPU's logging data can be saved to a USB memory stick when connected to the GOT's front USB interface. Logging data can be retrieved easily without opening any control panels or removing the SD memory card from the CPU. (Log viewer function) GT16



■ **Copy logging data from the GOT (on site)**
Retrieve logging data without removing the L Series CPU's SD memory card.

■ **Use GX LogViewer(PC) to display logging data**
Even where an Ethernet connection is unavailable, logging data can be transferred from the GOT to a USB device for use on a PC.

CPU Modules

■ L02CPU

Program capacity **20k**steps	Number of I/O points **1024**points	Basic operation processing speed **40**ns	
Ethernet	**USB**		
General Output **Sink type**	Built-in I/O **16** inputs / **8** outputs	Built-in I/O Positioning **2** axes	Built-in I/O High-Speed Counter **2** ch

*END cover is included.

■ L02CPU-P NEW

Program capacity **20k**steps	Number of I/O points **1024**points	Basic operation processing speed **40**ns	
Ethernet	**USB**		
General Output **Source type**	Built-in I/O **16** inputs / **8** outputs	Built-in I/O Positioning **2** axes	Built-in I/O High-Speed Counter **2** ch

*END cover is included.

■ L26CPU-BT

Program capacity **260k**steps	Number of I/O points **4096**points	Basic operation processing speed **9.5**ns	
Ethernet	**USB**	**CC-Link Ver.2.0**	
General Output **Sink type**	Built-in I/O **16** inputs / **8** outputs	Built-in I/O Positioning **2** axes	Built-in I/O High-Speed Counter **2** ch

*END cover is included.

■ L26CPU-PBT NEW

Program capacity **260k**steps	Number of I/O points **4096**points	Basic operation processing speed **9.5**ns	
Ethernet	**USB**	**CC-Link Ver.2.0**	
General Output **Source type**	Built-in I/O **16** inputs / **8** outputs	Built-in I/O Positioning **2** axes	Built-in I/O High-Speed Counter **2** ch

*END cover is included.

CPU packages

■ L02CPU-SET
Includes CPU (L02CPU), power supply module (L61P), and display unit (L6DSPU).

■ L02CPU-P-SET NEW
Includes CPU (L02CPU-P), power supply module (L61P), and display unit (L6DSPU).

■ L26CPU-BT-SET
Includes CPU (L26CPU-BT), power supply module (L61P), and display unit (L6DSPU).

■ L26CPU-PBT-SET NEW
Includes CPU (L26CPU-PBT), power supply module (L61P), and display unit (L6DSPU).

■ General specifications

General specifications indicate the environmental specifications in which this product can be installed and operated. Unless otherwise specified, these general specifications apply to all L Series products.
*General specifications of jointly developed products are different from those of MELSEC products. For more information, please refer to the product manuals or contact your local Mitsubishi Electric representative.

Item	Specification					
Operating ambient temperature	0 to 55°C					
Storage ambient temperature	-25 to 75°C					
Ambient humidity (operating)	5 to 95%RH, non-condensing					
Ambient humidity (storage)						
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2		Frequency	Constant accelration	Half amplitude	Sweep count
		Under intermittent vibration	5 to 9Hz	—	3.5mm	10 times each in X, Y, Z directions
			9 to 150Hz	9.8m/s^2	—	
		Under continuous vibration	5 to 9Hz	—	1.75mm	—
			9 to 150Hz	4.9m/s^2	—	
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2 (147m/s^2, 3 times each in X, Y, and Z directions)					
Operating atmosphere	No corrosive gases					
Operating altitude*1	2000m or less					
Installation location	Inside a control panel					
Overvoltage category*2	II or less					
Pollution degree*3	2 or less					
Equipment class	Class I					

*1: Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0m.
Doing so may cause malfunction. When using the programmable controller under pressure, please consult your local Mitsubishi Electric representative.
*2: This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises.
Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300V is 2500V.
*3: This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.
Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.

■ CPU module specifications

Item			L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Control method			Stored program repeat operation			
I/O control mode			Refresh mode (Direct mode is available by specifying the direct access input/output (DX, DY).)			
Programming language (sequence control language)			Function block, relay symbol language, MELSAP3 (SFC), MELSAP-L, structured text (ST), logic symbolic language			
Processing speed*1 (sequence instruction)	LD X0		40ns		9.5ns	
	MOV D0 D1		80ns		19ns	
Constant scan			0.5 to 2000ms (Setting is available in increments of 0.5ms by parameter.)			
Program size			20k steps (80k bytes)		260k steps (1040k bytes)	
Memory capacity	Program memory (drive 0)		80k bytes		1040k bytes	
	Memory card (RAM) (drive 1)		—			
	Memory card (ROM) (drive 2)		Depends on the SD/SDHC memory card used.*2			
	Standard RAM (drive 3)		128k bytes		768k bytes	
	Standard ROM (drive 4)		512k bytes		2048k bytes	
Maximum number of files stored	Program memory		64 files		252 files	
	Memory card (RAM)		—			
	Memory card (ROM)	SD	Root directory: 511 files (maximum) Subdirectory: 65533 files (maximum)			
		SDHC	Root directory: 65534 files (maximum) Subdirectory: 65533 files (maximum)			
	Standard RAM		4 files (each one of the following files: file register file, local device file, sampling trace file, and module error collection file)			
	Standard ROM		128 files		256 files	
Maximum number of intelligent function module parameters		Initial setting	2048 parameters		4096 parameters	
		Refresh	1024 parameters		2048 parameters	
Maximum number of modules specification*3			10			
Built-in I/O function			Refer to the built-in I/O specifications ➡ P.23 to P.25			
Data Logging function			Refer to the Data Logging function specifications ➡ P.25			
Built-in Ethernet function			Refer to the built-in Ethernet specifications ➡ P.26			
Built-in CC-Link function			—		Refer to the built-in CC-Link specifications ➡ P.51	
Clock function	Displayed information		Year, month, date, hour, minute, second, and day of the week (automatic leap year detection)			
	Accuracy		0°C: -2.96 to +3.74s (TYP. +1.42s) per day 25°C: -3.18 to +3.74s (TYP. +1.50s) per day 55°C: -13.20 to +2.12s (TYP. -3.54s) per day			
5VDC internal current consumption	CPU	With display unit	1.00A		1.43A	
		Without display unit	0.94A		1.37A	
	END cover (Accessory)*4		0.04A			
Weight	CPU	With display unit	0.40kg		0.50kg	
		Without display unit	0.37kg		0.47kg	
	END cover (Accessory)*4		0.06kg			

*1: Indexing devices does not delay processing time.
*2: Mitsubishi Electric shall not guarantee the operation of any non-Mitsubishi Electric products.
*3: The total number of modules that can be mounted to a CPU. Refer to the "Maximum number of modules specification" for each module.
(CPU module, display unit, RS-232 adapter, END cover, END cover with error terminal, and power supply module are not included. Note that only one CPU or head module per system is possible.)
*4: The end cover is included with the CPU module and must be placed on the right end of the last module in the system.

■ CPU module device specifications

Item		L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Number of I/O device points (number of points available on a program)		8192 points (X/Y0 to X/Y1FFF)			
Number of I/O points		1024 points (X/Y0 to X/Y3FF)		4096 points (X/Y0 to X/YFFF)	
Internal relay (M)		8192 points (M0 to M8191) by default (changeable)			
Latch relay (L)		8192 points (L0 to L8191) by default (changeable)			
Link relay (B)		8192 points (B0 to B1FFF) by default (changeable)			
Timer (T)		2048 points (T0 to T2047) by default (changeable) (Low-speed and high-speed timers available) Low-speed or high-speed is specified by an instruction. The measurement unit is set by parameter. (Low-speed timer: 1 to 1000ms (in increments of 1ms), default: 100ms) (High-speed timer: 0.1 to 100ms (in increments of 0.1ms), default: 10ms)			
Retentive timer (ST)		0 points by default (changeable)(Low-speed and high-speed retentive timers available) Low-speed or high-speed is specified by an instruction. The measurement unit is set by parameter. (Low-speed retentive timer: 1 to 1000ms (in increments of 1ms), default: 100ms) (High-speed retentive timer: 0.1 to 100ms (in increments of 0.1ms), default: 10ms)			
Counter (C)		Normal counter 1024 points (C0 to C1023) by default (changeable)			
Data register (D)		12288 points (D0 to D12287) by default (changeable)			
Extended data register (D)		32768 points (D12288 to D45055) by default (changeable)		131072 points (D12288 to D143359) by default (changeable)	
Link register (W)		8192 points (W0 to W1FFF) by default (changeable)			
Extended link register (W)		0 points by default (changeable)			
Annunciator (F)		2048 points (F0 to F2047) by default (changeable)			
Edge relay (V)		2048 points (V0 to V2047) by default (changeable)			
Link special relay (SB)		2048 points (SB0 to SB7FF) by default (changeable)			
Link special register (SW)		2048 points (SW0 to SW7FF) by default (changeable)			
File register	(R)	32768 points (R0 to R32767) (Maximum 65536 points are available by switching blocks.)		32768 points (R0 to R32767) (Maximum 393216 points are available by switching blocks.)	
	(ZR)	65536 points (ZR0 to ZR65535) (Blocks do not need to be switched.)		393216 points (ZR0 to ZR393215) (Blocks do not need to be switched.)	
Step relay (S)		8192 points (S0 to S8191) by default (The points can be changed to 0.)			
Index register/standard device register (Z)		20 points (Z0 to Z19) (maximum)			
Index register (Z) (32-bit index modification of ZR device)		10 points (Z0 to Z18) (maximum) (The index register is used as a double-word device.)			
Pointer (P)		4096 points (P0 to P4095) (The local pointer range and the common pointer range can be set by parameter.)			
Interrupt pointer (I)		256 points (I0 to I255) (The fixed scan interval for the system interrupt pointer I28 to I31 can be set by parameter.) 0.5 to 1000ms (in increments of 0.5ms) Default I28: 100ms, I29: 40ms, I30: 20ms, I31: 10ms			
Special relay (SM)		2048 points (SM0 to SM2047) (The number of device points is fixed.)			
Special register (SD)		2048 points (SD0 to SD2047) (The number of device points is fixed.)			
Function input (FX)		16 points (FX0 to FX F) (The number of device points is fixed.)			
Function output (FY)		16 points (FY0 to FY F) (The number of device points is fixed.)			
Function register (FD)		5 points (FD0 to FD4) (The number of device points is fixed.)			
Intelligent function module device		Device that directly accesses the buffer memory of an intelligent function module Specification format: U□□/G□□			
Latch (data retention during power failure) range		8192 points (L0 to L8191) by default (The latch range can be set for the devices, B, F, V, T, ST, C, D, W, and R by parameter.)			

■ CPU built-in I/O - Input signal assignment

◯: Selectable ×: No combination

External input signal	Function				
	General-purpose input	Interrupt input	Pulse catch	High-speed counter	Positioning
X0(high-speed)	◯	◯*1	◯	Counter CH1 A phase*1	×*3
X1(high-speed)	◯	◯*1	◯	Counter CH1 B phase*1	×*3
X2(high-speed)	◯	◯*1	◯	Counter CH2 A phase*1	×*3
X3(high-speed)	◯	◯*1	◯	Counter CH2 B phase*1	×*3
X4(high-speed)	◯	◯	◯	Counter CH1 Z phase*2	Axis #1 Zero signal*2
X5(high-speed)	◯	◯	◯	Counter CH2 Z phase*2	Axis #2 Zero signal*2
X6(standard)	◯	◯	◯	Counter CH1 Function input*2	Axis #1 External command signal*2
X7(standard)	◯	◯	◯	Counter CH2 Function input*2	Axis #2 External command signal*2
X8(standard)	◯	◯	◯	Counter CH1 latch counter*2	Axis #1 Drive module READY signal*2
X9(standard)	◯	◯	◯	Counter CH2 latch counter*2	Axis #2 Drive module READY signal*2
XA(standard)	◯	◯	◯	×*3	Axis #1 Near-point dog dignal*2
XB(standard)	◯	◯	◯	×*3	Axis #2 Near-point dog dignal*2
XC(standard)	◯	◯	◯	×*3	Axis #1 Upper limit signal*2
XD(standard)	◯	◯	◯	×*3	Axis #2 Upper limit signal*2
XE(standard)	◯	◯	◯	×*3	Axis #1 Lower limit signal*2
XF(standard)	◯	◯	◯	×*3	Axis #2 Lower limit signal*2

*1: When using CH1 for the high-speed counter function, X0 and X1 cannot be used as interrupt inputs. Also, when using CH2 for the high-speed counter function, X2 and X3 cannot be used as interrupt inputs. Other functions such as the general-purpose input can be used.
*2: When this signal is not required, the input signal can be used for other functions such as the general-purpose input.
*3: When the high-speed counter function or positioning function is selected, this signal is not used for that function. This input signal may be used for another function such as a general-purpose input.

■ CPU built-in I/O - Output signal assignment

◯: Selectable ×: No combination

External input signal	Function		
	General-purpose output	High-speed counter	Positioning
Y0	◯	CH1 Coincidence output No.1*1	×*3
Y1	◯	CH2 Coincidence output No.1*1	×*3
Y2	◯	CH1 Coincidence output No.2*2	Axis #1 Deviation counter clear*1
Y3	◯	CH2 Coincidence output No.2*2	Axis #2 Deviation counter clear*1
Y4	◯	×*3	Axis #1 CW/PULSE/A phase output*1
Y5	◯	×*3	Axis #2 CW/PULSE/A phase output*1
Y6	◯	×*3	Axis #1 CCW/SIGN/B phase output*1
Y7	◯	×*3	Axis #2 CCW/SIGN/B phase output*1

*1: This signal must be used depending on parameter settings.
When this signal is not used, the output signal can be used for the general-purpose output function.
*2: When this signal is not used, the output signal can be used for the general-purpose output function.
*3: When the high-speed counter function or positioning function is selected, this signal is not used for that function.
This input signal may be used for another function such as a general-purpose output.

■ CPU built-in I/O function - input specifications (general input/interrupt input/pulse catch function)

Item			L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Standard input	Points		10			
	Input voltage/current		24VDC 4.1mA (TYP.)			
	The minimum input response time		100µs			
	Input response time setting		0.1ms/1ms/5ms/10ms/20ms/70ms			
	Common terminal arrangement		10 points/common (Positive or negative common)			
High-speed input	Points		6			
	Input voltage/current	DC input	24VDC 6.0mA (TYP.)			
		Differential input	EIA Standard RS-422-A Differential line driver level AM26L31 (manufactured by Texas Instruments Incorporated) or equivalent			
	The minimum input response time		10µs			
	Input response time setting		0.01ms/0.1ms/0.2ms/0.4ms/0.6ms/1ms			
	Common terminal arrangement		Independent			

■ CPU built-in I/O function - output specifications (general output function)

Item		L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Points		8			
Output voltage/current		5 to 24VDC 0.1A			
Response time	OFF to ON	1µs or less (rated load, resistance load)			
	ON to OFF				
Common terminal arrangement		8 points/common (Sink type)	8 points/common (Source type)	8 points/common (Sink type)	8 points/common (Source type)

■ CPU built-in I/O function - positioning function specifications

Item			L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Number of controlled axes			2			
Control unit			pulse			
Operation pattern		PTP*1 control	Available			
		Path control	Not usable			
Number of positioning data			10 data/axis			
Positioning control	Positioning control method	PTP*1 control	ABS/INC			
		Speed/position switching control	INC			
	Positioning range	PTP*1 control	-2147483648 to 2147483647 pulses			
		Speed/position switching control	0 to 2147483647 pulses			
	Speed command		0 to 200 kpulses/s			
	Acceleration/deceleration system selection		Automatic trapezoid acceleration/deceleration and S-curve acceleration/deceleration			
	Acceleration/deceleration time		0 to 32767 ms			
OPR method			6 types			
Starting time (1-axis linear control)			Trapezoid acceleration/deceleration (single-axis start): 30 µs/axis S-curve acceleration/deceleration (single-axis start): 35 µs/axis			
Command pulse output	Pulse output method		5 to 24VDC (Sink type)	5 to 24VDC (Source type)	5 to 24VDC (Sink type)	5 to 24VDC (Source type)
	Pulse output mode		4 types			
	Maximum output pulse		200 kpulses/s			
	Maximum connection distance with drive unit		2 m			
External input	Zero signal	DC input	24VDC 6.0 mA (TYP.)			
		Differential input	EIA RS-422-A differential line driver level (AM26LS31 (by Texas Instruments Japan Limited.) or equivalent)			
	Speed/position switching signal		24VDC 4.1 mA (TYP.)			
	Near-point dog signal					
	Upper and lower limit signal					
	Drive unit ready signal					
	Input response time		Zero signal: 10 µs Speed/position switching control, near-point dog signal: 100 µs Upper and lower limit signal, drive unit ready signal: 2 ms			
External output	Deviation counter clear signal		5 to 24VDC 0.1A (Sink type)	5 to 24VDC 0.1A (Source type)	5 to 24VDC 0.1A (Sink type)	5 to 24VDC 0.1A (Source type)
	Response time	OFF to ON	1 µs or less (rated load, resistive load)			
		ON to OFF				

*1: Abbreviation for "Point to Point." This is a type of position control.

