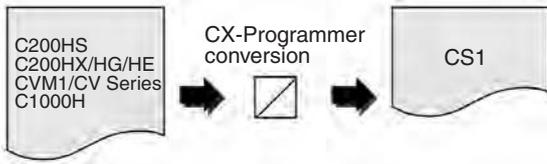


CS1-series Features

Better Basic Performance

■ Use Legacy Programs

The CX-Programmer can be used to convert programs from other OMRON PLCs.



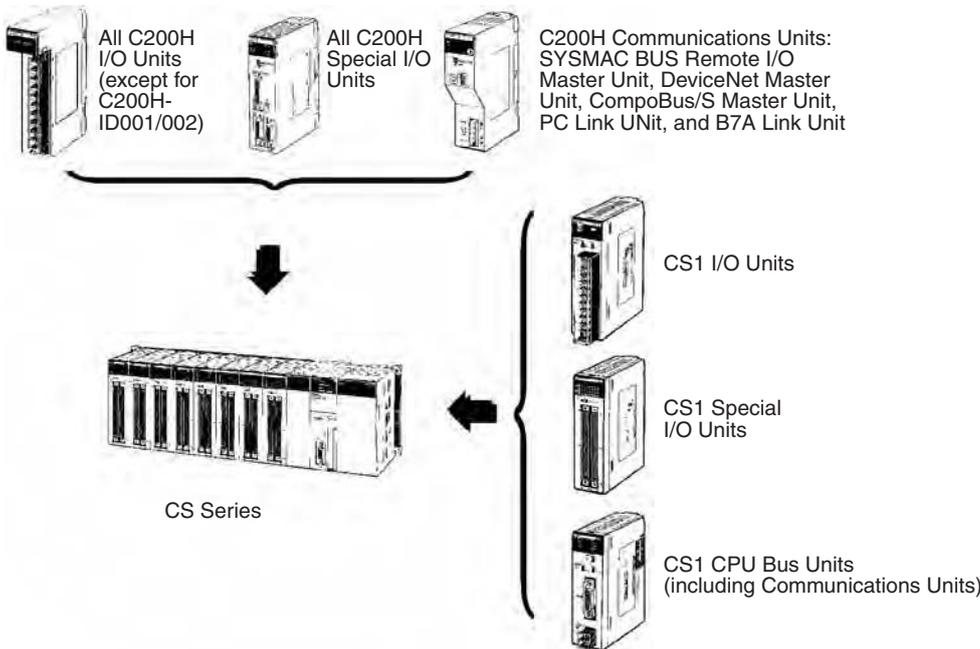
■ Large Capacity Data Handling with Each Instruction

The basic operand specifications have been converted from BCD to binary to increase data handling capacity.

Item	C200HX/HG/HE	CS1
Block transfers	0 to 6655 words	0 to 65535 words
Indirect addressing range	DM 00000 to DM 9999	D00000 to D32767

■ Use C200H Units with CS1G/CS1H PLCs

All of the I/O Units and Special I/O Units and a portion of the Communications Units used for the C200H, C200HS, and C200HX/HG/HE can be used, as can C200HX/HG/HE Expansion I/O Racks. (Only CS1 Units can be used on long-distance Expansion I/O Racks using I/O Control Units or I/O Interface Units.)



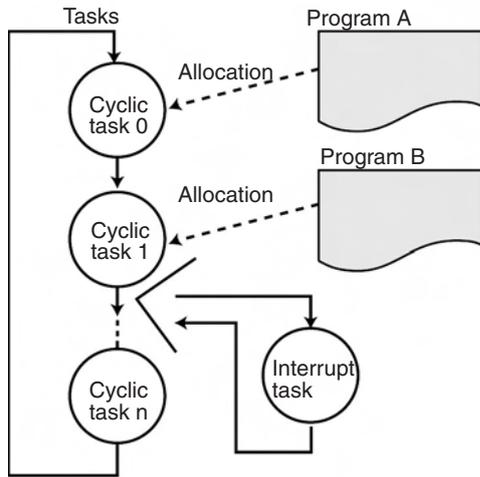
Note: There are restrictions in data transfers with the CPU Unit for CIO and DM Area specifications (e.g., addresses of transfer source or transfer destination) for the C200H Special I/O Units, as well as in data transfers programmed from these Units (e.g., using PC READ or PC WRITE instructions). Refer to CS1 PLC manuals (in particular, information on restrictions in using C200H Special I/O Units) for details, including the following.

Better Design/Development Efficiency

Structured Programming and Team Program Development with Tasks

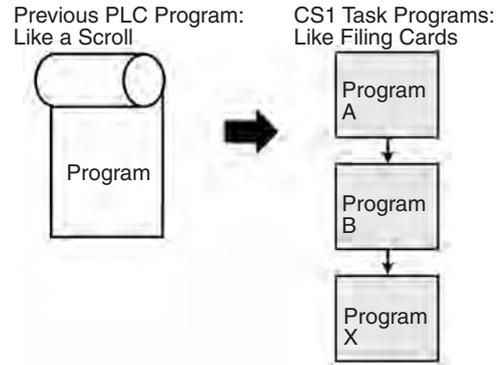
Task Programming

With CS1 PLCs, programs can be divided into programming units called tasks. There are both cyclic tasks, which are executed each cycle in a specified order, and interrupt tasks, which are executed when an interrupt occurs.



Comparison to Previous PLCs

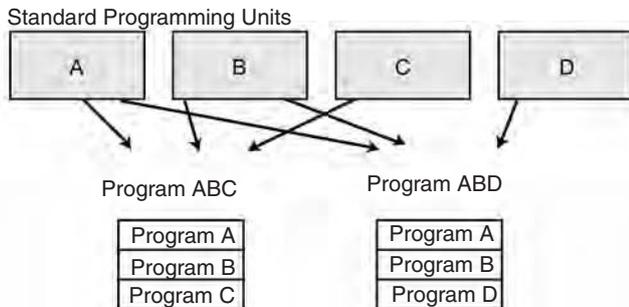
Although previously a PLC program was something like one long scroll, task programs more like separate cards arranged in order of execution.



Advantages

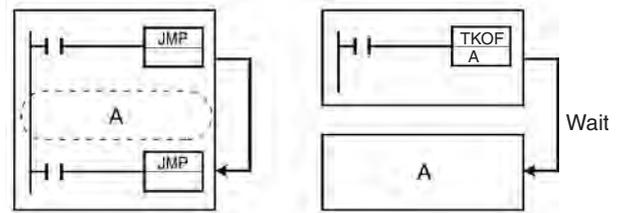
Program Standardization

Task programs are created in units divided by functionally by purpose. These functional units can be easily reused when programming new PLCs or systems with the same functionality.



Shorter Cycle Times

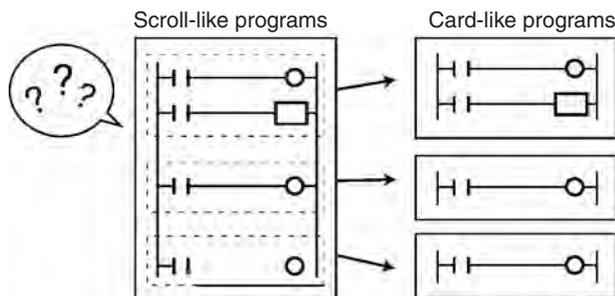
With a scroll-like program, many jump and similar instructions had to be used to avoid executing specific parts of the program. This not only slows down the programs, but makes them more difficult to understand. With task programming, special instructions enable controlling the execution of tasks so that only the required tasks are executed during any particular cycle.



Easier-to-understand Programs

With scroll-like programs, individual functional units are extremely difficult to find just by looking at the program.

Tasks are used to separate a program functionally and make the program much easier to understand.



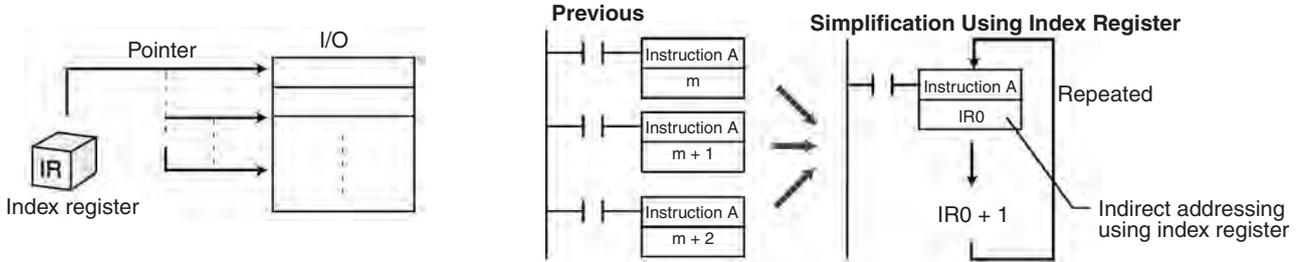
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Simple, Easy-to-Understand Programs

Index Registers, Table Data, Repeat Instructions, Block Programs, Text Strings, and More.

■ Simplify Programs with Index Registers

Index registers can be used as memory pointers to enable easily changing the addresses specified for instructions. Using an index register can often enable one instruction to perform the processing previously performed by many instructions.

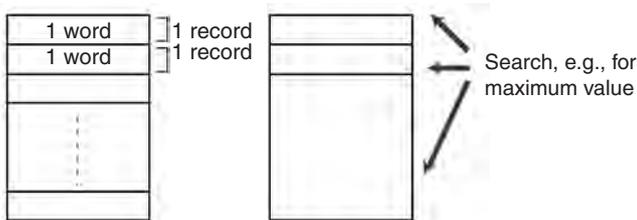


■ Easily Handle Table Data

Table Data Instructions

One-word Records

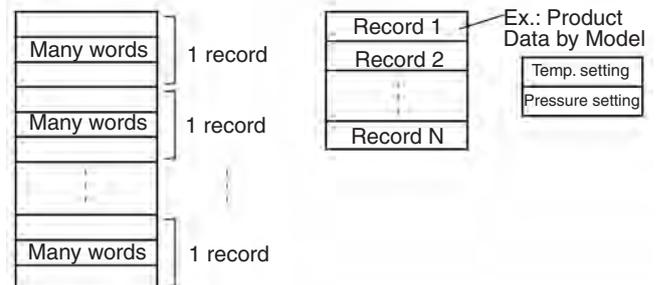
Instructions are provided to find the maximum value, minimum value, and search values.



Multi-word Records

Areas of memory can be defined as tables with the specified record size (words). Index registers can be used with such tables to easily sort records, search for values, or otherwise process the records in the table.

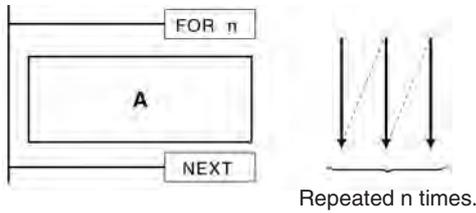
For example, the temperature, pressure, and other settings for each model of a product can be set in separate records and the data handled by record.



CS1-series Features

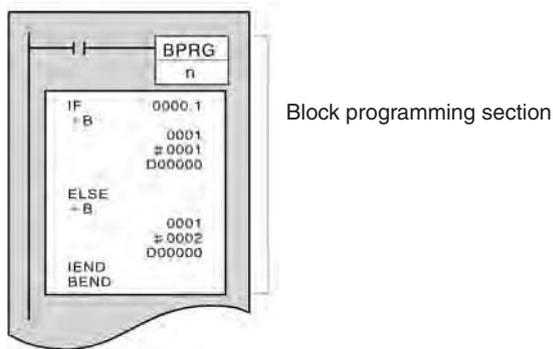
■ Easily Repeat Processing

Instructions are provided that let you easily repeat sections of the program. Repeat execution can also be ended for a specified condition.



■ Easily Program Logic Flow Control with Block Programming Sections

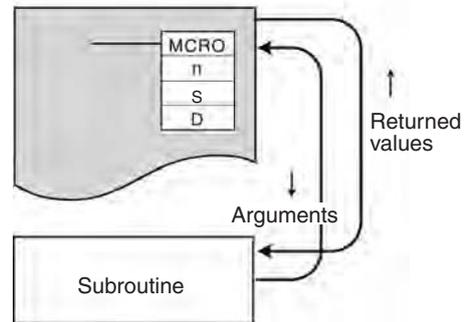
A block of mnemonic programming instructions can be executed as a group based on a single execution condition. IF/THEN, WAIT, TIMER WAIT, and other instructions can be used inside the block programming section to easily program logic flow control that is difficult to program with ladder diagrams.



Simple, Easy-to-Understand Programs

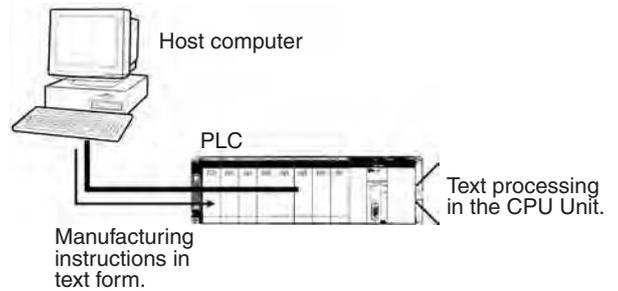
■ Macro (MCRO) Instruction

Macro instructions can be used to execute the same subroutine program with different operands from different locations in the programs (subroutine instruction with argument).



■ Easily Handle Text Strings

Manufacturing instruction can be obtained from a host computer or other external source, stored in memory, and then manipulated as text strings as required by the applications. The text strings can be searched, fetched, reordered, or other processed in the CPU Unit of the PLC.



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Maintenance and Management

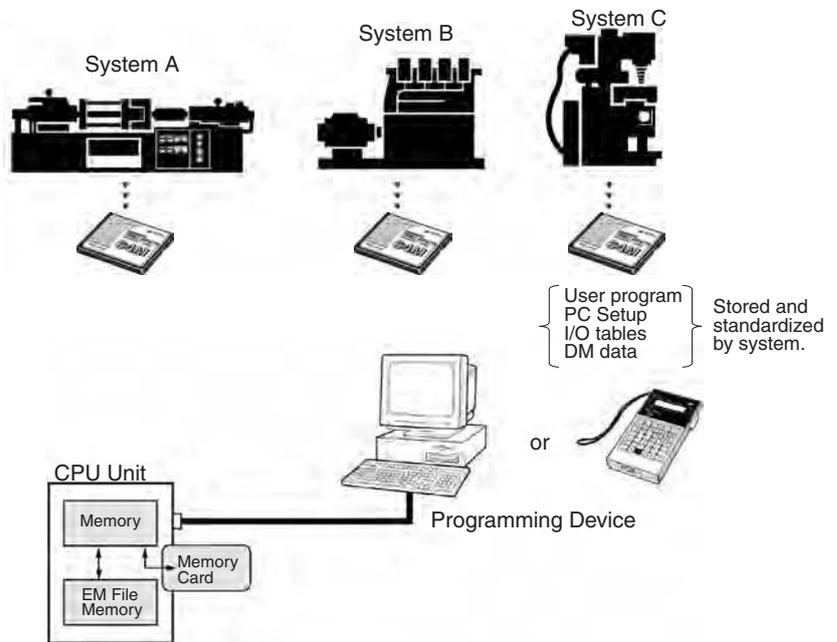
Use Memory Cards to Handle Files Containing Various Types of Data

File Applications

Manipulate PLC File Data Using Windows Files

- The user program, parameters, I/O memory, names, I/O comments, and block comments can all be handled as file data. File data can be used to standardize programs and initialization data for each system, and comments can be stored as file data on Memory Cards.
- The CX-Programmer or a Programming Console can be connected to a CS1 PLC to transfer files between the CPU Unit's memory and Memory Cards (or EM File Memory).
- As Windows files, file icons can be dragged and dropped to a Memory Card or computer storage device to easily copy the files.

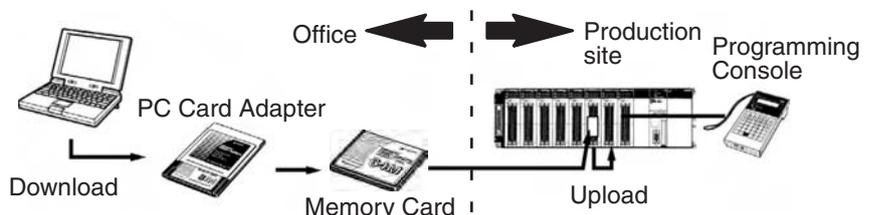
Note: A Memory Card Adapter can be used to mount Memory Cards into a PC card slot on a computer to use them as computer storage devices.



Handle File Data Onsite with Programming Consoles

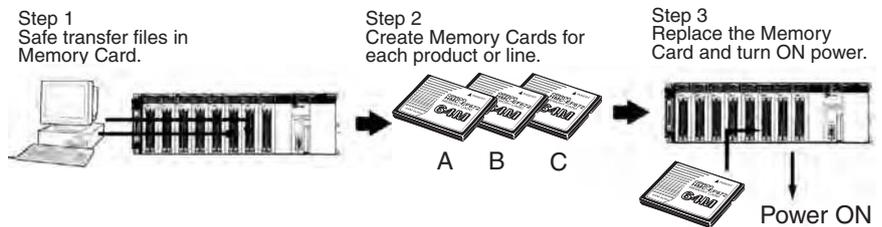
- A Programming Console can be connected to the PLC to transfer files between the CPU Unit's memory and Memory Cards (or EM File Memory). A Programming Console and Memory Cards are all you need to change data onsite.

Note: Program and setup data can be easily backed up onsite using only the CPU Unit, without a Programming Device. Also, programmed replacement of programs designated in Memory Cards is also possible without a Programming Device.



Change Program Simply by Changing Cards

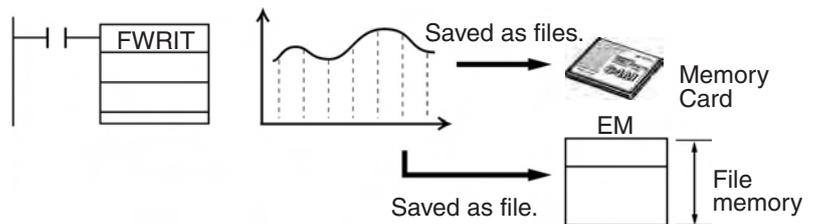
- File data can be automatically transferred from Memory Card to the CPU Unit when power is turned ON, enabling Memory Cards to be used for operation in the same way as is possible with ROM.



Manipulate Files During Operation

- File read and write instructions can be used during operation to transfer files between the CPU Unit's memory and Memory Cards (or EM File Memory). Trend data, quality control data, other data from memory can be stored during operation in Memory Cards or EM File Memory.

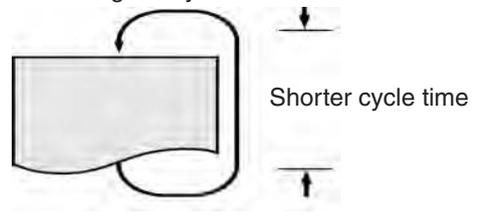
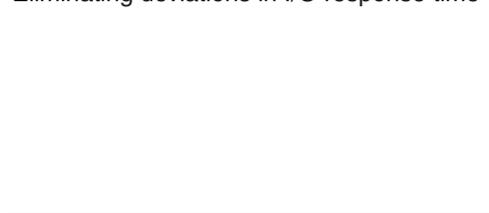
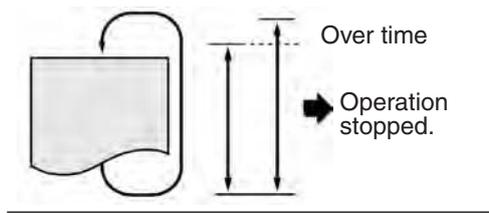
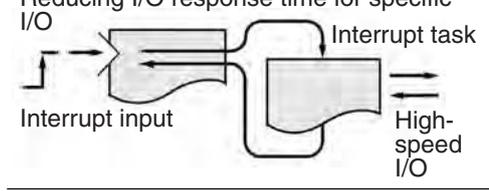
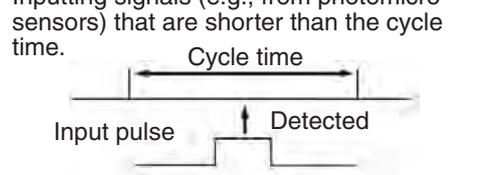
Note: With EV1-version CPU Units, CSV and text files can be saved, and programmed file operations, such as file name changes and deletions, are also possible.



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■ A Wide Range of Special Functions

Cycle Time Functions

Requirements	Solutions
<p>Reducing the cycle time</p> 	<ul style="list-style-type: none"> • Place tasks that are not being executed on standby. • Create subroutines for portions of tasks executed only under special conditions. • Disable cyclic refreshing for Special I/O Units when not required each cycle.
<p>Eliminating deviations in I/O response time</p> 	<ul style="list-style-type: none"> • Set the cycle time to a fixed time.
<p>Stopping operation for long cycle times</p> 	<ul style="list-style-type: none"> • Use the cycle time monitoring function to stop operation when the cycle time is too long.
<p>Reducing I/O response time for specific I/O</p> 	<ul style="list-style-type: none"> • Use an I/O interrupt task to execute an interrupt program when a specific input turns ON and then directly refresh external I/O when the appropriate instruction is executed in the interrupt program. External I/O can be directly refreshed either by using immediate refreshing for instruction operands or by using the IORF instruction to refresh all or a specified portion of external I/O.
<p>Inputting signals (e.g., from photomicrosensors) that are shorter than the cycle time.</p> 	<ul style="list-style-type: none"> • Use the high-speed pulse input function of the C200H High-density I/O Units (C200H Special I/O Units). These Units can detect 1-ms or 4-ms pulses (except C200H-OD501/OD215.) • Use the IORF instruction to refresh inputs during program execution to further increase processing speed.

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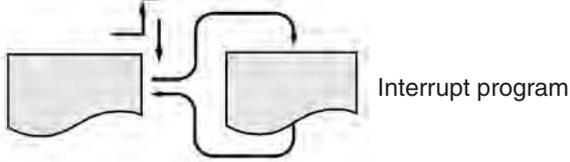
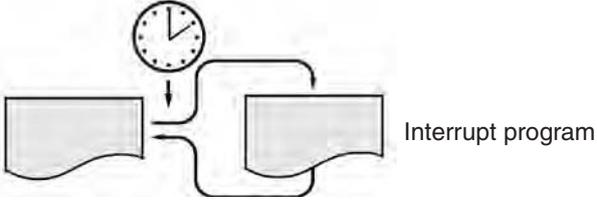
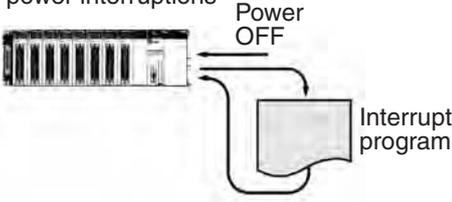
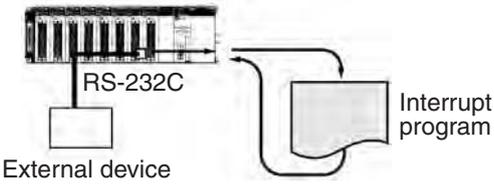
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Wiring Devices for High-density I/O Units

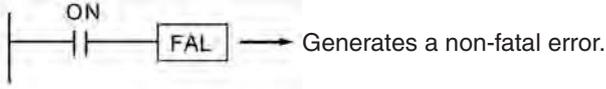
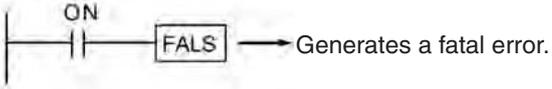
Connector Cables

Peripheral Devices

Interrupt Functions for CS1G/CS1H PLCs

Requirements	Solutions
<p>Executing programming without being affected by the cycle time</p>	<ul style="list-style-type: none"> Use I/O interrupt tasks to execute interrupt programs when specific inputs turn ON. 
<p>Monitoring operating conditions at a specific interval</p>	<ul style="list-style-type: none"> Use a scheduled interrupt task to execute an interrupt program at a specific interval. 
<p>Executing emergency processing for power interruptions</p>	<ul style="list-style-type: none"> Use the power OFF interrupt task to execute an interrupt program before the CPU stops. Immediate refreshing can be used inside this interrupt program to refresh specified outputs. (CS1G/CS1H only) 
<p>Generating CPU Unit interrupts when data is received from a serial port</p>	<ul style="list-style-type: none"> Use an interrupt from the Serial Communications Board to execute an interrupt program when a specific messages received by the Board. (CS1G/CS1H only) 

Maintenance and Debugging Functions

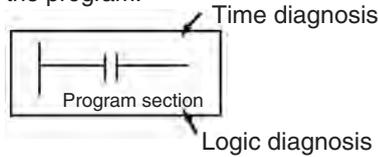
Requirements	Solutions
<p>Creating a user-defined error for specific conditions (e.g., errors or specific signals from the controlled system) but allow the CPU Unit to continue running.</p>	<ul style="list-style-type: none"> Use the FAL instruction to create a non-fatal user-defined error. An entry can also be left in the error history when the error occurs.  <ul style="list-style-type: none"> FAL can also be used just to leave error history records for specific conditions that are not necessarily errors.
<p>Creating a user-defined error for specific conditions (e.g., errors or specific signals from the controlled system) and stop the CPU Unit as a result.</p>	<ul style="list-style-type: none"> Use the FALS instruction to create a fatal user-defined error. An entry can also be left in the error history when the error occurs.  <ul style="list-style-type: none"> FALS can also be used to automatically stop operation for specific conditions that are not necessarily errors.

