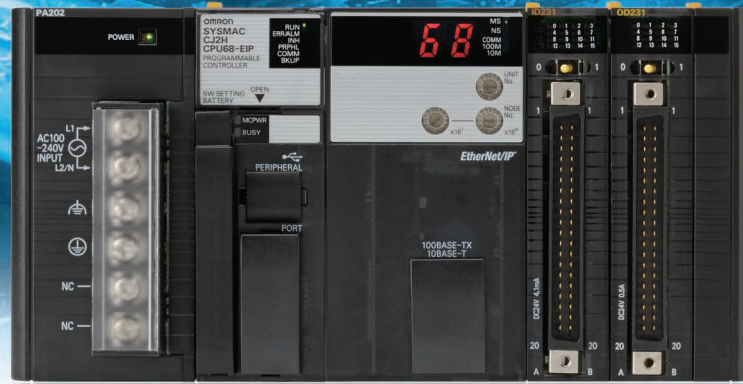# OMRON

CJ2 SERIES

Programmable Automation Controllers

Introducing the Flagship CJ2 CPU Units, with Built-in Multifunctional EtherNet Port

» Built-in EtherNet/IP ports
» Tag based programming
» Fast processing time
» Large memory capacity
» Fully compatible with CJ1 modules

Automation...simple...powerful.

CJ2 – Omron's New Small, Fast & Flexible Modular Flagship PAC, with built-in EtherNet/IP and Tag Based Programming

The **CJ2 Programmable Automation Controller (PAC)** delivers PAC features and capabilities as defined by ARC Advisory Group in Omron's popular, compact modular CJ PLC platform.

Multi-domain functionality — CJ2 performs logic, motion, HMI and process control on a single platform.

Single multi-discipline development platform - Using a common tag database, PAC and HMI programming can be developed in parallel, reducing development time. Omron's CJ2 PAC, NS-Series HMI's and middleware all share the same tag database. CX-One Software incorporates 16 different development tools.

Software tools that allow access across several machines - Omron's CJ2 PACs supports Single Point Multiple Access (SPMA) which enables set-up and programming of all local modules and remotely networked modules.

Open, modular architecture - Omron's CJ2 supports the capability to handle logic, position & motion control, RFID, analog and temperature control, HMI, bar code, networking modules, communication modules, smart sensors, vision and drives, all in a single modular platform.

Standardized Programming & Open Networks - Omron's CJ2 supports all IEC61131-3 programming languages: Ladder, Function Block, Structured Text, Sequential Function Chart (SFC) and Instruction List. Open networks enable seamless communications using these protocols: Ethernet, EtherNet/IP, DeviceNet, CompoNet, PROFIBUS, PROFINET, FLNet, MECHATROLINK-II and Serial (RS-232C, RS-422, RS-485).

CJ2 CPU's — Offer built-in EtherNet/IP networking, High-speed, high-capacity data exchange between PAC's, PLC's, HMI's and I/O devices. EtherNet/IP can be used to perform both information and control Networking, share up to 184,832 words over 256 nodes. CJ2 PAC's can easily connect to Rockwell's ControlLogix and CompactLogix PLC's using EtherNet/IP tag data links.

2

Key Features and Benefits

Large Memory Capacity –

The CPU program memory capacity has been increased up to 400K Steps, DM has increased up to 800K while Function Block Program, Symbol, Comment Memory has increased to 3.5MB. Large memory allows for larger more versatile programs, well documented programs makes it easier and faster to troubleshoot.

Fast –

Processing times are significantly faster. Faster production, faster development time, faster time to market and higher throughput means higher speed applications can be achieved.

IEC61131-3 Programming –

All 5 programming languages are supported with the CJ2 PAC. Ladder, Function Block, Structured Text, Instruction List and Sequential Function Chart. Hundreds of Pre-built pre-test Function blocks significantly can reduce design time. Standard programming languages allow for fast, flexible and powerful programming.

General-purpose Networks for Support Software Interface –

CX-One software applications can be easily connected using standard USB and EtherNet Cables via USB and EtherNet/IP ports.

Tag Based Programming –

CJ2 CPU Units have a tag name server to manage tag names and I/O addresses. This enables access from external devices using tag names, without needing to know the I/O addresses.

One Single Programming Environment –

CX-One is Omron's single programming environment for PAC's, PLC's, HMI, Networks, Process Control, Motion Control and Simulation Software. Legacy PLC's are supported and single click conversion to new hardware makes for easy migration. The software includes and Update service that automatically checks for the latest update of software.

Improved Debugging –

Online editing and data tracing have been improved, greatly increasing the efficiency of debugging. The data trace function is built into the PAC and can monitor & store I/O and data in 1 ms time increments. This allows for easy and faster debug time, which allows for faster time to market.

CJ2 Capabilities –

Offers functions such as motion control, process control, RFID, Logic and Drives all on the same controller platform. The modular architecture is ideal for applications where the user is interested in saving money by reducing development time & increasing production.

3

Faster and Higher-capacity CPU Units

High-capacity data memory is in demand to meet the need for quality control for equipment and products and to provide real-time processing and collection of measurement data. Large program capacity is also in demand due to the need for improving program reusability through modularization and structured programming.

Great Expanded Program Capacity and Data Memory Capacity NEW

Ample capacity is provided for the data required for control operations.
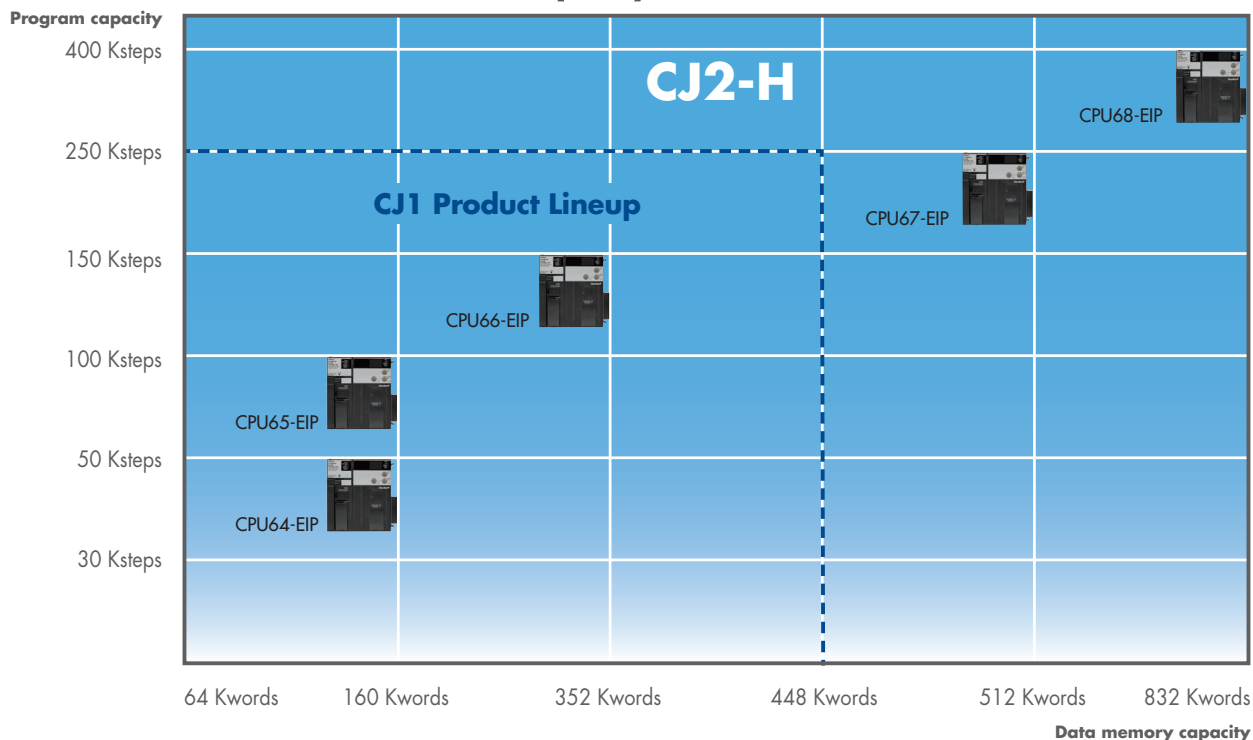
The High-capacity CJ2H-CPU68-EIP Is Now Available.