■ CPU built-in I/O function - high-speed counter specifications

Item			L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Number of channels			2			
Count input signal	Phase		1-phase input (1 multiple/2 multiples) CW/CCW, 2-phase input (1 multiple/2 multiples/4 multiples)			
	Signal level	DC input	24VDC 6.0mA (TYP.)			
		Differential input	EIA Standard RS-422-A Differential line driver level (AM26L31(manufactured by Texas Instruments Incorporated) or equivalent)			
Counter	Maximum counting speed		200k pulse/s (for 2 multiples of 1 phase and 4 multiples of 2 phases)			
	Counting range		-2147483648 to 2147483647			
	Model		UP/DOWN preset counter (with ring counter function)			
	Minimum count pulse width (Duty ratio 50%)	1 phase	5µs			
		2 phases	10µs			
	Min. phase differential for 2-phase input		5µs			
External input	Phase Z (preset)	DC input	24VDC 6.0mA (TYP.)			
		Differential input	EIA Standard RS-422-A Differential line driver level (AM26L31(manufactured by Texas Instruments Incorporated) or equivalent)			
	Function start		24VDC 4.1mA (TYP.)			
	Latch					
	Input response time		Phase Z: 10µs Function start, latch: 100µs			
External output	Output format		Sink type	Source type	Sink type	Source type
	Output voltage / current	Coincidence output No. 1 / PWM output	5 to 24 VDC / 0.25 A*1			
		Coincidence output No. 2	5 to 24 VDC / 0.1 A			
	Response time	OFF to ON	1µs or less (Rated load, resistance load)			
		ON to OFF				
Coincidence output	Comparison range		-2147483648 to 2147483647			
	Comparison result		Set value < Counted value Set value = Counted value Set value > Counted value			
	I/O points		2 points / channel			
PWM output	Output frequency range		DC to 200kHz			
	ON width		1µs			
	Duty ratio		On width can be set in increments of 0.1µs.			
	I/O points		1 point / channel			
Pulse width measurement	Measurement item		Pulse width (On width: 200µs or more, Off width: 200µs or more)			
	Measurement resolution		5µs			
	Measurement points		1 point/channel			

*1: For units where the first six digits of the serial number are "120722" or later. The specification for previous serial numbers is 5 to 24 VDC / 0.1 A.

■ CPU Data logging function specifications

Item			L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Number of data logging settings			10			
Data logging buffer capacity			For each setting, any of 32 to 4832 k bytes (in units of 1 k byte) can be specified. The total value of settings No.1 to No.10 is up to 5120 k bytes.			
Data storage location			Standard ROM (configuration files only), SD Memory Card			
Logging type			• Continuous logging • Trigger logging			
Data sampling	Sampling interval		• Each scanning cycle • Time specification • Condition specification (Device specification, Step No. specification)			
	No. of data sampling points		Up to 1280 (128 points per setting)			
	AND conjunction		In the Sampling interval setting, Device and Step No. under "Condition specification" can be specified in combination (AND conjunction).			
Data processing	Trigger logging	Trigger condition	• Condition specification (Device change specification, Step No. specification) • When trigger instruction executed • When data logging trigger activated			
		AND conjunction	In the Trigger setting, Device data change and Step No. under "Condition specification" can be specified in combination (AND conjunction).			
		Trigger logging range	Data of the specified number of records are logged before and after a trigger.			
		Number of triggers	1			
		Number of trigger logging records	Up to 1000000			
File output	File Name		Up to 48 one-byte characters can be used for the following. • File number (serial number)*1 • Character string (name)*2 • Date and time*2			
	File format		CSV file			
	Data type		•Bit •Word (unsigned) •Word (signed) •Double word (unsigned) •Double word (signed) •FLOAT [single precision] •FLOAT [double precision] •Character string: 1 to 256 characters •Numeric string: 1 to 256 bytes			
	Data output format (CSV file)		• Decimal format • Hexadecimal format • Exponential format			
Handling of output files	File switching	File switching timing	• No. of records • File size			
		Number of saved files	1 to 65535			

*1: Part of the saved file name, this number is automatically assigned.
*2: Optional data to be appended to the saved file name.

■ CPU built-in Ethernet function specifications

Item			L02CPU	L02CPU-P NEW	L26CPU-BT	L26CPU-PBT NEW
Transmission specifications	Data transfer speed		100 or 10 Mbps			
	Communication mode		Full-duplex or half-duplex			
	Transmission method		Base band			
	Maximum distance between hub and node		100 m			
	Maximum number of nodes/connection	10BASE-T	Cascade connection: Up to four			
		100BASE-TX	Cascade connection: Up to two			
Number of connections	TCP/IP		Total of 16 for socket communications, MELSOFT connections, and MC protocol.*1			
	UDP/IP		One for FTP			
Connection cable*2	10BASE-T		Ethernet cable of category 3 or higher (STP/UTP cable)*3			
	100BASE-TX		Ethernet cable of category 5 or higher (STP cable)			

*1: Only the QnA-compatible 3E frame may be used.
*2: Straight through cable. Also, when the CPU is connected directly with a GOT, a cross cable (category 5e or less) may be used.
*3: The use of STP (Shielded Twisted Pair) cables is recommended in noisy environments.

■ How to read the product code

L 26 CPU - P BT - SET

① ② ③ ④ ⑤

Number	Item	Code	Specification
①	Program memory capacity	02	20k steps
		26	260k steps

Number	Item	Code	Specification
②	Type of module	CPU	CPU module

Number	Item	Code	Specification
③	Built-in I/O output format	No	Sink type
		P	Source type

Number	Item	Code	Specification
④	Built-in CC-Link function	No	—
		BT	✓

Number	Item	Code	Specification
⑤	Product set	No	—
		SET	Set includes a power supply module (L61P) and display unit (L6DSPU)

Display Unit

■ L6DSPU

Number of display characters **16 characters x 4 lines**

Language selection **Japanese or English**

Backlight display **Green or Red**

■ Display Unit specifications

Item	Specification
Number of displayed characters	16 one-byte characters × 4 lines
Displayed characters	• Alphanumeric (two-byte/one-byte character) • Katakana (two-byte/one-byte character) • Hiragana (two-byte character) • Chinese character (two-byte character) • Symbol (two-byte/one-byte character)
Language	Japanese/English
Backlight	Green (normal), red (error)
Weight	0.03kg

RS-232 Adapter

*For connection of GOT

■ L6ADP-R2

RS-232

Transmission speed **115.2kbps**

■ RS-232 adapter specifications

Item	Specification
Maximum data transmission speed	115.2kbps
5VDC internal current consumption	0.02A
Weight	0.10kg

END Cover with Error Terminal

■ L6EC-ET

Error output Relay

■ END cover with error terminal specifications

Item			Specification
ERR. terminal	Rated switching voltage, current		24VDC 0.5A
	Minimum switching load		5VDC, 1mA
	Response time	OFF to ON	10ms or less
		ON to OFF	12ms or less
	Life	Mechanical	20 million times or more
		Electrical	Rated switching voltage/current: 10 million times or more
	Surge suppressor		—
	Fuse		—
Applicable wire size			0.3 to 2.0mm² (AWG22 to 14) (Twisted wire/Solid wire)
External connections			Spring clamp terminal block
5VDC internal current consumption			0.06A
Weight			0.11kg

Power Supply Modules

■ L61P

Input **100 to 240VAC**

Output **5VDC, 5A**

■ L63P

Input **24VDC**

Output **5VDC, 5A**

■ Power supply module specifications

Item	L61P	L63P
Input power supply	100 to 240VAC (-15% to +10%)	24VDC (-35% to +30%)
Input frequency	50/60Hz (-5% to +5%)	—
Input voltage distortion	Within 5%	—
Maximum input apparent power	130VA	—
Maximum input power	—	45W
Inrush current	20A, within 8ms	100A, within 1ms (24VDC input)
Rated output current (5VDC)	5A	
Overcurrent protection (DC5V)	5.5A or more	
Overvoltage protection	5.5 to 6.5V	
Efficiency	70% or more	
Allowable momentary power failure time	Within 10ms	Within 10ms (24VDC input)
Weight	0.32kg	0.29kg

Input Modules

■ **LX40C6**
DC input

Number of inputs **16points**	Rated input voltage **24VDC**	**Positive/Negative common**
Response time **1 to 70ms**	External connections **18-point terminal block**	

■ **LX41C4**
DC input

Number of inputs **32points**	Rated input voltage **24VDC**	**Positive/Negative common**
Response time **1 to 70ms**	External connections **40-pin connector**	

■ **LX42C4**
DC input

Number of inputs **64points**	Rated input voltage **24VDC**	**Positive/Negative common**
Response time **1 to 70ms**	External connections **40-pin connector ×2**	

Positive or negative common

All models are capable of using both positive or negative common connections; separate modules are not necessary.

Adjustable sensing speed

Match the response speed to the connected devices. Choose from 1, 5, 10, 20, or 70ms.

■ Input module specifications
[DC input module]

Item		LX40C6	LX41C4	LX42C4
Number of input points		16 points	32 points	64 points
Rated input voltage		24VDC (+20%/-15%, ripple ratio within 5%)		
Rated input current		6.0mA TYP. (at 24VDC)	4.0mA TYP. (at 24VDC)	
ON voltage/ON current		15V or higher/4mA or higher	19V or higher/3mA or higher	
OFF voltage/OFF current		8V or lower/2mA or lower	9V or lower/1.7mA or lower	
Input impedance		3.8kΩ	5.7kΩ	
Response time	OFF to ON	1ms/5ms/10ms/20ms/70ms or less Initial setting is 10ms.		
	ON to OFF			
Common terminal arrangement		16 points/common	32 points/common	
Maximum number of modules specification		Counts as 1 module		
Number of occupied I/O points		16 points (I/O allocation: input 16 points)	32 points (I/O assignment: 32 input points)	64 points (I/O allocation: input 64 points)
External connections		18-point screw terminal block	40-pin connector	40-pin connector ×2
5VDC internal current consumption		90mA (TYP. all points ON)	100mA (TYP. all points ON)	120mA (TYP. all points ON)
Weight		0.15kg	0.11kg	0.12kg

Output Modules

■ **LY10R2**
Contact output

Number of outputs **16points**	**Contact output**	Maximum switching load **264VAC/125VDC**
Rated switching current **2A/point**	Response time **10ms or less**	External connections **18-point terminal block**

■ **LY40NT5P**
Transistor output

Number of outputs **16points**	**Transistor output**	Rated load voltage **12 to 24VDC**
Maximum load current **0.5A/point**	Response time **0.5ms or less**	External connections **18-point terminal block**
Sink type	**Protection Function**	

■ **LY41NT1P**
Transistor output

Number of outputs **32points**	**Transistor output**	Rated load voltage **12 to 24VDC**
Maximum load current **0.1A/point**	Response time **0.5ms or less**	External connections **40-pin connector**
Sink type	**Protection Function**	

■ **LY42NT1P**
Transistor output

Number of outputs **64points**	**Transistor output**	Rated load voltage **12 to 24VDC**
Maximum load current **0.1A/point**	Response time **0.5ms or less**	External connections **40-pin connector ×2**
Sink type	**Protection Function**	

■ **LY40PT5P**
Transistor output

Number of outputs **16points**	**Transistor output**	Rated load voltage **12 to 24VDC**
Maximum load current **0.5A/point**	Response time **0.5ms or less**	External connections **18-point terminal block**
Source type	**Protection Function**	

■ **LY41PT1P**
Transistor output

Number of outputs **32points**	**Transistor output**	Rated load voltage **12 to 24VDC**
Maximum load current **0.1A/point**	Response time **0.5ms or less**	External connections **40-pin connector**
Source type	**Protection Function**	

■ **LY42PT1P**
Transistor output

Number of outputs **64points**	**Transistor output**	Rated load voltage **12 to 24VDC**
Maximum load current **0.1A/point**	Response time **0.5ms or less**	External connections **40-pin connector ×2**
Source type	**Protection Function**	

Module protection features

Output modules [LY40NT5P, LY41NT1P, LY42NT1P, LY40PT5P, LY41PT1P, LY42PT1P]

Modules are built with countermeasures in case of external load short-circuits to protect against over-current and over-heating.

■ Output module specifications

[Contact output module]

Item		LY10R2
Number of output points		16 points
Rated switching voltage, current		24VDC 2A (resistive load)/point, 8A/common 240VAC 2A (COSϕ=1)/point, 8A/common
Minimum switching load		5VDC 1mA
Maximum switching load		264VAC 125VDC
Response time	OFF to ON	10ms or less
	ON to OFF	12ms or less
Life	Mechanical	20 million times or more
	Electrical	Usage environment / Switching life: Rated switching voltage/current, rated load: 100 thousand times 200VAC 1.5A, 240VAC 1A (COSϕ = 0.7): 100 thousand times 200VAC 0.4A, 240VAC 0.3A (COSϕ = 0.7): 300 thousand times 200VAC 1A, 240VAC 0.5A (COSϕ = 0.35): 100 thousand times 200VAC 0.3A, 240VAC 0.15A (COSϕ = 0.35): 300 thousand times 24VDC 1A, 100VDC 0.1A (L/R = 7ms): 100 thousand times 24VDC 0.3A, 100VDC 0.03A (L/R = 7ms): 300 thousand times
Maximum switching frequency		3600 times/hour
Surge suppressor		—
Fuse		—
Common terminal arrangement		16 points/common
Maximum number of modules specification		Counts as 1 module
Number of occupied I/O points		16 points (I/O assignment: 16 input points)
External connections		18-point terminal block
5VDC internal current consumption		460mA (TYP. all points ON)
Weight		0.21kg

[Transistor output module (Sink type)]

Item		LY40NT5P	LY41NT1P	LY42NT1P
Number of output points		16 points	32 points	64 points
Rated load voltage		12 to 24VDC (+20%/-15%)		
Maximum load current		0.5A/point, 5A/common	0.1A/point, 2A/common	
Maximum inrush current		Current is limited by the overload protection function.		
Leakage current at OFF		0.1mA or less		
Maximum voltage drop at ON		0.2VDC(TYP.)0.5A, 0.3VDC(MAX.)0.5A	0.1VDC (TYP.) 0.1A, 0.2VDC (MAX.) 0.1A	
Response time	OFF to ON	0.5ms or less		
	ON to OFF	1ms or less (rated load, resistance load)		
Surge suppressor		Zener diode		
Fuse		—		
Protection function	Overload protection	Limited current when detecting overcurrent (overload protection): 1.5 to 3.5A/point. Activated in increments of 1 point.	Overcurrent detection/overload protection limit current: 1 to 3A/point, Activated in increments of 1 point	
	Overheat protection	Activated in increments of 1 point		
External power supply	Voltage	12 to 24VDC (+20%/-15%, ripple ratio within 5%)		
	Current	9mA (at 24VDC)/common	13mA (at 24VDC)/common	9mA (at 24VDC)/common
Common terminal arrangement		16 points/common	32 points/common	
Maximum number of modules specification		Counts as 1 module		
Number of occupied I/O points		16 points (I/O assignment: 16 output points)	32 points (I/O assignment: 32 output points)	64 points (I/O assignment: 64 output points)
External connections		18-point terminal block	40-pin connector	40-pin connector ×2
5VDC internal current consumption		100mA (TYP. all points ON)	140mA (TYP. all points ON)	190mA (TYP. all points ON)
Weight		0.15kg	0.11kg	0.12kg

[Transistor output module (Source type)]

Item		LY40PT5P	LY41PT1P	LY42PT1P
Number of output points		16 points	32 points	64 points
Rated load voltage		12 to 24VDC (+20%/-15%)		
Maximum load current		0.5A/point, 5A/common	0.1A/point, 2A/common	
Maximum inrush current		Current is limited by the overload protection function.		
Leakage current at OFF		0.1mA or less		
Maximum voltage drop at ON		0.2VDC(TYP.)0.5A, 0.3VDC(MAX.)0.5A	0.1VDC (TYP.) 0.1A, 0.2VDC (MAX.) 0.1A	
Response time	OFF to ON	0.5ms or less		
	ON to OFF	1ms or less (rated load, resistance load)		
Surge suppressor		Zener diode		
Fuse		—		
Protection function	Overload protection	Overcurrent detection: 1.5A or more/point. Activated in increments of 1 point.	Limited current when detecting overcurrent (overload protection): 1 to 3A/point. Activated in increments of 1 point.	
	Overheat protection	Activated in increments of 1 point.	Activated in increments of 2 point.	
External power supply	Voltage	12 to 24VDC (+20%/-15%, ripple ratio within 5%)		
	Current	17mA (at 24VDC)/common	20mA (at 24VDC)/common	
Common terminal arrangement		16 points/common	32 points/common	
Maximum number of modules specification		Counts as 1 module		
Number of occupied I/O points		16 points (I/O assignment: 16 output points)	32 points (I/O assignment: 32 output points)	64 points (I/O assignment: 64 output points)
External connections		18-point terminal block	40-pin connector	40-pin connector ×2
5VDC internal current consumption		100mA (TYP. all points ON)	140mA (TYP. all points ON)	190mA (TYP. all points ON)
Weight		0.15kg	0.11kg	0.12kg

■ How to read the product code

L Y 4 0 NT 5 P

① ② ③ ④ ⑤ ⑥

Number	Item	Code	Specification
①	Module type	X	Input
		Y	Output

Number	Item	Code	Specification		
			DC input	Transistor output module	Contact output
②	Voltage specification	1	—		24 VDC / 240 VAC
		4	24 VDC	12 to 24 VDC	—

Number	Item	Code	Specification
③	I/O points	0	16 points
		1	32 points
		2	64 points

Number	Item	Code	Specification
④	I/O type	C	DC input (positive / negative shared common)
		NT	Transistor output module (Sink type)
		PT	Transistor output module (Source type)
		R	Contact output

Number	Item	Code	Specification		
			DC input	Transistor output module	Contact output
⑤	Current specification	1	—	0.1A	—
		2	—	—	2A
		4	4mA	—	—
		5	—	0.5A	—
		6	6mA	—	—

Number	Item	Code	Specification
⑥	Extra Specifications	P	Includes protection function

Analog Input Module

■ L60AD4

Number of inputs **4 points** (channels)	Input voltage **-10 to 10VDC**	Input current **0 to 20mADC**	
Conversion speed **20μs/ch**	Resolution **1/20000**	Accuracy **±0.1%**	
Scaling function	**Warning output function**	**Conversion speed switching function**	**Input signal error detection function**
GX Works2 **Error history**			

Analog Output Module

■ L60DA4

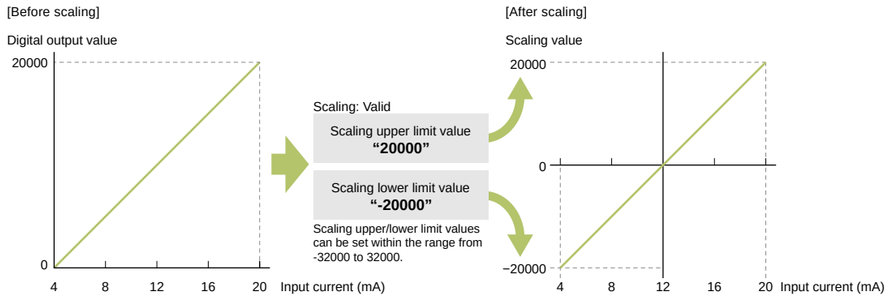
Number of outputs **4 points** (channels)	output voltage **-10 to 10VDC**	output current **0 to 20mADC**	
Conversion speed **20μs/ch**	Resolution **1/20000**	Accuracy **±0.1%**	
Scaling function	**Warning output function**	**Analog output HOLD/CLEAR function**	
GX Works2 **Error history**			

Reduce programming man-hours using the scaling function L60AD4 L60DA4

The scaling function converts values directly to easy-to-understand units without any programming.
Speed up scan times by eliminating the conversion process by sequence program.