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Requirements	Solutions
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Determining if a specific output turns ON within a specified time after an input turns ON, generating an error if the output does not turn ON, and determining the address in the program responsible for the output not turning ON.

- Use the FPD instruction to perform time or logic diagnosis of a specified portion of the program.

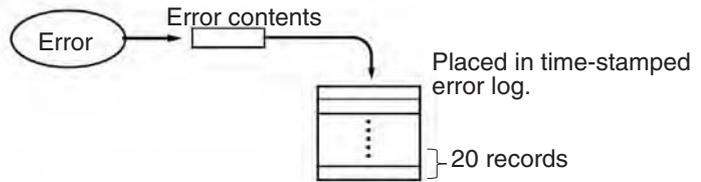


Creating a history of user-defined and system errors that have occurred.

- Use the error log to record up to 20 time-stamped error records.

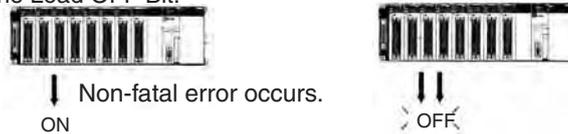
Creating an external output when a non-fatal error occurs.

- Use the Non-fatal Error Flag.



Turning OFF all output from Output Units for specific conditions.

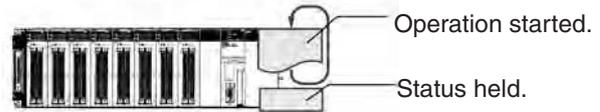
- Use the Load OFF Bit.



Turning OFF all output from Output Units during trial system operation.

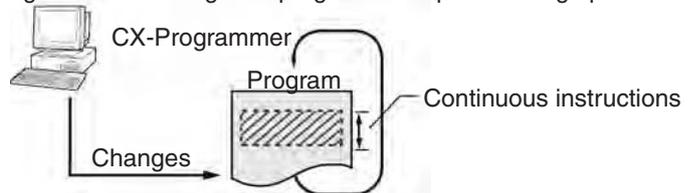
Maintaining I/O memory status when starting operation

- Use the I/O memory hold function to start program execution with the same I/O memory status as the last time the program was executed.



Correcting the program during operation

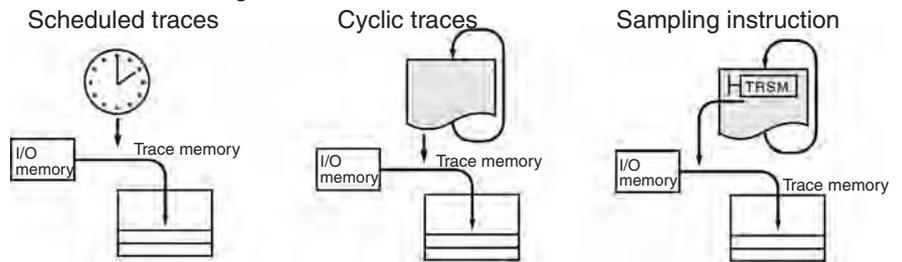
- Use the CX-Programmer to change the program as required during operation.



Sampling specified I/O memory bits or word data.

- Scheduled sampling
- Sampling once per cycle
- User-defined sampling

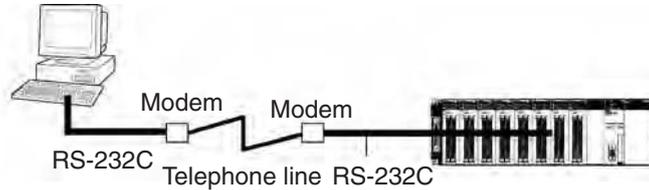
- Use the data tracing function.



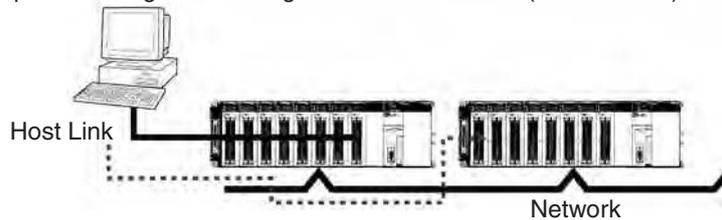
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Remote Programming and Monitoring

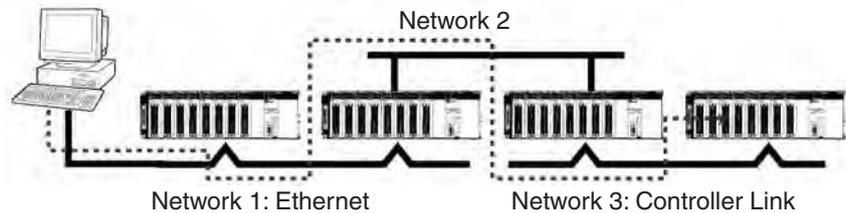
Requirements	Solutions
Monitoring and editing online for remote PLCs using telephone lines	<ul style="list-style-type: none"> Perform online programming and monitoring from a CX-Programmer running on a computer connected to the PLC via a modem.



Monitoring and editing online from the CX-Programmer for a remote PLC connected to a network	<ul style="list-style-type: none"> Use a Serial Communications Board or Unit, connect to a PLC via a modem, use an instruction to switch to host link mode, and then program or monitor from the CX-Programmer. (It's not necessary to cut the connection during the procedure.) Use the host link gateway function to program or monitor any PLC connected to a Controller Link or Ethernet Network to which the PLC connected to the computer running the CX-Programmer is connected (via RS-232C).
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Programming and editing a PLC on a remote network	<ul style="list-style-type: none"> Use the gateway function to edit any PLC connect to a network up to two networks away (3 networks including the local network). For example, a PLC on the Controller Link Network shown below can be accessed from the CX-Programmer running on a computer connected to a PLC on the Ethernet Network.
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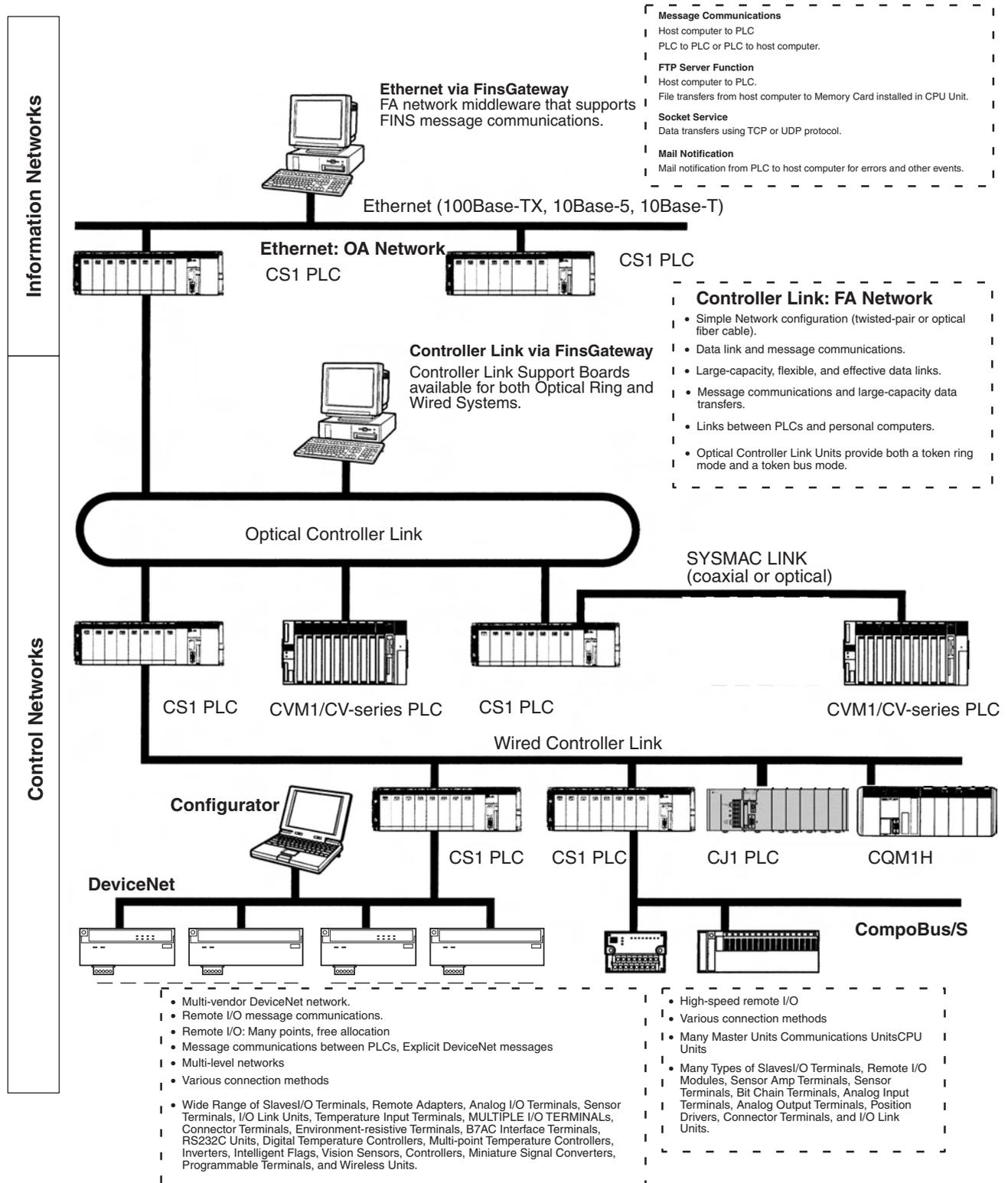


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Seamless Communications between Information and Control Systems

Seamless Network Communications

Network hierarchies stretch from component networks through top-level Ethernet networks and, with FINS commands, provide seamless inter-network communications. Multi-vendor support is also now better than ever before.



CS1-series Features

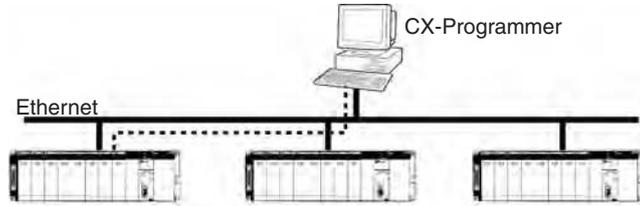
Seamless Communications between Information and Control Systems

■ Ethernet: Information Network

Use an Ethernet Network to organically link production management with the production site using various communications services.

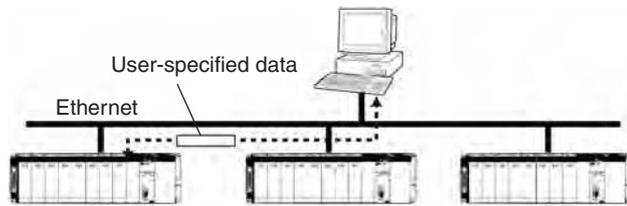
Remote Programming and Monitoring

CX-Programmer running on a computer connected to the Ethernet Network can be used to program and monitor all the PLCs connected to the Ethernet Network.



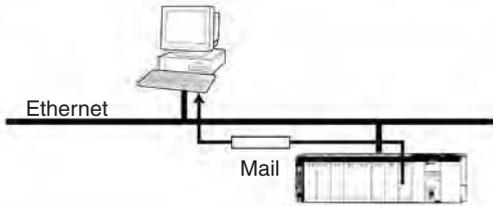
Socket Service

Transfer data using either UDP or TCP protocol.



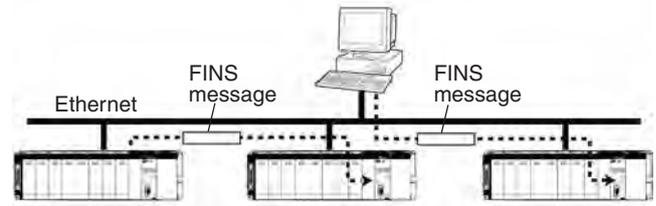
Mail Service

Send electronic mail from the PLC to a host computer when a flag turns ON, when an error occurs, or at scheduled times.



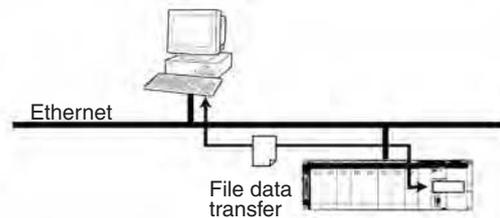
FINS Message Service

Send FINS message between PLCs or between PLCs and host computers. The Ethernet FinsGateway can be used to handle messages from applications without having to program FINS commands directly.



FTP Service

Use the FTP to transfer files between Memory Cards in the CPU Unit and computer memory.



■ Controller Link and SYSMAC LINK: Control Networks

Controller Link or SYSMAC LINK can easily connect PLCs at the factory site in a fully functional FA network.

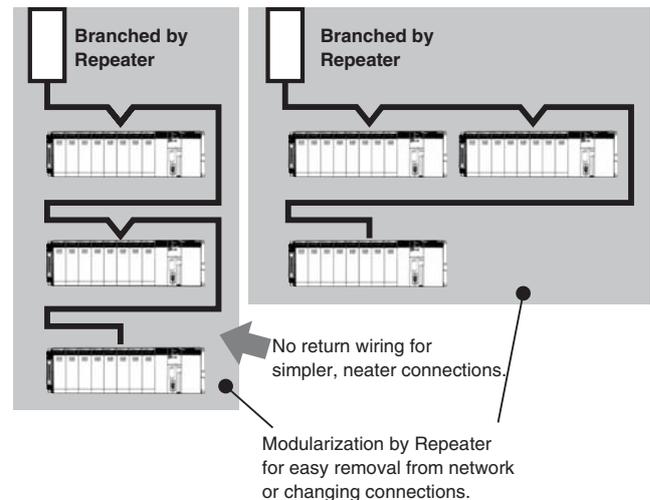
Controller Link:
Easy Network Construction with Twisted-pair or Optical Cables – Use Either H-PCF Cables or GI Cables for Optical Ring Systems

SYSMAC LINK:
Easy Network Construction with Coaxial or Optical Cables

Repeater Units Enable T-branch Wiring, Extension, Expansion, or Optical Sections in Networks

More Flexibility in Wiring for Layout, Construction, and Expansion Using T-branches

Repeater Units can be used for branching, making complicated wiring paths unnecessary. This method reduces wiring labor, and modularization of equipment into Repeater Units.

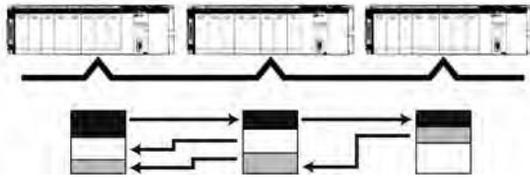


CS1-series Features

Seamless Communications between Information and Control Systems

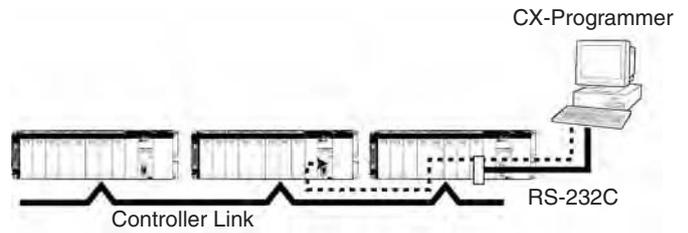
Data Links

Efficient, large-capacity data links can be flexibly created between PLCs and between PLCs and host computers. The Controller Link FinsGateway can be used to handle data links from applications without having to program FINS commands directly.



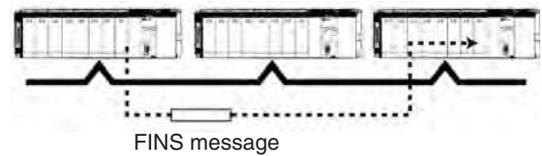
Remote Programming and Monitoring

CX-Programmer connected via RS-232C can be used to program and monitor PLCs on the Controller Link Network.



FINS Message Communications

Large volumes of data can be transferred between PLCs and host computers whenever necessary. The Controller Link FinsGateway can be used to handle messages from applications without having to program FINS commands directly.

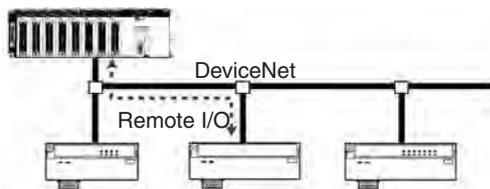


DeviceNet: Component Network

Create a multi-vendor network for multibit communications for lower-level PLCs that need to handle both control signals and data.

Remote I/O Communications

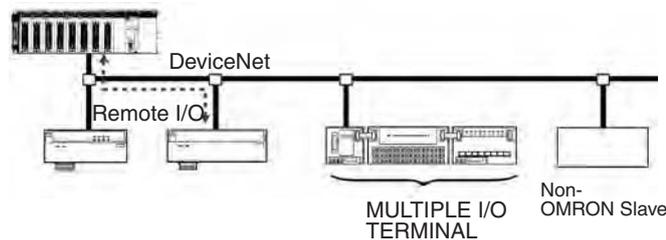
Large-capacity remote I/O can be freely allocated according to application needs.



Select from a Wide Range of Slaves (Connection Possible to Data-intensive Devices)

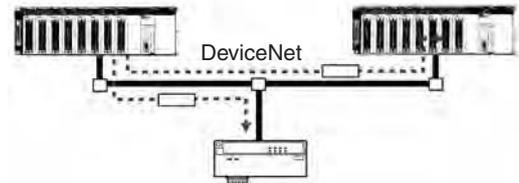
Connect contact I/O, analog I/O, temperature inputs, sensor (photo-electric or proximity) inputs, and small PLCs (e.g., CQM1).

Connect to DeviceNet Products from Other Manufacturers



Message Communications

Send FINS messages between OMRON PLCs and Explicit message between OMRON PLCs and devices from other makers.



Use MULTIPLE I/O TERMINALS as DeviceNet Slaves

I/O can be expanded through one-step connections. Special I/O and explicit messages are also supported.

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■ CompoBus/S: High-speed ON/OFF Bus

Create a high-speed remote I/O system connected under a PLC to reduce wiring to sensors and actuators in machines.

High-speed or Long-distance Communications (Switchable)

- High-speed Mode (previous mode):
750 Kbps, 100 m with 2-core VCTF cable
- Long-distance Mode:
93.75 Kbps, 500 m with 2-core VCTF cable

High-speed Remote I/O Communications: 1 ms Maximum

Link up to 32 slaves with 128 inputs and 128 outputs and a communications cycle time of 1 ms or less. (Cycle time is 0.5 ms for 16 slaves with 64 inputs and 64 outputs.)

Faster Wiring with Special Cables

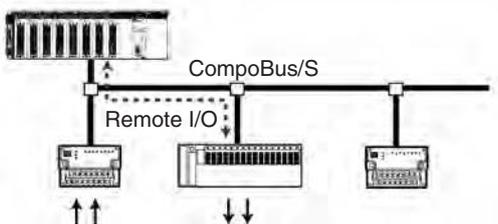
Connections are easily made with special flat cables or VCTF cables.

Many Slaves Available

Connect contact I/O, contact I/O modules, and sensor (photoelectric or proximity) inputs. Also available are Analog I/O models.

Flexible Branching with Long-distance Communications Mode

By using a special flat cable or 4-core VCTF cable, you can wire up to 200 m total with essentially any required wiring layout.



Better Connectivity and Compatibility

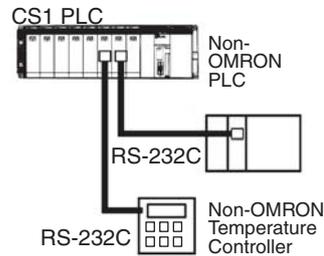
More Serial Communications Ports, More Protocols.
Up to 34 Port Connections with Protocol Setting for Each Port.

Protocol Macros

Data transfer protocol for serial communications vary with the manufacturer and with devices. Differences in protocols can make communications between devices by different manufacturers very difficult, even when electrical standards are the same.

OMRON's protocol macros solve this problem by enabling easy creation of protocol macros designed to match the protocol of a connected device. Protocol macros will let you communicate with essentially any device with an RS-232C, RS-422, or RS-485 port without having to write a special communications program.

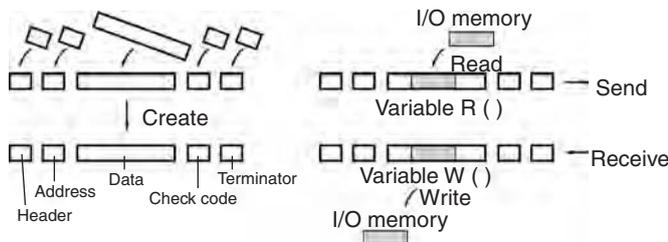
PLCs with Protocol Macros



The Two Main Functions of Protocol Macros

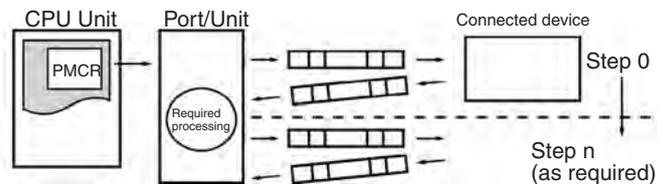
1. Creating Communications Frames

The communications frames can be easily created according to the specifications required by the connected device. Data from I/O memory in the CPU Unit can be easily included as part of a communications frame to read from or write to I/O memory.



2. Creating Frame Send/Receive Procedures

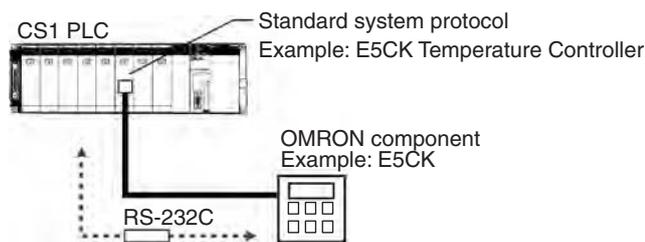
The required processing, including sending and receiving communications frames, can be performed one step at a time according to the results of the previous step, and then CX-Protocol can be used to trace send and receive data.



Application Examples

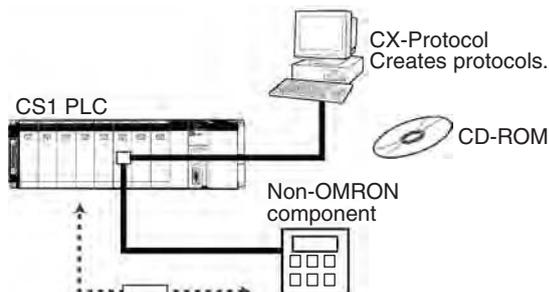
Standard System Protocols

Data transfers with OMRON components can be easily performed using standard system protocols. There is no need to develop your own protocols in this case.