» Program capacity: 400 Ksteps (1.6 times larger than before)
» Data memory capacity: 832 Kwords (2 times larger than before)
» Basic Instructions (0.016 µs)

And, All CJ2 Models Have more Capacity than CJ1 Models.

In addition, all models have more capacity than the equivalent CJ1-series models to meet needs for structured programming and increasing amounts of data.

Increased Capacity over CJ1-series CPU Units

Program capacity

Program capacity	
400 Ksteps	CJ2-H
250 Ksteps	CPU68-EIP
150 Ksteps	CPU67-EIP
100 Ksteps	CPU66-EIP
50 Ksteps	CPU65-EIP
30 Ksteps	CPU64-EIP

CJ1 Product Lineup

64 Kwords   160 Kwords   352 Kwords   448 Kwords   512 Kwords   832 Kwords

Data memory capacity

Program capacity: **400 Ksteps**
Data memory capacity: **832 Kwords**

4

High-speed System I/O Throughput NEW

Improved basic performance enables flexible machine control.

Ample Instruction Execution Performance for Machine Control

The CJ2 Series fully responds to customer requests for improvement and increased information.

- » **System Overhead**
  Common processing 200 μs
  Interrupt response: 30 μs

- » **Basic Instructions**
  LD instruction execution: 0.016 μs
  OUT instruction execution: 0.016 μs

- » **Floating-point Math**
  SIN calculation: 0.59 μs
  Floating-point decimal addition and subtraction: 0.24 μs

Faster I/O Refreshing Using the Burst Transfer Method 2.4 Times

I/O refreshing between an EtherNet/IP Unit and the CPU Unit is now performed at high speed using the even faster and higher-capacity data links for EtherNet/IP. This method is standard for the CJ2 CPU Units. I/O refreshing is now performed at up to 2.4 times the speed of previous Communications Units.

I/O refresh speed (for 1,000 words)

CJ2   330μs ··· 2.4x
CJ1   800 μs

Burst transfer

High-speed, high-capacity
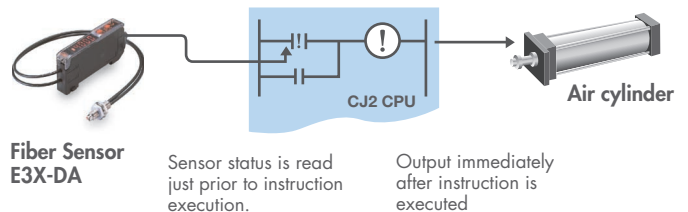
EtherNet/IP
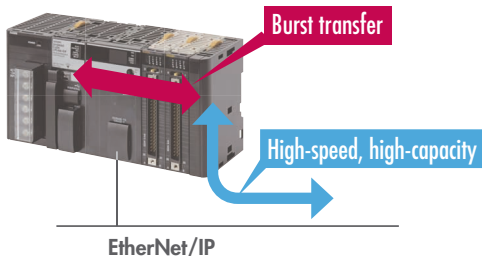
- » **I/O Refreshing**
  16-point Basic I/O Unit: 1.4 μs
  8-point Analog Input Unit: 50 μs

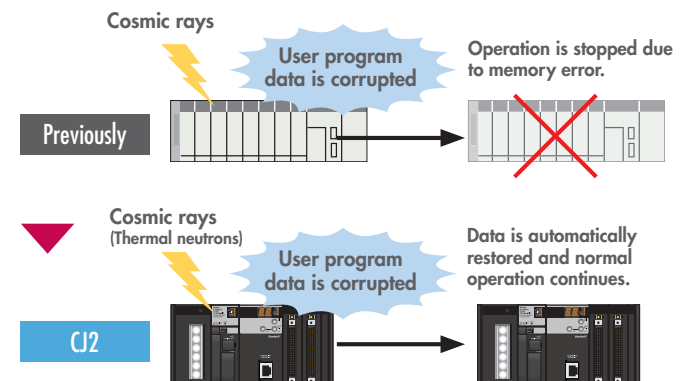# Faster Immediate I/O Refreshing 20 Times

Immediate refreshing of basic I/O is also faster. Real-time inputs and outputs while instructions are being executed are up to 20 times faster than before.

(Example: !LD instruction speed improved from 20 μs to 1 μs)

Fiber Sensor E3X-DA

Sensor status is read just prior to instruction execution.

CJ2 CPU

Output immediately after instruction is executed

Air cylinder

Automatic User Memory Recovery

Finer memory production processes have been accompanied by problems such as bit corruption caused by cosmic rays. With the CJ2 CPU Units, corruption in the user program is detected and the program recovered in real time before program execution. This reduces equipment down time by minimizing the number of times that operation is stopped due to memory errors.

Cosmic rays

User program data is corrupted

Operation is stopped due to memory error.

Previously

Cosmic rays (Thermal neutrons)

User program data is corrupted

Data is automatically restored and normal operation continues.

CJ2

5

Networks Are More Open

EtherNet/IP is an open network that uses the TCP/IP protocol on EtherNet networks, which are widely used in offices and factories throughout the world. The CJ2 CPU Units support EtherNet/IP as a standard feature. Because EtherNet/IP uses TCP/IP, it provides the many advantages of EtherNet technology.

Universal EtherNet and FA Data Links Can Be Used at the Same Time.

`NEW`

With EtherNet/IP, One Port Is Enough.

FTP Communications, Data Links, and Support Software Can Be Used Simultaneously through a Single Port.

The CJ2 CPU Units provide as standard equipment a multifunctional EtherNet port that supports EtherNet/IP. There is no need to add an EtherNet Unit, because universal EtherNet communications, such as data links between PAC's, message communications between PAC's, and FTP transfers, are all enabled simultaneously through this one port while Support Software is connected.
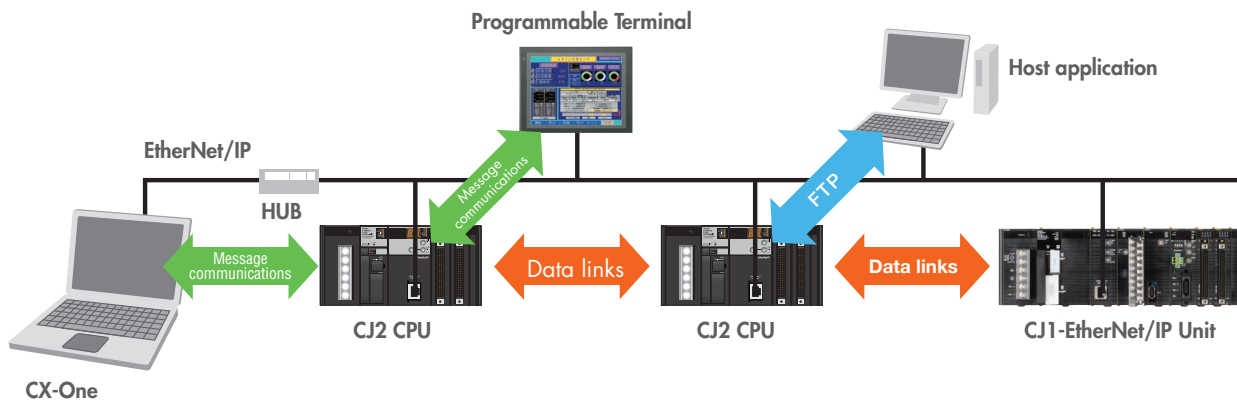
Create a Seamless Data Flow in a Single Network System.