Scaling settings for A to D conversion module (example)

Normally an analog input of 4 to 20mA is converted to a digital value from 0 to 20000. Using the scaling feature, the same input can result in a digital value of ±20000.



Input current (mA)	Digital output value	Scaling value
4	0	−20000
8	5000	−10000
12	10000	0
16	15000	10000
20	20000	20000

High-speed conversion of 20μs/ch L60AD4 L60DA4

Take advantage of CPU performance with 20μs/ch high-speed analog conversion rates.

High resolution of 1/20000 L60AD4 L60DA4

An extremely fine level of control is possible with high resolution (1/20000) in all ranges.

High conversion accuracy of ±0.1% L60AD4 L60DA4

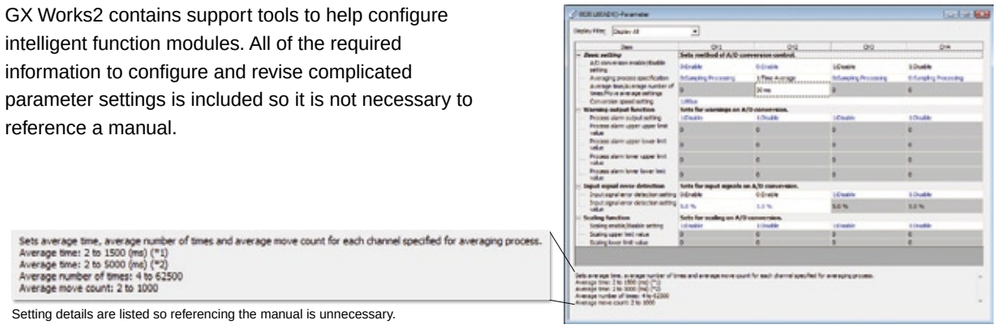
Experience more reliable control with conversion accuracy as high as ±0.1%.

Ensure stability with variable conversion speed L60AD4

The conversion speed can be switched between 20μs/ch, 80μs/ch, and 1ms/ch. By selecting the appropriate conversion speed according the connected device's specifications, stable analog input signals can be obtained even in noisy environments.

Configure modules without the need to reference a manual L60AD4 L60DA4

GX Works2 contains support tools to help configure intelligent function modules. All of the required information to configure and revise complicated parameter settings is included so it is not necessary to reference a manual.



Setting details are listed so referencing the manual is unnecessary.

■ Specifications

Item		L60AD4 [Analog input module]	L60DA4 [Analog output module]
Number of analog input points		4 points (ch)	
Analog input	Voltage	-10 to 10VDC (Input resistance value 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)
	Current	0 to 20mADC (Input resistance value 250Ω)	0 to 20mADC (External load resistance value 0Ω to 600Ω)
Digital output		-20480 to 20479	
	When using scaling function	-32768 to 32767	
I/O characteristics, resolution		See table below	See table below
Accuracy	Ambient temperature 25±5°C	Within ±0.1% (±20digit)	Within ±0.1% (voltage: ±10mV, current: ±20μA)
	Ambient temperature 0 to 55°C	Within ±0.2% (±40digit)	Within ±0.3% (voltage: ±30mV, current: ±60μA)
Conversion speed		High speed: 20μs/ch Medium speed: 80μs/ch Low speed: 1ms/ch	20μs/ch
Absolute maximum input		Voltage: ±15V, Current: 30mA*2	—
Output short protection		—	Available
External power supply		—	24VDC (+20%/-15%)
		—	Ripple, spike 500mVp-p or lower
		—	Inrush current: 4.3A, 1000μs or shorter
		—	Current consumption: 0.18A
Maximum number of modules specification		Counts as 1 module	
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)	
External connections		18-point terminal block	
5VDC internal current consumption		0.52A	0.16A
Weight		0.19kg	0.20kg

Analog input range		Digital output value	Resolution
Voltage	0 to 10V	0 to 20000	500μV
	0 to 5V		250μV
	1 to 5V		200μV
	-10 to 10V	-20000 to 20000	500μV
	Users range setting		307μV*1
Current	0 to 20mA	0 to 20000	1000nA
	4 to 20mA		800nA
	Users range setting	-20000 to 20000	1230nA*1

Analog output range		Digital value	Resolution
Voltage	0 to 5V	0 to 20000	250μV
	1 to 5V		200μV
	-10 to 10V	-20000 to 20000	500μV
	Users range setting		333μV*1
Current	0 to 20mA	0 to 20000	1000nA
	4 to 20mA		800nA
	Users range setting	-20000 to 20000	700nA*1

*1: Maximum resolution in users range settings.
*2: Maximum instantaneous current value that will not cause destruction of the internal components. The maximum constant input current value is 24mA.

Temperature Control Modules

■ **L60TCTT4**
Thermocouple
NEW

Temperature input points **4 points** (channels)	**Standard control**	**Heating-cooling control**	
Self-tuning function	**Peak current suppression function**	**Simultaneous temperature rise function**	**Selectable sampling cycle**
Temperature input mode	**Temperature control mode**		
GX Works2 **Error history**			

■ **L60TCTT4BW**
Thermocouple
NEW

Temperature input points **4 points** (channels)	**Standard control**	**Heating-cooling control**	
Self-tuning function	**Peak current suppression function**	**Simultaneous temperature rise function**	**Selectable sampling cycle**
Temperature input mode	**Temperature control mode**	**Heater disconnection detection function**	
GX Works2 **Error history**			

■ **L60TCRT4**
Platinum RTD
NEW

Temperature input points **4 points** (channels)	**Standard control**	**Heating-cooling control**	
Self-tuning function	**Peak current suppression function**	**Simultaneous temperature rise function**	**Selectable sampling cycle**
Temperature input mode	**Temperature control mode**		
GX Works2 **Error history**			

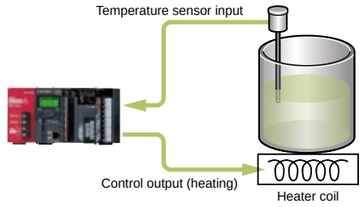
■ **L60TCRT4BW**
Platinum RTD
NEW

Temperature input points **4 points** (channels)	**Standard control**	**Heating-cooling control**	
Self-tuning function	**Peak current suppression function**	**Simultaneous temperature rise function**	**Selectable sampling cycle**
Temperature input mode	**Temperature control mode**	**Heater disconnection detection function**	
GX Works2 **Error history**			

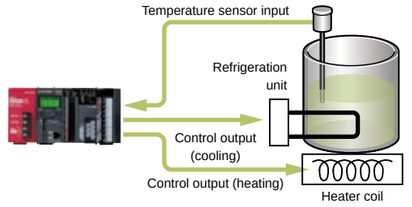
Highly stable temperature control

[Standard control/heating and cooling control]
Prevent overheating and overcooling in devices which require a high level of temperature stability, such as in an extrusion molding machine.
In addition to standard temperature control (heating or cooling), control of cooling may be performed.
Furthermore, mix control (a combination of heating and cooling control) can be performed.

■ **Example: Standard control (heating only)**
The temperature of the object is controlled by adjusting the heater output based on the PID calculations resulting from the temperature sensor input.



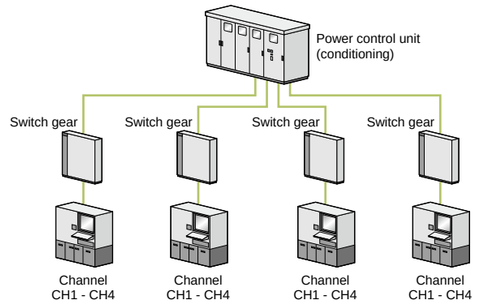
■ **Example: Heating-cooling control**
(heating and cooling elements controlled simultaneously)
Heating is performed when the control object's temperature is lower than the target temperature, and cooling is performed when it is hotter or the humidity needs to be reduced.



Reduce running costs by taking advantage of the energy-saving effect

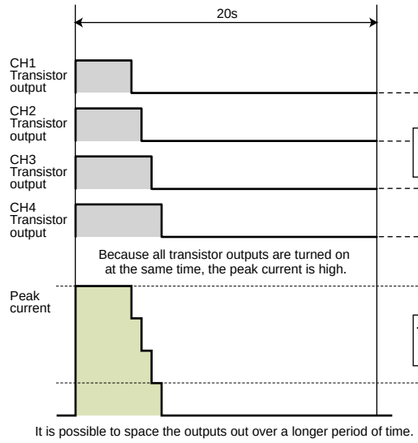
[Peak current control function]
This function reduces the peak current by automatically adjusting the upper bound and output limiter of each channel and dividing transistor output timing.
Output timing can be split between up to 4 outputs.

The maximum power supply capacity requirement is lowered.
We can save money on our electricity contract!

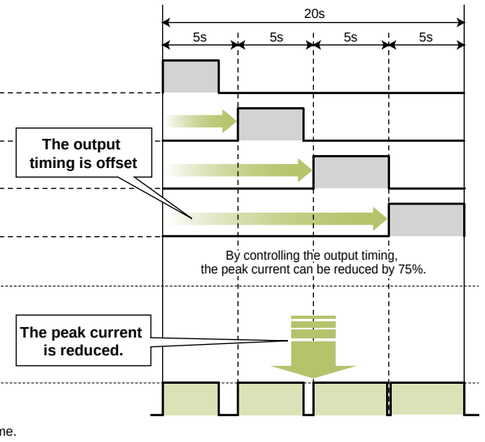


When two or more loads are being controlled, the peak current can be minimized by spreading the total load out over time.

■ **Without peak current control function**



■ **With peak current control function**



It is possible to space the outputs out over a longer period of time.

Ensures uniform temperature control

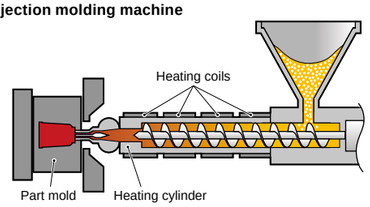
[Simultaneous temperature rise function]

Ensures uniform temperature control by synchronizing the temperature arrival times from multiple loops.

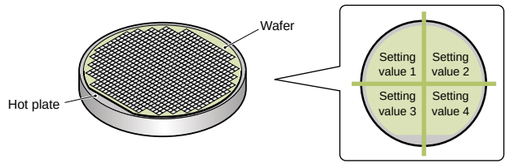
Perform a uniform temperature rise using two or more control loops without going over temperature or resulting in unexpected thermal expansion.

A "no idling" format increases energy efficiency and reduces running costs.

■ Example: Temperature control of injection molding machine

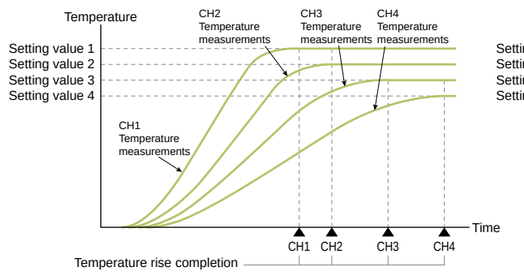


■ Example: Wafer heating process for semiconductor manufacturing

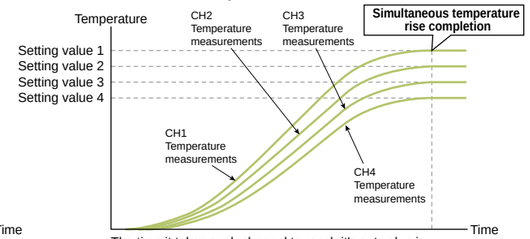


The running costs is reduced!

■ Without the simultaneous temperature rise function



■ With the simultaneous temperature rise function



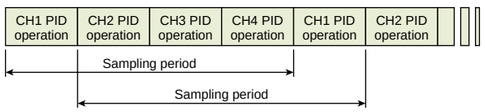
The time it takes each channel to reach it's set value is matched to the slowest time of CH4.

Using this function, it is possible to coordinate the control of two or more loops to reach their target values (SV) at the same time. Control the simultaneous rise in temperature of separate loops by setting a channel group (Max. 2 groups). This is an effective way to control applications where differing target temperature arrival times can result in undesirable temperature differentials.

Support a range of system requirements

[Sampling cycle change function]

Choose a sampling cycle of 250 ms/4 channels or 500 ms/4 channels.

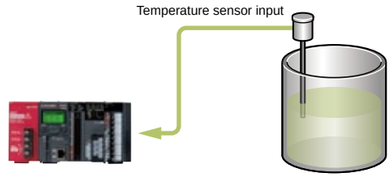


Sampling period: The time it takes to execute a PID operation for all channels (CHn) before beginning the PID operation of the present channel (CHn) again is called a sampling period.

Temperature input mode

This function allows the temperature control module to be used as a standard temperature input module.

Using the switch setting, it is possible to easily change the input mode.