User-created Protocols

Data transfers with non-OMRON components can be easily created just by defining parameters using the CX-Protocol Windows tool.



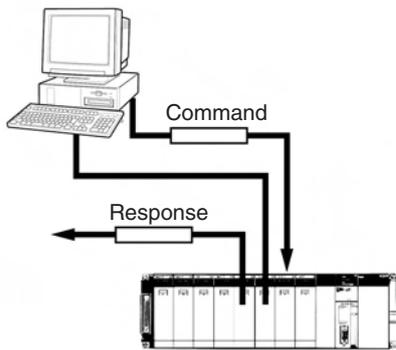
Other Protocols

OMRON provides all of the capabilities and capacity you need for the advanced programming required for human-machine interfaces, communications, data processing, and other required applications.

Host Links

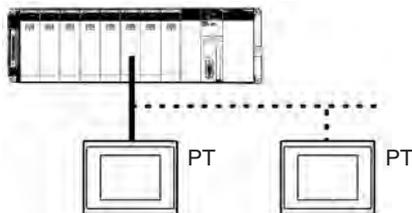
Host Link (C-mode) commands or FINS commands placed within host link headers and terminators can be sent to a host computer to read/write I/O memory, read/control the operating mode, and perform other operations for the PLC.

Unsolicited messages can also be sent from the PLC to the host computer by sending FINS commands from the ladder program using the SEND(090), RECV(098), and CMND(490) instructions.



1:N NT Links

The PLC can be connected to a Programmable Terminal (PT) via RS-232C or RS422A/485 ports, and I/O memory in the PLC can be allocated to various PT functions, including status control areas, status notifications areas, touch switches, lamps, memory tables, and other objects.



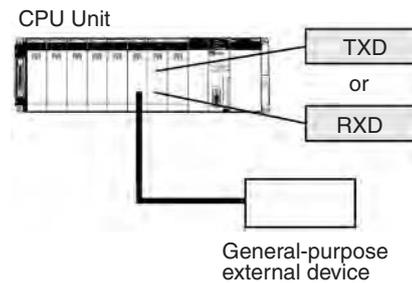
Note: Either one or up to eight PTs can be connected to a PLC in for 1:N NT Links.

High-speed NT Links

High-speed NT Links that are three times faster than standard NT Links are possible with NS-series PTs. This speed is particularly important when connecting to more than one PT.

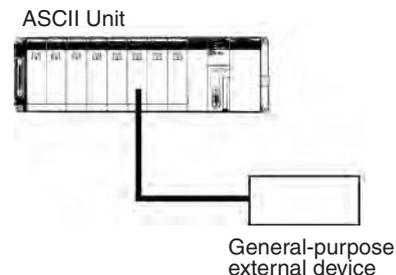
Custom Protocols

I/O instructions for communications ports (TXD(236) and RXD(235)) can be used for simple data transfers (custom protocols), such as to input data from bar code readers or output data to a printer. Start/end codes can be specified, and RS, CS, and other control signals can be handled. (Custom protocols can be used only for the CPU Unit's built-in RS-232C port.)



General-purpose Protocols Using BASIC

An ASCII Unit can be used to create essentially any protocol for an external device using the BASIC language, providing the ability to handle applications for which protocol macros cannot be created.



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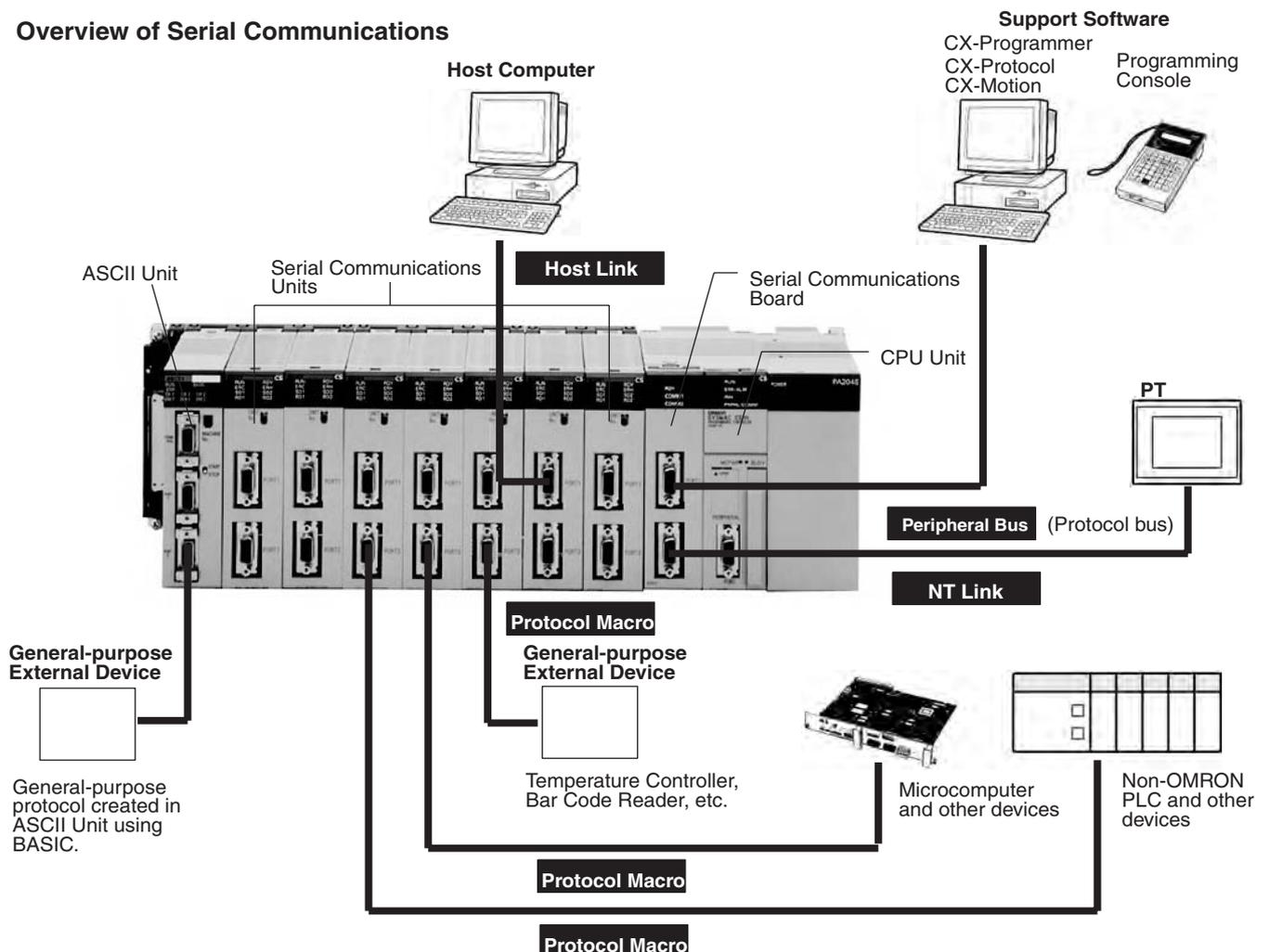
Protocol List

The following protocols are supported for serial communications

Protocol	Main destinations	Outline	Commands/Instructions
Host Link (SYSMAC WAY)	Computers, OMRON Programmable Terminals (PTs)	Communications between host computers and PLCs.	Host Link commands or FINS commands (unsolicited messages supported)
Custom	General-purpose devices	Custom communications with general-purpose external devices.	TXD and RXD instructions
Protocol Macros	General-purpose devices (including OMRON components)	Sending/receiving messages (communications frames) matched to the communications specifications of external devices.	PMCR instruction
1:N NT Links	OMRON Programmable Terminals (PTs)	High-speed communications with Programmable Terminals.	None
Peripheral bus	Support Software	Communications with Support Software tools running on host computers.	None
General (written in BASIC)	General-purpose devices	Unrestricted communications with external devices.	BASIC

Note: Refer to *Serial Communications* on page 138 for the ports that can be used for each protocol.

Overview of Serial Communications



WS02-CXPC1-EV5

CX-Programmer

Reduce application development and testing time and increase machine functionality with CX-Programmer.

Programming software for SYSMAC CS, CJ, C, and CVM1/CV series PLC ladder programs

CX-Programmer provides one common PLC software platform for all types of Omron PLC controllers – from micro PLC's up to Duplex processor systems. It allows easy conversion and re-use of PLC code between different PLC types, and the full re-use of control programs created by older generation PLC programming software.

Many powerful documentation features are available to clearly document the intended use and operation of the control code, are this can be stored inside the PLC. An advanced 'project comparison' function is included to allow in-detail comparison between the PLC project and the PC project.

Easy integration with other Omron software products allows sharing of Tag comments to reduce mistakes, reduce development time and increase ease of use.

Maintenance features allow easy searching of contacts and coils with a single click, thereby allowing fast identification of the cause of machine or line stoppages while monitoring, display, and debugging functions reduce engineering time and implementation costs.

Advanced data trace and time chart monitoring reduces maintenance and troubleshooting time. This can then be used to either fine-tune the performance of the machine, or reduce and optimize the cycle time of the machine.

Powerful, Easy-to-use Functions

Powerful, Easy-to-use Ladder Editor

The ladder create, search, and jump operations can be executed with a single keystroke for efficient programming and debugging. Also, the various comment functions make ladder programs much easier to read and search.

- Program with single key inputs. No mouse required.
- Use the cross reference popup function to check a bit or output's ON/OFF status in real time.
- When the program is input, the software automatically performs a circuit check and output-duplication check to prevent input mistakes.
- With one keystroke, jump to a desired location in the program from the search results or program check results displayed in the output window.
- Input various comments (such as rung comments, I/O comments, and circuit comments) to make the program easier to read and search.

Displaying Comments at the Cursor Position

The symbol comment at the cursor position and corresponding address are displayed at the bottom of Ladder View to improve program legibility.



Switching between Multiple Comments

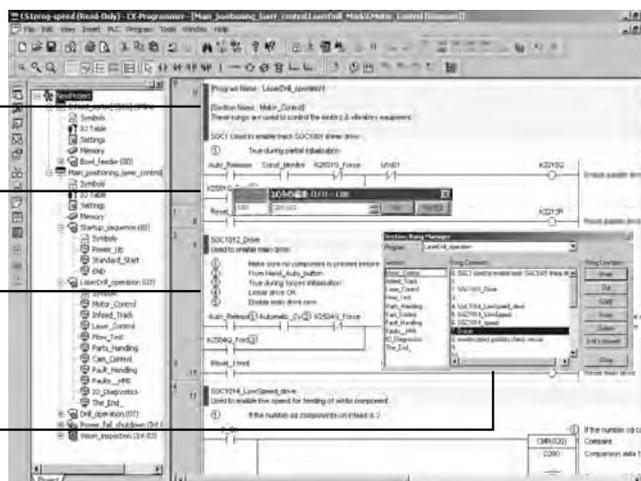
Multiple symbol comments (up to 16) can be registered for a single address. This function enables different comments for a single program—for designing, factory, each engineer, or each language—and makes the program easier to understand for the corresponding purpose.



Cross reference popup
Displays the real-time status of the bit or output at the cursor location. It is also possible to jump to the displayed location.



Output duplication check
An output-duplication check is performed automatically when the program is input. Relevant locations are listed and it is possible to jump to those locations.



Rung comment list
The rung comment jump function makes the program easier to search.

Circuit comment, circuit comment list
Circuit comments can be displayed or hidden. Comments attached as notes can be checked when necessary.

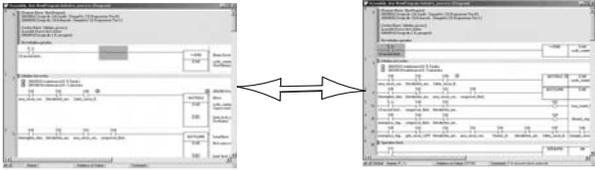
I/O comments
It is possible to display/hide the I/O comments and set attributes such as the number of displayed lines.

Rung comment list/jump
Program contents can be checked in a list like a table of contents. It is possible to jump to a listed location.

CS1 Unit Descriptions

Display Special Instructions Vertically or Horizontally

The user can select whether to display special instructions vertically or horizontally, improving display and printing efficiency.

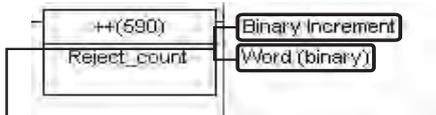


Complete Help and Guidance Functions

The help and guidance function provides helpful support when inputting or creating a program.



Complete instruction help
The help function can be checked immediately when inputting instructions.



Instruction name and operand description
The instruction name and operand meaning can be displayed in the Ladder Window. (These displays can also be hidden.)



Input help function (Details dialog)
Information on the operand's allowed data areas and setting ranges can be displayed immediately.

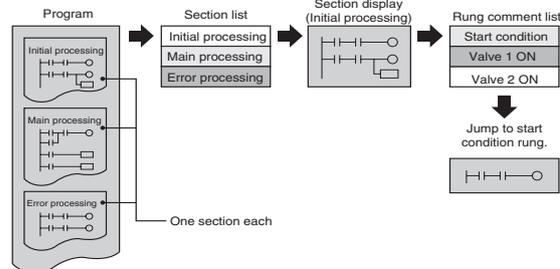


Inputting instructions by instruction group
Instructions can be selected from a list organized by instruction functions.

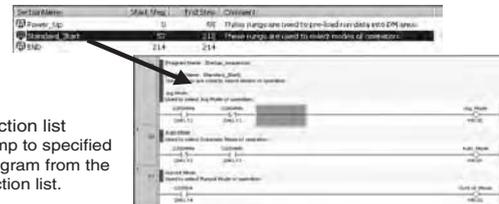
Program Structure

Detailed Debugging can be performed while displaying the overall program flow.

Program section displays can be further divided when creating or displaying the program. In the following example, the program is created in sections based on processing and it is possible to jump to a specified processing program (section) from the section list.



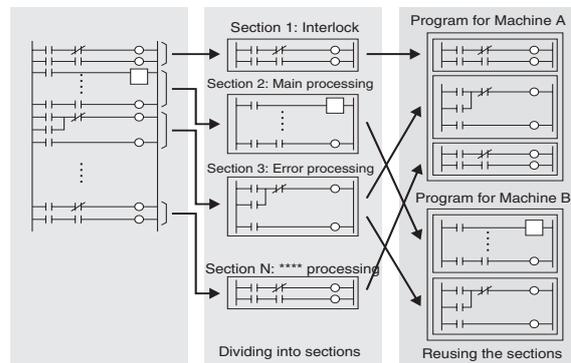
It is possible to jump to a specified section while viewing the overall program in a section list.



Section list
Jump to specified program from the section list.

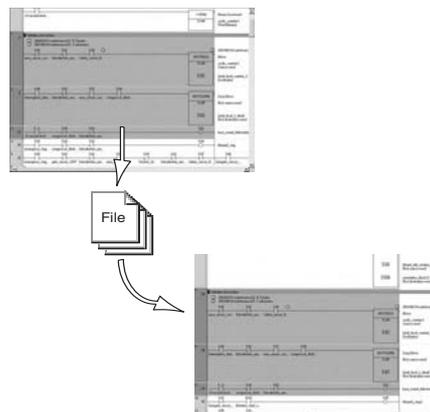
Sectioning Program and Reusing Sections

Sectioning Program → Reusing Sections



Improved Ladder Program Reusability

Parts of the program can be saved or additions can be loaded in section, ladder rung, or symbols table units. This allows programs to be easily split into smaller parts, and then integrated, thereby improving reusability of the program.

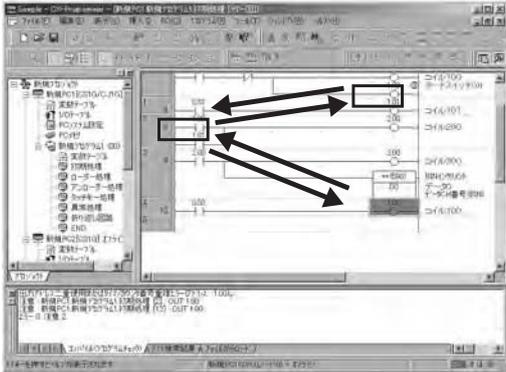


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Online Debugging

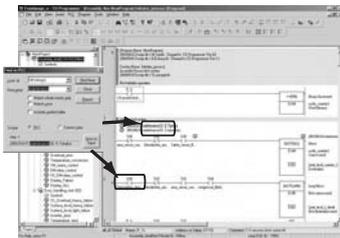
A Complete Set of Debugging Functions reduces Debugging Time.

- Trace-back searches (searching for bits/outputs with the same address) and consecutive address searches can be performed with a single keystroke.
- Enter the search item by dragging and dropping the item in the ladder window.
- Different parts of the ladder program can be monitored simultaneously with a 2-way or 4-way split screen.
- The I/O monitor function can group locations being monitored, such as steps and processes that are being debugged.

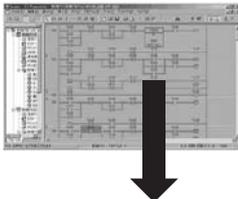


Trace-back Search

Search for the output corresponding to the bit address at the cursor location or search for the bit corresponding to the output at the cursor location.



"All" has been added as a target of searching. Any strings can be entered as a keyword for searching.



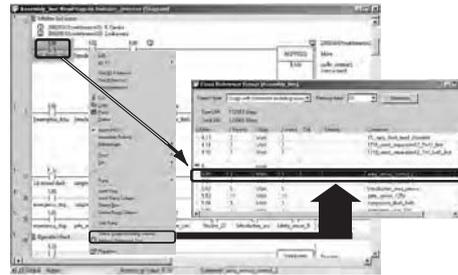
2-way or 4-way Monitor
Powerful split-screen monitoring function allows simultaneous monitoring of different parts of the ladder program, an overview and detailed view of a ladder program rung, etc.

I/O Monitor Function (Watch Window)

- Group different locations that need to be monitored for each process or piece of machinery being debugged.
- Various data displays are available, such as decimal, hexadecimal, signed, and floating-point.
- Registered addresses can be sorted and monitored.
- Registered addresses are automatically saved to a file. It isn't necessary to register the addresses again the next time debugging is performed.

Note: 1. When the WS02-CXPC1-E-V3□ is purchased with only one license and a micro PLC restriction, it can be used only for these PLCs. The Version restricted for only micro PLCs does not support all standard functions.

2. The CX-Programmer does not support SFC.

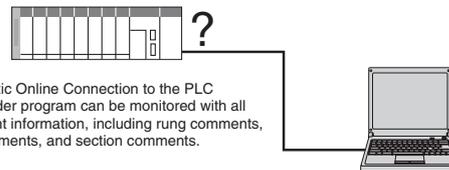


Easily Search Usages Overview on Ladder Diagrams

The usage overview can be launched from the a popup menu or Ladder View. This enables the user to easily check the usage of addresses at the cursor position and to easily check the usage of contacts/coils.

Automatic Online Connections to PLCs make Online Monitoring Easy

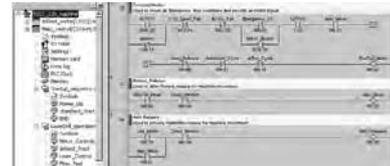
The CX-Programmer automatically detects the PLC model, uploads the PLC program and various parameters, and starts the ladder monitor function.



Automatic Online Connection to the PLC
The ladder program can be monitored with all comment information, including rung comments, I/O comments, and section comments.

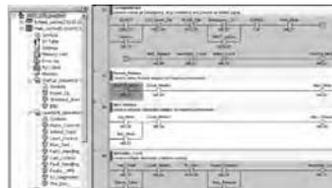
Online Debugging Functions

- Check continuity efficiently with the ladder wrap-around monitor.
- The online editing function allows several consecutive rungs to be edited at the same time.



Ladder Wrap-around Monitor

Long ladder rungs are wrapped around to another line before connecting to the right bus bar.



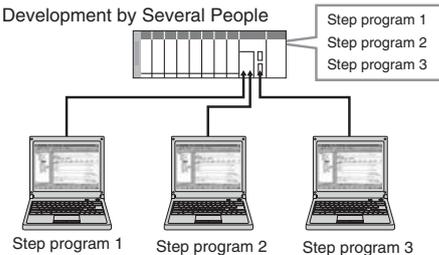
Online Editing

Consecutive ladder rungs can be edited together online. Before edited contents are written to the PLC, a program check is performed automatically and the results are displayed.

Simultaneous Online Debugging by Several People

Program development and online debugging can be performed by two or more people at the same time, so debugging time can be reduced dramatically.

Program Development by Several People



WS02-SIMC1-E CX-Simulator

Online debugging of virtual PLCs in the computer

Simulated ladder program execution in a virtual CS/CJ series PLC

WS02-SIMC1-E

Allows program debugging in a single PLC before the actual system has been assembled. Reduces the total lead time required for machine/equipment development and startup.

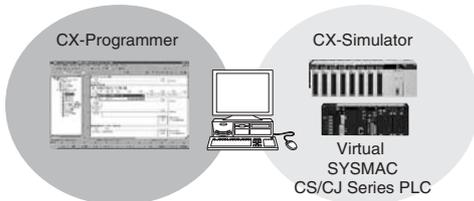
Key Features

A debugging environment equivalent to the actual PLC system environment can be achieved by simulating the operation of a CS/CJ Series PLC with a virtual PLC in the computer. CX-Simulator makes it possible to evaluate program operation, check the cycle time and reduce debugging time before the actual equipment is assembled.

Ladder program debugging in a computer

Monitor and debug program execution without the actual PLC. The developed program can be executed in a virtual PLC within the computer and debugged with the CX-Programmer, just like the actual PLC.

- All of the debugging functions can be used, including the ladder monitor, I/O monitor, online editing, force setting/resetting bits, differential monitor, and data tracing.
- The cycle time can be checked without the actual PLC system.
- Interrupt tasks can also be started.



Execute just the required parts of structured/sectional programs and monitor the status of I/O.

Perform efficient debugging operations that cannot be performed in the actual PLC, such as executing single steps, executing single cycles, and inserting break points.

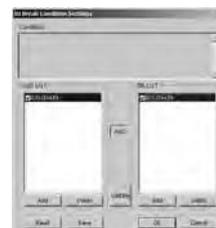
- With the step execution and cycle execution functions, the contents of I/O memory can be monitored in the middle of program execution or after execution of a single cycle.
- Program execution can be stopped when I/O memory data satisfies preset conditions, so that the I/O memory data at that point can be checked.
- A starting point and break point can be specified to execute and debug just that part of the program.



Debug Console
Various execution methods can be selected, such as step execution and cycle execution.

Type	Trigger	Level	Status	Exec. time
Cyclic	1	Cyclic	READY	0 0.0000 ms
Cyclic	2	Cyclic	READY	0 0.0000 ms
Cyclic	7	Cyclic	READY	0 0.0000 ms
Interval	1	Pass	...	0 0.0000 ms
Interval	2	Interval	Time	0 0.0000 ms

Checking execution times
The virtual cycle time can be checked in advance. Each task can also be started and stopped and each task's cycle time can be checked.



I/O Break Condition Settings
Stop program execution when the specified I/O memory conditions are satisfied, so that the contents of I/O memory at that point can be checked easily.

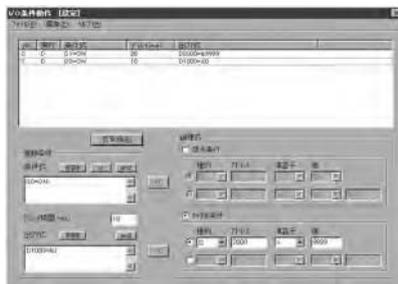
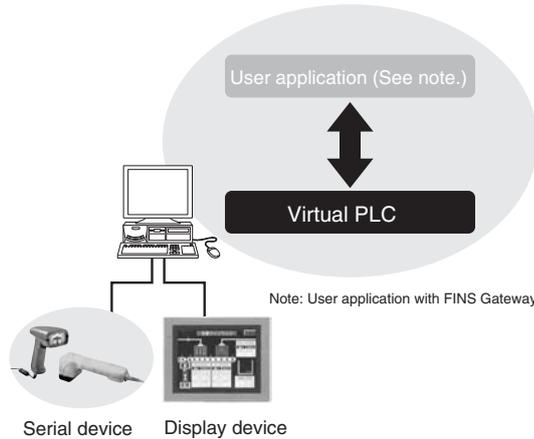


Virtual External Inputs

Several methods can be used to create and replay virtual external inputs.