Because it is based on the world-standard CIP open protocol, a seamless data flow can be achieved between control lines and information monitoring lines in a single network system. From here on, EtherNet/IP will be increasingly used in multi-vendor environments (such as robotics and safety devices).
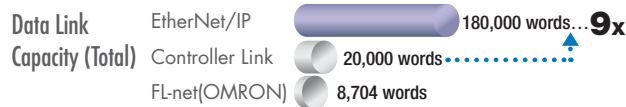
Download from Www.Somanuals.com. All Manuals Search And Download.
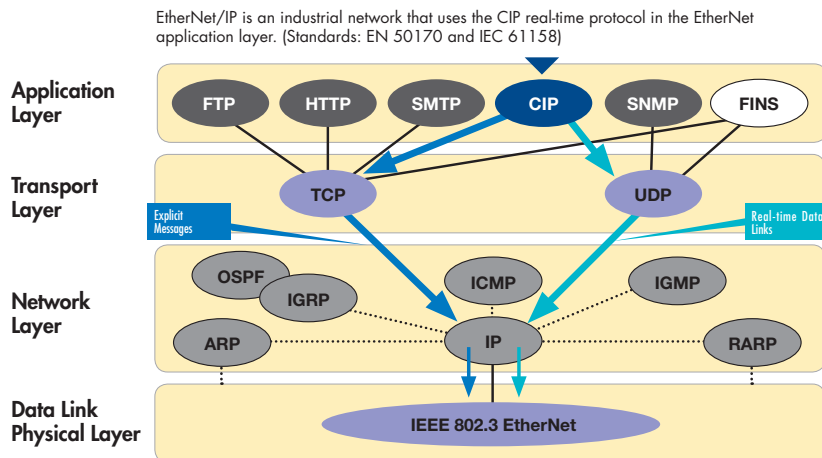
Extremely Fast and High-capacity Data [NEW] Links Compared to Previous FA Networks

Large Data Transfers with High Reliability.

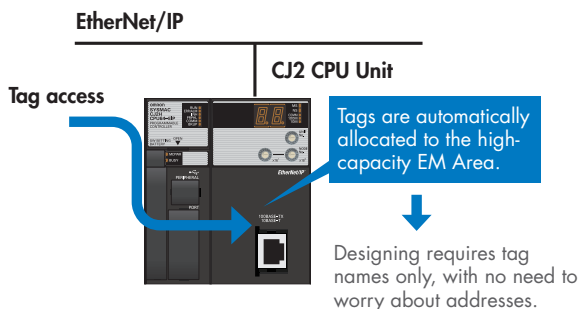## High-speed [30 Times] and High-capacity [9 Times] Data Links

From manufacturing recipes and information on interlocks between processes to production data, any type of data can be exchanged at high speed and at the optimal timing. Communications performance is vastly improved over OMRON's Controller Link and FL-net networks.

Data Link Capacity (Total)
- EtherNet/IP — 180,000 words... **9x**
- Controller Link — 20,000 words
- FL-net(OMRON) — 8,704 words

Data Link Performance (See note.)
- EtherNet/IP — 10ms **30x**
- Controller Link — 300ms

Note: Communications cycle time for 20,000 words

Automatic Address Allocation Is Expanded to Up to 240 Kwords, Enabling Allocation of Large Amounts of Data.
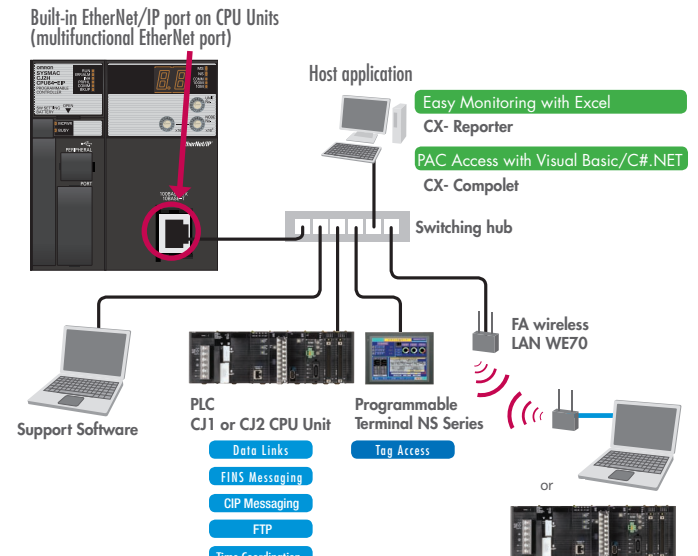
The memory size of the EM Area for automatic address allocation in CX-Programmer symbol tables has been expanded to a maximum of 240 Kwords. When a tag is automatically allocated, data link design and access from the host are enabled with no need to be conscious of addresses. Moreover, bits can be force-set/reset in the areas in which data is automatically allocated.

EtherNet/IP

Tag access

CJ2 CPU Unit

Tags are automatically allocated to the high-capacity EM Area.

Designing requires tag names only, with no need to worry about addresses.

Peripheral Devices (such as Cables, Hubs, and Wireless Devices) Can Be Used With Universal EtherNet Technology. [NEW]

The convenience of a global standard at your fingertips.

» **Using Universal EtherNet Reduces Network Installation and Wiring Costs.**

» **FA Wireless LAN Makes Mobile Control Easy, with No Need for Rewiring when Changing Layout.**

Built-in EtherNet/IP port on CPU Units (multifunctional EtherNet port)

Host application

Easy Monitoring with Excel
CX- Reporter

PAC Access with Visual Basic/C#.NET
CX- Compolet

Switching hub

FA wireless LAN WE70

Support Software

PLC CJ1 or CJ2 CPU Unit
- Data Links
- FINS Messaging
- CIP Messaging
- FTP
- Time Coordination

Programmable Terminal NS Series
- Tag Access

or

No Need for Memory Map Control.

The CJ2 CPU Units introduce a new feature called tag access, to reduce your TCO (Total Cost of Ownership) for systems that use Programmable Terminals, multiple PAC's, and host applications. Tags allow freedom from memory maps.