■ Specifications

Item			L60TCTT4 NEW	L60TCTT4BW NEW	L60TCRT4 NEW	L60TCRT4BW NEW
Control output			Transistor output			
Number of temperature input points			4 points (ch)			
Applicable temperature sensors			Thermocouple		Resistive thermal device	
Accuracy*1	Indication accuracy	Ambient temperature: 25 ± 5°C	Full scale × (±0.3%)			
		Ambient temperature: 0 to 55°C	Full scale × (±0.7%)			
	Cold junction temperature compensation accuracy: (ambient temperature: 0 to 55°C)	Temperature process value (PV): -100°C or more	Within ± 1.0°C		—	
		Temperature process value (PV): -150 to -100°C	Within ± 2.0°C			
		Temperature process value (PV): -200 to -150°C	Within ± 3.0°C			
Sampling cycle			250ms/4 channels 500ms/4 channels			
Control output cycle			0.5 to 100.0s			
Input impedance			1MΩ			
Input filter			0 to 100s (0: Input filter OFF)			
Sensor correction value setting			-50.00 to 50.00%			
Operation at sensor input disconnection			Upscale processing			
Temperature control method			PID ON/OFF pulse or two-position control			
PID constants range		PID constants setting	Can be set by auto tuning.			
		Proportional band (P)	0.0 to 1000.0% (0: Two-position control)			
		Integral time (I)	0 to 3600s (set 0 for P control and PD control.)			
		Derivative time (D)	0 to 3600s (set 0 for P control and PI control.)			
Set value (SV) setting range			Within the temperature range set in the thermocouple/platinum resistance thermometer to be used			
Dead band setting range			0.1 to 10.0%			
Transistor output		Output signal	ON/OFF pulse			
		Rated load voltage	10 to 30VDC			
		Max. load current	0.1A/point, 0.4A/common			
		Max. inrush current	0.4A 10ms			
		Leakage current at OFF	0.1mA or less			
		Max. voltage drop at ON	1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A			
		Response time	OFF→ON: 2ms or less, ON→OFF: 2ms or less			
Number of accesses to non-volatile memory			Max. 10^{12} times			
Insulation method			Between input terminal and programmable controller power supply: Transformer insulation Between input channels: Transformer insulation			
Dielectric withstand voltage			Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute			
Insulation resistance			Between input terminal and programmable controller power supply: 500VDC 20MΩ or more Between input channels: 500VDC 20MΩ or more			
Heater disconnection detection specifications	Current sensor		—	• CTL-12-S36-8 (0.0 to 100.0A)*2 *3 • CTL-12-S36-10 (0.0 to 100.0A)*2 • CTL-12-S56-10 (0.0 to 100.0A)*2 • CTL-6-P (0.00 to 20.00A)*2 *3 • CTL-6-P-H (0.00 to 20.00A)*2	—	• CTL-12-S36-8 (0.0 to 100.0A)*2 *3 • CTL-12-S36-10 (0.0 to 100.0A)*2 • CTL-12-S56-10 (0.0 to 100.0A)*2 • CTL-6-P (0.00 to 20.00A)*2 *3 • CTL-6-P-H (0.00 to 20.00A)*2
	Input accuracy			Full scale × (±1.0%)		Full scale × (±1.0%)
	Number of alert delay			3 to 255		3 to 255
Maximum number of modules specification			Counts as 1 module	Counts as 2 modules	Counts as 1 module	Counts as 2 modules
Number of occupied I/O points			16 points (I/O assignment: Intelligent 16 points)			
External connections			18-point terminal block	18-point terminal block × 2	18-point terminal block	18-point terminal block × 2
5VDC internal current consumption			0.30A	0.33A	0.31A	0.35A
Weight			0.18kg	0.33kg	0.18kg	0.33kg

*1: Calculate the accuracy in the following method (only when it is not affected by noise).
Accuracy (°C) = full scale × indication accuracy + cold junction temperature compensation accuracy
Ex.) Accuracy at the input range of 38 (-200.0 to 400.0°C), the operating ambient temperature of 35°C, and the temperature process value (PV) of 300°C
(Full scale) × (indication accuracy) + cold junction temperature compensation accuracy
= (400.0°C - (-200.0°C)) × (±0.007) + (±1.0°C)
= ± 5.2°C
*2: U.R.D.Co., LTD. For more information, visit http://www.u-rd.com/
*3: The CTL-12-S36-8 and CTL-6-P can be used although they have been discontinued.

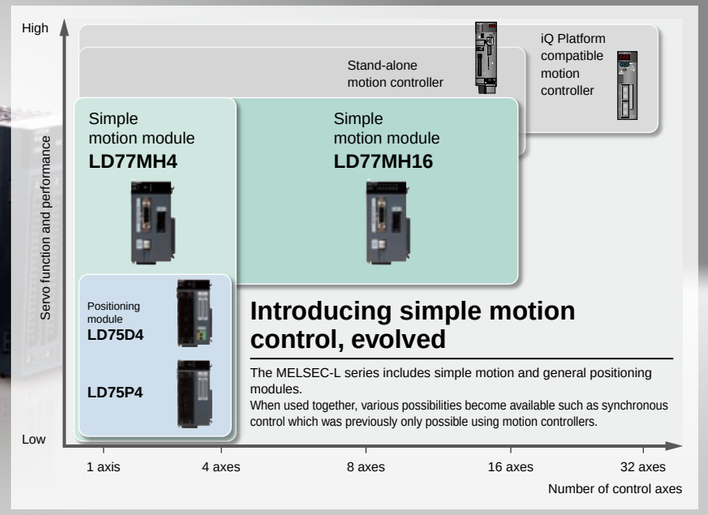
■ Control mode

Control mode	Contents	Number of controllable loops
Standard control	Performs the standard control of four channels.	Standard control 4 loops
Heating-cooling control (normal mode)	Performs the heating-cooling control. CH3 and CH4 cannot be used.	Heating-cooling control 2 loops
Heating-cooling control (expanded mode)	Performs the heating-cooling control. The number of loops is expanded using an output module and others in the system.	Heating-cooling control 4 loops
Mix control (normal mode)	Performs the standard control and the heating-cooling control. CH2 cannot be used.	Standard control 2 loops Heating-cooling control 1 loop
Mix control (expanded mode)	Performs the standard control and the heating-cooling control. The number of loops is expanded using an output module and others in the system.	Standard control 2 loops Heating-cooling control 2 loops

Control for each channel is as follows.

Channel	Standard control	Heating-cooling control		Mix control	
		Normal mode	Expanded mode	Normal mode	Expanded mode
CH1	Standard control	Heating-cooling control	Heating-cooling control	Heating-cooling control	Heating-cooling control
CH2	Standard control	Heating-cooling control	Heating-cooling control	—*1	Heating-cooling control*2
CH3	Standard control	—*1	Heating-cooling control*2	Standard control	Standard control
CH4	Standard control	—*1	Heating-cooling control*2	Standard control	Standard control

*1: Only temperature measurement using a temperature input terminal can be performed.
*2: Heating-cooling control is performed using an output module in the system.



Simple Motion Modules

■ **LD77MH4**

Number of control axes **4 axes**	Connection system **SSCNET Ⅲ -compatible**	Positioning data **600 data/axis**	
Positioning control function	**Speed/torque control function**	**4-axis interpolation** (Linear interpolation)	**2-axis interpolation** (Circular interpolation)
Synchronous control function **External encoder**	Synchronous control function **Cam**	Synchronous control function **Phase compensation**	
Manual pulse generator operation function	**OPR control function**		

■ **LD77MH16**

Number of control axes **16 axes**	Connection system **SSCNET Ⅲ -compatible**	Positioning data **600 data/axis**	
Positioning control function	**Speed/torque control function**	**4-axis interpolation** (Linear interpolation)	**2-axis interpolation** (Circular interpolation)
Synchronous control function **External encoder**	Synchronous control function **Cam**	Synchronous control function **Phase compensation**	
Manual pulse generator operation function	**OPR control function**		

*SSCNET(Servo System Controller NETwork)

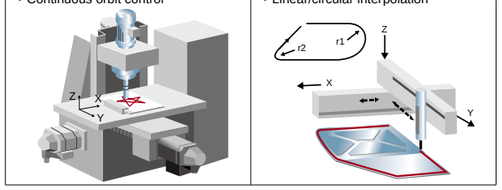
Countless applications are possible

A variety of control types including positioning control, speed control, torque control, cam control and synchronous control can be implemented easily with simple parameter settings and a sequence program.

[Positioning control]

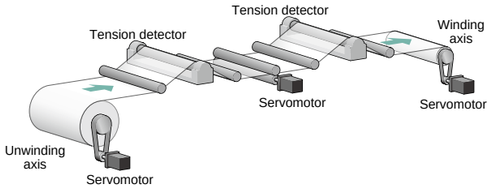
- Support for a multitude of applications thanks to a wide variety of control formats including linear interpolation control (up to 4 axes), 2-axis circular interpolation control, fixed feed control and continuous orbit control.
- Use a sequence program to set the positioning address, speed, etc. for easy automatic operation.
- Quickly implement powerful auxiliary functions such as step operation, target position change, M codes, and the skip function.

XY table	Sealant application
• 2-axis linear interpolation • 2-axis circular interpolation • 3-axis linear interpolation • Continuous orbit control	• Continuous orbit control • High-speed, high-accuracy orbit calculation • Linear/circular interpolation



[Speed control and torque control]

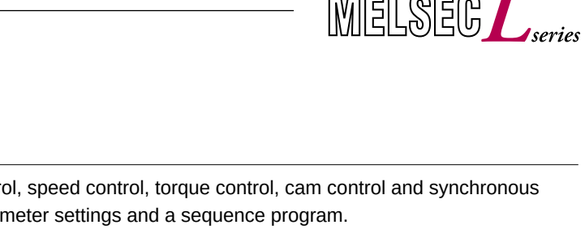
- Tension control applications such as winding and rewinding are supported.
- Switch from positioning control, to speed and torque control, and back to positioning control.
  Because the present location is tracked even in speed and torque control mode, it is possible to maintain the current absolute position when returning to positioning control.



[Cam control]

- Cam control may be used alone or combined with synchronous control.

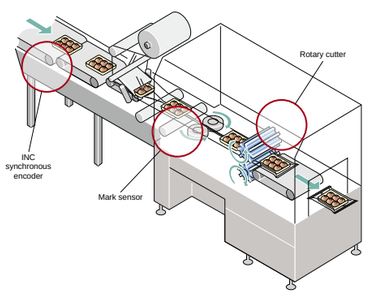
Example application for cam control:
To create a movement path around a workpiece using positioning control, axis 2 waits for axis 1 to complete the move from P1 to P2 before it begins moving from P2 to P3. By using cam control, axis 2 does not need to wait for axis 1 to complete its movement and the in position time can be shortened.



Many functions in a compact design

[Use a synchronous encoder with synchronous control]

- Input pulses from a synchronous encoder can be used to perform synchronous control and cam control.
- Connect an incremental synchronous encoder directly to the LD77MH built-in interface, or connect an absolute synchronous encoder SOON via servo amplifier. Option modules are no longer necessary.
- To Further improve the synchronization accuracy, the phase compensation function, designed to compensate for synchronous encoder delays, can be used.

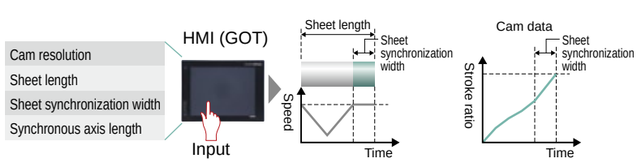


[Standard mark detection function]

- The built-in mark detection signal interface allows these units to be used in packaging systems for example, without additional option modules.

[Automatic cam data generation for rotary cutter]

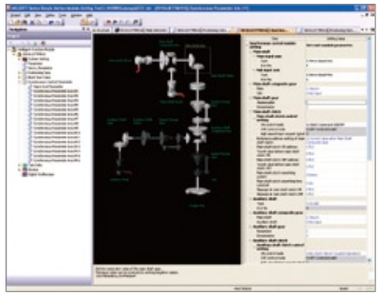
- Complicated cam data for rotary cutters can be automatically generated just by specifying a few parameters like the sheet length and synchronization width.



Perfect synchronous control is easy to achieve

Replace mechanical gears, shafts, speed change gears, cams, etc. and generate synchronous control operations using software.

- Complicated programs are unnecessary for synchronous control because it can be implemented easily using parameter settings.
- Start and stop synchronous control for each axis. Use the synchronous control axis and positioning control axis together.
- Convey the travel value of main shaft to the output axis via the clutch.

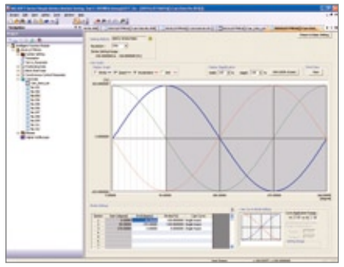


Synchronous Control Parameter Settings

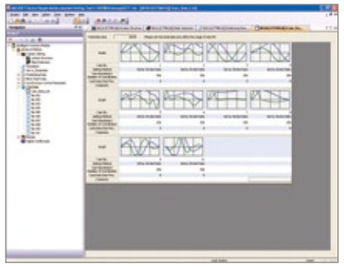
Cam control made simple

Create cam data patterns easily.

- Create cam profiles unrestricted by existing concepts of electronic cam control.
- Change the acceleration, speed, stroke, and jerk while simultaneously seeing how it effects the profile.
- Easily check created cam data by viewing them as thumbnails.
- Import and export cam data in CSV format.



Cam Data



Cam Data List

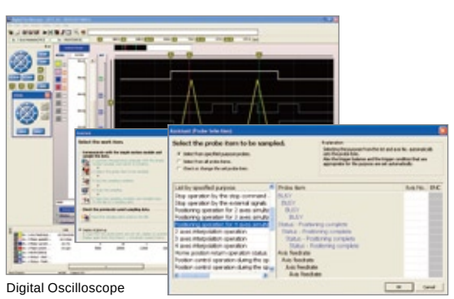
Simplified debugging and commissioning

[Digital oscilloscope function]

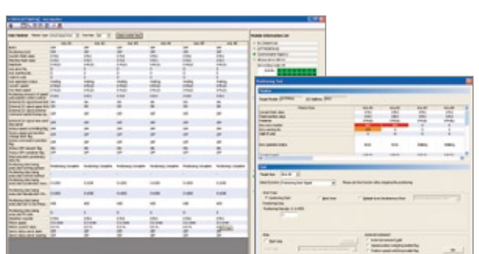
- Collection of data from the Simple Motion Module is synchronized with the operation cycle and waveform displays to facilitate an efficient start up.
- The assistant function explains each step.
- Use the purpose-based probe setting to easily set frequently-viewed data.
- Sample 16CH word and 16CH bit data and display 8CH words and 8CH bits in real time.

[Monitor and test functions]

- Complete the system installation and perform operational checks easily using powerful monitor and test functions.
- Select items to be displayed on the monitor using a wealth of information monitoring options.
- The test function can be used to check basic operations without a sequence program.



Digital Oscilloscope



Axis Monitor

Positioning Test

■ Specifications

Item			LD77MH4	LD77MH16[NEW]
Number of control axes			4 axes	16 axes
Operation cycle			0.88ms	0.88ms/1.77ms*1
Interpolation function			Linear interpolation(Up to 4 axes),Circular interpolation(2 axes)	
Control system			PTP (Point To Point) control, path control (both linear and arc can be set), speed control, torque control, speed-position switching control, position-speed switching control	
Acceleration/deceleration process			Trapezoidal acceleration/deceleration, S-pattern acceleration/deceleration	
Compensation function			Backlash compensation, Electronic gear, Near pass function	
Synchronous control			External encoder, Cam, Phase Compensation, Cam generated automatically	
Control unit			mm, inch, degree, pulse	
Positioning data			600 data (positioning data No. 1 to 600)/ axis (Can be set with GX Works2 or PLC program.)	
Backup			Parameters, positioning data, and block start data can be saved on flash ROM (battery-less backup)	
OPR control	Machine OPR control		Near-point dog method, Count method 1), Count method 2), Data set method, scale origin signal detection method	
	Fast OPR control		Provided	
	Sub functions		OPR retry, OP shift	
Position control	Position control	Linear control	1-axis linear control, 2-axis linear interpolation control, 3-axis linear interpolation control, 4-axis linear interpolation control (Composite speed, Reference axis speed)	
		Fixed-feed control	1-axis fixed-feed control, 2-axis fixed-feed control, 3-axis fixed-feed control, 4-axis fixed-feed control	
		2-axis circular interpolation control	sub point designation, center point designation	
	Speed control		1-axis speed control, 2-axis speed control, 3-axis speed control, 4-axis speed control	
	Speed-position switching control		INC mode, ABS mode	
	Position-speed switching control		INC mode	
	Other control	Current value changing	Changing to a new current value using the positioning data , Changing to a new current value using the start No.	
		NOP instruction	Provided	
		JUMP instruction	Unconditional JUMP, Conditional JUMP	
		LOOP,LEND	Provided	
High-level positioning control			Block start, Condition start, Wait start, Simultaneous start, Repeated start	
Manual control	JOG operation		Provided	
	Inching operation		Provided	
	Manual pulse generator operation		Possible to connect 1 module (Incremental) Unit magnification (1 to 10000times)	
Expansion control	Speed-torque control		Speed control without positioning loops, Torque control without positioning loops	
Absolute position system			Connect a battery to the servo amplifier to ensure compatibility	
Synchronous encoder interface			Up to 4 channel (internal interface , servo amplifier, via the PLC CPU interface)	
	Internal interface		1channel (Incremental)	
	Via servo amplifier		Support coming soon	
Functions that limit control	Speed limit function		Speed limit value, JOG speed limit value	
	Torque limit function		Torque limit value_same setting, torque limit value_individual setting	
	Forced stop function		valid/invalid setting	
	Software stroke limit function		Movable range check with current feed value, movable range check with machine feed value	
	Hardware stroke limit function		Provided	
Functions that change control details	Speed change function		Provided	
	Override function		Provided	
	Acceleration/deceleration time change function		Provided	
	Torque change function		Provided	
	Target position change function		Target position address and target position speed are changeable	
Other functions	M code output function		Provided	
	Step function		Deceleration unit step, Data No. unit step	
	Skip function		Via sequence CPU, Via external command signal	
	Teaching function		Provided	
Mark detection function			Mark detection mode (Continuous Detection mode, Specified Number of Detections mode, Ring Buffer mode)	
	mark detection signal		4points	
	mark detection setting		4	16
Optional data monitor function			4points/axis	
Master-slave operation function			Provided	
Amplifier-less operation function			Provided	
Digital oscilloscope function			bit data :8channels, word data: 4channels	bit data :16channels, word data: 16channels*2
Starting time*3	1-axis linear control		0.88ms	
	1-axis speed control			
	2-axis linear interpolation control (Composite speed)			
	2-axis linear control (Reference axis speed)			
	2-axis circular interpolation control			
	2-axis speed control			
	3-axis linear interpolation control (Composite speed)			
	3-axis linear interpolation control (Reference axis speed)			
	3-axis speed control			
	4-axis linear interpolation control			
	4-axis speed control			
Maximum connection distance between drive units			50m	
Maximum number of modules specification			Counts as 2 modules	
Number of occupied I/O points			32 points (I/O assignment: Intelligent 32 points)	
Servo amplifier connection system			SSCNET III-compatible (50Mbps)	
5VDC internal current consumption			0.55A	0.70A
Weight			0.22kg	

*1: Default value is 1.77 ms. If necessary, check the operation time and change to 0.88 ms.
*2: 8CH word data and 8CH bit data can be displayed in real time.
*3: The starting time varies with conditions. For details, refer to the manual.