The operation of equipment and machinery can be simulated in the PLC as virtual external inputs from several sources.

- **Reproducing Virtual External Inputs**
When I/O memory data satisfy preset conditions, specified I/O bits and words can be set to desired values after a set time delay (I/O Condition Tool).
- **Reproducing External Inputs**
Virtual external input data from various sources can be reproduced in the virtual PLC. (Some data sources are operation logs of force-set/force-reset bits and changed I/O memory data, data trace data acquired from an actual PLC, and cyclic data files created in spread sheet software.)



I/O Condition settings



Message communications display function

Complete Debugging with Peripheral Devices

Total system debugging can be carried out by performing communications tests with peripheral devices (serial devices, displays, etc.) and user applications that communicate with the PLC.

- Communications can be debugged with external serial devices connected to the computer's COM port.
- Communications can be tested with Programmable Controllers through NT Link.
- Messages sent by the network communications program can be checked. Messages (frames) sent by the TXD (TRANS-MIT), SEND/RECV (NETWORK SEND/RECEIVE), and CMND (DELIVER COMMAND) instructions can be displayed at the computer.

Specifications	
Basic Functions	Simulates of a CS/CJ Series CPU Unit's operation in the computer. ●Virtual external inputs can be input and operation of the virtual CPU Unit can be monitored from the CX-Programmer (continuity monitor, PV monitor, online editing, etc.). ●Check the cycle time.
Other Functions	Execute debugging functions that cannot be performed in the actual PLC (such as single step execution). ●Debug network communications and serial communications.
Created files	PC data directory Contents: Various log files such as Virtual PLC and Debug Settings files
Operating Environment	
CPU:	Pentium 133 MHz or faster CPU Note: Windows Me requires a 150 MHz or faster CPU. Recommended CPU: Pentium 200 MHz or faster
OS:	Windows 95, 98, Me, 2000, NT 4.0, or XP
Compatible PLCs:	
CS Series and CJ Series	

WS02-PSTC1-E CX-Protocol

Create serial communications protocols to communicate with standard serial devices

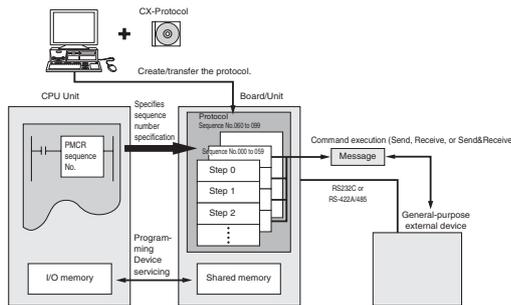
Allows program debuging in a single PLC before the actual system has been assembled.
Reduces the total lead time required for machine/equipment development and startup.

Key Features

The CX-Protocol software creates data communications procedures (protocol macros) to exchange data between standard serial devices and the PLC (Serial Communications Unit or Board).

What is a Protocol Macro?

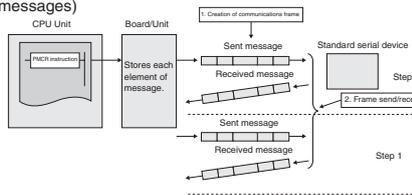
A protocol macro defines the communications protocol for communications between the PLC and any serial device that has an RS-232C port or RS-422A/RS-485 port and uses half-duplex or full-duplex communications with start-stop synchronization. Serial communications can be processed without a ladder program routine once the protocol macro has been written to the Serial Communications Unit or Board (CS/CJ Series Unit/Board, C200HX/C200HG/C200HE Board, or CQM1H Board) and the PMCR instruction has been executed from the CPU Unit's ladder program.



Overview of Protocol Macros

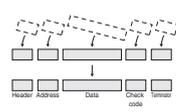
The protocol macro function can be broadly divided into the following two functions.

1. Creation of communications frames (messages)
2. Creation of procedures to send/receive those communications frames (messages)

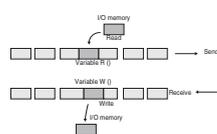


1. Creating communications frames (messages)

1) Communications frames (referred to as "messages" here), which can be understood by general-purpose external devices, can be created according to the communications specifications.



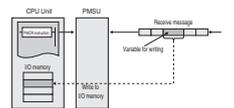
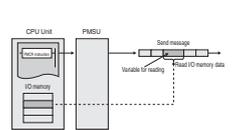
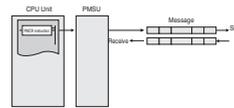
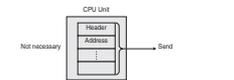
Note: In general, the data area of a send message contains a command code and data. The data area of a receive message contains a response code.



2) Variables for reading data from (or writing data to, if receiving) the I/O memory data areas in the CPU Unit, can be integrated into the messages.

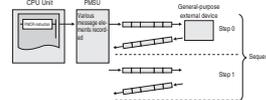
This function has the following advantages:

- Ladder program processing will not be necessary at the CPU Unit when, for example, sending messages after arranging them all in data memory.
- The components of the previously created messages are stored in memory at the Unit for Board, not the CPU Unit. When sending or receiving data, the CPU Unit only has to execute the PMCR instruction.
- When handling one part of the I/O memory data, if the variable required for reading that data has been integrated into a send message, the Unit or Board will automatically read the required data from the I/O memory of the CPU Unit when the PMSU sends the message. Similarly, when writing data from one part of a received message into I/O memory, if the variable required to read the data has been integrated into the reception settings message, the Unit or Board will automatically write the data at the designated position in the message into I/O memory when the Unit or Board receives the message.

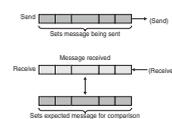
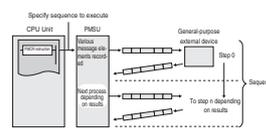


2. Creating procedures to send/receive the communications frames (messages)

1) This function enables all the processing needed to send or receive a message to be handled as one step, and possesses all the commands (step commands), such as Send, Receive, Send&Receive and Wait, that are needed for each step.



2) This step can be set so that the next process (step/end) depends on the processing result of the previous step. In particular, it is possible to set the sequence so that the next process depends on the contents of one or several set receive messages.



- Note 1: A send message created with a protocol macro will perform settings for messages that are actually sent.
- Note 2: A receive message created with protocol macro will set an expected message for comparison with messages that are actually received.

Developing Communication Protocols

Supports a Wide Range of Communication Protocols

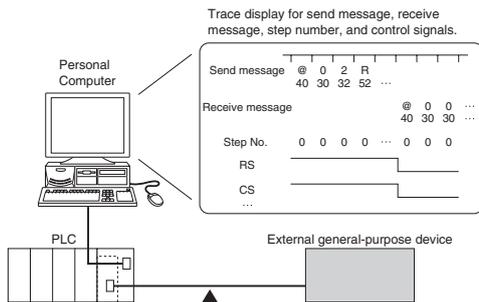
- Send frames and receive frames can be created according to the communications frame (message) specifications of external devices. In addition, variables for exchanging data with the PLC can be incorporated in send and receive frames.
- Supports error check code calculation, frame length calculation during transmission processes, and numeric data conversion between ASCII and hexadecimal.
- Repeat variables can be used, 1:N communications are supported, and write destinations can be switched.
- Supports send and receive time monitoring functions as well as retry processing, so the required communications error processing can be specified easily.
- The interrupt function can send an interrupt to the CPU Unit when receiving data, so high-speed data processing can be performed.
- Expected reception data can be registered and processing can be switched based on the received data.

Complete Set of Debugging Functions

Sequences can be evaluated, saved, and printed with send/receive message tracing.

Trace function

With a CS/CJ Series PLC, up to 1,700 characters of time-sequential transmission or reception data, which the Board or Unit exchanges with external devices, can be traced. Tracing allows the user to determine which messages were transmitted or received in each step number. The results of tracing can be saved as data in project files or printed.



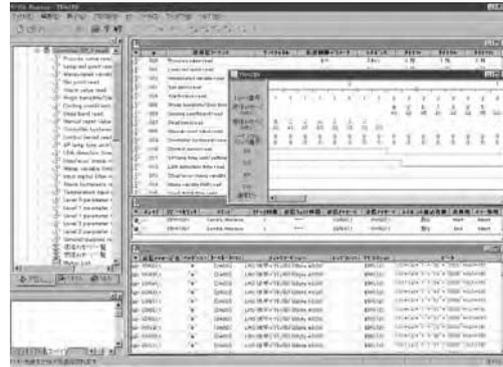
I/O memory monitor function

Send/receive data stored in the PLC's data areas can be monitored.

Standard System Protocols

Protocols to exchange Data with OMRON Control Devices are a Standard Feature.

Data exchange protocols for 13 kinds of OMRON control devices, such as Temperature Controllers and Bar Code Readers, are provided. The standard system protocols can be copied easily and customized.



Connected component	Model	Send/receive sequences	
CompoWay/F Master	OMRON components equipped with CompoWay/F Slave functions	Sending CompoWay/F commands and receiving responses	
Controllers/ Temperature Controllers	Small Digital Controller with Communications Functions (53 × 53 mm)	Present value read, set point read, manipulated variable read, etc. Set point write, alarm write, PID parameter write, etc.	
	Temperature Controllers with Digital Indications (96 × 96 mm or 48 × 96 mm)		
	Digital Controllers with Communications Functions (96 × 96 mm)		
	High-density Temperature Controller with Communications Functions		
Digital Panel Meters with Communications Output (custom specification)	K3T□	Display value read, comparison value read, write, etc.	
Bar Code Readers	Laser Scanner version	V500	Read start, data read, read stop, etc.
	CCD version	V520	
Laser Micrometer	3Z4L	Measurement condition set, continuous measurement start, etc.	
Machine Vision Systems	High speed, high precision, low cost version	F200	Measurement, continuous measurement, etc.
	High-precision Inspection/Positioning	F300	
	Character Inspection Software/ Positioning Software	F350	
ID Controllers	Electromagnetic coupling	V600	Carrier data read, autoread, write to carrier, etc.
	Microwave	V620	
Hayes modem AT command	MD24FB10V MD144FB5V ME1414B2	Initialize modem, dial, transfer data, etc.	

Specifications

Basic Functions	Create protocols, transfer protocols between the CX-Protocol and the Serial Communications Unit/Board, and save files.
Other Functions	Transmission line trace, standard system protocols, PLC I/O memory monitor, PLC error display, protocol print
Created files	CX-Protocol project file (*.psw) Contents: Protocol list, PLC communications settings, trace list

Operating Environment

CPU: Pentium 90 MHz or faster CPU
Note: Windows Me requires a 150 MHz or faster CPU.
Recommended CPU: Pentium 166 MHz or faster

OS: Windows 95, 98, Me, 2000, NT 4.0, or XP

Compatible PLCs:

CS Series, CJ Series, CQM1H Series, and C200HX/HG/HE Series

Compatible Serial Communications Units/Boards:

CS Series Serial Communications Units/Boards
CS1W-SCB21-V1, CS1W-SCB41-V1, CS1W-SCU21-V1

CJ Series Serial Communications Units
CJ1W-SCU21 and CJ1W-SCU41

C200HX/HG/HE Communications Boards
C200HW-COM04, C200HW-COM04-V1, C200HW-COM05, C200HW-COM05-V1, C200HW-COM06, and C200HW-COM06-V1

CQM1H Serial Communications Board
CQM1H-SCB41

WS02-MCTC1-EV2 CX-Motion

Creates programs to control the motion controller and monitors controller status

Provides the ideal environment for motion control support, from motion controller program development to full system operation.

Key Features

The CX-Motion software can be used to create, edit, and print the various parameters, position data, and motion control programs (G code) required to operate Motion Controllers, transfer the data to the Motion Control Units, and monitor operation of the Motion Control Units. Increase productivity in every step of the motion control process, from development of the motion control program to system operation.

Motion Control Programs

Easily create motion control G Code programs and parameters.

CX-Motion can create all of the data needed in the Motion Control Unit, such as parameters, position data, and the program. The program can be input in either G code or mnemonics.

- When the Unit is connected online, data can be transferred, verified, and saved.
- Data for different Units can be registered and managed as separate projects.



Operation Monitor

Powerful support during startup and operation

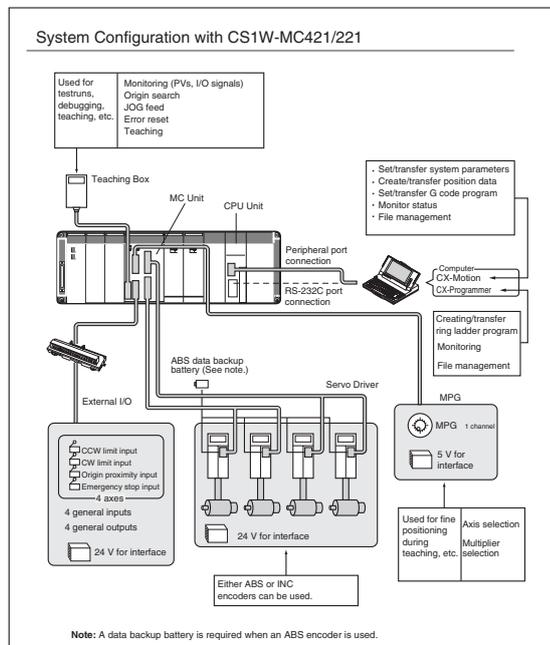
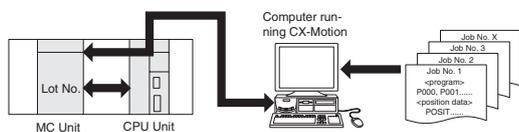
The MC Unit Monitoring function can display vital information at the computer, such as the present position, task being executed, I/O status, error displays, and servo system trace data.

- Up to 20 errors that have occurred in the Motion Control Unit can be stored and displayed (CS1W-MC421/221 and CV500-MC421/221 Motion Control Units only).

Automatic Loading Function

Ideal for flexible, small-lot production lines

Various programs and position data can be stored on disks for the computer running the CX-motion software and the required program/position data can be substituted into the Motion Control Unit when necessary. More than 100 different application programs can be used in this way. A wide variety of programs can be available for execution if the computer is used to store data for the MC Unit.



Specifications

Basic Functions Create/transfer/print various parameters, position data, and the MC program, transfer data to the MC Unit, and monitor MC Unit's operating status.

Other Functions Automatic loading, Servo data tracing

Created files CX-Motion project files (*.mci) Contents: System parameters, position data, program, scripts, etc.

Operating Environment

CPU: Pentium 100 MHz or faster CPU

OS: Windows 95, 98, NT4.0, W2000 or XP.

Compatible PLCs:

CS Series, C200HX/HG/HE Series, and CVM1/CV Series

WS02-NCTC1-EV2 CX-Position

Set, transfer, store, and print position control unit data and monitor operation online

Increase productivity in all position control tasks, from design and startup to system maintenance.

Key Features

The CX-Position software simplifies every aspect of position control, from creating/editing the data used in Position Control Units (NC Units) to communicating online and monitoring operation. The software is equipped with functions that can improve productivity, such as automatically generating project data and reusing existing data.

Creating and managing data

Data can be created for various applications

The CX-Position enables data for multiple NC Units on up to 1,000 PLCs to be handled as 1 project. Data is displayed in tree format and the data for an NC Unit can be moved or copied (overwritten) between PLCs in the project tree. This feature allows data to be edited and re-used in other PLCs or NC Units.

- The CX-Position can read information from NC Units connected online and automatically generate project data.
- Data created for a C200HW-NC□□□□ using the SYSMAC-NCT can be imported and used as data for the CS1W-NC□□□□ or CJS1W-NC□□□□.



NC Monitor

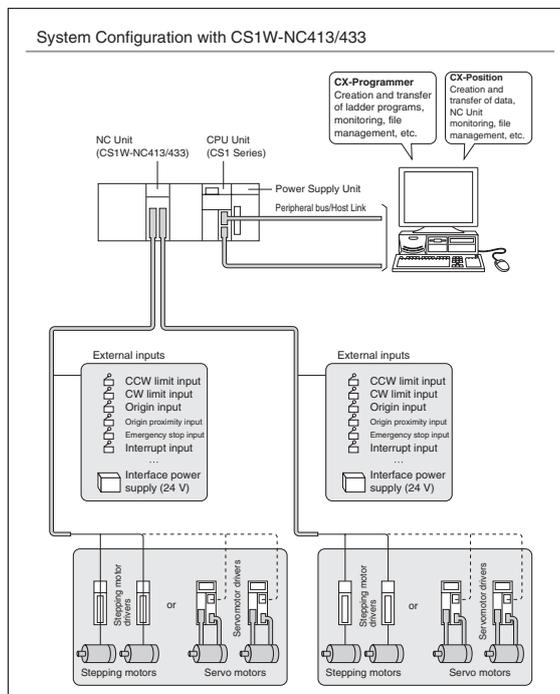
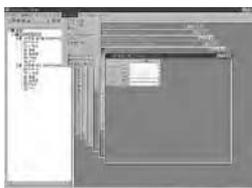
Display the NC units' present positions, error codes, sequence numbers, and I/O status.

The sequence numbers and present positions can be displayed for up to 4 Units. In addition, the contents of the operating memory area and operating data area can be monitored and the error log can be displayed.

Communications

Communicate with NC units through the network.

It is possible to communicate with NC Units through the Fins-Gateway. Depending on the FinsGateway driver version, HostLink or Ethernet. can be used to perform online operations (monitoring operation or transferring/verifying parameters, sequences, etc.) with the NC Unit.



Specifications

Compatible Position Control Units:	CS Series: CS1W-NC113/NC133/NC213/NC413/NC433 CJ Series: CJ1W-NC113/NC133/NC213/NC413/NC433
Basic Functions	Create, edit, and print the Position Control Unit's parameter data, sequence data, speed data, acceleration/deceleration data, dwell times, and zone data. Monitor the Position Control Unit's operating status.
Created files	CX-Position project files (*.nci) Contents: Parameter data, sequence data, speed data, acceleration/deceleration data, dwell times, and zone data
Operating Environment	
CPU:	Pentium 100 MHz or faster CPU
OS:	Windows 95, 98, NT4.0, W2000 or XP
Compatible PLCs:	
CS Series and CJ Series	

WS02-LCTC1-EV4 CX-Process Tool

Creates, transfers, runs, and debugs function blocks for loop control units/boards.

Easy Engineering Solutions for Loop Control Boards (LCB) and Loop Control Units (LCU)

Key Features

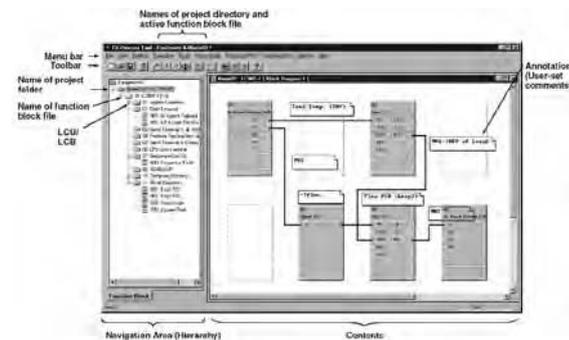
The CX-Process Tool software simplifies every aspect of loop control, from creating/transferring function blocks to running the Boards/Units and debugging (tuning PID parameters, etc.) operation.

Creating Programs

Function Block Diagrams can be created easily.

Function block programs can be created easily by pasting function blocks in the window and making software connections with the mouse.

- Control Blocks, Operation Blocks, and Field Terminal Blocks are available, so all of the required functions can be performed just by arranging the function blocks.
- Comments (user-set character strings) can be pasted in the function block diagrams.

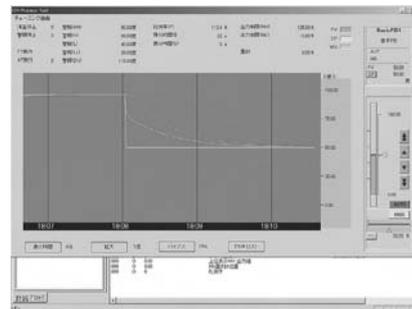


Debugging

Operation can be checked and tuned easily.

All of the ITEM data in a block can be monitored and the operation of a function block's connections can be checked. The PV, SP, and MV trends can be monitored and adjusted in the Tuning Screen.

- A function block's analog signal values can be displayed and forcibly changed and the operation of each function block can be stopped and restarted.
- Run/Stop commands can be executed (Hot or Cold Start).

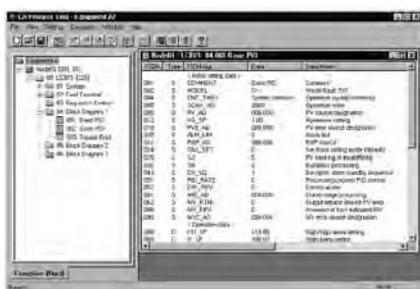


Transferring Programs

Programs can be changed Online.

The entire program, individual blocks, and individual ITEMS can be downloaded from or uploaded to the LCU/LCB.

- When there is a change in an individual block or ITEM, the change can be made while the LCU/LCB continues running.
- Block diagram information can also be downloaded/uploaded (LCU version V2 or higher only).



Specifications

Compatible Loop Control Units/Boards: CS Series: CS1W-LC001 Loop Control Unit, CS1W-LCB01/05 Loop Control Board, CS1D-CPU6□P CS1D Process-control CPU Units, CJ1G-CPU4□P CJ-series Loop-control CPU Units

Basic Functions: Create, transfer, and debug function block programs.

Created files: CX-Process project files (*.mul)
Contents: Function block program, step ladder program, sequence table program, tags, settings, and other information

Operating Environment

CPU: Pentium 133 MHz or faster CPU
Recommended CPU: Celeron 400 MHz or faster CPU
OS: Windows 95, 98, Me, 2000, XP, or NT 4.0

Compatible PLCs: CS/CJ Series

WS02-LCTK1-EL01

CX-Process Monitor

Monitors and controls operation of function blocks in loop control units

Monitoring and operation screens can be configured easily with this HMI Software for loop control units,

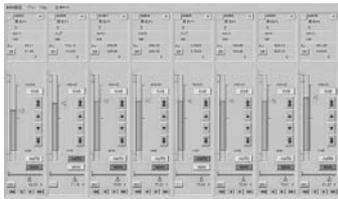
Key Features

The CX-Process Monitor is HMI (human-machine interface) software that can easily configure standard screens from the tag information created with the CX-Process Tool.

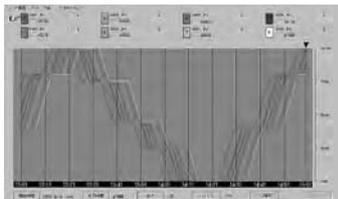
Monitoring the Operating Status

The operating status of function blocks can be monitored.
Bit signals as well as the PV, SP, MV, and other analog signal scan be monitored.
Run and Stop Commands can be sent to the Loop Control Unit.

- Control Screens
- Trend Screens



Group Screen



Trend Screen

Monitoring the Alarm Status

Monitoring alarms in function blocks
Alarms that occur in Control Blocks and Alarm Blocks can be displayed and stored in an alarm log.

- Alarm Log Screens
- Annunciator Screens



Alarm Log Screens



Annunciator Screens

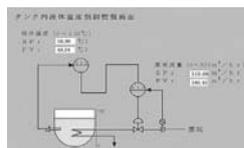
Controlling Operation

Controlling Operations in Function Blocks
Various adjustments can be made, such as changing a Control Block's settings, switching between Auto and Manual, performing manual operations, and tuning parameters such as PID constants.