Simultaneous Development Takes the Stress Out of Short Deadlines. NEW

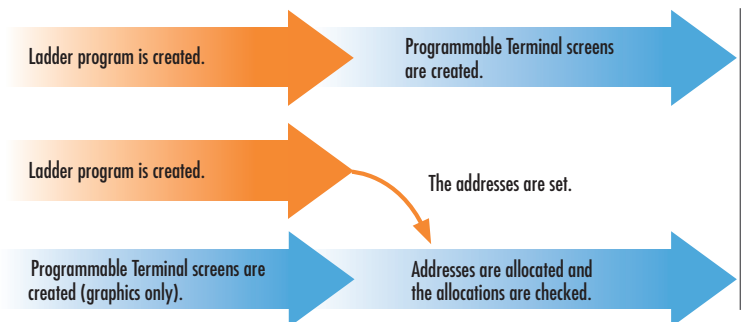No Need for Address Allocation Adjustments in Post-processing.

The various Controllers do not depend on addresses, so parallel development at each Controller is enabled by first simply determining the tag names. There is no need for subsequent address allocation.
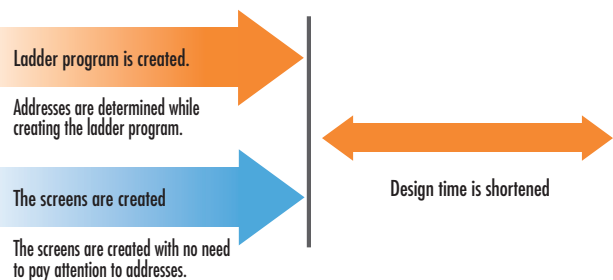
Example: Programmable Terminal and CJ2 Development

Previously

Case 1
The PLC program is first created, and then the ladder program is referenced to create the screens.

Ladder program is created. → Programmable Terminal screens are created.

Case 2
The screen graphics are created in advance, and then addresses are allocated and checked after the ladder program is completed.

Ladder program is created. → The addresses are set.

Programmable Terminal screens are created (graphics only). → Addresses are allocated and the allocations are checked.

CJ2
By simply setting tag names, PAC and Programmable Terminal programming can be performed in parallel.

Tag name	Address
Number_produced	Undetermined
Production_target	Undetermined
⋮	⋮

Ladder program is created.

Addresses are determined while creating the ladder program.

The screens are created

The screens are created with no need to pay attention to addresses.

Design time is shortened

» Simultaneous Development for Programmable Terminal and CJ2 CPU Unit

Programmable Terminal screens can be designed using tag names defined in the CJ2 CPU Unit. There is no need to adjust address allocations in post-processing.

» Data Links between CJ2 CPU Units

Simply setting tag names allows development to proceed simultaneously among multiple designers and multiple vendors. It is then easy to subsequently change the sizes of data links.

» Simultaneous Development for Host Application and CJ2 CPU Unit

Designing can be carried out simply by setting tag names in the information section and the control design section. There is no need for physical addresses in the network interface specifications.

The Ease of Changing Designs Makes It Simple to Add or Upgrade Equipment.

There is little effect on address changes. Previously, when data was exchanged by address specification and addresses were changed, the program had to be changed at other Controllers and various operations, such as memory checks, had to be performed. Now, tag names eliminate the dependence on a memory map and the need for checking items affected by changes. This allows equipment to be easily added or upgraded.
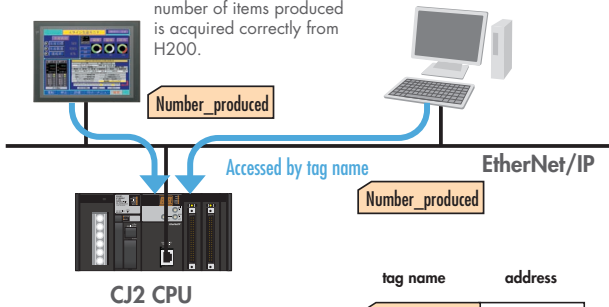
Programmable Terminal NS Series

No change required.

Even after the change, the number of items produced is acquired correctly from H200.

Number_produced

Host application

No change required.
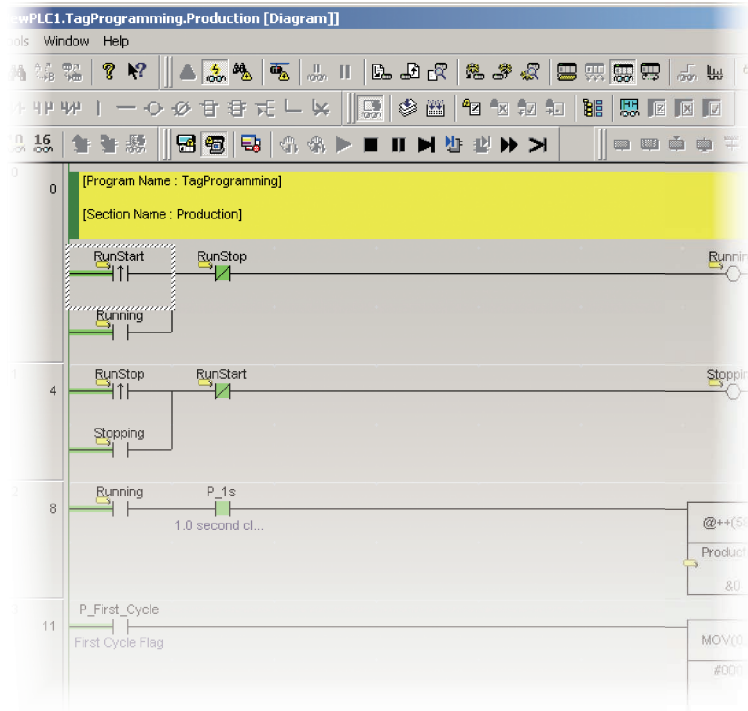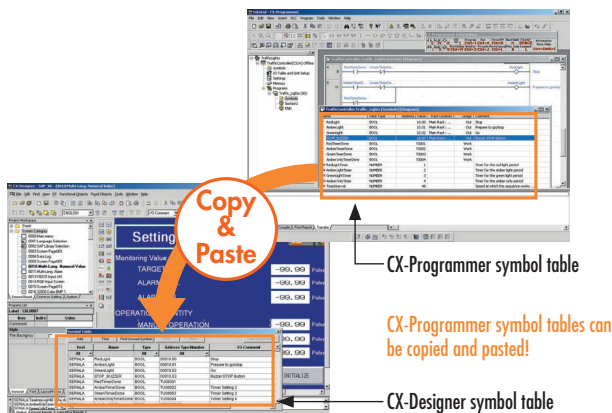
Accessed by tag name

Number_produced

EtherNet/IP

CJ2 CPU

Change — With the CX-Programmer, the address for the tag named "Number produced" is changed from D100 to H200.

tag name	address
Number_produced	D100

↓ Change

Number_produced	H200

Assurance of Quality, Free from Mistakes.

Tags can be shared among the CJ2 CPU Units, NS-series PTs and Middleware. Tag names can be shared among controllers that exchange data using the CX-One or Excel import/export functions. Because redundant address entry and address allocation are not needed, checking is also not required. This makes it easy to construct high-quality systems.

Copy & Paste

CX-Programmer symbol table

CX-Programmer symbol tables can be copied and pasted!