Positioning Modules

■ **LD75P4**
Open collector

Number of control axes **4 axes**	Connection method **Open collector**	Maximum output pulse **200kpulse/s**
Positioning data **600 data/axis**	Maximum connection distance **2m**	
Positioning control function	**Speed control function**	**OPR control function**
GX Works2 **Error history**		

■ **LD75D4**
Differential driver

Number of control axes **4 axes**	Connection method **Differential driver**	Maximum output pulse **4Mpulse/s**
Positioning data **600 data/axis**	Maximum connection distance **10m**	
Positioning control function	**Speed control function**	**OPR control function**
GX Works2 **Error history**		

High-speed control of high resolution devices

Control high resolution devices such as linear servos and direct drive motors without compromising speed.

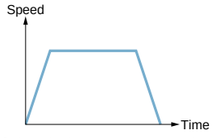
*LD75D4

LD75D4	4Mpulse/s, maximum 10m
LD75P4	200kpulse/s, maximum 2m

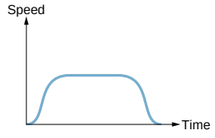
Reduce machine vibration by using the optimal acceleration/deceleration system

Chosen between automatic trapezoidal acceleration/deceleration or S-curve acceleration/deceleration in accordance with machine characteristics such as the amount of load or vibration characteristics.

*S-curve acceleration/deceleration cannot be used with stepping motors.



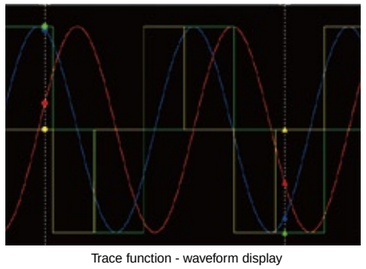
Automatic trapezoidal acceleration/deceleration
Is a system in which the acceleration and deceleration changes linearly based on acceleration/deceleration time and the speed-limit value set by users.



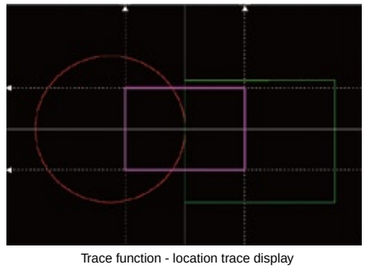
S-curve acceleration/deceleration
Is a system in which acceleration/deceleration changes gradually based on acceleration/deceleration time, speed-limit, and the S-curve ration value (1 to 100%).

Visualize positioning module buffer data

Monitor online or save and review command data such as speed, simultaneous start, and dual axis interpolation routines using customizable graphs.



Trace function - waveform display

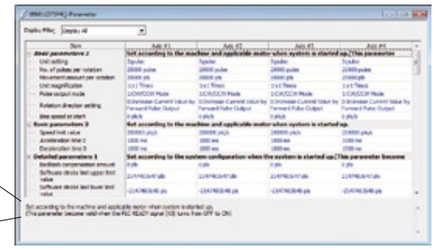


Trace function - location trace display

*These screens shots represent software still under development and are subject to change.

Configure modules without the need to reference a manual

GX Works2 contains support tools to help configure intelligent function modules. All of the required information to configure and revise complicated parameter settings is included so it is not necessary to reference a manual.



Configure modules easily and with no manual thanks to the included settings information.

■ Specifications

Item			LD75P4 [Open collector]	LD75D4 [Differential driver]
Number of control axes			4 axes	
Interpolation function			2-axis/3-axis/4-axis linear interpolation, 2-axis circular interpolation	
Control system			PTP (Point To Point) control, path control (both linear and arc can be set), speed control, speed-position switching control, position-speed switching control	
Control unit			mm, inch, degree, pulse	
Positioning data			600 data (positioning data No.1 to 600)/axis (Can be set with peripheral device or sequence program.)	
Backup			Parameters, positioning data, and block start data can be saved on flash ROM (battery-less backup)	
Positioning control	Positioning control system	PTP*1 control	INC system, ABS system	
		Speed-position switching control	INC system, ABS system*2	
		Position-speed switching control	INC system	
		Path control	INC system, ABS system	
	Positioning control range	In ABS system	-214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) 0 to 359.99999 (degree) -2147483648 to 2147483647 (pulse)	
		In INC system	-214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) -21474.83648 to 21474.83647 (degree) -2147483648 to 2147483647 (pulse)	
		In speed-position switching control (INC mode)/ position-speed switching control	0 to 214748364.7 (μm) 0 to 21474.83647 (inch) 0 to 21474.83647 (degree) 0 to 2147483647 (pulse)	
		In speed-position switching control (ABS mode)*2	0 to 359.99999 (degree)	
	Speed command		0.01 to 20000000.00 (mm/min) 0.001 to 2000000.000 (inch/min) 0.001 to 2000000.000 (degree/min) 1 to 4000000 (pulse/s)	
	Acceleration/deceleration system selection		Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration	
	Acceleration/deceleration time		1 to 8388608ms Four patterns can be set for each of acceleration time and deceleration time	
	Sudden stop deceleration time		1 to 8388608ms	
OPR method			6 types	
Starting time*3			1-axis linear control: 1.5ms 1-axis speed control: 1.5ms 2-axis linear interpolation control (Composite speed): 1.5ms 2-axis linear control (Reference axis speed): 1.5ms 2-axis circular interpolation control: 2.0ms 2-axis speed control: 1.5ms 3-axis linear interpolation control (Composite speed): 1.7ms 3-axis linear interpolation control (Reference axis speed): 1.7ms 3-axis speed control: 1.7ms 4-axis linear interpolation control: 1.8ms 4-axis speed control: 1.8ms	
Pulse output method			Open collector output	Differential driver output
Maximum output pulse			200kpulse/s	4Mpulse/s
Maximum connection distance between drive units			2m	10m
Maximum number of modules specification			Counts as 2 modules	
Number of occupied I/O points			32 points (I/O assignment: Intelligent 32 points)	
External connections			40-pin connector ×2	
5VDC internal current consumption			0.55A	0.76A
Weight			0.18kg	

*1: The abbreviation for Point To Point, referring to position control.
*2: In speed-position switching control (ABS mode), "degree" is the only control unit available.
*3: Starting times may vary depending on conditions. For details, refer to the manual.

High-Speed Counter Modules

■ **LD62**
DC input

Number of channels **2ch**	**5/12/24VDC input**	Maximum counting speed **200kpulse/s**	
Linear counter function	**Ring counter function**	**Coincidence output function**	**Preset function**
Disable count function	**Latch counter function**	**Sampling counter function**	**Periodic pulse counter function**

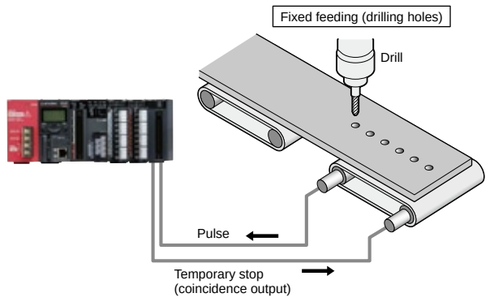
■ **LD62D**
Differential input

Number of channels **2ch**	**Differential driver input**	Maximum counting speed **500kpulse/s**	
Linear counter function	**Ring counter function**	**Coincidence output function**	**Preset function**
Disable count function	**Latch counter function**	**Sampling counter function**	**Periodic pulse counter function**

High-speed pulse measurement of 500kpulse/s

LD62D

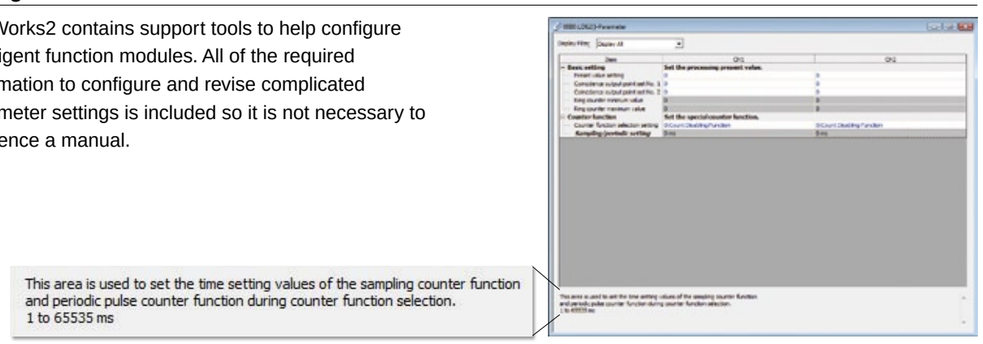
It is easy to achieve accurate measurement of high speed pulses using the LD62D.
Due to the wide range of supported pulse speeds, the module is capable of supporting many different applications including various conveyor systems, work piece length measurement, and processing speed measurement.



Configure modules without the need to reference a manual

LD62D **LD62**

GX Works2 contains support tools to help configure intelligent function modules. All of the required information to configure and revise complicated parameter settings is included so it is not necessary to reference a manual.



Configure modules easily and with no manual thanks to the included settings information.

■ Specifications

Item			LD62 [DC input]	LD62D [Differential input]
Number of channels			2ch	
Counting speed switch setting			10kpulse/s, 100kpulse/s, 200kpulse/s	10kpulse/s, 100kpulse/s, 200kpulse/s, 500kpulse/s
Count input signal	Phase		1-phase input (multiple of 1/2), CW/CCW, 2-phase input (multiple of 1/2/4)	
	Signal level (A, B)		5/12/24VDC 2 to 5mA	EIA Standard RS-422-A differential type line driver level (Equivalent with AM26LS31 (manufactured by Texas Instruments Japan Limited))
Counter	Maximum counting speed*1		200kpulse/s	500kpulse/s
	Counting range		-2147483648 to 2147483647	
	Type		UP/DOWN preset counter and ring counter functions	
	Minimum count pulse width (Duty ratio 50%)		10kpulse/s: 50µs; 100kpulse/s: 5µs; 200kpulse/s: 2.5µs	10kpulse/s: 50µs; 100kpulse/s: 5µs; 200kpulse/s: 2.5µs; 500kpulse/s: 1µs
	Minimum phase differential for 2-phase input		10kpulse/s: 25µs; 100kpulse/s: 2.5µs; 200kpulse/s: 1.25µs	10kpulse/s: 25µs; 100kpulse/s: 2.5µs; 200kpulse/s: 1.25µs; 500kpulse/s: 0.5µs
Coincidence output	Comparison range		Binary with 32-bit code (-2147483648 to 2147483647)	
	Comparison result		Set value < Count value Set value = Count value Set value > Count value	
External input	Preset		5/12/24VDC 2 to 5mA	5/12/24VDC 2 to 5mA (Differential type line drivers conforming to EIA standard RS-422-A are also applicable.)
	Function start			
	Minimum input response time	OFF to ON	Function start: 0.5ms	
		ON to OFF	Function start: 1ms	
External output	Coincidence output		2 points/channel	
	Output voltage/current		12 to 24VDC 0.5A	
	Output response time	OFF to ON	0.1ms or less (rated load, resistive load)	
		ON to OFF		
Maximum number of modules specification			Counts as 1 module	
Number of occupied I/O points			16 points (I/O assignment: Intelligent 16 points)	
External connections			40-pin connector	
5VDC internal current consumption			0.31A	0.36A
Weight			0.13kg	

*1: The counting speed is affected by the rising/falling pulse speed. For details, refer to the corresponding manual.

Serial Communication Modules

■ LJ71C24

Interface RS-232	Interface RS-422/485	Maximum transmission speed 230.4kbps*	
Communication system MC protocol	Communication system Pre-defined protocol	Communication system Nonprocedural protocol	Communication system Bidirectional protocol
GX Works2 Error history			

*Available for only channel 1

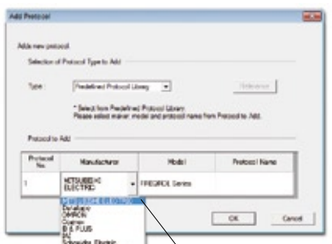
■ LJ71C24-R2

Interface RS-232 x 2	Maximum transmission speed 230.4kbps*		
Communication system MC protocol	Communication system Pre-defined protocol	Communication system Nonprocedural protocol	Communication system Bidirectional protocol
GX Works2 Error history			

*Available for only channel 1

Quick connection using pre-defined protocols

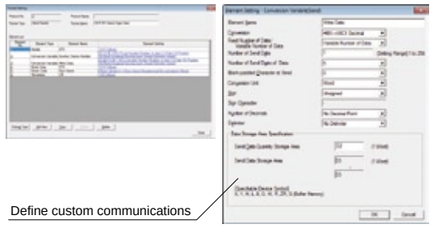
Establish communication with devices quickly by simply selecting a device from the pre-defined protocol library included in GX Works2.



Simply select a device you want to establish communication with

Easily define custom protocols

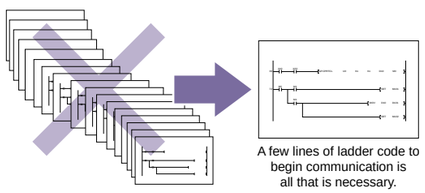
Even when a desired external device is not included in the predefined protocol library, it is still easy to define a custom protocol and establish communications. The protocol editing windows allow the confirmation of settings at a glance for quick and easy configuration.



Define custom communications

The number of ladder program steps can be significantly reduced

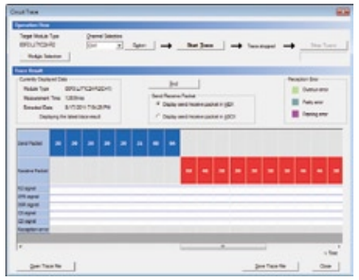
Using the predefined protocol feature means that only a few simple ladder instructions are required to communicate with external devices. In the past, massive amounts of ladder program code had to be dedicated to the communication process. This reduction in ladder code reduces scan times and allows more space for other program code.



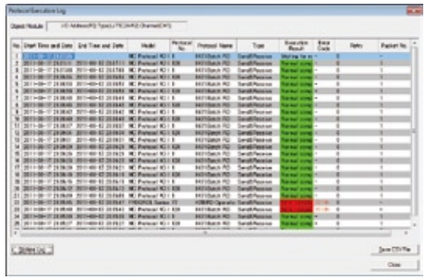
A few lines of ladder code to begin communication is all that is necessary.

Enhanced debugging and support functions

Built in debugging functions include confirmation of communication signal wire condition, packet data contents, and a state monitor. These features effectively eliminate the need for an expensive network analyzer.



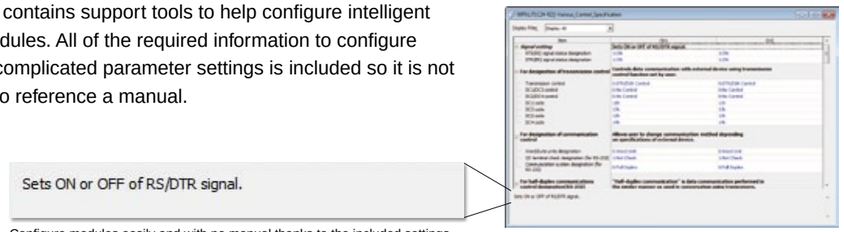
Circuit trace
Network transmission data are saved to the data area inside the module for review. There is no need for devices such as circuit analyzers.



Protocol execution log
Information about each data packet sent and received such as protocol name, start/end times and dates, and end results can be saved to the buffer memory inside the module.

Configure modules without the need to reference a manual

GX Works2 contains support tools to help configure intelligent function modules. All of the required information to configure and revise complicated parameter settings is included so it is not necessary to reference a manual.