- Tuning Screens
- Graphic Screens



Tuning Screens



Graphic Screens

Specifications

Compatible Loop Control Unit:	CS Series: CS1W-LC001 Loop Control Unit CS1W-LCB01/05 Loop Control Board CS1D-CPU65P/67P CS1D Process-control CPU Unit
Basic Functions	Monitor the operating status of Loop Control Units. Control basic function block operation.
Created files	DB folder Contents: Monitor tag settings, screen configuration
Operating Environment	
CPU:	Pentium 133 MHz or faster CPU Recommended CPU: Celeron 400 MHz or faster CPU
OS:	Windows 2000, XP, or NT 4.0
Compatible PLCs:	
CS Series	

Lineup of Units
CPU Unit Overview
Basic System Configuration
Better Basic Performance
Peripheral Devices
Peripheral Devices
CPU Unit Overview
I/O Allocations
Current Consumption
Instructions
Replacing C200H I/O Units
ORDERING GUIDE
Wiring Devices for High-density I/O Units
Connector Cables
Peripheral Devices

WS02-PUTC1-E CX-Process Analog I/O Unit Software

Sets and monitors operation of process/analog I/O units.

Easily set parameters in 16 models of process I/O units and analog I/O units.

Key Features

Various parameters in process I/O units and analog I/O units can be input easily in a table format or dialog format

Editing and Transferring Set Values

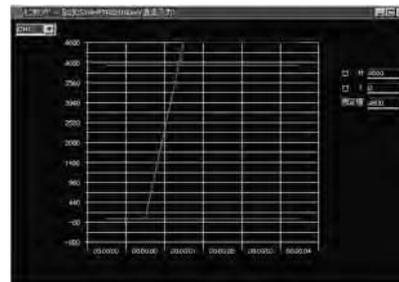
Edit Settings in the DM Area words allocated to Special I/OUnits.
Settings can be edited in table format or dialog format.

- The settings can be transferred in one-word units or one-Unit units.
- The settings can be saved as a file.



Simple Monitoring

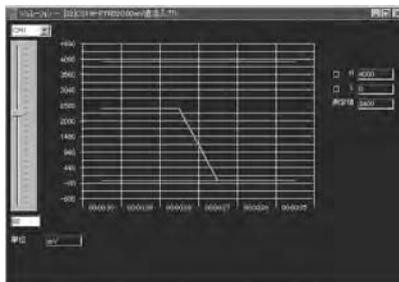
Operation of the Connected Units can be checked.
An Input Unit's input data can be monitored.
An output value can be output from an Output Unit.



Simulating Operation

Alarm Operation and Other Functions can be checked.

Input values such as voltages can be entered in the Simulation Window with a sliding bar or numeral entry and operation can be checked in the Analog I/O Unit Support Software.



Specifications	
Compatible Units:	Process I/O Units: CS1W-P□□□□ (See note.) Analog I/O Units: CS1W-AD□□□, CS1W-DA□□□, CS1W-MAD□□, CJ1W-AD□□□, CJ1W-DA□□□, and CJ1W-MAD□□
	Note: The C□1W-PTS5□ is not supported.
Basic Functions	Edit settings in table format. Input settings in dialog format. Transfer settings. Backup settings. Simulate operation of Process I/O Units and Analog I/O Units. Perform simple monitoring. Print settings.
Created files	Process I/O system file (*.ias) Contents: Settings data, model number information
Operating Environment	
CPU:	Pentium 133 MHz or faster
OS:	Windows 95, 98, 2000, or NT 4.0
Compatible PLCs:	CS/CJ Series

NS-NSDC1-V6 NS Designer

Efficient development process for screen creation, simulation and project deployment.

The NS-Designer is used to create screen data for NS-series Programmable Terminals. The NS-Designer can also check the operation of the created screen data on the computer.

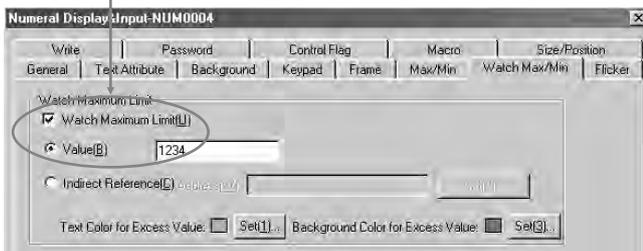
Screen Creation

Develop Screens More Efficiently with Easy-to-use Support Software. The NS-Designer has about 1,000 standard functional objects with associated graphics and advanced functions, so even first-time users can create screens easily just by arranging functional objects in a screen.

The NS-Designer is also equipped with a variety of functions that make it easy to create screens for common applications. Screen development is far more efficient with the NS-Designer.

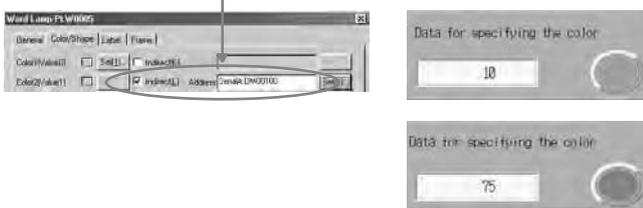
- Color Change when the Upper or Lower Limit Is Exceeded

The upper limit can be monitored just by checking the box and setting the upper limit value.

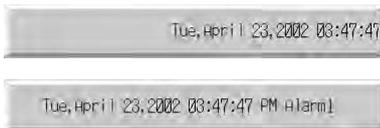


- Indirect Specification of the Display Color (Dynamic Display) with the Color Code (0 to 255)

The color can be specified indirectly by checking the box and setting the address being used for indirect specification.



- Flow Text Display for Alarm/Event Messages

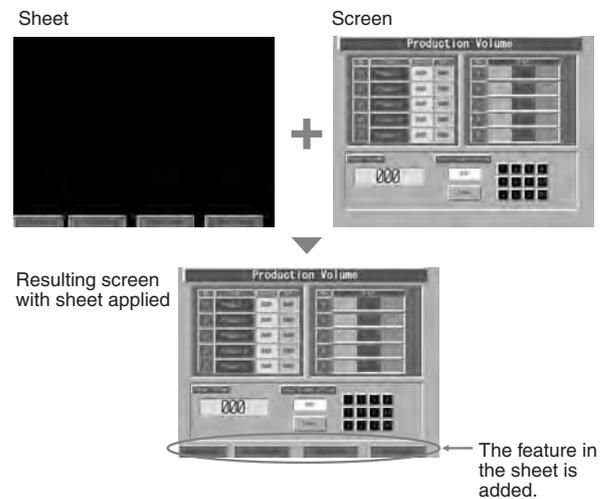


Screen templates

Make one common screen (sheet) that overlaps other screens (to save having to recreate the same part, such as a menu, in every screen).

- Sheets

A feature that is common to several screens can be registered as a sheet. The common feature can be added to any screen just by applying the corresponding sheet to the screen. (Up to 10 sheets can be created for one project.)



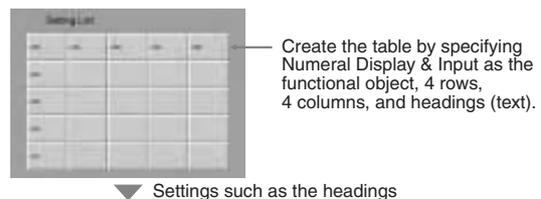
Making Table Form Objects

Speed up creating tables containing similar functional objects.

- Tables

The same kind of functional objects (such as Buttons, Text, or Numeral Display & Input objects) can be created together in a table just by specifying the kind of functional object, number of rows, and number of columns in the table. In addition, the properties for functional objects can all be set together and PLC addresses can be allocated automatically.

It is also possible to add headings for each row and column.



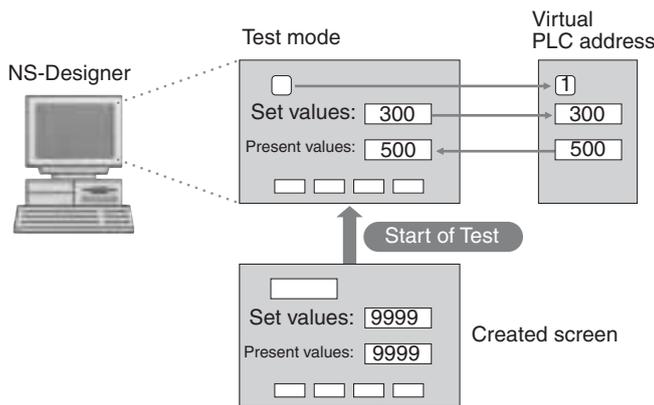
Setting No.	Setting Name	Setting Value	Setting Unit	Setting Range
Setting 1	100	100	Sec	10
Setting 2	100	100	Sec	10
Setting 3	100	100	Sec	10
Setting 4	100	100	Sec	10

■ The Operation of Screen Data Can Be Confirmed Easily on a Personal Computer

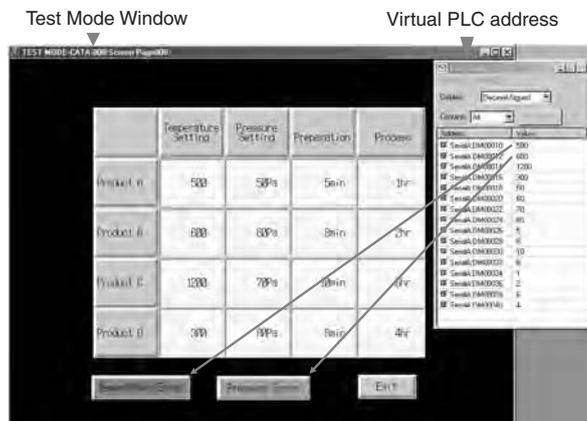
Check the operation of functional objects (buttons, lamps, numeral displays, etc.) on a personal computer.

- Simulation via the "Test Function"

When a test is started, a test screen and virtual PLC will be displayed on the computer.



Operating (clicking with the mouse) the functional objects on the test screen will change the corresponding address in the virtual PLC. Conversely, changing the content of a virtual PLC address will change the corresponding functional objects. It is also possible to confirm pop-up screens. This function can be used to confirm the actual operation of a screen during the edition.



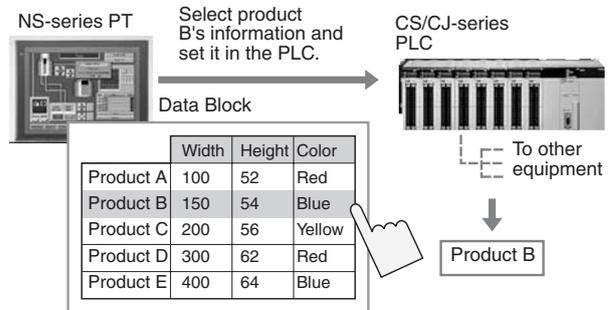
The test function enables debugging screens without NS and PLC Hardware.

- Validation

Validation checks functional objects against checkpoints (such as PLC addresses setting miss), and detected errors are listed. The listed errors can be checked before transferring the screen data to the PT.

■ Built-in Recipe Function for Fast Production Changeovers

Data blocks (recipe function) allow several numeric values and/or character strings to be transferred to/from memory areas, such as PLC data areas. Data blocks can be used to change the system's production setup even faster.



- Register Recipes Easily by Writing Product Information in Data Blocks.

The Data Block (recipe) function consists of records and fields. Set the communications address and data format for each field. The records contain the data for each field.

For example, when production conditions are assigned to the fields, write the values for the product in that record so that the values required for production of the product will be transferred to the PLC.

Using this function can drastically reduce the time required to switch the production arrangement. This function also helps avoid production problems from errors such as recipe transmission mistakes.

	Field A • Address • Data format	Field B • Address • Data format	Field C • Address • Data format
Record 1			
Record 2			
Record 3			
Record 4			

WS02-NSFC1-E

Face Plate builder for NS

Automatically create loop control unit/board control and tuning screens for NS-series PTs

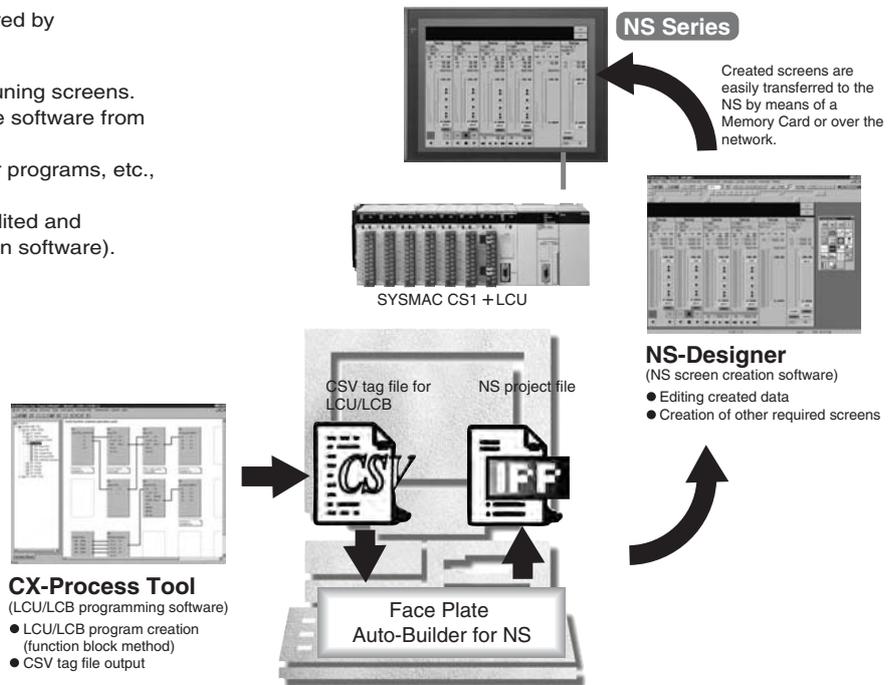
Create touch panel screens with the touch of a button and dramatically reduce development time.

Key Features

The Face Plate Auto-builder automatically creates a NS-series (touch panel) control or tuning screen from the CX-Process Tool's function block information.

Significantly reduces the engineering time required by combining LCB/LCU and the NS Series.

- Automatic generation of control screens and tuning screens.
Automatic generation of NS screen data by the software from tag information created with CX-Process Tool.
- NS communications address allocation, ladder programs, etc., are completely unnecessary.
- Data that has been generated can be freely edited and processed by NS-Designer (NS screen creation software).



■ Specifications

Product name	Specifications	Model number
Face Plate Auto-Builder for NS	CSV tag files for LCU/LCB used in Face Plate Auto-Builder for NS	WS02-NSFC1-E

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WS02-CFDC1-E/3G8E2-DRM21-EV1 DeviceNet Configurator

Simplifies system construction and maintenance for DeviceNet multivendor networks.

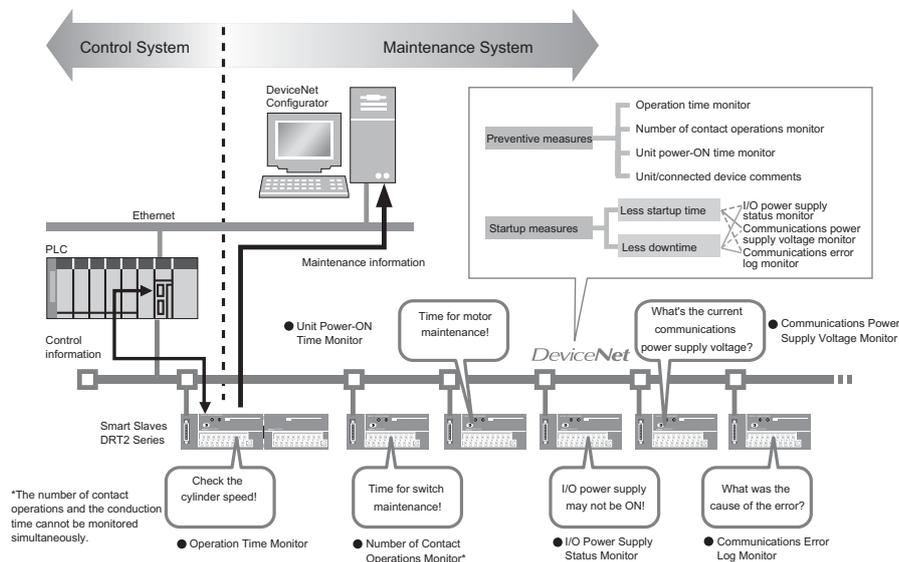
- Graphical interface to simplify network construction.
- DeviceNet Board for personal computers to enable connection from a serial port.
- Monitor devices through an online connection.
- Use Smart Slaves to build an advanced maintenance system.



Ordering Information

Name	Operating system	Model
DeviceNet Configurator Software	Windows 95, 98, Me, NT4.0, 2000, or XP	WS02-CFDC1-E
DeviceNet Configurator PC Card	Windows 95, 98, Me, 2000, or XP	3G8E2-DRM21-EV1

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Operating Environment

Operating environment	Hardware	Computer: IBM PC/AT or compatible CPU: Pentium 166 MHz or better (Pentium 150 MHz or better for Windows Me) (Recommended: 200 MHz or better) Recommended memory: 32 MB or more Available hardware disk space: 15 MB or more
Network connection method	Board/Card	3G8E2-DRM21-EV1 DeviceNet Configurator PC Card (PCMCIA) (DeviceNet Configurator Software included)
	Serial	Peripheral port or RS-232C port on CPU Unit or RS-232C port on Serial Communications Unit/Board mounted to CS/CJ-series PLC.

- Note:** 1. Windows is a registered trademark of the Microsoft Corporation.
2. Use version 2.1 or later for the CJ1W-DRM21.

Outline

The DeviceNet Configurator provides function to aid in constructing and operating DeviceNet multivendor networks. These functions are interfaced through graphical windows for easy operation. Offline, virtual networks can be constructed and device settings can be made. If Smart Slaves are used, an advance maintenance system can be constructed by setting and monitoring maintenance information inside the Smart Slaves.

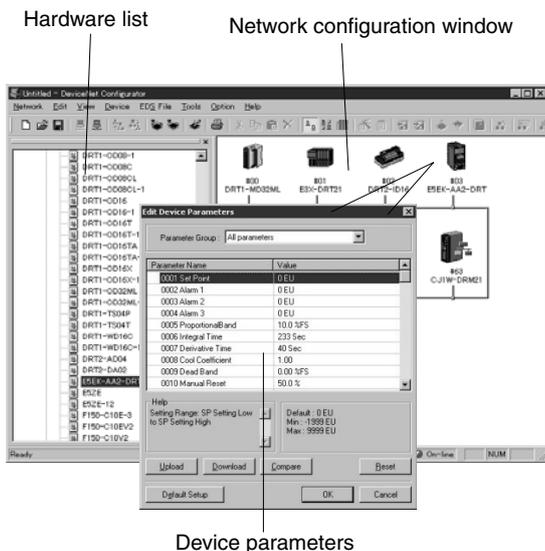
Network Construction and Settings

Easy Network Construction with Graphical Interface

A virtual network construction window provided by the Configurator enables dragging and dropping devices from hardware lists to build a network and make the required settings on the personal computer. The resulting information can be saved in files for downloading to the devices online.

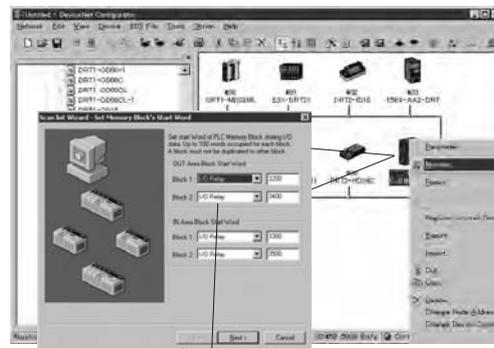
Setting DeviceNet Parameters

Offline, device files can be drug and dropped on a virtual network inside the Configurator to build a network and the parameters for each device can be edited, greatly increasing system design efficiency.



Create Scan Lists Using a Wizard

I/O allocations and slave registrations can be easily performed in the master by using a wizard to create scan lists. The currently registered slaves and allocations can also be easily confirmed.



Scan List Wizard

Online Connections

Connect Using a PC Card or Board, or a Serial Port

Software connections from the Configurator are possible using either a DeviceNet Board or Card installed in the personal computer, or through a serial port on an OMRON CS- or CJ-series PLC.

DeviceNet Board or Card

OMRON provides both a PCI Board and a PCMCIA Card to enable direct connection as a node on the DeviceNet network (one node address is allocated).

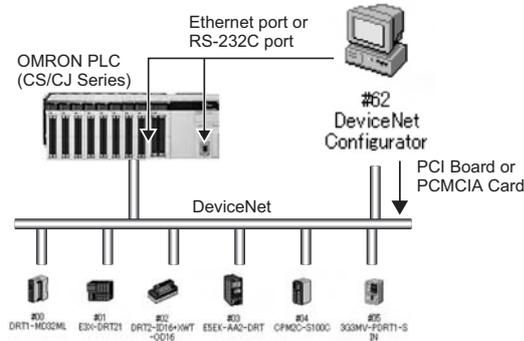
RS-232C COM Port on Computer

Connection is also possible from the COM port on the computer to the Peripheral port or RS-232C port on CPU Unit or RS-232C port on Serial Communications Unit/Board mounted to a CS/CJ-series PLC that has a DeviceNet Unit mounted to it.

CS1 Unit Descriptions

Ethernet Port on Computer

Furthermore, connection is also possible from an Ethernet port on the computer to an Ethernet Unit mounted to a CS/CJ-series PLC that has a DeviceNet Unit mounted to it.



DeviceNet Configurator
WS02-CFDC1-E/3G8E2-DRM21-EV1

Device Management and Monitoring

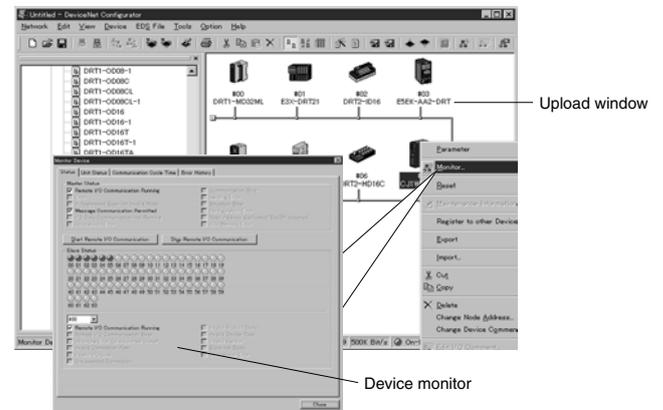
Online Device Monitoring

Use Network Uploads to Monitor Devices (See note.)

The following items can be monitored from the CPU Unit of an OMRON CS- or CJ-series PLC.

- Overall network communications status
- Master and slave status
- Unit status
- Communications cycle time
- Error log

Note: Supported only by devices with a monitor function.

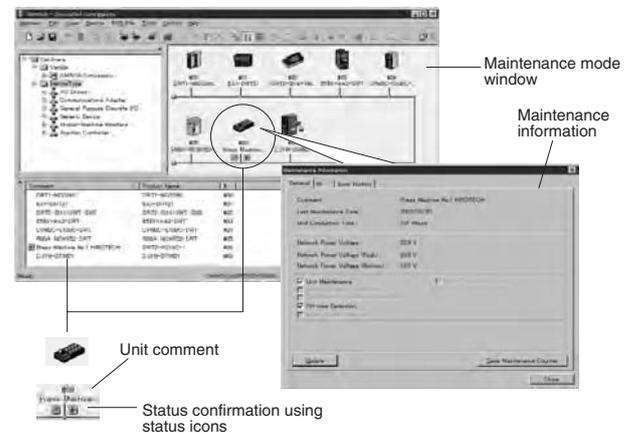


Maintenance System Construction

Use Smart Slaves for an Advance Maintenance System

Smart Slave Maintenance Information

Maintenance information stored in Smart Slaves can be read and use to build a maintenance system that functions separately from the control system.

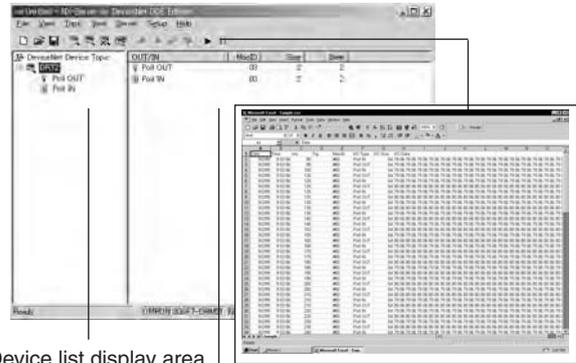


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WS02-NXD1-E NX-Server

Easily monitor and record all kinds of I/O data in the DeviceNet Network.