CX-Designer symbol table

---

wPLC1.TagProgramming.Production [Diagram]]
ols Window Help

0 [Program Name : TagProgramming]

[Section Name : Production]

RunStart   RunStop   Running

Running

4 RunStop   RunStart   Stopping

Stopping

8 Running   P_1s   @++(S
1.0 second cl...   Product
&0

11 P_First_Cycle   MOV(0
First Cycle Flag   #00
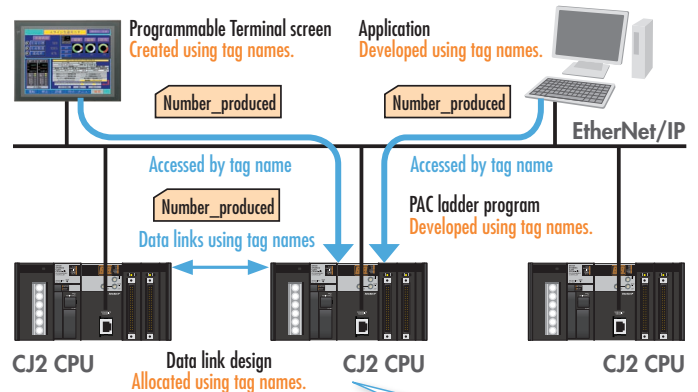
What is Tag Access?

NEW

A tag is a name given to an address. Tags are managed in the CJ2 CPU Unit, where they are defined as network symbols. The common user-defined tag names are used from Programmable Terminals and host applications to access memory in a CJ2 CPU Unit without knowing the actual memory address.

Programmable Terminal NS Series

Programmable Terminal screen
Created using tag names.

Application
Developed using tag names.

Number_produced

Number_produced

Host application

EtherNet/IP

Accessed by tag name

Accessed by tag name

Number_produced

PAC ladder program
Developed using tag names.

Data links using tag names

CJ2 CPU

Data link design
Allocated using tag names.

CJ2 CPU

CJ2 CPU

Tags are managed in the CJ2 CPU Unit as network symbols.

Symbol Table

Tag name	Physical address
Number_produced	D100
Production_target	D200
⋮	⋮

I/O Memory

Address	Data
D100	&200
D200	&500

9

# Connecting Support Software is Now Easier and Safer.

Using General-purpose Networks for Support Software Interface. Connecting to a USB or EtherNet/IP port is easy, by commercially available cable used around the world.
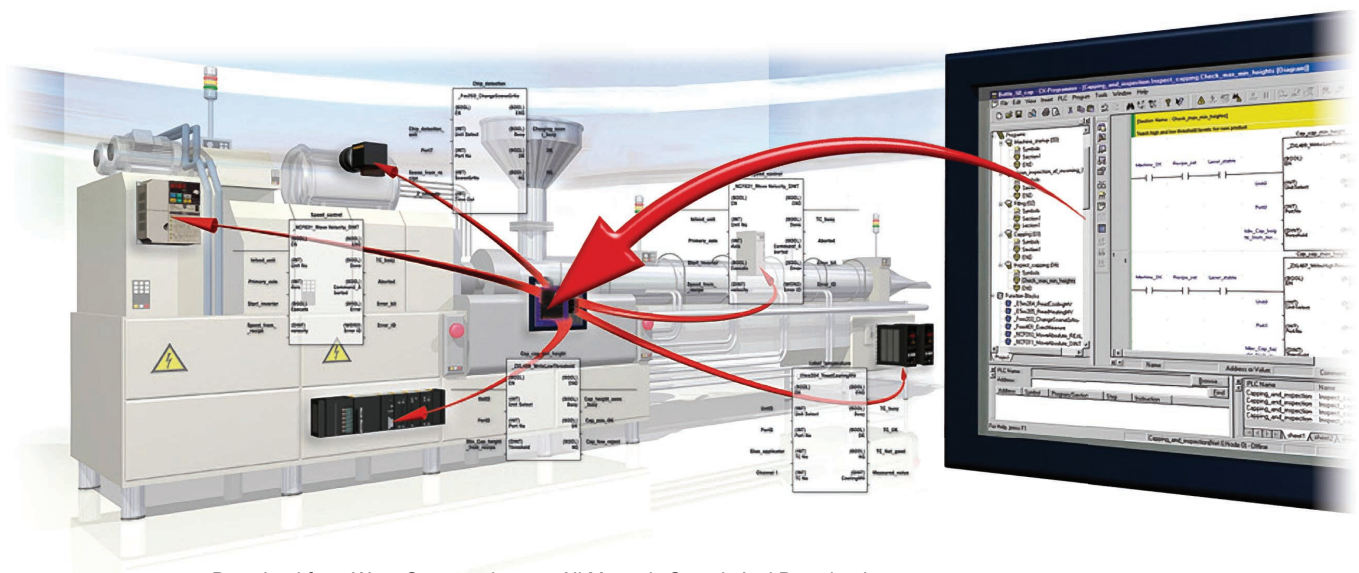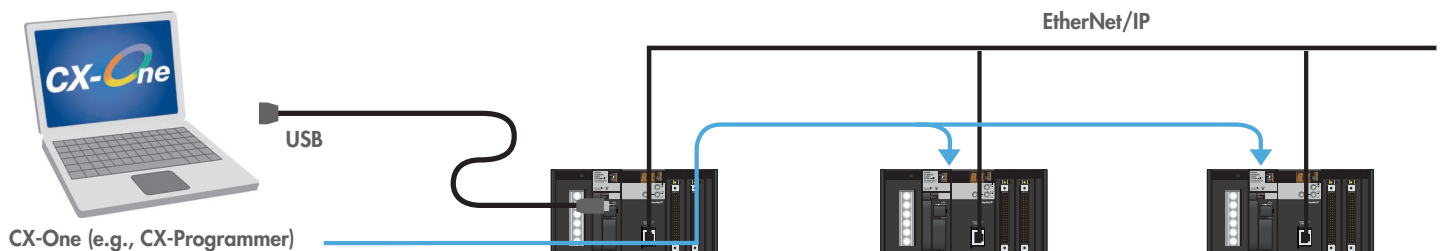
Easy Connection by USB

NEW

Commercially available cable can be connected to a USB port on the front panel of the CPU Unit.

» **Simply Connect the Cable, with No Settings Required.**

USB port (standard equipment)

Commercially available USB cable

CX-One (e.g., CX-Programmer)
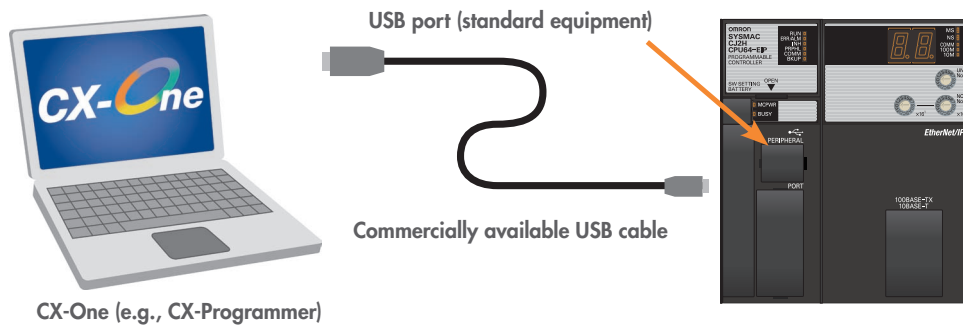
» **A CJ2 CPU Unit on an EtherNet/IP Network Can Be Accessed Via USB, with No Need for Routing Tables.**