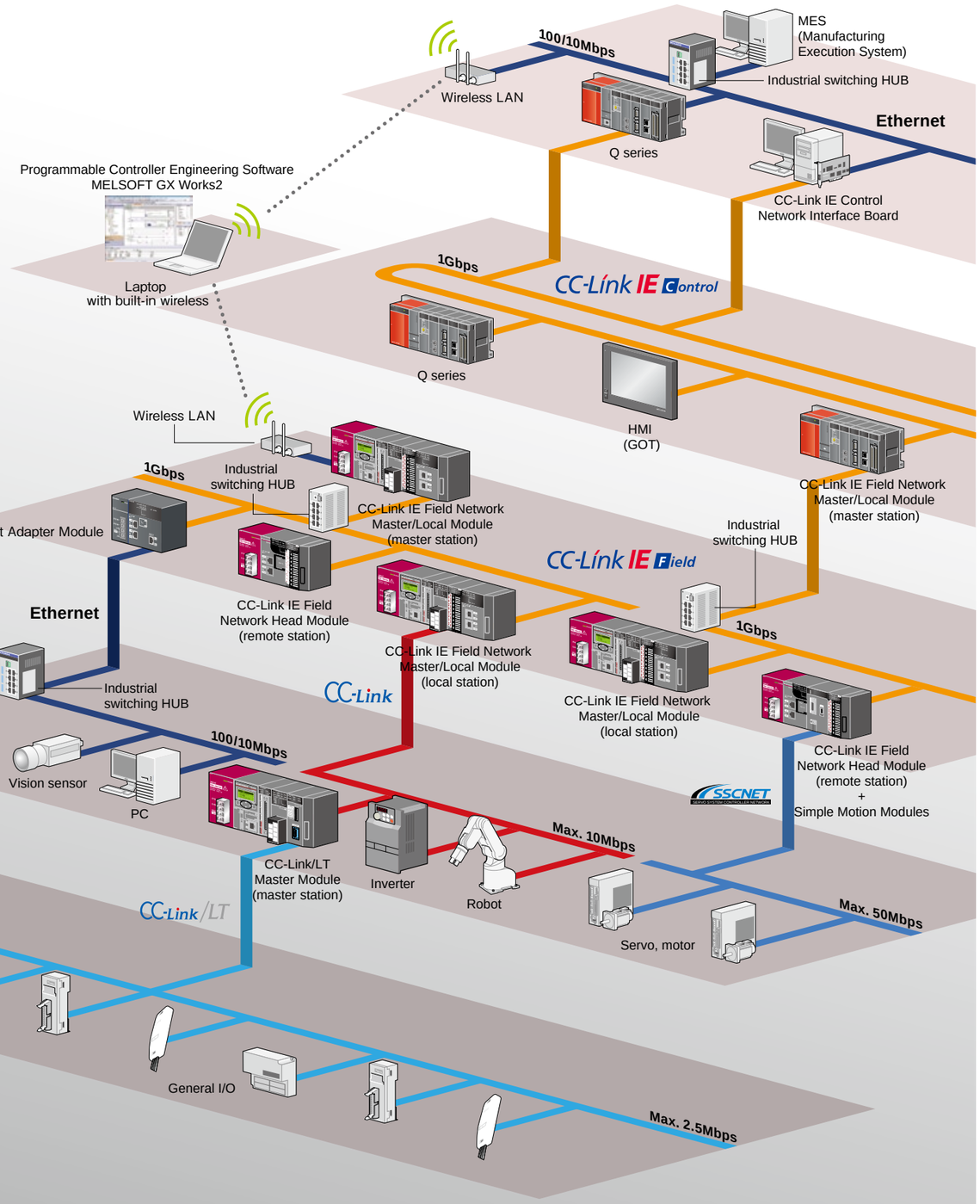
Configure modules easily and with no manual thanks to the included settings information.

■ Specifications

Item		LJ71C24	LJ71C24-R2
Interface	ch1	RS-232 compliant (D-Sub 9P female)	RS-232 compliant (D-Sub 9P female)
	ch2	RS-422/485 compliant (2-piece terminal block)	RS-232 compliant (D-Sub 9P female)
Communication system	Line	Full-duplex/half-duplex communications	
	MC protocol	Half-duplex communications	
	Pre-defined protocol	Full-duplex/half-duplex communications	
	Nonprocedural protocol		
	Bidirectional protocol		
Synchronization method		Start-stop synchronization method	
Transmission speed		50bps/300bps/600bps/1200bps/2400bps/4800bps/9600bps/14.4kbps/ 19.2kbps/28.8kbps/38.4kbps/57.6kbps/115.2kbps/230.4kbps Transmission speed 230.4kbps is only available for channel 1. Total transmission speed of two interfaces is available up to 230.4kbps. Total transmission speed of two interfaces is available up to 115.2kbps when the communication data monitoring function is used.	
Data foramat	Start bits	1	
	Data bits	7 or 8	
	Parity bits	1 (vertical parity) or none	
	Stop bits	1 or 2	
Access cycle	MC protocol	Processes one request during installed C24 CPU module END processing. (Number of scans that must be processed/number of link scans depends on the contents of the request.)	
	Pre-defined protocol	Sends or receives data when requested with the dedicated instruction (CPRTCL).	
	Nonprocedural protocol	Sends each time a send request is issued. Can receive at any time.	
	Bidirectional protocol		
Error detection	Parity check	All protocols and when ODD/EVEN is selected by parameter.	
	Sum check code	MC protocol/bidirectional protocol selected by parameter. For the pre-defined protocol, whether or not a sum check code is needed depends on the selected protocol. Nonprocedural protocol selected by user frame.	
Transmission control		RS-232 / RS-422/485 DTR/DSR (ER/DR) control: Enabled / Disabled RS/CS control: Enabled / Disabled CD signal control: Enabled / Disabled DC1/DC3 (Xon/Xoff) control DC2/DC4 control: Enabled / Enabled • DTR/DSR signal control and DC code control are selected by the user.	
Transmission distance (Overall distance)	RS-232	Maximum 15m	
	RS-422/485	Maximum 1200m (overall distance)	—
Maximum number of modules specification		Counts as 1 module	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)	
5VDC internal current consumption		0.39A	0.26A
Weight		0.17kg	0.14kg

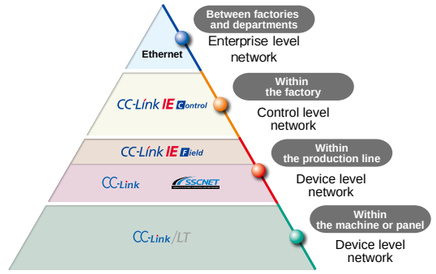
Seamless integration of multiple networks

Today there is an increasing demand from production facilities for high speed control, effective management of data, flexible wiring, easy parameter settings, and predictive maintenance. To answer these demands, Mitsubishi Electric has teamed up with the CC-Link Partner Association to provide reliable, open-standards networks that operate seamlessly with one another. Together, These and other Mitsubishi networks allow for flexible integration at any network level. The latest addition to the CC-Link portfolio is IE Field; an Ethernet based gigabit network designed to provide cost-effective, reliable connectivity to field devices.



Seamless communication

L Series combines enterprise, control, device, and sensor level networks together through Ethernet, MELSECNET/H, and CC-Link networks to allow easy access to information, no matter where it resides on the network.
It is possible to “drill down” from the top Ethernet layer, through multiple networks, and access programmable controllers using GX Works2 or other engineering tools.
In addition, many devices supporting SLMP* such as vision sensors and RFID controllers may be connected to the CC-Link IE Field network.
*SLMP (SeamLess Message Protocol) is a protocol advocated by the CC-Link Partner Association.



CC-Link IE Control

This highly-reliable control network is designed to transfer large amounts of data at real-time speeds between PLCs. The CC-Link IE Control network includes a variety of functions and allows seamless communications among other CC-Link networks.

- 1 Gbps high-speed communication
- Maximum number of link points per network:
  Link relays (LB): 32768 points
  Link registers (LW): 131072 points
  Link inputs/outputs (LX, LY): 8192 points each
- Maximum number of connected stations per network:
  max. 120 units
- Maximum overall distance: 66km

*L Series does not support the CC-Link IE Controller network.

CC-Link IE Field

This versatile field network integrates distributed control, I/O control, and motion control. Its flexible wiring design allows for star, line, star and line mixed, or ring topology to ensure the network can meet the needs of any production line or equipment layout.

- 1 Gbps high-speed communication
- Maximum link points per network:
  Remote inputs/outputs (RX, RY): 16384 points
  Remote registers (RWw): 8192 points, (RWr): 8192 points
- Maximum overall distance: 12km

CC-Link

CC-Link is Semiconductor Equipment and Materials International (SEMI®) certified and provides an open device level network that allows great flexibility in system design and configuration. CC-Link provides the means to link controllers to numerous devices while reducing wiring costs and adding additional benefits such as improved diagnostic capabilities.

- Communication speeds up to 10 Mbps
- 8192 link device remote I/O points and 2048+2048 remote register points
- Connect with over 1,000 different 3rd party CC-Link compatible products
- Maximum overall distance: 100m(10mbps)

SSCNET

SERVO SYSTEM CONTROLLER NETWORK

Specially designed for Mitsubishi servo systems, this networking technology addresses the need for long distance, noise resistant, high speed communication. Fiber optical daisy-chain connections improve reliability and allow for large volumes of data to be shared between controllers and servo amplifiers in real time.

- Communication speed: 50Mbps
- Communication cycle: 0.44ms/0.88ms
- Connect up to 16 axes per system
- Maximum overall distance: 100m(10mbps)

CC-Link/LT

At the bottom of the network hierarchy, sensor level networks can reduce wiring costs inside panels between simple discrete devices such as push-buttons and sensors. CC-Link/LT accomplishes this and is fully supported by L Series. Achieve tremendous flexibility and cost savings through innovative connection technology, which does not require cutting/stripping of the network cable to make connections.

- Make connections quickly and easily using dedicated connectors
- Use I/O points efficiently by using ‘number of points mode’ (4 points, 8 points, 16 points).
- Connect up to 1024 link points in 16-point mode.
- Up to 39m from master station(2.5Mbps)

CC-Link IE Field Network Master/Local Module

■ LJ71GF11-T2

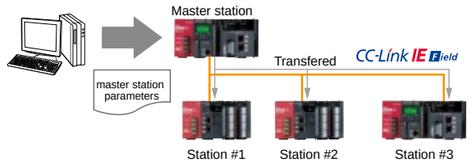
Master/ local station	Transmission speed **1Gbps**	Remote I/O **16384 points**	Remote register **8192 words**
CC-Link IE Field			

*Sequence CPUs whose first five serial number digits are "13042" or later are required.

Easy to configure settings

Network parameters are configured using the engineering tool, GX Works2. Only the master station needs to be configured, thereby greatly simplifying the network setup. Updating the system configuration is a breeze.

Master station settings are all that is required!

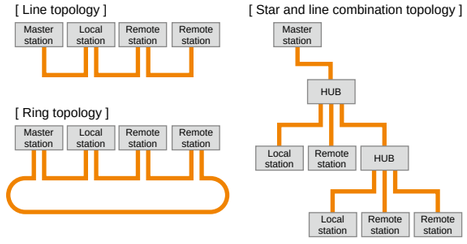


Flexible network topology

Various network topologies are supported including star, line, star and line combination, and ring. When hubs*1 are used, new equipment can be added and machine layouts can be changed easily.

*1 Hubs cannot be used in a ring configuration.

■ **Examples of network topologies**



■ Specifications

Item		LJ71GF11-T2
Transmission speed		1Gbps
Maximum overall cable distance (Maximum transmission distance)	Line topology	12000m (when cables are connected to 1 master station and 120 slave stations)
	Star topology	Depends on the system configuration
	Ring topology	12100m (when cables are connected to 1 master station and 120 slave stations)
Maximum number of connected stations	Master station	1 station (Up to 120 slave stations can be connected to the master station)
	Local station	120 stations
Maximum link points per station	Remote register (RWw)	8192 points, 16KB
	Remote register (RWr)	8192 points, 16KB
	Remote input (RX)	16384 points, 2KB
	Remote output (RY)	16384 points, 2KB
Maximum link points per station	Master station: Remote register (RWw)	8192 points, 16KB
	Master station: Remote register (RWr)	8192 points, 16KB
	Master station: Remote input (RX)	16384 points, 2KB
	Master station: Remote output (RY)	16384 points, 2KB
	Local station: Remote register (RWw)	8192 points, 16KB (also including the send range of own station)
	Local station: Remote register (RWr)	8192 points, 16KB
	Local station: Remote input (RX)	16384 points, 2KB
	Local station: Remote output (RY)	16384 points, 2KB (also including the send range of own station)
Network topology		Line topology, star topology (Coexistence of line topology and star topology is possible.), and ring topology
Communication method		Token passing method
Communication port		CC-Link IE Field network port x 2
RAS function		Automatic return, Slave station disconnection, Loopback function
Connection cable*1		Ethernet cable of category 5e or higher (Double shielded cable) which satisfies 1000BASE-T standard
Maximum number of modules specification		Counts as 2 modules
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)
5VDC internal current consumption		0.89A
Weight		0.27kg

*1: Straight through cable

CC-Link IE Field Network Head Module

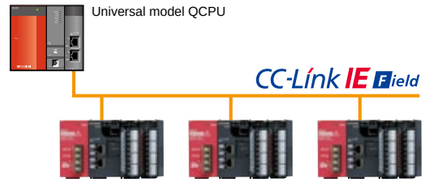
■ LJ72GF15-T2

Intelligent device station	Transmission speed **1Gbps**	Remote I/O **2048 points**
Remote register **1024 words**	Maximum number of connected modules **120**	
RAS function **System monitor**	RAS function **Remote RESET**	RAS function **Self-diagnosis**
CC-Link IE Field		

*END cover is included.

CC-Link IE Field network remote I/O station

L-series I/O and intelligent function modules can be connected to the remote I/O head module without a dedicated CPU. There are many benefits to using intelligent device stations including reduced CPU and wiring costs, great flexibility in selecting I/O and intelligent function modules, and compact unit size.

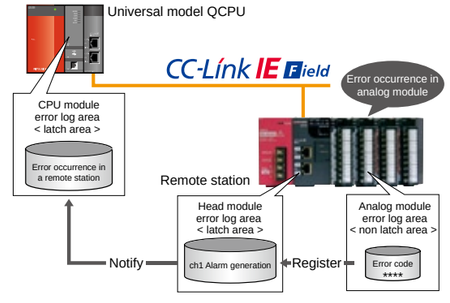


Modules compatible with the CC-Link IE Field network head module

Item	Product
I/O module	Input module
	Output module
Intelligent function module	Analog input module
	Analog output module
	Temperature Control module
	Simple Motion Module
	Positioning Module
	High-speed counter module
	Serial communication module
Network module	CC-Link master/local module
	CC-Link/LT master module

RAS (Reliability, Availability, Serviceability) functions

One feature of RAS is to store all remote station error histories in the master station's latched memory. This preserves the error information in one place in the event of power loss and allows for easy troubleshooting. Other RAS features include network event logging, unit error logging, and testing and monitoring capabilities.



■ Specifications

Item		LJ72GF15-T2
Transmission speed		1Gbps
Maximum overall cable distance (Maximum transmission distance)	Line network topology	12000m (with 1 master and 120 slaves connected)
	Star network topology	Depends on the system configuration
	Ring network topology	12100m (with 1 master and 120 slaves connected)
Transmission path		Line, star, line and star mixed, or ring topology
Communication method		Deterministic (token passing)
Maximum number of modules specification*1		10
Communication port		CC-Link IE Field network port x 2
RAS function		Network event logging, unit error logging, testing, monitoring, and error history preservation function
Connection cable*2		Ethernet cable of category 5e or higher (Double shielded cable) which satisfies 1000BASE-T standard
5VDC internal current consumption		1.00A
Weight		0.23kg

*1: The total number of modules that can be mounted to a CC-Link IE Field network head module. (END cover and power supply module are not included.)
*2: Straight through cable

CC-Link Master/Local Module

■ LJ61BT11

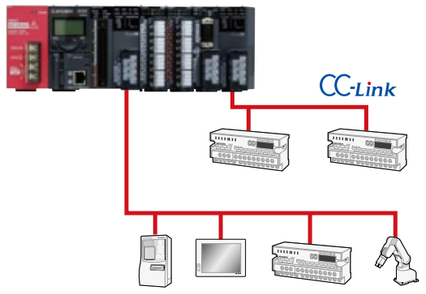
Master/ local station	Maximum transmission speed **10Mbps**	Remote I/O **8192 points***	Remote register **2048 words***
CC-Link Ver.2.0	**Standby master station function**	Local station **Transmission speed auto-tracking function**	

*Link points for CC-Link Ver.2.0 master station

CC-Link V2

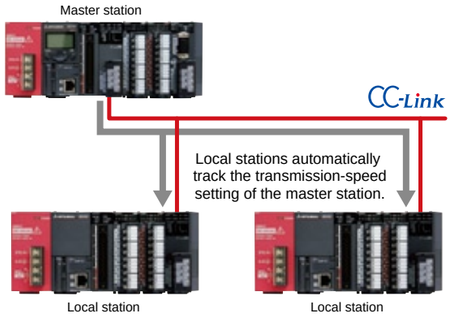
Connect with a huge selection of device types using CC-Link

With such a large selection of CC-Link open network compatible devices, constructing a control system is easy.
Even applications requiring vast amounts of data transmissions can be satisfied because CC-Link Ver.2.0 is supported.



Local stations do not require transmission speed settings

[Transmission speed auto-tracking function]
When used as a local station, no transmission speed setting is required; the setting is made through automatic detection of the master station setting.
The current transmission speed in is indicated by an LED on the front surface of the module.



■ Specifications

Item		LJ61BT11
Transmission speed		156kbps/625kbps/2.5Mbps/5Mbps/10Mbps
Maximum overall cable distance (Maximum transmission distance)		1200m (without repeater, varies according to the transmission speed)
Maximum number of connected stations (master station)		64
Number of occupied stations (local station)		1 to 4 stations (The number of stations can be switched using the GX Works2 parameter setting)
Maximum number of link points per system*1	Remote I/O (RX, RY)	2048 points
	Remote register (RWw)	256 points (master station → remote device station/local station/intelligent device station/standby master station)
	Remote register (RWr)	256 points (remote device station/local station/intelligent device station/standby master station → master station)
Number of link points per station*1	Remote I/O (RX, RY)	32 points (local station is 30 points)
	Remote register (RWw)	4 points (master station → remote device station/local station/intelligent device station/standby master station)
	Remote register (RWr)	4 points (remote device station/local station/intelligent device station/standby master station → master station)
Communication method		Broadcast polling method
Synchronous method		Frame synchronization method
Encoding method		NRZI method
Transmission path		Bus (RS-485)
Transmission format		Conforms to HDLC
Error control system		CRC ($X^{16}+X^{12}+X^5+1$)
RAS function		Automatic return function Slave station cut-off function Error detection via link special relay/register
Connection cable		CC-Link dedicated cables compatible with Ver.1.10
Maximum number of modules specification		Counts as 1 module
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)
5VDC internal current consumption		0.46A
Weight		0.15kg

*1: Indicates the number of link points for Remote net Ver.1 mode.