- I/O data being transferred through DeviceNet can be monitored.
- The advanced trigger function allows a specific device's data to be recorded.
- Nodes are not used because the Server is equipped with an original frame analysis engine.
- Data can be accessed without increasing network traffic.
- A development kit for developing applications with the DDE Server and software for operating existing user applications are also available.



Device list display area

Logging data example

Topic and item information display area

■ NX-Server Functions

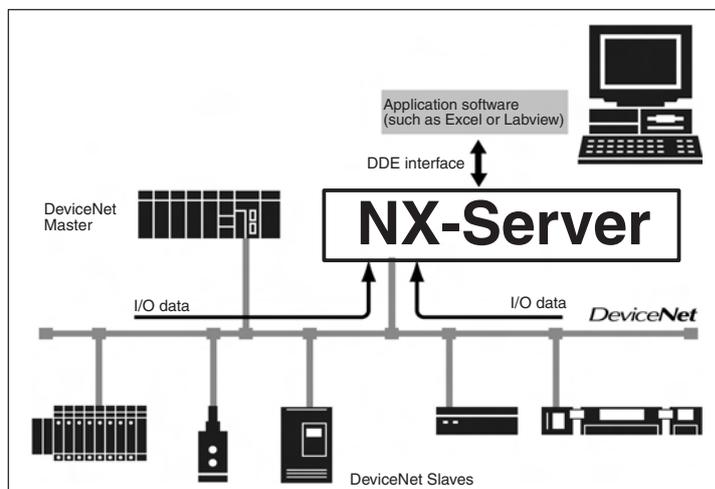
- Topic names and data areas can be set freely for each device that you want to monitor or record.
- DDE interface's server name as a public user interface: NETXDNET
- The data size and format (bit, byte, word) can be specified.
- Data logging can be set independently for each device and their trigger conditions can also be set.
- The recorded data can be checked in standard CSV format.
- Nodes are not used because the Server is equipped with an original frame analysis engine.
- Data can be accessed without increasing network traffic.

Ordering Information

Name	Model
NX-Server for DeviceNet DDE Edition	WS02-NXD1-E

- Note:**
1. NX-Server is a DDE (Dynamic Data Exchange) Server that collects I/O data and provides that data to higher-level monitoring software.
 2. The 3G8E2-DRM21-EV1 PC Card can be used.

System Configuration



Specifications

■ Operating Environment

Hardware	OMRON DeviceNet Configurator PC Cards: 3G8E2-DRM21-EV1 PC Card (included with DeviceNet Configurator) National Instruments DeviceNet boards: Any board that supports NI-DNET Software
Computer	IBM PC/AT compatible
OS	When using the 3G8E2-DRM21-EV1: Windows 95, 98
CPU	Pentium 166 MHz or higher
Hard disk space	5 Mbytes min.
Memory	32 Mbytes min.
Floppy disk drive	Drive that can read 1.44-Mbyte, 3.5-inch, 2HD floppy disks
Display	VGA or higher

Note: Windows is a registered trademark of Microsoft Corporation.

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Communications Middleware

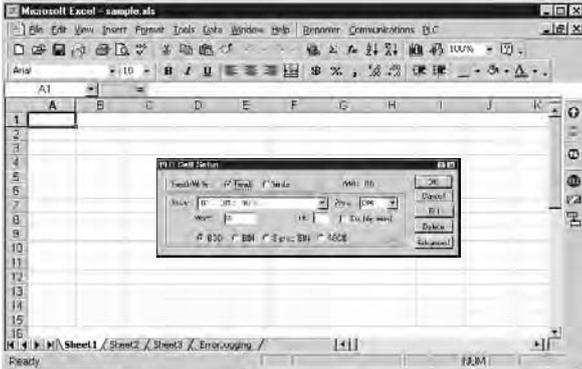
■ PLC Reporter 32 – Simple Data Collection Software

Write PLC data to Excel without programming.

Main Features

Easy Operation

Time-consuming computer programming is completely unnecessary. After installation, PLC data can soon be collected at the computer simply using screen settings. No specialist knowledge is required.

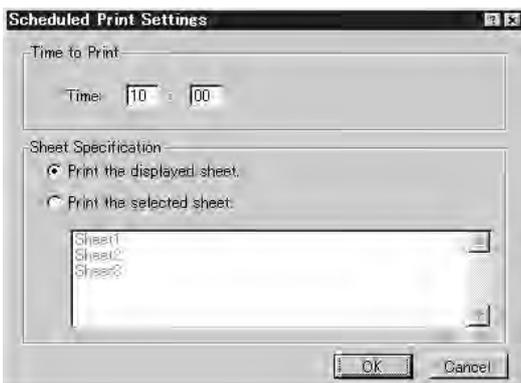


Large Reductions in Construction Costs

Basically, the system can be constructed with just a computer, PLC Reporter, Excel and a Host Link cable. This means that construction time and cost can be greatly reduced.

Automatic Saving/Printing Function

By setting the times at which data is to be saved or printed, or communications started, PLC Reporter will automatically perform all the required tasks. Also, simultaneous time and condition specification is now possible. The maximum number of items that can be set for either specification has been increased to 32. With automatic printing, it is possible to specify different printout sheets for each setting.



Modem Module

A modem module that has the functionality required for modem connections is available as a standard product. By using PLC Reporter in combination with the modem module, data can be obtained from a remote PLC.

Log Function

An easy-to-use log function that helps in the creation of daily reports is available. There are 3 log modes: Fixed time-intervals; when a specified bit turns ON; and one-shot logging to log data only once a day. The logging function can be selected to suit the application, and specified contents of PLC memory can be written to the Excel cells automatically.

Consecutive Reading and Writing for Cells

Data in consecutive areas in PLC memory can be read/written to consecutive cells in the spreadsheet. It is also possible to set cells in the same column simultaneously, and using the batch-setting function that has been added, communications cells can be specified out of a selected range.

Multi-network Version Available

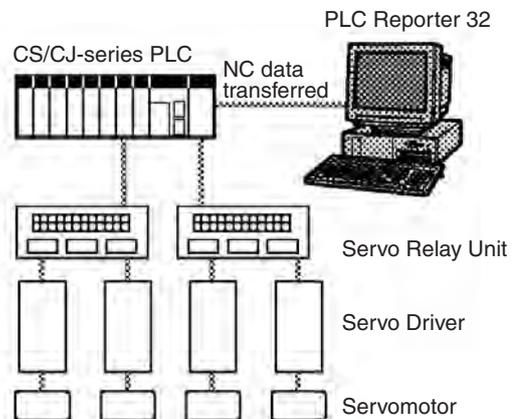
All types of FA network can be handled with this software package. In addition to Host Link communications, a multi-network version that is compatible with SYSMAC LINK, Controller Link, and Ethernet Networks is available.

System Configuration Examples

Changing Production Data in One Operation

Changing Position Data for an NC Unit

First create the files containing NC Unit data for the different applications. Then, when changing applications, use the PLC Reporter to read the file for the next application from computer memory, and then send it in one operation to the PLC's memory. This functionality means that applications can be switched quickly.

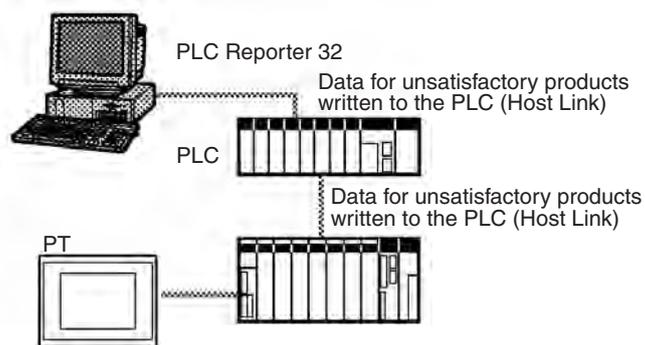


CS1 CPU Unit Descriptions

Collection of Data for Quality Checks

Data for Unacceptable Products Displayed in Words

Data for unsatisfactory products sent to the PLC can be collected with the PLC Reporter. Excel's user definitions can be used to define the meanings of codes and thus display messages instead of actual data.



Models/Specifications

Product name	PLC Reporter 32 Host Link Version	PLC Reporter 32 Multi-network Version
Model	SDKY-95HLK-E97	SDKY-95MLT-E97
Compatible networks	Host Link	Host Link, Controller Link, SYSMAC LINK, Ethernet, SYSMAC Board
Connectable PLCs	CS Series, CJ Series, C Series, CV Series	
OS	Microsoft Windows 98, Me, 2000, or XP	
Compatible Excel version	Microsoft Excel 97, 2000, or 2002	
Computer	IBM PC/AT or compatible	
Recommended specifications	CPU: Pentium 300 MHz min. Memory: 128 MB min. Free disk space: 20 MB min. CD-ROM drive required for installation	

Note: Product specifications and configurations are current as of July 2003.

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■ Compolet™– ActiveX Control for PLC Communications

Development Work for PLC Communications Simpler and Faster with ActiveX Control

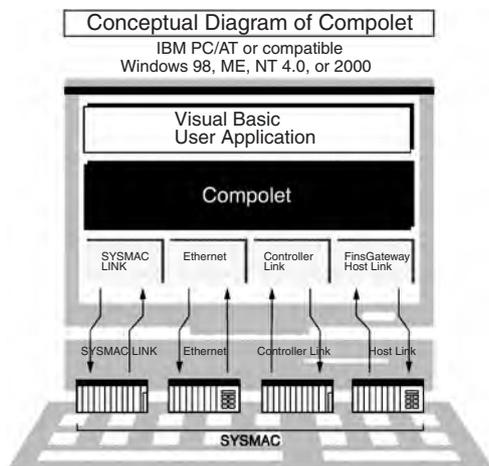
Main Features

Significant Reduction in Development Time

Compolet significantly reduces the time and effort required for difficult, time-consuming communications programming. Using ActiveX control for direct operation of Programmable Controllers (e.g., SYSMAC), eliminates the need for knowledge of PLC communications commands (FINS commands). The application uses an easy-to-read format, allowing simple reading of 100 words of DM Area data. This enables users to concentrate on creating application logics and to configure efficient applications.

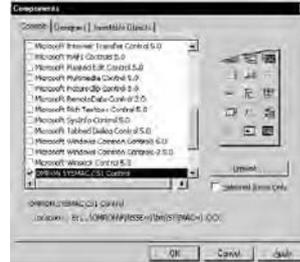
FinsGateway

More than two field networks can be unified into one platform. Users can create various applications without being concerned about types of networks. With the FinsGateway, new networks can be easily added.



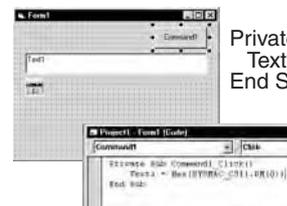
Application

Start Visual Basic and select **Components**. Select **OMRON SYSMAC CS1 Control**.



On the Form Window, double-click **Command1**, and a window describing codes will be displayed.

Enter the following text in the **Click** column next to the **Command1** column.



```
Private Sub Command1_Click
    Text1 = Hex (SYSMAC_CS11.DM(0))
End Sub
```

Complete



Main Functions

Interface	Function	Description
Property	Communications with SYSMAC PLCs	Specifying the SYSMAC to communicate with, and reading network information
	Reading/writing variables and I/O Area memory data	Reading and writing to memory areas such as DM and CIO words E.g. DM word 100: DM (100)
	Operating state	Reading or changing the operation mode
	Area information	Reading the size of the program area or the number of DM words
	Error information	Reading the value of an error as a message.
	Other SYSMAC information	Reading the format, changing or reading the time
Method	Reading/writing variables and I/O Area memory data	Reading and writing of memory area data such as consecutive DM or I/O words
	I/O table creation	Creating an I/O table for the current configuration
	Forced set/reset/cancel of input bits (contacts)	Forced set/reset/cancel of individual input bits (contacts)
	Execution of FINS services	Sending FINS commands, and acquisition of FINS responses received

CS1 CPU Unit Descriptions

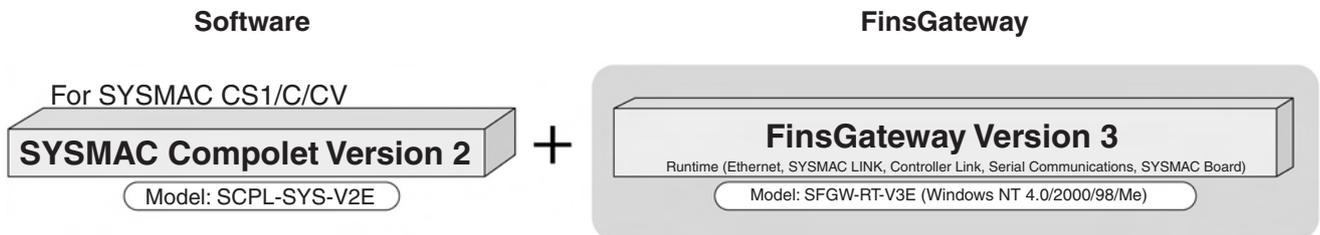
Operating Environment/Specifications

Computer	IBM PC/AT or compatible An environment where the OS can run properly 10MB of free disk space for installation
CPU (memory)	Intel Celeron 400 MHz min. or better recommend- ed (Memory: 32 MB min.)
OS	Windows 98, Me, NT 4.0 SP3 or later, 2000, or XP
Required devel- opment soft- ware	Microsoft Visual Basic 5.0/6.0
Compatible net- works	SYSMAC LINK Controller Link Ethernet Serial communications (RS-232C) SYSMAC Board

Note: A suitable board for each network is required.

Models

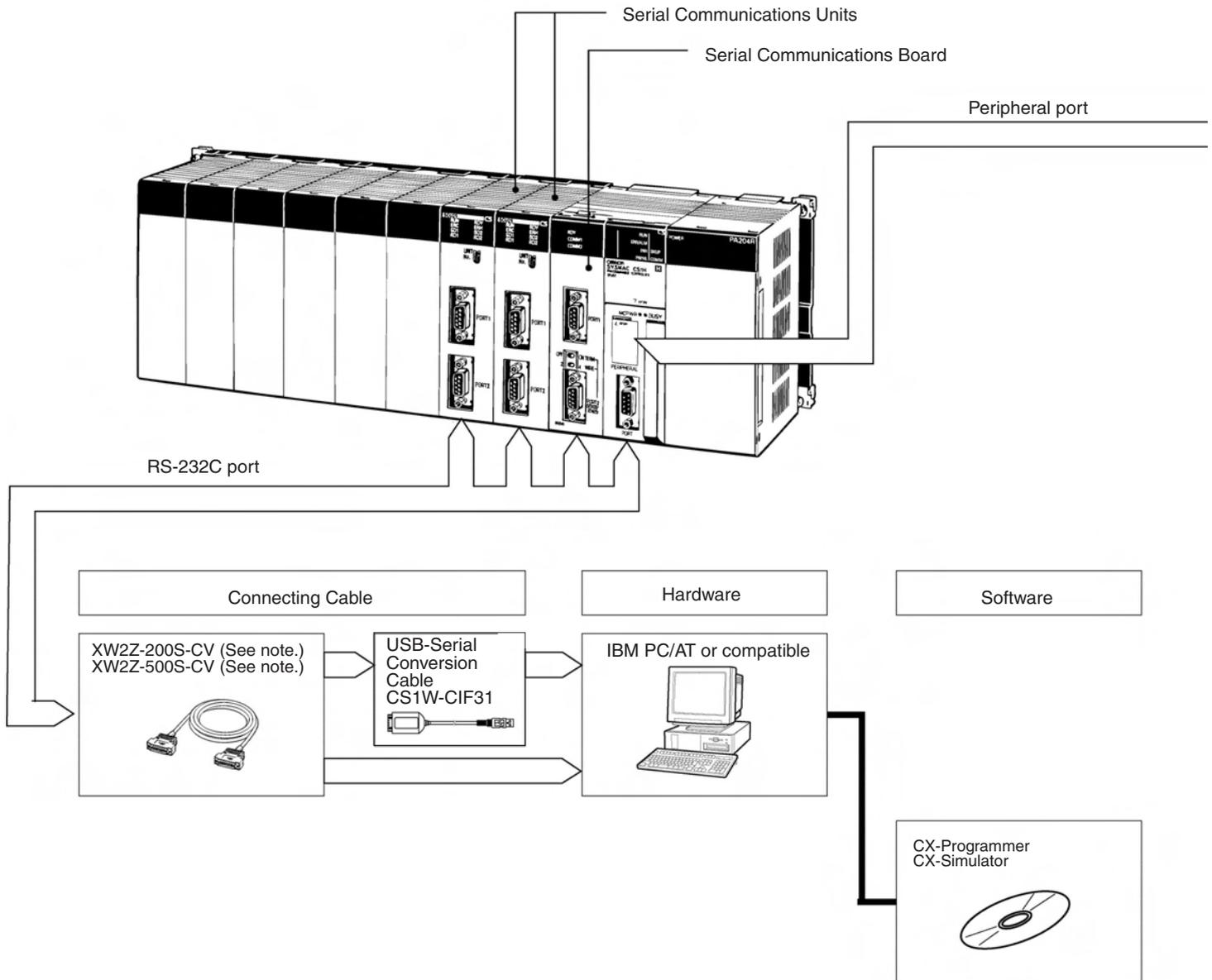
Choose one from the following products according to specification requirements.



Note: Product specifications and configurations are current as of July 2003.

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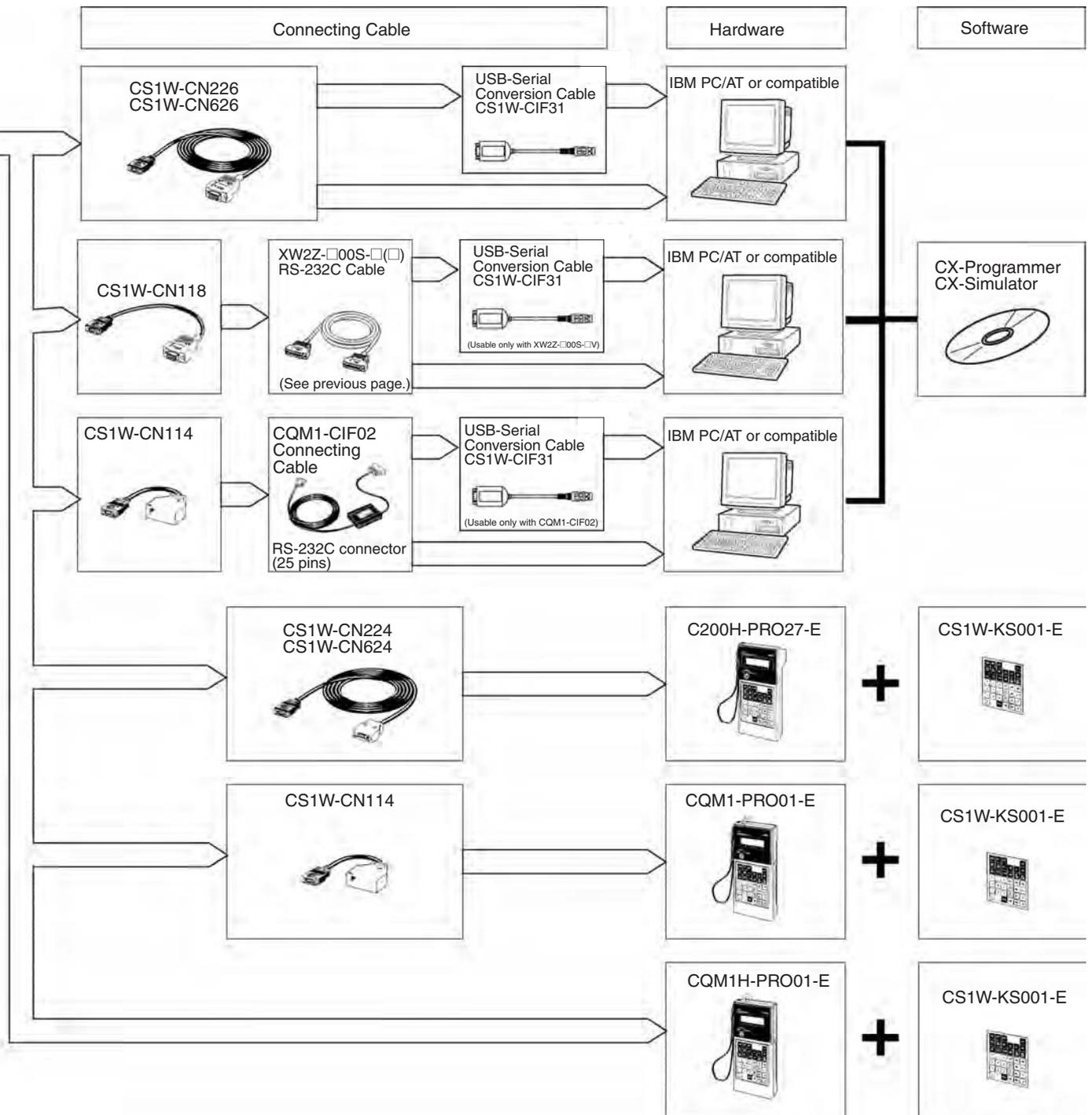
Programming Devices



- Note:**
1. Refer to the next page for details of cables for connecting to computers. Choose the appropriate cable for the communications mode.
 2. The following cables can be used for a Host Link connection (but not a peripheral bus connection):
 XW2Z-200S-V
 XW2Z-500S-V

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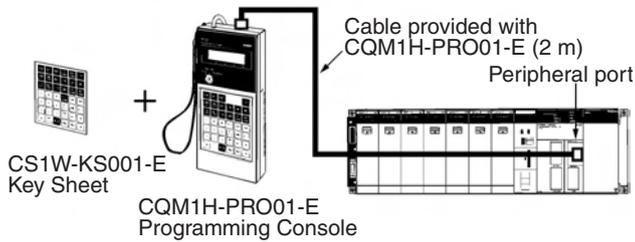


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Programming Devices

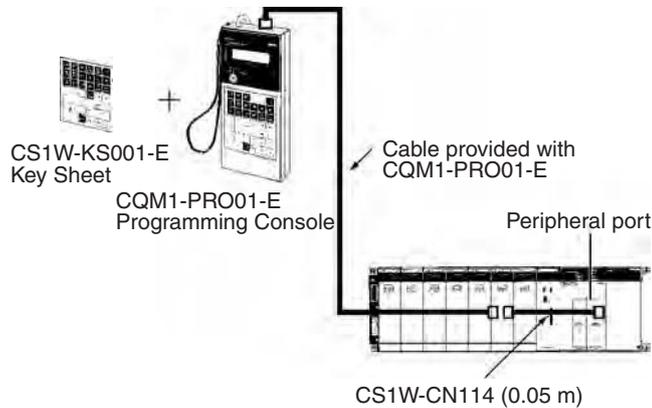
■ Programming Consoles

CQM1H-PRO01-E



Model	Cable	Cable length
CQM1H-PRO01-E	Not required.	---

CQM1-PRO01-E (See note.)



Note: The above configuration is also possible for the C200H-PRO27-E with a Programming Console Cable, such as the C200H-CN222.

Model	Cable	Cable length
CQM1-PRO01-E	CS1W-CN114	0.05 m

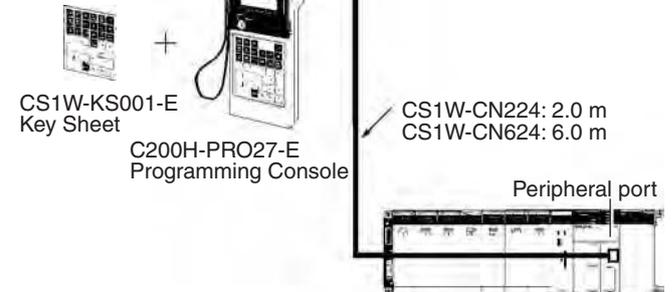
■ Windows-based Programming Software: CX-Programmer

Name	Model	Specifications
CX-Programmer	WS02-CXPC1-E-V5□	OS: Windows 95/98 or Windows NT/Me/2000/XP

The following serial communications modes can be used to connect a computer with the CX-Programmer to a CS1 PLC.