EtherNet/IP
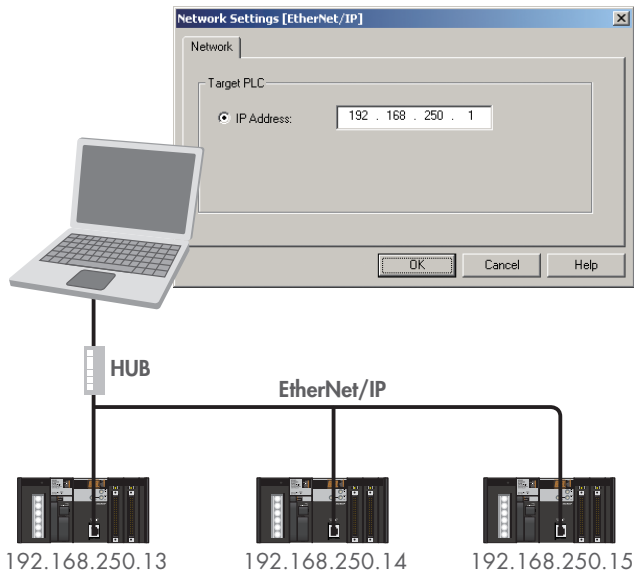
USB

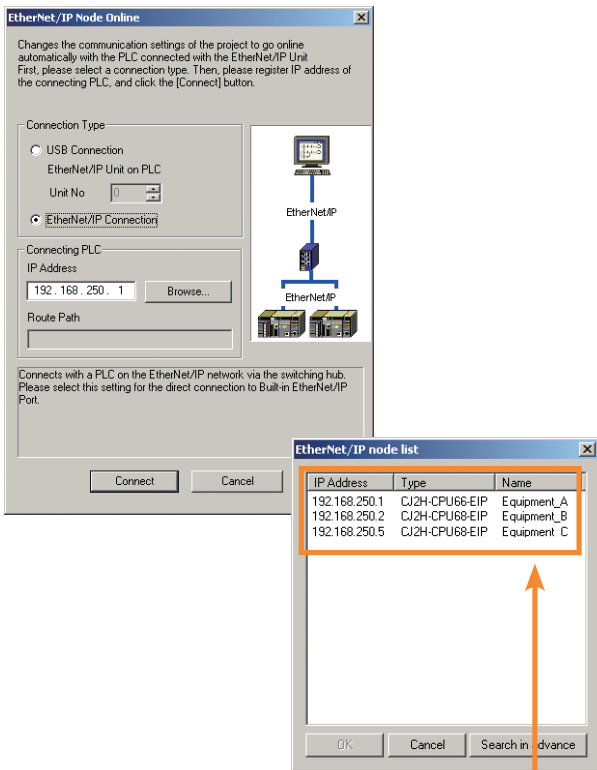CX-One (e.g., CX-Programmer)

Easy Connection by EtherNet/IP `NEW`

The built-in EtherNet/IP port enables smooth on-site remote debugging and maintenance.

» **EtherNet/IP can be easily connected with simply an IP address.**

» **Even if the IP address is not known, it is easy to connect by searching the PAC's on the EtherNet/IP network and selecting from a list.**


The PAC name can be easily found by selecting from the list that is displayed.

Prevention of Erroneous Connection by PAC Name Verification `NEW`

A user-set PAC name can be recorded in the CPU Unit. When connecting online to a PAC, it can be checked whether the project file matches the name of the PAC that is to be connected, making it possible to connect with confidence to a PAC installed in a location that cannot be seen.

Erroneous connection is prevented by checking whether the PAC name matches when connecting online.
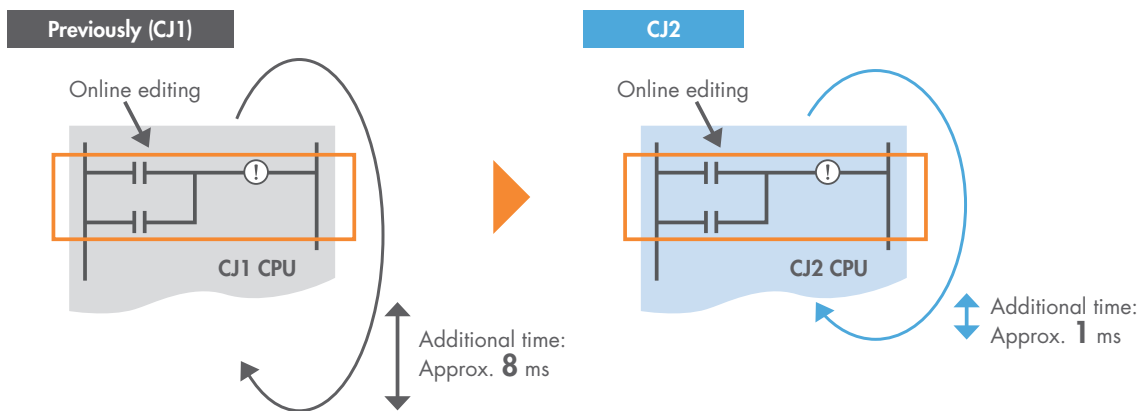
11
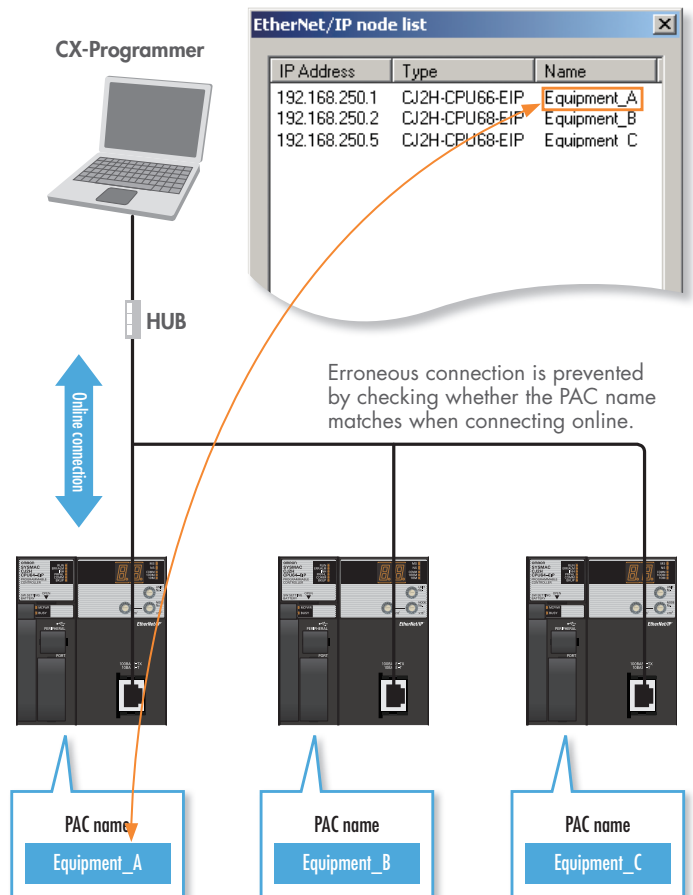
Easier On-site Debugging