CC-Link/LT Master Module

■ LJ61CL12
NEW

Master station	Maximum transmission speed **2.5Mbps**	Remote I/O **1024 points***	
CC-Link/LT	**No parameter settings**	Remote station **Transmission speed auto-tracking function**	

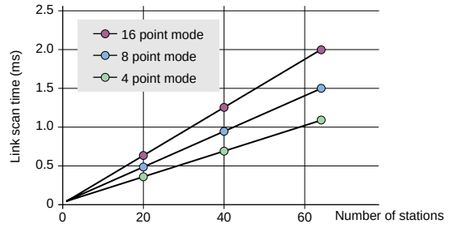
*In the 16-point mode

CC-Link/LT

High speed equipment response

CC-Link/LT has an excellent response time. With 64 stations and a transmission speed of 2.5Mbps, the maximum link scan time is just 1.2ms. According to the transmission distance required, it is possible to select speeds of 2.5Mbps, 625kbps, or 156kbps.

■ CC-Link/LT link scan time (using a transmission speed of 2.5Mbps)



Simple networking that 'just works'

There are no confusing parameters settings to make, and with remote I/O, only the master station needs to set the transmission speed.

■ Specifications

Item				LJ61CL12		
Point mode				4-point mode	8-point mode	16-point mode
Control specifications	Maximum link points (the same I/O address used)			256 points (512 points)	512 points (1024 points)	1024 points (2048 points)
	Link points per station (the same I/O address used)			4 points (8 points)	8 points (16 points)	16 points (32 points)
	Link scan time	32 stations connected	Points	128 points	256 points	512 points
			2.5Mbps	0.7ms	0.8ms	1.0ms
			625kbps	2.2ms	2.7ms	3.8ms
			156kbps	8.0ms	10.0ms	14.1ms
		64 stations connected	Points	256 points	512 points	1024 points
			2.5Mbps	1.2ms	1.5ms	2.0ms
			625kbps	4.3ms	5.4ms	7.4ms
			156kbps	15.6ms	20.0ms	27.8ms
Communication specifications	Transmission speed			2.5Mbps/625kbps/156kbps		
	Communication method			BITR method (Broadcastpolling + Interval Timed Response)		
	Network topology			T-branch type		
	Error control system			CRC		
	Number of connectable modules			64		
	Remote station number			1 to 64		
	Installation position of master station			End of a trunk line		
	RAS function			Network diagnostics, internal loopback diagnostics, slave station cutoff function, automatic return function		
	Connection cable*1			Dedicated flat cable (0.75mm² × 4)*2, VCTFcable*3, flexible cable*2		
Maximum number of modules specification				Counts as 1 module		
Number of occupied I/O points*4				16, 32, 48, 64, 128, 256, 512, or 1024 points (I/O assignment: Intelli.)		
5VDC internal current consumption				0.16A		
24VDC power supply*5	Voltage			20.4 to 28.8VDC		
	Current consumption			0.03A		
	Current on startup			0.07A		
Weight				0.12kg		

*1: When the cables other than dedicated flat cables, VCTF cables, and flexible cables are used, performance of CCLink/LT is not guaranteed.
*2: Use the dedicated flat cables and flexible cables accredited by CC-Link Partner Association. CC-Link Partner Association website: http://www.cc-link.org/
*3: Refer to the manual for details regarding VCTF cable specifications.
*4: Set the number of occupied I/O points using the operation setting switch. Refer to the manual for details.
*5: 24VDC power supply is supplied through the dedicated power supply or power supply adapter.

CC-Link IE Field and Ethernet related products

CC-Link IE Field Network Ethernet Adapter Module CC-Link IE Field Ethernet

NZ2GF-ETB※1

Features

- Using Seamless Message Protocol (SLMP*2), a variety of Ethernet devices such as vision sensors and RFID controllers can be connected to the CC-Link IE Field network.
- Use a web browser to set station numbers, Ethernet options, and view error history.
- This Ethernet adapter module is compatible with transmission rates of 100 Mbps and 1 Gbps.

*1 GX Works2 (Version 1.40S or later) is required to make settings and to conduct diagnosis of stations using extended mode.
*2 SLMP (SeamLess Message Protocol) is a protocol advocated by the CC-Link Partner Association.

Industrial Switching HUB CC-Link IE Field Ethernet

NZ2EHG-T8 / NZ2EHF-T8※1

Features

- NZ2EHG-T8 is compatible with transmission rates of 10 Mbps, 100 Mbps, and 1 Gbps.
- NZ2EHF-T8 is compatible with transmission rates of 10 Mbps and 100 Mbps.
- These switching hubs comply with IEEE802.3ab (1000 BASE-T), IEEE802.3u(100 BASE-TX), IEEE802.3 (10 BASE-T) standards.
- AutoMDI/MDI-X and auto-negotiation are available.
- The automatic power adjustment function can reduce power consumption by up to 80 percent.*2
- These hubs do not use cooling fans, and yet a wide ambient-temperature operating range is permissible (0 to 50°C).
- Quick detach mechanism allows easy DIN rail attachment and detachment.

*1 This model may not be connected directly to the CC-Link IE Field Network (1 Gbps). An Ethernet adapter module NZ2GF-ETB is required. For direct use with the CC-Link IE Field Network, please use NZ2EHG-T8.
*2 For comparison, power consumption was measured when all 8 ports were used and when none of them were used. This function is only available for NZ2EHG-T8.

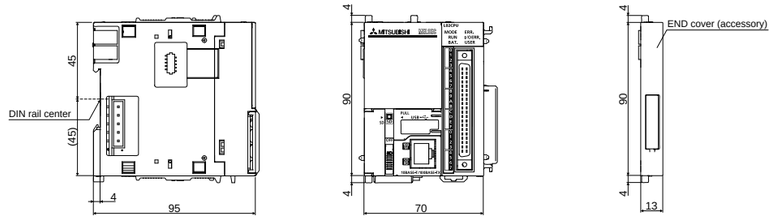
[1Gbps] [100Mbps]

This series was developed and is produced with Contec Co. Ltd. Please note that the specifications and guarantee conditions of these products are different from those of MELSEC products.
Please refer to the product manual for details.

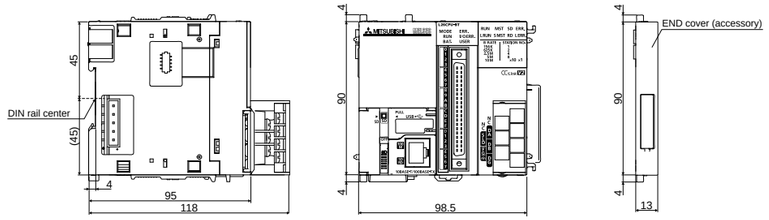
MEMO

CPU Modules

L02CPU, L02CPU-P NEW

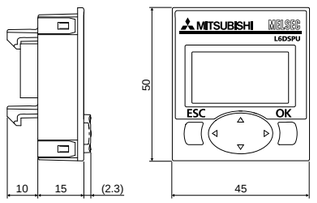


L26CPU-BT, L26CPU-PBT NEW



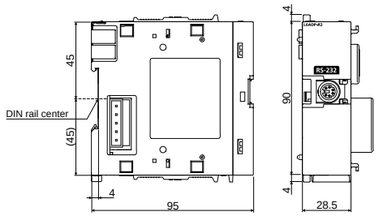
Display Unit

L6DSPU



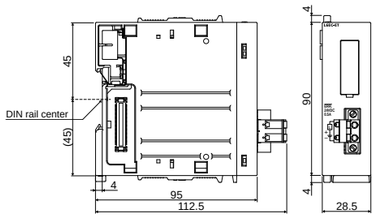
RS-232 adapter

L6ADP-R2



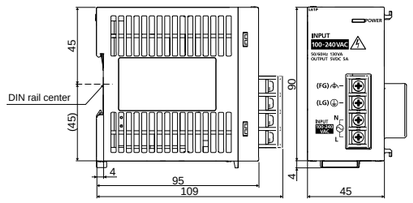
END cover with error terminal

L6EC-ET



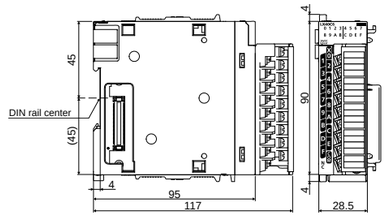
Power Supply Modules

L61P, L63P

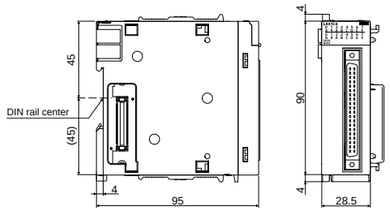


I/O Modules

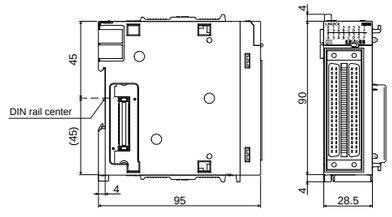
LX40C6, LY10R2, LY40NT5P, LY40PT5P



LX41C4, LY41NT1P, LY41PT1P

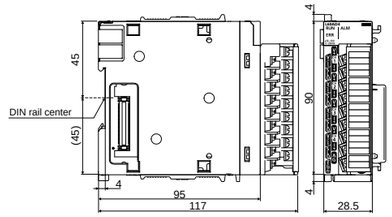


LX42C4, LY42NT1P, LY42PT1P



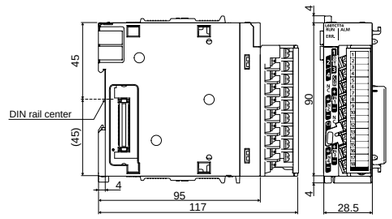
Analog I/O Modules

L60AD4, L60DA4

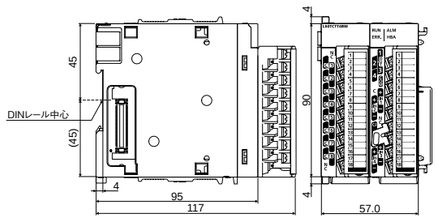


Temperature Control Modules

L60TCTT4 NEW, L60TCRT4 NEW

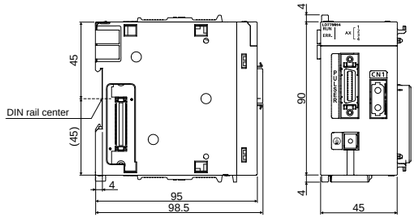


L60TCTT4BW NEW, L60TCRT4BW NEW



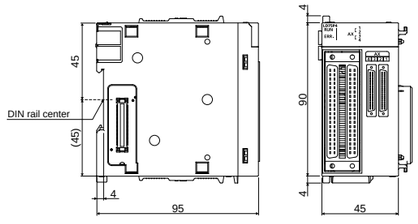
Simple Motion Module

LD77MH4, LD77MH16

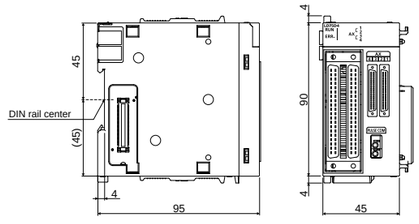


Positioning Modules

LD75P4

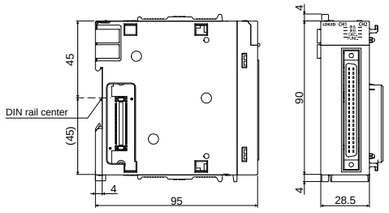


LD75D4



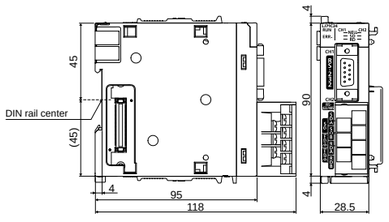
High-Speed Counter Modules

LD62, LD62D

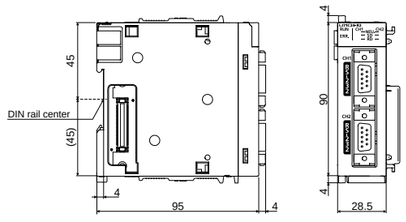


Serial Communication Modules

LJ71C24

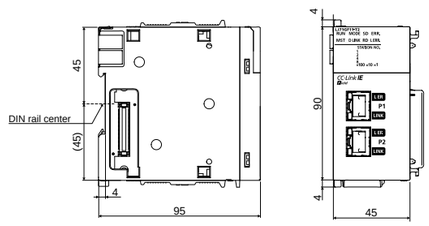


LJ71C24-R2



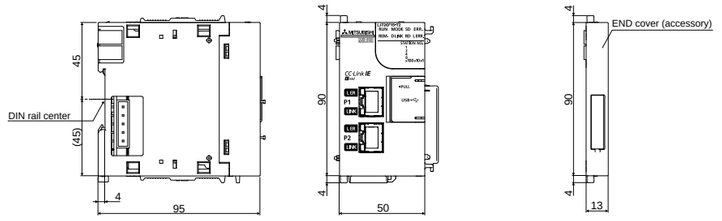
CC-Link IE Field Network Master/Local Module

LJ71GF11-T2



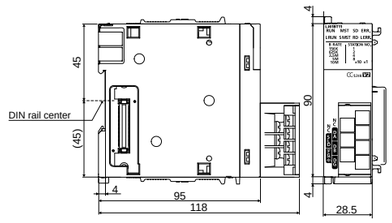
CC-Link IE Field Network Head Module

LJ72GF15-T2



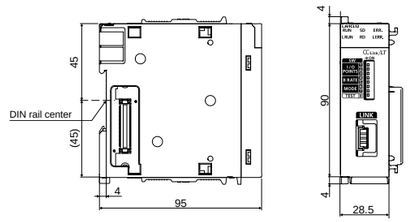
CC-Link Master/Local Module

LJ61BT11



CC-Link/LT Master Module

LJ61CL12 NEW



Reaching out to the world using a global network to provide comprehensive customer support.

Global FA center

"Mitsubishi Electric Global FA centers" have been established in various countries around the world to cover the Americas, Europe, and Asia. FA centers help to ensure compliance with the certifications and regulations of different regions, initiate product development in response to local demands, and provide full-time, professional customer service.

FA center / FA center satellite (China) / Mechatronics service center (China) / Sales and Service office (China) / Factory location / Development center

UK FA Center

Mitsubishi Electric Europe B.V. UK Branch
Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, UK.
Tel: 44-1707-27-6100 / Fax: 44-1707-27-8695
Area covered: UK, Ireland

European FA Center

Mitsubishi Electric Europe B.V. Polish Branch
ul. Krakowska 50, 32-083 Balice, Poland
Tel: 48-12-630-4700 / Fax: 48-12-630-4701
Area covered: Central and Eastern Europe

Russian FA Center

Mitsubishi Electric Europe B.V. Russian Branch St.Petersburg office
Sverdlovskaya emb., bld "Sch", BC "Benua", office 720, 195027, St.Petersburg, Russia
Tel: 7-812-633-3497 / Fax: 7-812-633-3499
Area covered: Russia

Korean FA Center

Mitsubishi Electric Automation Korea Co., Ltd.
B1F,2F, 1480-6, Gayang-Dong, Gangseo-Gu, Seoul, 157-200, Korea
Tel: 82-2-3660-9632 / Fax: 82-2-3663-0475
Area covered: Korea

German FA Center

Mitsubishi Electric Europe B.V. - German Branch
Gothaer Strasse 8, D-40880 Ratingen, Germany
Tel: 49-2102-486-0 / Fax: 49-2102-486-1120
Area covered: Mainly Western Europe

Taiwan FA Center

L : Setsuyo Enterprise Co., Ltd.
3F., No.105, Wugong 3 rd, Wugu Dist, New Taipei City 24889, Taiwan, R.O.C.
Tel: 886-2-2299-9917 / Fax: 886-2-2299-9963
R : Mitsubishi Electric Taiwan Co.,Ltd.
No.8-1.Industrial 16th Road,Taichung Industrial Park ,Taichung, Taiwan 407, R.O.C.
Tel: 886-(0)4-2359-0688 / Fax: 886-(0)4-2359-0689
Area covered: Taiwan

Czech republic FA Center

Mitsubishi Electric Europe B.V. -o.s. Czech office
Avenir Business Park, Radicka 714/113a, 158 00 Praha5, Czech Republic
Tel: 420-251-551-470 / Fax: 420-251-551-471
Area covered: Czech,Slovakia

Thailand FA Center

Mitsubishi Electric Automation (Thailand) Co., Ltd.
Bang-Chan Industrial Estate No.111, Soi Serithai 54, T.Kannayao,A.Kannayao, Bangkok10230, Thailand
Tel: 66-2906-3238 / Fax: 66-2906-3239
Area covered: Thailand