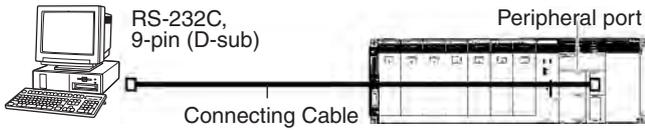
Mode	Features
Peripheral bus	The faster mode, peripheral bus is generally used for CX-Programmer connections. Only 1:1 connections are possible. The baud rate is automatically detected with the CS1.
Host Link	A standard protocol for host computers. Slower than peripheral bus, but allows modem or optical adapter connections, or long-distance or 1:N connections via RS422A/485.

C200H-PRO27-E



Model	Cable	Cable length
C200H-PRO27-E	CS1W-CN224	2.0 m
	CS1W-CN624	6.0 m

Connecting to the Peripheral Port

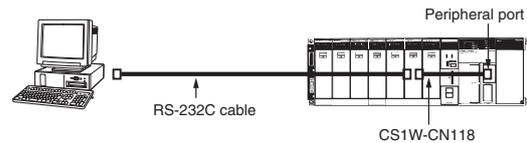


Peripheral Port Connecting Cables

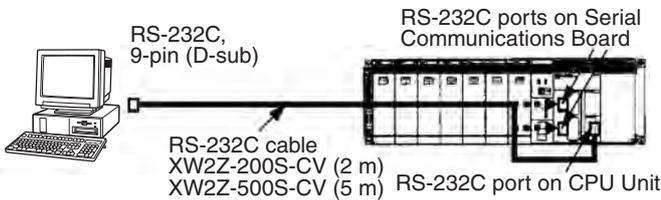
Cable	Length	Computer connector
CS1W-CN226	2.0 m	D-sub, 9-pin, male
CS1W-CN626	6.0 m	

The following cables can be used for an RS-232C connection from the computer to the peripheral port.

Mode	Connecting cables	Length	Computer connector
Peripheral bus or Host Link	XW2Z-200S-CV or XW2Z-500S-CV	2 or 5 m + 0.1 m	D-sub, 9-pin, male
Host Link	XW2Z-200S-V or XW2Z-500S-V		



Connecting to the RS-232C Port



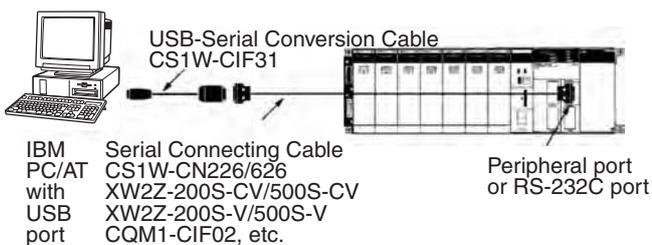
RS-232C Port Connecting Cables

Mode	Cable	Length	Computer connector
Peripheral bus or Host Link	XW2Z-200S-CV	2.0 m	D-sub, 9-pin, male
	XW2Z-500S-CV	5.0 m	

Note: Cables with model numbers ending in "CV" are antistatic. The following cables can be used for an RS-232C connection from the computer to an RS-232C port. (Unlike cables with model numbers ending in "-CV," however, these cables do not support peripheral bus connection and do not have anti-static specifications.)

Mode	Cable	Length	Computer connector
Host Link	XW2Z-200S-V	2.0 m	D-sub, 9-pin, male
	XW2Z-500S-V	5.0 m	

Using the USB-Serial Conversion Cable



USB-Serial Conversion Cable General Specifications

USB interface standard		Conforms to USB Specification 1.1
DTE speed		115.2 kbps
Connector specifications	Computer end	USB (type A plug, male)
	PLC end	RS-232C (D-sub, 9-pin, male)
Power supply		Bus power (supplied from upstream, 5 VDC)
Current consumption		35 mA
Operating environment	Ambient temperature	0 to 55°C
	Ambient humidity	10% to 90% (with no condensation)
	Atmosphere	No corrosive gas
Weight		50 g

OS Supporting Drivers for the USB–Serial Conversion Cable

Windows 98, Me, 2000, and XP

• Applicable Software

- CX-Programmer, CX-Simulator, CX-Protocol, CX-Motion
- CX-Position, CX-Process, DeviceNet Configurator, PLC Reporter 32
- NS-Designer, NT Support Tool for Windows (NTST)

Note: There are restrictions in the COM port that can be used for the NTST.

• Applicable Communications Middleware

FinsGateway, CX-Server

Models

The applicable software supports the following PLCs and PTs.

• PLCs

CS Series, CJ Series, C Series (C200HS, C200HX/HG/HE, C200H, C1000H, C2000H, CQM1, CPM1, CPM1A, CPM2A, SRM1, CQM1H, CPM2C), CVM1, CV Series

• PTs

NS Series, NT Series

Connecting Cables for Peripheral Port

Computer	Serial Communications Mode	Connecting Cable model numbers		Lengths	Computer end
IBM PC/AT or compatible	Tool bus or Host Link (SYSWAY)	CS1W-CIF31	CS1W-CN226	0.5 m + 2.0 m	USB (type A plug)
			CS1W-CN626	0.5 m + 6.0 m	
	CS1W-CIF31	XW2Z-200S-CV/ 500S-CV	CS1W-CN118	0.5 m + (2.0 m or 5.0 m) + 0.1 m	
	Host Link (SYSWAY)	CS1W-CIF31		XW2Z-200S-V/ 500S-V	

Connecting Cables for RS-232C Port

Computer	Serial Communications Mode	Connecting Cable model numbers		Lengths	Computer end
IBM PC/AT or compatible	Tool bus or Host Link (SYSWAY)	CS1W-CIF31	XW2Z-200S-CV	0.5 m + 2.0 m	USB (type A plug)
			XW2Z-500S-CV	0.5 m + 5.0 m	
	Host Link (SYSWAY)	CS1W-CIF31	XW2Z-200S-V (See note.)	0.5 m + 2.0 m	
			XW2Z-500S-V (See note.)	0.5 m + 5.0 m	

Note: Tool bus connections are not possible and connectors without ESD measures are used.

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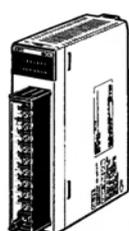
Unit		Classification	Model	Use with CS1D	Page
I/O Units	Input Units	CS1 Basic I/O Unit	CS1W-ID211/231/261/291	Yes	93
			CS1W-IA111/211	Yes	94
		C200H Basic I/O Unit	C200H-ID211/212	No	93
			C200H-IA□□□(V)	No	94
			C200H-IM211/212	No	94
		C200H Group-2 High Density Units	C200H-ID216/217/218/219/111	No	93
	C200H Special I/O Unit	C200H-ID215/501	No	93	
	Output Units	CS1 Basic I/O Unit	CS1W-OC201/211	Yes	94
			CS1W-OD21□/23□/26□/29□	Yes	94
			CS1W-OA201/211	Yes	95
		C200H Basic I/O Unit	C200H-OC22□(N)	No	94
			C200H-OD□□□	No	94
			C200H-OA223/222V/224	No	95
	C200H Group-2 High-density Units	C200H-OD218/219	No	94	
C200H Special I/O Unit	C200H-OD215/501	No	94		
I/O Units	CS1 Basic I/O Unit	CS1W-MD261/262/291/292/561	Yes	95	
	C200H Special I/O Unit	C200H-MD215/115/501	No	95	
High-speed Input Unit		CS1 Basic I/O Unit	CS1W-IDP01	Yes	95
Interrupt Input Unit		CS1 Basic I/O Unit	CS1W-INT01	Yes	96
		C200H Basic I/O Unit	C200H-INT01	No	
Analog Timer Unit		C200H Special I/O Unit	C200H-TM001	No	97
B7A Interface Units	Input Units	C200H Basic I/O Unit	C200H-B7A11/12	No	98
	Output Units	C200H Basic I/O Unit	C200H-B7AO1/02	No	
	I/O Units	C200H Basic I/O Unit	C200H-B7A21/22	No	
Safety Relay Unit		CS1 Basic I/O Unit	CS1W-SF200	Yes	100
Analog I/O Units	Input Units	CS1 Special I/O Unit	CS1W-AD041/081 (-V1)	Yes	103
		C200H Special I/O Unit	C200H-AD03	No	
	Output Units	CS1 Special I/O Unit	CS1W-DA041/08V/08C	Yes	105
		C200H Special I/O Unit	C200H-DA001/002/003/004	No	
	I/O Units	CS1 Basic I/O Unit	CS1W-MAD44	Yes	107
		C200H Special I/O Unit	C200H-MAD01	No	
Loop Control Unit		CS1 CPU Bus Unit	CS1W-LC001	Yes	109
Loop Control Board		Inner Board	CS1W-LCB01/05	Yes (See note 1.)	113
		CS1D Process Control CPU Unit (with built-in Inner Board)	CS1D-CPU65P/67P (CS1D-LCB05D built in)	Yes	
Process I/O Units		CS1 Special I/O Unit	CS1W-P□□□□(-V1)	Yes	113
Temperature Sensor Units		CS1 Special I/O Unit	CS1W-PTS01-V1/02/03/11/12/51/52	Yes	116
		C200H Special I/O Unit	C200H-TS001/002/101/102	No	
Temperature Control Units		C200H Special I/O Unit	C200H-TC□□□	No	118
Heat/Cool Control Units		C200H Special I/O Unit	C200H-TV□□□	No	120
PID Control Units		C200H Special I/O Unit	C200H-PID01/02/03	No	122
Position Control Units		CS1 Special I/O Unit	CS1W-NC□□3	Yes	124
		C200H Special I/O Unit	C200HW-NC□□3	No	

Unit		Classification	Model	Use with CS1D	Page
Motion Control Unit		CS1 Special I/O Unit	CS1W-MC421-V1/221-V1	Yes	126
		CS1 CPU Bus Unit	CS1W-MCH71	Yes (See note 2.)	128
Customizable Counter Units		CS1 Special I/O Unit	CS1W-HCP22-V1/HCA22-V1/ HCA12-V1/HIO01-V1	Yes	131
High-speed Counter Units		CS1 Special I/O Unit	CS1W-CT021/041	Yes	133
		C200H Special I/O Unit	C200H-CT001-V1/002/021	No	
Cam Positioner Unit		C200H Special I/O Unit	C200H-CP114	No	135
ID Sensor Units		CS1 Special I/O Unit	CS1W-V600C11/V600C12	Yes	137
		C200H Special I/O Unit	C200H-IDS01-V1	No	
Serial Communi- cations Boards/ Unit	Serial Communications Boards	Inner Board	CS1W-SCB21-V1/41-V1	Yes (See note 1.)	139
	Serial Communications Unit	CS1 CPU Bus Unit	CS1W-SCU21-V1	Yes	
GP-IB Interface Unit		CS1 Special I/O Unit	CS1W-GPI01	Yes	140
ASCII Units		C200H Special I/O Unit	C200H-ASC11/21/31	No	141
RS-232C/RS-422 Conversion Unit		---	NT-AL001	Yes	145
Ethernet Unit (100Base-TX/10Base-T)		CS1 CPU Bus Unit	CS1W-ETN21/CS1D-ETN21D	Yes	147
Controller Link Boards/Unit	Controller Link Unit	CS1 CPU Bus Unit	CS1W-CLK21-V1/12-V1/52-V1	Yes	149
	Controller Link Boards	Personal computer ISA board	3G8F7-CLK21-EV1/CLK12-EV1/ CLK52-EV1	Yes	
SYSMAC LINK Boards/Unit	SYSMAC LINK Unit	CS1 CPU Bus Unit	CS1W-SLK21/11	Yes	153
	SYSMAC LINK Boards	Personal computer ISA board	3G8F7-SLK21/11-E	Yes	
FL-net Unit		CS1 CPU Bus Unit	CS1W-FLN22	---	155
DeviceNet Units	DeviceNet Unit (Master/Slave)	CS1 CPU Bus Unit	CS1W-DRM21-V1	Yes	158
	Master Unit	C200H Special I/O Unit	C200HW-DRM21-V1	No	
	Slave	C200H Special I/O Unit	C200HW-DRT21	No	
CompoBus/S Units	Master Unit	C200H Special I/O Unit	C200HW-SRM21-V1	No	160

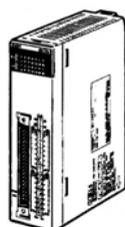
Note: 1. Inner Boards cannot be used with the CS1D-CPU□□H.

2. There are restrictions when using the CS1W-MCH71 Motion Control Unit with the CS1D-CPU□□H. Refer to the *CS1D Duplex System Operation Manual* (Cat. No.: W405).

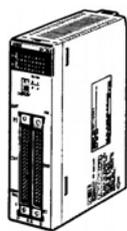
I/O Units CS1W-ID/IA/OC/OD/OA/MD



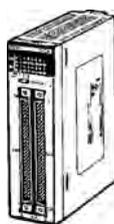
Input Unit
CS1W-ID211
16 points



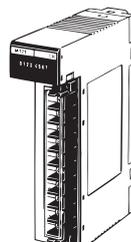
Input Unit
CS1W-ID231
32 points



Input Unit
CS1W-ID261
64 points



Input Unit
CS1W-ID291
96 points



Input Unit
C200H-ID211
8 points



Input Unit
C200H-ID212
16 points

Output Units
CS1W-OD211
16 points

Output Units
CS1W-OD231
32 points

Output Units
CS1W-OD261
64 points

Output Units
CS1W-OD291
96 points

Output Units
C200H-OD211
5/8 points

Output Units
C200H-OD212
16 points

I/O Units
CS1W-MD261/561
32/32 points

I/O Units
CS1W-MD291
48/48 points



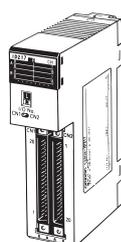
AC Input Units
CS1W-IA111
16 points



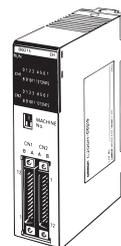
Triac Output Unit
CS1W-OA201
8 points



Relay Output Unit
CS1W-OC201
8 independent



Input Unit
C200H-ID321
32/64 points



Input Unit
C200H-ID322
32 points

Triac Output Unit
CS1W-OA211
16 points

Relay Output Unit
CS1W-OC211
16 points

Output Units
C200H-OD321
32/64 points

Output Units
C200H-OD322
32 points

I/O Units
C200H-MD321
16/16 points

DC Input Units

Classification	Input voltage	Inputs	Connections	Model	Remarks
CS1 Basic I/O Unit	24 VDC	16 pts	Removable terminal block	CS1W-ID211	Input current: 7 mA
	24 VDC	32 pts	Connector	CS1W-ID231	Input current: 6 mA
	24 VDC	64 pts		CS1W-ID261	
	24 VDC	96 pts		CS1W-ID291	Input current: approx. 5 mA
C200H Basic I/O Unit	12 to 24 VDC	8 pts	Removable terminal block	C200H-ID211	Input current: 10 mA
	12 VDC	16 pts	Removable terminal block	C200H-ID212	Input current: 7 mA
C200H Group-2 I/O Units	24 VDC	32 pts	Connector	C200H-ID216	Input current: 4.1 mA
	24 VDC	64 pts		C200H-ID217	
	24 VDC	32 pts		C200H-ID218	Input current: 6 mA
	24 VDC	64 pts		C200H-ID219	
	12 VDC	64 pts		C200H-ID111	Input current: 4.1 mA
C200H Special I/O Unit	24 VDC	32 pts		C200H-ID215	

CS1 Unit Descriptions

I/O Units
CS1W-ID/IA/OC/OD/OA/MD

TTL Input Units

Classification	Input voltage	Inputs	Connections	Model	Remarks
C200H Special I/O Unit	5 VDC	32 pts	Connector	C200H-ID501	Supports high-speed inputs.

AC Input Units (and 100 VDC)

Classification	Input voltage	Inputs	Connections	Model
CS1 Basic I/O Units	100 to 120 VAC, or 100 to 120 VDC	16 pts	Removable terminal block	CS1W-IA111
	200 to 240 VAC	16 pts		CS1W-IA211
C200H Basic I/O Units	100 to 120 VAC	8 pts		C200H-IA121
		16 pts		C200H-IA122
	200 to 240 VAC	8 pts		C200H-IA122V
		16 pts		C200H-IA221
		16 pts	C200H-IA222	
		16 pts	C200H-IA222V	

AC/DC Input Units

Classification	Input voltage	Inputs	Connections	Model
C200H Basic I/O Units	12 to 24 VAC/VDC	8 pts	Removable terminal block	C200H-IM211
	24 VAC/VDC	16 pts		C200H-IM212

Relay Output Units

Classification	Outputs	Connections	Model
CS1 Basic I/O Units	8 pts (independent)	Removable terminal block	CS1W-OC201
	16 pts		CS1W-PC211
C200H Basic I/O Units	8 pts		C200H-PC221
	12 pts		C200H-OC222
	12 pts		C200H-OC222N
	16 pts		C200H-OC225
	16 pts		C200H-OC226N
	5 pts		C200H-OC223
	8 pts		C200H-OC224
	8 pts		C200H-OC224N

Transistor Output Units

Classification	Outputs	Max. switching capacity	Connections	Model	Remarks		
CS1 Basic I/O Units	16 pts	12 to 24 VDC, 0.5 A/pt, 8 A/Unit sinking	Removable terminal block	CS1W-OD211	---		
		24 VDC, 0.5 A/pt, 5 A/Unit, sourcing, load short protection, alarm		CS1W-OD212	---		
	32 pts	12 to 24 VDC, 0.5 A/pt, 5 A/Unit, sinking	Connector	CS1W-OD231	---		
		24 VDC, 0.5 A/pt, 5 A/Unit, sourcing, load short protection, alarm		CS1W-OD232	---		
	64 pts	12 to 24 VDC, 0.3 A/pt, 6.4 A/Unit, sinking		CS1W-OD261	---		
		24 VDC, 0.3 A/pt, 6.4 A/Unit, sourcing, load short protection, alarm		CS1W-OD262	---		
	96 pts	12 to 24 VDC, 0.1 A sinking, 7.2 A/Unit		CS1W-OD291	---		
		12 to 24 VDC, 0.1 A sourcing, 7.2 A/Unit		CS1W-OD292	---		
	C200H Basic I/O Units	8 pts		12 to 48 VDC, 1 A sinking	Removable terminal block	C200H-OD411	---
		8 pts		24 VDC, 2.1 A, sinking		C200H-OD213	---
8 pts		24 VDC, 0.8 A, sourcing, load short protection		C200H-OD214		---	
8 pts		5 to 24 VDC, 0.3 A, sourcing		C200H-OD216		---	
12 pts		24 VDC, 0.3 A, sinking	C200H-OD211	---			
16 pts		24 VDC, 0.3 A, sinking	C200H-OD212	---			
12 pts		5 to 24 VDC, 0.3 A, sourcing	C200H-OD217	---			
16 pts		24 VDC, 1.0 A, sourcing, load short protection	C200H-OD21A	---			
C200H Group-2 I/O Units	32 pts	16 mA at 4.5 V to 100 mA at 26.4 V, sinking	Connector	C200H-OD218	---		
	64 pts	16 mA at 4.5 V to 100 mA at 26.4 V, sinking		C200H-OD219	---		
C200H Special I/O Unit	32 pts	16 mA at 4.5 V to 100 mA at 26.4 V, sinking		C200H-OD215	128-pt dynamic outputs possible		

Note: C200H-OD212/21B Units can also be used with CS1 PLCs.

CS1 Unit Descriptions

I/O Units
CS1W-ID/IA/OC/OD/OA/MD

■ TTL Output Unit

Classification	Outputs	Max. switching capacity	Connections	Model	Remarks
C200H Special I/O Unit	32 pts	5 VDC, 35 mA	Connector	C200H-OD501	128-pt dynamic outputs possible

■ Triac Output Units

Classification	Outputs	Max. switching capacity	Connections	Model
CS1 Basic I/O Units	8 pts	250 VAC, 1.2 A, 50/60 Hz	Removable terminal block	CS1W-OA201
	16 pts	250 VAC, 0.5 A, 50/60 Hz		CS1W-OA211
C200H Basic I/O Units	8 pts	250 VAC, 1.2 A, 50/60 Hz	Removable terminal block	C200H-OA223
	12 pts	250 VAC, 0.3 A, 50/60 Hz		C200H-OA222V
	12 pts	250 VAC, 0.5 A, 50/60 Hz		C200H-OA224

■ I/O Units

Name	Classification	Inputs/Outputs	Input voltage	Max. switching capacity	Connections	Model	Remarks
DC Input/ Transistor Output Units	CS1 Basic I/O Units	32 inputs/32 outputs	24 VDC	12 to 24 VDC, 0.3 A, sinking	Connector	CS1W-MD261	---
		32 inputs/32 outputs		24 VDC, 0.3 A, sourcing, load short protection, alarm		CS1W-MD262	---
		48 inputs/48 outputs	24 VDC	12 to 24 VDC, 0.1 A, sinking		CS1W-MD291	---
		48 inputs/48 outputs		12 to 24 VDC, 0.1 A, sourcing		CS1W-MD292	---
	C200H Special I/O Units	16 inputs/16 outputs	24 VDC	16 mA at 4.5 V to 100 mA at 26.4 VDC, sinking		C200H-MD215	High-speed inputs, 128-pt dynamic outputs possible
		16 inputs/16 outputs	12 VDC	24 VDC, 50 mA, sinking		C200H-MD115	

Note: In addition to the normal I/O functions, C200H High-density I/O Units (Special I/O Units) provide the following functions.

- Dynamic I/O (except for OD501/OD215): In stead of normal static inputs and normal static outputs, dynamic outputs and dynamic inputs are used to increase I/O capacity to 128 inputs and 128 outputs through the use of strobe signal outputs. These functions can be used to reduce wiring to devices with more digits, such as displays and keyboards.
- High-speed Inputs (except OD501/OD215): Eight of the inputs can be set as high-speed inputs to accurately input short pulses from devices like photomicroswitches.

■ TTL I/O Unit

Name	Classification	Inputs/Outputs	Input voltage	Max. switching capacity	Connections	Model	Remarks
TTL I/O Unit	CS1 Basic I/O Units	16 inputs/16 outputs	5 VDC	5 VDC, 35 mA	Connector	CS1W-MD561	---
	C200H Special I/O Units					C200H-MD501	High-speed inputs, 128-pt dynamic outputs possible

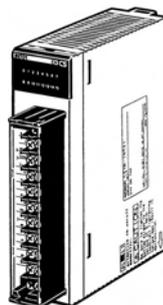
■ High-speed Input Unit

Name	Classification	Inputs	Max. switching capacity	Model
High-speed Input Unit	CS1 Basic I/O Units	16 pts	24 VDC, 7 mA	CS1W-IDP01

Interrupt Input Unit CS1W-INT01/C200HS-INT01

High-speed Response of 1.0 ms

- Mounted to CPU Rack.
- Use up to two CS1W-INT01 Units or up to four C200HS-INT01 Units.



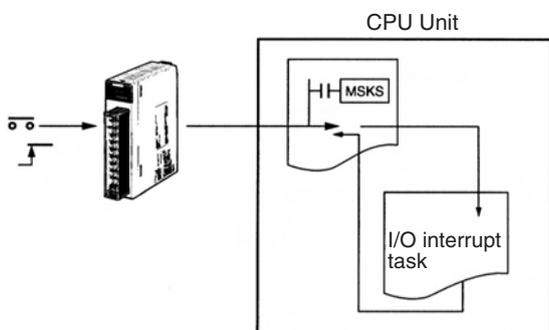
CS1W-INT01
C200HS-INT01

Function

When the input on the Interrupt Input Unit turns ON, the CPU Unit is notified immediately, cyclic task execution (normal programming) is interrupted, and an I/O interrupt task is executed.

The interrupt input function is supported only by CS1G/CS1H CPU Units. The Interrupt Input Units can be used only as normal Input Units with CS1D CPU Units.