Superior debugging functions reduce the time required for debugging and shorten the total lead time for system startup and trouble countermeasures.
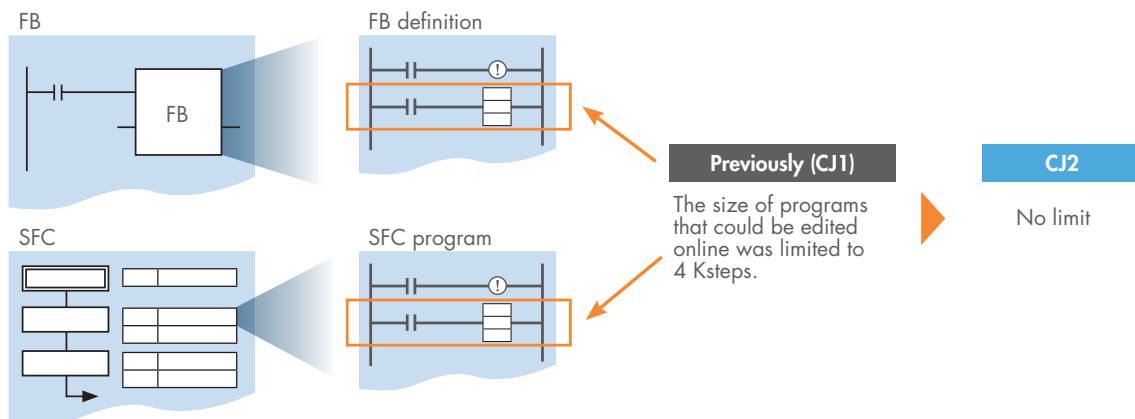
Stress-free Online Debugging

Effects on machinery operation are reduced.

» **The additional cycle time due to Online editing has been reduced to approx. 1 ms**
The previous additional cycle time of 8 ms has been shortened to 1 ms.

Previously (CJ1)

Online editing

CJ1 CPU

Additional time:
Approx. **8** ms

CJ2

Online editing

CJ2 CPU

Additional time:
Approx. **1** ms

» **Unlimited FB and SFC Online Editing**
Function blocks and sequential function charts can be edited online with no limitation on program size.

FB

FB

FB definition

SFC

SFC program

Previously (CJ1)

The size of programs that could be edited online was limited to 4 Ksteps.

CJ2

No limit

Greatly Improved Debugging Efficiency Through Superior Data Tracing

High-speed, High-capacity Data Tracing is now possible.

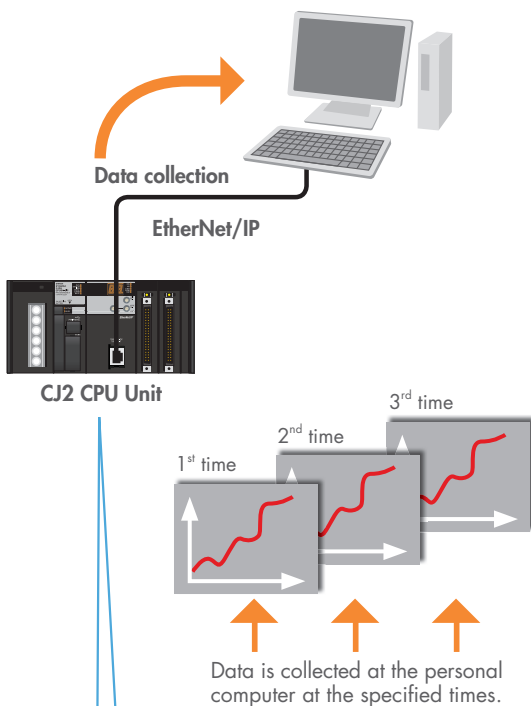## High-capacity Data Tracing

8 Times More capacity   **NEW**

32 Kwords of data can be traced, and the EM Area can also be used as trace memory.

## Ample Sampling Data type and Trigger Conditions

NEW

One, two, or four words of data and comparison conditions can be specified. For example, a trigger can be set for when double-precision data is larger than a specified value.

Continuous Data Tracing

NEW

Sampled data in the trace memory of the CPU Unit can be regularly collected at the personal computer to enable sampling for long periods or time. CSV files can be saved at the personal computer.

Data collection

EtherNet/IP

CJ2 CPU Unit

1st time

2nd time

3rd time

Data is collected at the personal computer at the specified times.

When data that was sampled at high speed in the PAC's trace memory is saved at the personal computer, the trace memory is cleared.
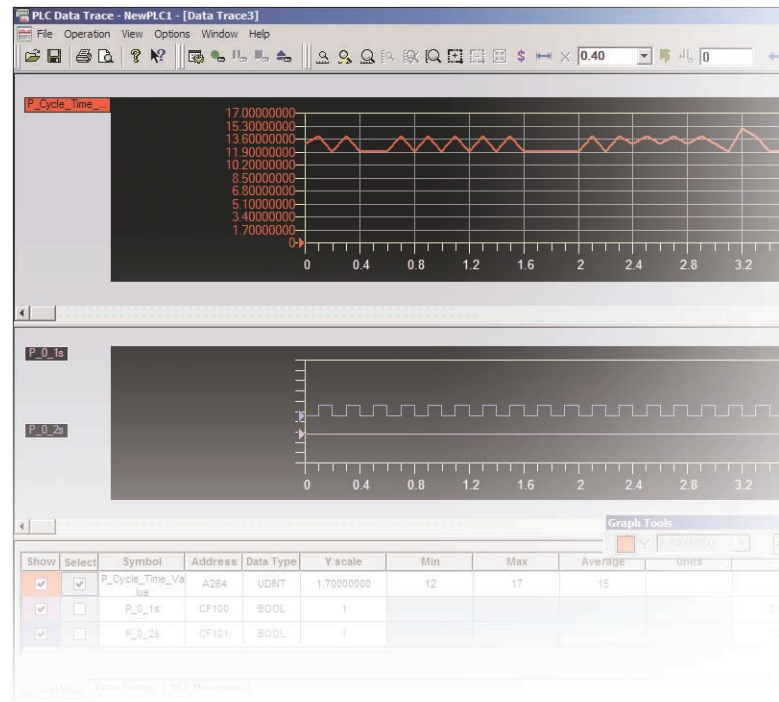
CX-One Data Trace is also Upgraded

Ver.Up

The improved CJ2 trace function is fully utilized.

» **A function has been added for superimposing trace waveforms**

» **Trace results can be printed or saved as bit maps.**

» **The measurement times for two selected points can be checked.**

13
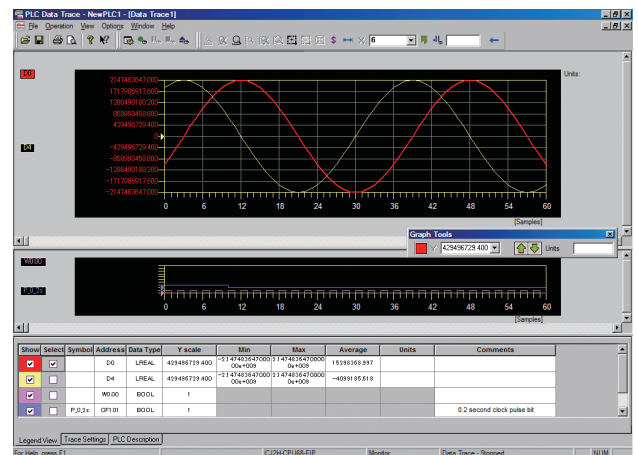
More Flexible Programming

The Greatest Program Diversity in the industry. A programming environment has been created that is highly readable and can flexibly support changes in specifications, to enable efficient design and program entry with few mistakes.
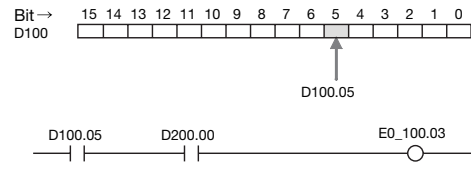
Highly Readable Programming

Programs are easy to see and easy to understand.