North American FA Center

Mitsubishi Electric Automation, Inc.
500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A
Tel: 1-847-478-2100 / Fax: 1-847-478-2253
Area covered: North America, Mexico, Chile, Brazil

India FA Center

Mitsubishi Electric India Pvt. Ltd.
India Factory Automation Centre
2nd Floor, DLF Building No.9B, DLF Cyber City Phase III, Gurgaon 122002, Haryana, India
Tel: 91-124-4630300 / Fax: 91-124-4630399
Area covered: India

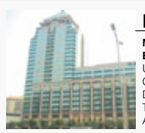
ASEAN FA Center

Mitsubishi Electric Asia Pte. Ltd.
ASEAN Factory Automation Centre
307 Alexandra Road #05-01/02, Mitsubishi Electric Building, Singapore
Tel: 65-6470-2460 / Fax: 65-6476-7439
Area covered: Southeast Asia, India

Brazil FA Center

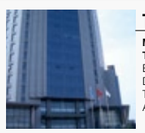
MELCO-TEC Representacao Comercial e Assessoria Tecnica Ltda.
Av. Paulista, 1439, Cerqueira Cesar - Sao Paulo Brazil - CEP 01311-200
Tel: 55-11-3146-2200 / Fax: 55-11-3146-2217
Area covered: Brazil

China (including Hong Kong area)



Beijing FA Center

Mitsubishi Electric Automation (CHINA) Ltd.
Beijing Office
Unit904-905, 9F, Office Tower , Henderson Centre, 18 Jianguomennei Avenue, Dongcheng District, Beijing, China
Tel: 86-10-6518-8830 / Fax: 86-10-6518-3907
Area covered: China



Tianjin FA Center

Mitsubishi Electric Automation (CHINA) Ltd.
Tianjin Office
B-2-801-802, Youyi Building, 50 Youyi Road, Hexi District, Tianjin, China
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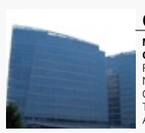
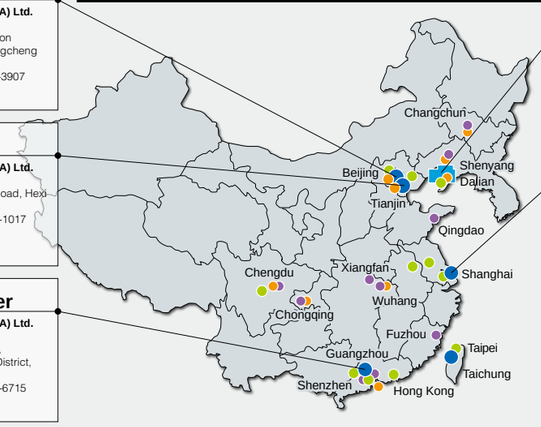
Area covered: China



Guangzhou FA Center

Mitsubishi Electric Automation (CHINA) Ltd.
Guangzhou Office
Rm.1609, North Tower, The Hub Center, No.1068, Xin Gang East Road, Haizhu District, Guangzhou,China
Tel: 86-20-8923-6730 / Fax: 86-20-8923-6715
Area covered: China



中国現地工場 三菱電機大連機器有限公司

Mitsubishi Electric Dalian Industrial Products Co., Ltd.

Shanghai FA Center

Mitsubishi Electric Automation (CHINA) Ltd.
4/F., Zhi Fu Plaza No.80 Xin Chang Road, Shanghai,200003, China
Tel: 86-21-2322-3030 / Fax: 86-21-2322-3000
Area covered: China

Complying with international quality assurance standards.

All of Mitsubishi Electric's FA component products have acquired the international quality assurance "ISO9001" and environment management system standard "ISO14001" certification. Mitsubishi Electric's products also comply with various safety standards, including UL standards.

*For jointly developed and partner products, guaranteed quality standards may differ. Please refer to the product manuals for details.

Safety Standards

CE	CE : Council Directive of the European Communities
c UL us	UL : Underwriters Laboratories Listing

Product List

*Refer to the product user manuals for information about compatible modules, restrictions, etc., before using the products.
*Contact your local Mitsubishi Electric sales office or representative for the latest information about MELSOFT software versions and compatible operating systems.

MELSEC-L Series

[Legend] DB : Double brand product (Note) NEW : Recently released product SOON : Product available soon

Product			Model	Outline
CPU			L02CPU	Number of I/O points: 1024 points, Number of I/O device points: 8192 points, Program capacity: 20k steps, Basic operation processing speed (LD instruction): 40ns, Program memory capacity: 80KB, Peripheral connection ports: USB and Ethernet, Memory card I/F: SD Memory Card, Built-in I/O functions (General input, General output (Sink type), Interrupt input, Pulse catch, Positioning, High-speed counter), END cover included
			L02CPU-P NEW	Number of I/O points: 1024 points, Number of I/O device points: 8192 points, Program capacity: 20k steps, Basic operation processing speed (LD instruction): 40ns, Program memory capacity: 80KB, Peripheral connection ports: USB and Ethernet, Memory card I/F: SD Memory Card, Built-in I/O functions (General input, General output (Source type), Interrupt input, Pulse catch, Positioning, High-speed counter), END cover included
			L26CPU-BT	Number of I/O points: 4096 points, Number of I/O device points: 8192 points, Program capacity: 260k steps, Basic operation processing speed (LD instruction): 9.5ns, Program memory capacity: 1040KB, Peripheral connection ports: USB and Ethernet, Memory card I/F: SD Memory Card, Built-in I/O functions (General input, General output (Sink type), Interrupt input, Pulse catch, Positioning, High-speed counter), CC-Link master/local station function, END cover included
			L26CPU-PBT NEW	Number of I/O points: 4096 points, Number of I/O device points: 8192 points, Program capacity: 260k steps, Basic operation processing speed (LD instruction): 9.5ns, Program memory capacity: 1040KB, Peripheral connection ports: USB and Ethernet, Memory card I/F: SD Memory Card, Built-in I/O functions (General input, General output (Source type), Interrupt input, Pulse catch, Positioning, High-speed counter), CC-Link master/local station function, END cover included
CPU packages			L02CPU-SET	CPU module (L02CPU), Display unit (L6DSPU), and Power supply module (L61P) set
			L02CPU-P-SET NEW	CPU module (L02CPU-P), Display unit (L6DSPU), and Power supply module (L61P) set
			L26CPU-BT-SET	CPU module (L26CPU-BT), Display unit (L6DSPU), and Power supply module (L61P) set
			L26CPU-PBT-SET NEW	CPU module (L26CPU-PBT), Display unit (L6DSPU), and Power supply module (L61P) set
CPU options	Display unit		L6DSPU	STN black-and-white LCD, 16 characters x 4 lines
	RS-232 adapter		L6ADP-R2	For GOT connection, 1 x RS-232 channel, maximum transmission speed: 115.2Kpbs
	End cover with error terminal		L6EC-ET	End cover with error terminal
	Battery		Q6BAT	Replacement battery
			Q7BAT-SET	High capacity battery with a battery holder for CPU installation
			Q7BAT	High capacity replacement battery
	SD Memory Card		L1MEM-2GBSD*1	2GB SD Memory Card
			L1MEM-4GBSD*1	4GB SD Memory Card
Power supply			L61P	Input voltage: 100 to 240VAC, Output voltage: 5VDC, Output current: 5A
			L63P	Input voltage: 24VAC, Output voltage: 5VDC, Output current: 5A
I/O module	Input	DC (Positiv e or negative common)	LX40C6	16 points, 24VDC, Response time: 1/5/10/20/70ms, 16 points/common, Positive/Negative common, 18-point terminal block
			LX41C4	32 points, 24VDC, Response time: 1/5/10/20/70ms, 32 points/common, Positive/Negative common, 40-pin connector
			LX42C4	64 points, 24VDC, Response time: 1/5/10/20/70ms, 32 points/common, Positive/Negative common, 40-pin connector x 2
	Output	Relay	LY10R2	16 points, 24VDC/240VAC, 2A/point, 8A/common, Response time: 10ms, 16 points/common, 18-point terminal block
		Transistor (Sink)	LY40NT5P	16 points, 12 to 24VDC, 0.5A/point, 5A/common, Response time: 0.5ms, 16 points/common, 18-point terminal block, overload protection function, overheat protection function, surge suppression
			LY41NT1P	32 points, 12 to 24VDC, 0.1A/point, 2A/common, Response time: 0.5ms, 32 points/common, Sink type, 40-pin connector, overload protection function, overheat protection function, surge suppression
			LY42NT1P	64 points, 12 to 24VDC, 0.1A/point, 2A/common, Response time: 0.5ms, 32 points/common, Sink type, 40-pin connector x 2, overload protection function, overheat protection function, surge suppression
		Transistor (Source)	LY40PT5P	16 points, 12 to 24VDC, 0.5A/point, 5A/common, Response time: 0.5ms, 16 points/common, 18-point terminal block, overload protection function, overheat protection function, surge suppression
			LY41PT1P	32 points, 12 to 24VDC, 0.1A/point, 2A/common, Response time: 0.5ms, 32 points/common, 40-pin connector, overload protection function, overheat protection function, surge suppression
			LY42PT1P	64 points, 12 to 24VDC, 0.1A/point, 2A/common, Response time: 0.5ms, 32 points/common, 40-pin connector x 2, overload protection function, overheat protection function, surge suppression

*1: Mitsubishi Electric does not guarantee the operation of non-Mitsubishi Electric products.

Note: General specifications and product guarantee conditions of jointly developed products are different from those of MELSEC products.
For more information, please refer to the product manuals or contact your local Mitsubishi representative for details.

MELSEC-L Series

[Legend] DB : Double brand product NEW : Recently released product SOON : Product available soon

Product			Model	Outline
Intelligent function module	Analog input		L60AD4	4 channels, Input: -10 to 10VDC, 0 to 20mADC, Output (resolution): 0 to 20000, -20000 to 20000, Conversion speed: 20µs, 80µs, 1ms/ch, 18-point terminal block
	Analog output		L60DA4	4 channels, Input (resolution): 0 to 20000, -20000 to 20000, Output: -10 to 10VDC, 0 to 20mADC, Conversion speed: 20µs/ch, 18-point terminal block
	Temperature Control	Thermocouple	L60TCTT4 NEW	4 channels (normal mode) / 2 channels (heating-cooling control), Thermocouple (K,J,T,B,S,E,R,N,U,L,PLⅡ,W5Re/W26Re), No Heater disconnection detection function, sampling cycle: 250ms/4CH, 500ms/4CH, Channel isolated, 18 point terminal block
			L60TCTT4BW NEW	4 channels (normal mode) / 2 channels (heating-cooling control), Thermocouple (K,J,T,B,S,E,R,N,U,L,PLⅡ,W5Re/W26Re), Heater disconnection detection function, sampling cycle: 250ms/4CH,500ms/4CH, Channel isolated, 18 point terminal block x 2
		RTD	L60TCRT4 NEW	4 channels (normal mode) / 2 channels (heating-cooling control), Platinum type resistive temperature device(Pt100, JPt100), No Heater disconnection detection function, Sampling cycle: 250ms/4CH,500ms/4CH, Channel isolated, 18 point terminal block
			L60TCRT4BW NEW	4 channels (normal mode) / 2 channels (heating-cooling control), Platinum type resistive temperature device(Pt100, JPt100), Heater disconnection detection function, Sampling cycle: 250ms/4CH,500ms/4CH, Channel isolated, 18 point terminal block x 2
	Simple motion		LD77MH4	4 axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, synchronous control, Control unit: mm, inch, degree, pulse, Number of positioning data: 600 data/axis, SSCNET Ⅲ connectivity
			LD77MH16	16 axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, synchronous control, Control unit: mm, inch, degree, pulse, Number of positioning data: 600 data/axis, SSCNET Ⅲ connectivity
	Positioning		LD75P4	4 axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, Control unit: mm, inch, degree, pulse, Number of positioning data: 600 data/axis, Maximum output pulse: 200kpps, 40-pin connector x 2
			LD75D4	4 axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, Control unit: mm, inch, degree, pulse, Number of positioning data: 600 data/axis, Maximum output pulse: 4Mpps, 40-pin connector x 2
	High-speed counter		LD62	2 channels, 200/100/10kpps, Count input signal: 5/12/24VDC, External input: 5/12/24VDC, Coincidence output: transistor (sink), 12/24VDC, 0.5A/point, 2A/common, 40-pin connector
			LD62D	2 channels, 500/200/100/10kpps, Count input signal: EIA standards RS-422-A (Differential line driver level), External input: 5/12/24VDC, Coincidence output: transistor (sink), 12/24VDC, 0.5A/point, 2A/common, 40-pin connector
	Serial communication		LJ71C24	RS-232: 1 channel, RS-422/485: 1 channel, Total transmission speed of 2 channels: 230.4kbps
			LJ71C24-R2	RS-232: 2 channels, Total transmission speed of 2 channels: 230.4kbps
Network	CC-Link IE Field network		LJ71GF11-T2	Master/Local station
			LJ72GF15-T2*2	Remote station (Head module with END cover)
	CC-Link		LJ61BT11	Master/Local station, CC-Link Ver.2.0 compatible
	CC-Link/LT		LJ61CL12 NEW	Master station, CC-Link/LT compatible

*2: Systems using the LJ72GF15-T2 head module cannot also use a CPU module, display unit, RS-232 adapter, or CC-Link IE Field Network master/local module.

Options

[Legend] DB : Double brand product NEW : Recently released product SOON : Product available soon

Product	Model	Outline
Connector	A6CON1*1 *2	Soldering type 32-point connector (40-pin connector)
	A6CON2*1 *2	Crimp contact type 32-point connector (40-pin connector)
	A6CON3*1 *3	Flat cable pressure welding type 32-point connector (40-pin connector)
	A6CON4*1 *2	Soldering type 32-point connector (40-pin connector, cable connectable in bidirection)
Connector/terminal block converter module	A6TBXY36*4 *5	For positive common type input module and sink type output module (Standard type)
	A6TBXY54*4 *5	For positive common type input module and sink type output module (2-wire type)
	A6TBX70*4	For positive common type input module (3-wire type)

*1: Available for L02CPU, L02CPU-P, L26CPU-BT, L26CPU-PBT, LX41C4, LX42C4, LY41NT1P, LY42NT1P, LY41PT1P and LY42PT1P.
*2: Available for LD75P4, LD75D4, LD62 and LD62D.
*3: When used with L02CPU, L02CPU-P, L26CPU-BT, L26CPU-PBT, only when all points are general I/O.
*4: Available for LX41C4 and LX42C4. (Positive common only)
*5: Available for LY41NT1P, LY42NT1P, LY41PT1P and LY42PT1P.

Ethernet related products

Product	Model	Outline
CC-Link IE Field Network Ethernet Adapter	NZ2GF-ETB	100Mbps/1Gbps compatible station for expanding CC-Link IE Field networks
Industrial switching HUB	NZ2EHG-T8 DB	10Mbps/100Mbps/1Gbps AUTO-MDIX, DIN rail mountable, 8 ports
	NZ2EHF-T8 DB	10Mbps/100Mbps AUTO-MDIX, DIN rail mountable, 8 ports

MELSOFT*1 — Programming Tool

Product	Model	Outline
GX Works2	SW1DNC-GXW2-E	Programmable controller engineering software (Functions integrated software: Programming, simulation, module settings, and monitoring)
GX Developer*2	SW8D5C-GPPW-E	Programmable controller programming software
	SW8D5C-GPPW-EV	Programmable controller programming software (upgrade)
MELSOFT iQ Works	SW1DNC-IQWK-E (CD edition) SW1DND-IQWK-E (DVD edition)	FA engineering software*3 • System Management Software: MELSOFT Navigator MELSOFT Navigator is a comprehensive system configuration solution that serves as a launching pad for the other software packages. • Controller Programming Software: MELSOFT GX Works2 The next generation configuration, programming, and simulation software for FX, L, and Q Series controllers. • Motion Programming Software: MELSOFT MT Works2 Design and maintenance tool for motion controllers • HMI Programming Software: MELSOFT GT Works3 GOT configuration, screen design, and maintenance tool.

*1: For details on the software versions compatible with each module, refer to the manual for each product.
Contact your local Mitsubishi Electric sales office or representative for the latest information about MELSOFT software versions and compatible operating systems.
*2: Some functions have restrictions. For details, refer to "Precautions on L Series Modules" in the appendix of the GX Developer Version 8 Operating Manual.
*3: For detailed information about supported modules, refer to the manuals of the relevant software package.

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

Mitsubishi Electric
Programmable Controllers

Precautions before use

This publication explains the typical features and functions of the products herein and does not provide restrictions and other information related to usage and module combinations. Before using the products, always read the product user manuals. Mitsubishi Electric will not be held liable for damage caused by factors found not to be the cause of Mitsubishi Electric; opportunity loss or lost profits caused by faults in Mitsubishi Electric products; damage, secondary damage, or accident compensation, whether foreseeable or not, caused by special factors; damage to products other than Mitsubishi Electric products; and to other duties.

⚠ For safe use

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

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USA	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061, USA	Tel : +1-847-478-2100 Fax : +1-847-478-2253
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Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8 D-40880 Ratingen, Germany	Tel : +49-2102-486-0 Fax : +49-2102-486-1120
UK	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire., AL10 8XB, UK	Tel : +44-1707-276100 Fax : +44-1707-278695
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