System Configuration

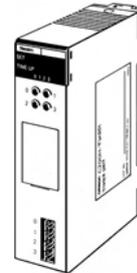


Specifications

Classification	Input voltage	Inputs	Input pulse width	Connections	Allocations	Model
CS1W Basic I/O Unit	24 VDC	16 pts	ON: 0.1 ms min. OFF: 0.5 ms min.	Removable terminal block	16 bits (CIO 0319 to CIO 2000)	CS1W-INT01
C200H Basic I/O Unit	12 to 24 VDC	8 pts	ON: 0.2 ms min. OFF: 0.5 ms min.		8 bits	C200HS-INT01

Analog Timer Unit (Interrupt Input Unit) C200H-TM001

Easy On-site Time Adjustments

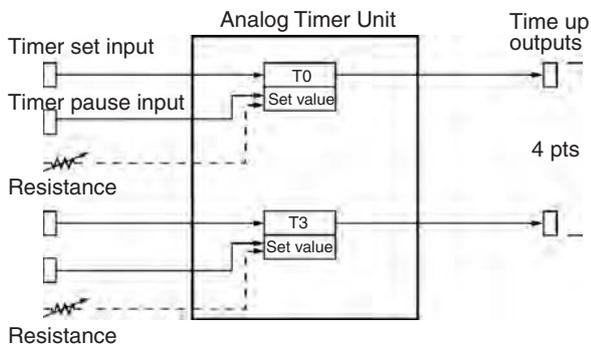


C200H-TM001

Function

Provides four timers, timer numbers 0 to 3, that are easily adjusted onsite via front-panel adjustments or external variable resistors: No Programming Device required. Using timer pause inputs enables applications as a accumulative timer.

System Configuration

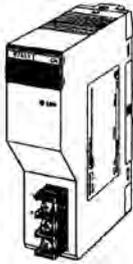


Specifications

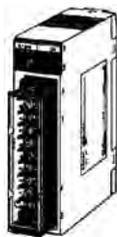
Classification	Timers	Setting range	Time setting method	CPU Unit bits	Allocations (CIO 0319 to CIO 2000)	Model
C200H Basic I/O Unit	4 pts	0.1 to 1.0 s, 1 to 10 s, 2 to 60 s, 1 to 10 min	Internal or external variable resistor	Timer set input, timer pause input, and time up output	16 bits (I/O Bit Area: CIO 2000 to CIO 0319)	C200H-TM001

B7A Interface Units C200H-B7A

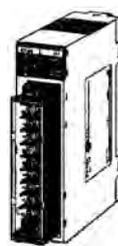
Wire-reduction Units that Transfer 16 Points of I/O Information on Two Signal Wires



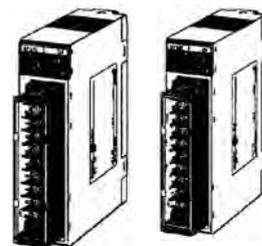
C200H-B7A11 (16 inputs)
C200H-B7A01 (16 outputs)



C200H-B7A02 (32 outputs)

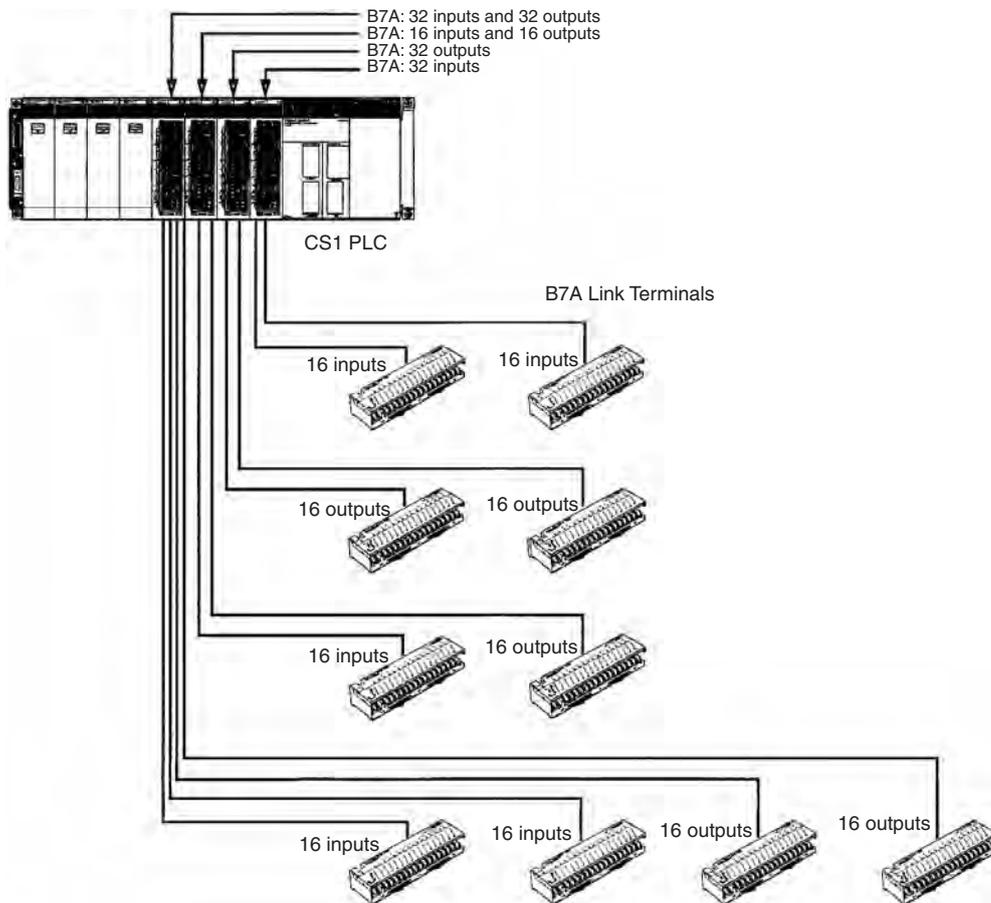


C200H-B7A12 (32 inputs)



C200H-B7A21 (16 inputs/16 outputs)
C200H-B7A22 (32 inputs/32 outputs)

Connection Example



Note: Refer to the B7A Link Terminal catalog (Q101) for details on B7A Link Terminals.

Lineup of Units
CPU Unit Overview
Basic System Configuration
Better Basic Performance
Peripheral Devices
CPU Unit Overview
I/O Allocations
Current Consumption
Instructions
Replacing C200H I/O Units
ORDERING GUIDE
Wiring Devices for High-density I/O Units
Connector Cables
Peripheral Devices

Specifications

Item		B7A Interface Units		B7A Group-2 Interface Units			
		C200H-B7A11	C200H-B7A01	C200H-B7A12	C200H-B7A02	C200H-B7A21	C200H-B7A22
I/O capacity	Inputs	16 inputs or 15 + 1 error input	---	32 inputs (See note 1.)	---	16 inputs (See note 2.)	32 inputs (See note 1.)
	Outputs	---	16 outputs	---	32 outputs	16 outputs	32 outputs
Transmission distance		500 m max. if separate power supplies are used for Unit and Link Terminals. 100 m max. if same power supply is used for Unit and Link Terminals.		Normal operation: 500 m max. if separate power supplies are used for Unit Link Terminals. 100 m max. if same power supply is used for Unit Link Terminals. High-speed operation: 100 m max. with shield connected and 10 m max. without shield connected if separate power supplies are used for Unit Link Terminals. 50 m max. with shield connected and 10 m max. without shield connected if same power supply is used for Unit and Link Terminals.			
Transmission delay		19.2 ms typical, 31 ms max.		Normal operation: 19.2 ms typical, 31 ms max. High-speed operation: 3 ms typical, 5 ms max. (See note 3.)			
Internal current consumption		100 mA max. at 5 VDC					
External power supply (See note 4.)		10 mA max. at 12 to 24 VDC ±10%	30 mA max. at 12 to 24 VDC ±10%	50 mA max. at 12 to 24 VDC ±10%	60 mA max. at 12 to 24 VDC ±10%	50 mA max. at 12 to 24 VDC ±10%	80 mA max. at 12 to 24 VDC ±10%
Weight		200 g max.		300 g max.			
I/O word allocations (See note 5.)		I/O words are allocated consecutively according to the mounting position.		I/O words are allocated consecutively according to the mounting position. Two words are allocated to 32-point Units and four words are allocated to 64-point Units.			

- Note:**
1. Can also be used for 32 inputs or 30 inputs + 2 error inputs by changing input mode.
 2. Can also be used for 16 inputs or 15 inputs + 1 error input by changing input mode.
 3. Normal and high-speed operation set via switch.
 4. Not including power supply to B7A Link Terminals
 5. With the C200HX/HG/HE, words from IR 030 to IR 049 are allocated to B7A Interface Units (Group-2 Units) according to the I/O number setting.

Applicable B7A Link Terminals

Input Terminals

Type	Model	Transmission delay
Screw terminals	B7A-T6□1	Normal (19.2 ms)
	B7AS-T6□1	
	B7A-T6□6	High-speed (3 ms)
	B7AS-T6□6	
Modules	B7A-T6D2	Normal (19.2 ms)
	B7A-T6D7	High-speed (3 ms)
PC connectors	B7A-T□E3	Normal (19.2 ms)
	B7A-T□E8	High-speed (3 ms)

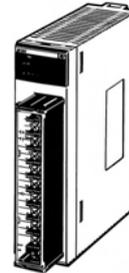
Output Terminals

Type	Model	Transmission delay
Screw terminal	B7A-R6□□1	Normal (19.2 ms)
	B7AS-R6□□1	
	B7A-R6□□6	High-speed (3 ms)
	B7AS-R6□□6	
Modules	B7A-R6A52	Normal (19.2 ms)
	B7A-RA57	High-speed (3 ms)
OC connectors	B7A-R□A□3	Normal (19.2 ms)
	B7A-R□A□8	High-speed (3 ms)

Safety Relay Unit CS1W-SF200

Reduced Wiring and Space for Safety Circuits

- Safety relays and monitor inputs in 1 Unit to reduce wiring and space.
- Safety relays operate with separate power supply from PLC.
- Monitor safety circuit output, K1/K2 relay, or power status from PLC.
- Four general-purpose inputs provided.
- Safety standards: EN954-1 and EN60204-1

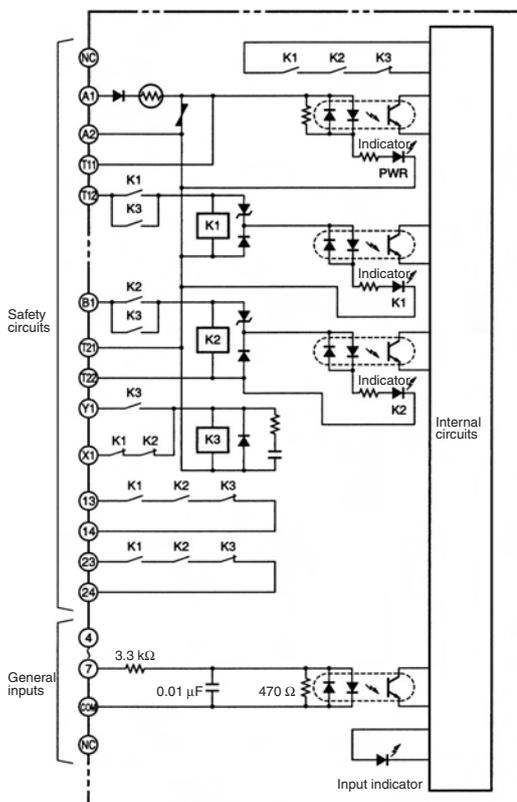


CS1W-SF200

Function

This Safety Relay Unit mounts as an I/O Unit and provides both safety relays and inputs for monitoring.

Internal Connections



Lineup of Units
CPU Unit Overview
Basic System Configuration
Better Basic Performance
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Specifications

Item	Specifications
Contact resistance	100 mΩ (5 VDC, 1 A, voltage drop method)
Operating time	300 ms max. (not including bounce)
Response time	10 ms max. (time from input OFF to main contact OFF, not including bounce)
Insulation resistance (See note.)	20 MΩ min. (at 500 VDC) for following: Safety circuits-safety outputs, General inputs-safety outputs, Different poles of safety outputs, and safety circuits-general inputs
Withstand voltage (See note.)	2,500 VAC, 50/60 Hz for 1 min for following: Safety circuits-safety outputs, General inputs-safety outputs, Different poles of safety outputs 500 VAC, 50/60 Hz for 1 min for Safety circuits-general inputs
Durability	Mechanical: 5,000,000 min. (7,200 time/hr) Electrical: 100,000 min. (1,800 time/hr)
Weight	300 g

Note: Measured while mounted to PLC.

Ratings of Safety Circuits

Item		Specification
Power	Supply voltage	24 VDC
	Fluctuation	-15%/+10% of supply voltage
	Consumption	24 VDC: 1.7 W max.
Inputs	Current	75 mA max.
Switching	Rated load	250 VAC, 5 A
	Rated ON current	5 A

Ratings of General Inputs

Item	Specifications
Power voltage	24 VDC
Fluctuation	-15%/+10% of supply voltage
Input impedance	3.3 kΩ
Input current	7 mA typ. (24 VDC)
ON voltage/current	14.4 VDC min./3 mA min.
OFF voltage/current	5 VDC max./1 mA max.
ON/OFF response	8 ms max. (Set to 1 to 32 in PC Setup)
Circuits	4 points, 1 common
ON points	100% simultaneously ON

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Analog Product Selection Guide

Classification	Model	I/O capacity	I/O isolation*	I/O ranges/types	Conversion time	Remarks	Page
Analog Input Units	CS1W-AD041-V1	4 inputs	No	1 to 5 V, 0 to 5 V, 0 to 10 V, ±10 V, 4 to 20 mA	0.25 ms/pt	---	103
	CS1W-AD081-V1	8 inputs	No	1 to 5 V, 0 to 5 V, 0 to 10 V, ±10 V, 4 to 20 mA		---	
	CS1W-PTW01	4 inputs	Yes	1 to 5 V, 4 to 20 mA	100 ms/4 pts	Built-in power supply for 2-wire transmission device, measured value alarms (HH, H, L, LL), other features	113
	CS1W-PDC11		Yes	4 to 20 mA, 0 to 20 mA, 0 to 10 V, ±10 V, 0 to 5 V, ±5 V, 1 to 5 V, 0 to 1.25 V, ±1.25 V	20 ms/4 pts, 10 ms/2 pts	Measured value alarms (HH, H, L, LL), top/bottom/valley hold, other features.	
	CS1W-PDC55	8 inputs	Yes	4 to 20 mA, 0 to 10 V, 0 to 5 V, 1 to 5 V	250 ms/8 pts	Measured value alarms (H, L), other features	103
	CS1W-PDC01	4 inputs	Yes	1 to 5 V, 0 to 5 V, 0 to 10 V, ±10 V, 4 to 20 mA, 0 to 20 mA	100 ms/4 pts	Measured value alarms (HH, H, L, LL), other features	
	CS1W-PTR01	8 inputs	No	-1 mA to 1 mA, 0 to 1 mA	200 ms/8 pts	Motor overdrive prevention, measured value alarms (H, L), other features	
	CS1W-PTR02		No	-100 mA to 100 mA, 0 to 100 mV	200 ms/8 pts	Measured value alarms (H, L), other features	
	C200H-AD003		No	1 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	1 ms/pt	---	
Analog Output Units	CS1W-DA041	4 outputs	No	1 to 5 V, 0 to 5 V, 0 to 10 V, ±10 V, 4 to 20 mA	1 ms/pt	---	105
	CS1W-DA08V	8 outputs	No	1 to 5 V, 0 to 5 V, 0 to 10 V, ±10 V			
	CS1W-DA08C		No	4 to 20 mA			
	CS1W-PMV01	4 outputs	Yes	1 to 5 V, 4 to 20 mA	100 ms/4 pts	Output disconnection alarm, control output answerback input, other features	113
	CS1W-PMV02		Yes	0 to 10 V, ±10 V, 0 to 5 V, ±5 V, 0 to 1 V, ±1 V	40 ms/4 pts	---	
	C200H-DA001	2 outputs	No	0 to 10 V, 1 to 5 V, 4 to 20 mA	2.5 ms/pt		105
	C200H-DA002	4 outputs	No	-10 to 10 V, 4 to 20 mA			
	C200H-DA003	8 outputs	No	1 to 5 V, 0 to 10 V, -10 to 10 V	1 ms/pt		
	C200H-DA004		No	4 to 20 mA			
Analog I/O Unit	CS1W-MAD44	2 inputs and 2 outputs	No	1 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA	1 ms/pt	---	107
	C200H-MAD01	4 inputs and 4 outputs	No	Inputs: 1 to 5 V, 0 to 5 V, 0 to 10 V, ±10 V, 4 to 20 mA Outputs: 1 to 5 V, 0 to 5 V, 0 to 10 V, ±10 V	1 ms/pt		
Temperature Sensor Input Units	CS1W-PTS11	4 inputs	Yes	B, E, J, K, L, N, R, S, T, U, WRe5-26, PLII, ±100 mV	20 ms/4 pts, 10 ms/2 pts	Measured value alarms (HH, H, L, LL), input disconnection alarm, top/bottom/valley hold, user-set zero span adjustment, other features.	116
	CS1W-PTS12		Yes	Pt100 Ω (JIS, IEC), Jpt100 Ω, Pt50 Ω, Ni508.4 Ω			
	CS1W-PTS51		Yes	B, J, K, R, S, T, L	250 ms/4 pts		
	CS1W-PTS55	8 inputs	Yes		250 ms/8 pts	Measured value alarms (H, L), measured value alarm DO output, input disconnection alarm, other features.	
	CS1W-PTS52	4 inputs	Yes	Pt100 Ω (JIS, IEC), Jpt100 Ω,	250 ms/4 pts		
	CS1W-PTS56	8 inputs	Yes		250 ms/8 pts		
	CS1W-PTS01-V1	4 inputs	Yes	B, E, J, K, N, R, S, T, ±80 m VDC auto range	150 ms/4 pts	Automatic range setting, measured value alarms (HH, H, L, LL), other features.	
	CS1W-PTS02		Yes	Pt100 (JIS, DIN, ISO) JPt100	100 ms/4 pts		
	CS1W-PTS03		Yes	Ni508 Ω	100 ms/4 pts		
	C200H-TS001		No	K, J	4.8 s max.	---	
	C200H-TS002		No	K, L			
	C200H-TS101		No	JPt100			
	C200H-TS102		No	Pt100			

Note: Inputs are isolated from PLC signals for all Units.

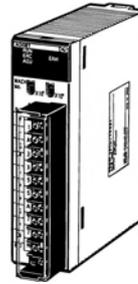
CS1 Unit Descriptions

Analog Input Units
CS1W-AD□□□-V1/C200H-AD003

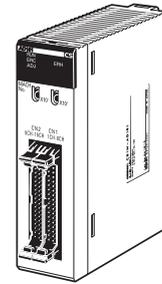
Analog Input Units CS1W-AD□□□-V1/C200H-AD003

Convert Analog Signals to Binary Data

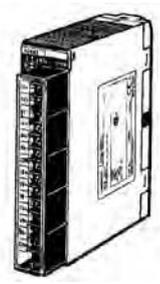
- Wire burnout detection
- Peak-hold function
- Mean function
- Offset gain setting



CS1W-AD041-V1/AD081-V1



CS1W-AD161

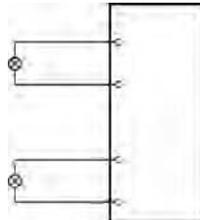


C200H-AD003

Function

Convert input signals such as 1 to 5 V or 4 to 20 mA to binary values between 0000 and 0FA0 Hex and store the results in the allocated words each cycle. The ladder diagram can be used to transfer the data to the DM Area or the SCALING instructions (e.g., SCL(194)) can be used to scale the data to the desired ranged.

Circuit Configuration



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Specifications

Model	CS1W-AD041-V1	CS1W-AD081-V1	CS1W-AD161	C200H-AD003	DRT2-AD04	DRT2-AD04H	GT1-AD08MX		
Classification	CS1 Special I/O Units (See note 3.)			C200H Special I/O Unit	DeviceNet Slaves		MULTIPLE I/O TERMINAL of DeviceNet Slaves		
Unit number	0 to 95	0 to 95	0 to 94	0 to F	---	---	---		
Inputs	4 pts	8 pts	16 pts	8 pts	4 pts	4 pts	4 or 8 pts		
Signal range	Voltages	1 to 5 V	Yes	Yes	Yes	Yes	Yes	Yes	
		0 to 10 V	Yes	Yes	Yes	Yes	Yes	Yes	
		0 to 5 V	Yes	Yes	Yes	---	Yes	Yes	Yes
		-10 to 10 V	Yes	Yes	Yes	Yes	Yes	---	Yes
	Currents	4 to 20 mA	Yes	Yes	Yes	Yes	Yes	Yes	Yes
0 to 20 mA		---	---	---	---	Yes	Yes	Yes	
Signal range settings	4 settings (one for each point)	8 settings (one for each point)	16 settings (one for each point)	8 settings (one for each point)	4 pts at a time	4 pts at a time	2 pts at a time		
Resolution	1/8000	1/8000	1/8000	1/4000	1/6000	1/30000	1/6000		
Conversion speed	1 ms/pt max. (0.25 ms/pt max.)	1 ms/pt max. (0.25 ms/pt max.)	1 ms/pt max. (0.25 ms/pt max.)	1 ms/pt max. (1 ms/pt max.)	4 ms/4 pts	250 ms/4 pts	8 ms/8 pts		
Overall accuracy (at 25 °C)	Voltage: ±0.2% Current: ±0.4%	Voltage: ±0.2% Current: ±0.4%	Voltage: ±0.2% Current: ±0.2%	Voltage: ±0.2% Current: ±0.4%	Voltage: ±0.3% Current: ±0.4%	Voltage: ±0.3% Current: ±0.4%	Voltage: ±0.3% Current: ±0.4%		
Connections	Terminal block	Terminal block	Connector (See note4.)	Terminal block	Terminal block	Terminal block	Connector		
Features	Wire burnout detection	Yes	Yes	Yes	Yes	Yes	Yes		
	Peak-hold function	Yes	Yes	Yes	Yes	Yes	---		
	Mean function	Yes	Yes	Yes	Yes	Yes	Yes		
	Scaling	---	---	Yes	---	Yes	Yes		
	Square root extraction	---	---	---	---	---	---		

- Note:**
1. Process I/O Units are also available for analog I/O. Refer to page 113.
 2. Analog I/O Terminals are also available as DeviceNet Slaves and in MULTIPLE I/O TERMINALS. Refer to pages 212 to 216.
 3. System settings also can be used to enable operation with the specifications of the previous Units (CS1W-AD041/081) (resolution: 1/4000, conversion speed: 1 ms per point max.).
 4. Use OMRON's XW2D-34G6 Connector-Terminal Block Conversion Unit and special connection cable for input wiring.

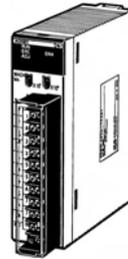
CS1 Unit Descriptions

Analog Output Units
CS1W-DA□□□/C200H-DA□□□

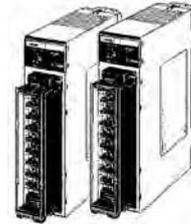
Analog Output Units CS1W-DA□□□/C200H-DA□□□

Convert Binary Data to Analog Signals

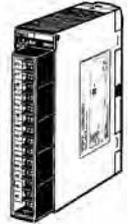
- Output hold function
- Offset gain adjustment (actual function depends on Unit)



CS1W-DA041/
CS1W-DA08V
CS1W-DA08C



C200H-DA001/
C200H-DA002

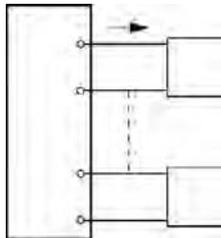


C200H-DA003
(voltage outputs)
C200H-DA004
(current outputs)

Function

Binary data between 0000 to 0FA0 Hex in the allocated words can be convert to analog signals such as 1 to 5 V or 4 to 20 mA for output. All that is required in the ladder diagram is to place the data in the allocated words.

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