Bit Addresses can be used in the DM Area and EM Area.

NEW

DM and EM Area bits could not be specified with the previous SYSMAC PLCs, but they can with the CJ2 CPU Units.
Examples
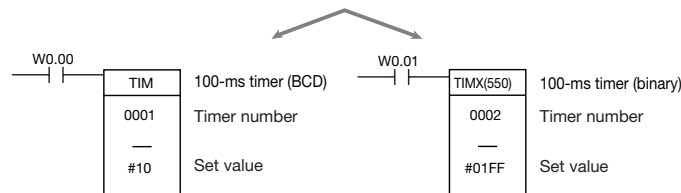D100.05: Bit 05 of D100
E0_100.05: Bit 03 of E0_100

BCD and Binary Timer Instructions can be used Together.

NEW

With the CJ1 CPU Units, it was necessary to select in the initial setup of the CPU Unit whether BCD or binary was to be used as the data format for timer instructions. With the CJ2 CPU Units, BCD or binary can be selected individually for each instruction by setting the data format of the timer set value.

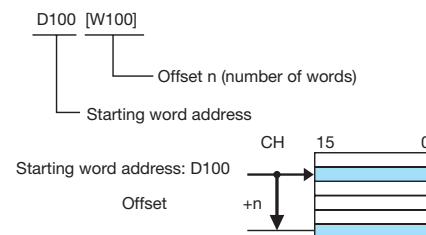The BCD TIM and binary TIMX instructions can be used together.

W0.00	TIM	100-ms timer (BCD)
	0001	Timer number
	— #10	Set value

W0.01	TIMX(550)	100-ms timer (binary)
	0002	Timer number
	— #01FF	Set value

Address Offsets can be Specified

NEW

An offset can be specified in brackets after a starting address to offset the starting address. If an address in I/O memory is specified as the offset, the final address can be dynamically specified according to the contents of the specified memory address.

Example
D100[W100]: D100 is the starting address and the contents of W100 is the offset. If W100 is &5, then D105 is specified.

D100 [W100]
— Offset n (number of words)
— Starting word address

Starting word address: D100
Offset +n

Array Variables make Data Specification Easier to Understand.

By using array variables, any data in a string of data can be expressed using a subscript, making programming easy to understand. Array variables can also be used for data stacks and function block I/O variables. Because they can be set for network symbols, the exchange of multiple data items with external devices can be easily programmed. (Usable languages: Ladder, ST, SFC).

Example
Array Variable: ABC

0	WORD data
1	WORD data
2	WORD data
3	WORD data
4	WORD data
5	WORD data
6	WORD data
7	WORD data
8	WORD data
9	WORD data

To access this data, specify ABC [3].

● Ladder language:
Copy ABC[3] to D200

5.00	MOV
	ABC[3]
	D200
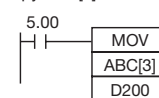
● ST language:
Substitute ABC[0] to ABC[3].

14

A Symbol Can be used for an Array Variable Subscript. `NEW`

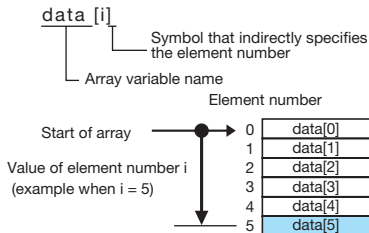A physical address or symbol can be specified for an array subscript, so data can be dynamically specified.

Example Data[i]: An element number is indirectly specified by the value of symbol i. If the value of symbol i is &5, data[5] is specified for element number 5.

data [i]
— Symbol that indirectly specifies the element number
— Array variable name

Element number	
Start of array → 0	data[0]
1	data[1]
Value of element number i 2	data[2]
(example when i = 5) 3	data[3]
4	data[4]
5	data[5]

Memory Attributes in the Ladder Editor can be Understood at a Glance. `Ver.Up`

Tag (network symbols) memory attributes can be understood at a glance in the Ladder Editor Window, enabling an easily understandable program to be created.

Example   :Published   :Input   :Output

Operation start   Operation stop

Operation status
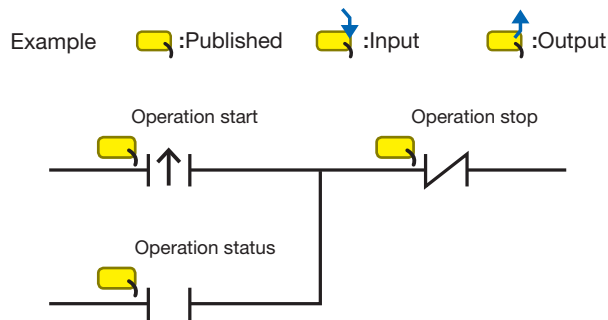
New Instructions are Supported. `NEW`

New instructions such as tracking, sorting, and floating-point decimal maximum/minimum value search instructions are supported.

The Number of Communications Logic Ports has Increased to 64. `NEW`

Programming can be performed with no need to pay attention to the number of logic ports.

Programming Structuring and Reusability.

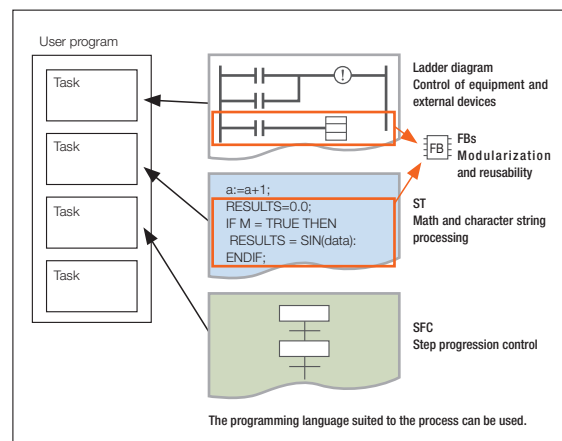Highly Independent Programs Can Be Easily Created.

Up to 128 Cyclic Tasks are Supported. `4 Times More than before` `NEW`

The user program can be divided into up to 128 tasks. Using smaller task programs makes it easier to structure programs. This also contributes to shorter cycle times by controlling the tasks that are being executed or not executed in smaller units.

Languages Conforming to IEC Are Supported.

Ladder diagrams and ST languages can be freely combined and made into components as function blocks (FBs), allowing programs to be created in the optimum language for the particular process.

User program

Task

Task

a:=a+1;
RESULTS=0.0;
IF M = TRUE THEN
  RESULTS = SIN(data):
ENDIF;

Task

Task

Ladder diagram
Control of equipment and external devices

FB — FBs
Modularization and reusability

ST
Math and character string processing

SFC
Step progression control

The programming language suited to the process can be used.

■ CJ-series CPU Racks

A CJ-series CPU Rack consists of a CPU Unit, Power Supply Unit, Configuration Units (Basic I/O Units, Special I/O Units, and CPU Bus Units), and an End Cover.

CPU Unit
CJ2H-CPU□□-EIP

I/O Control Unit
CJ1W-IC101
(Required only when connecting to an Expansion Rack.)

Power Supply Unit
CJ1W-P□□□ (□)

End Cover
CJ1W-TER01
(One End Cover is provided as a standard accessory with the CPU Unit.)

CPU Rack

CJ-series Basic I/O Units
CJ-series Special I/O Units
CJ-series CPU Bus Units

Total: 10 Units max
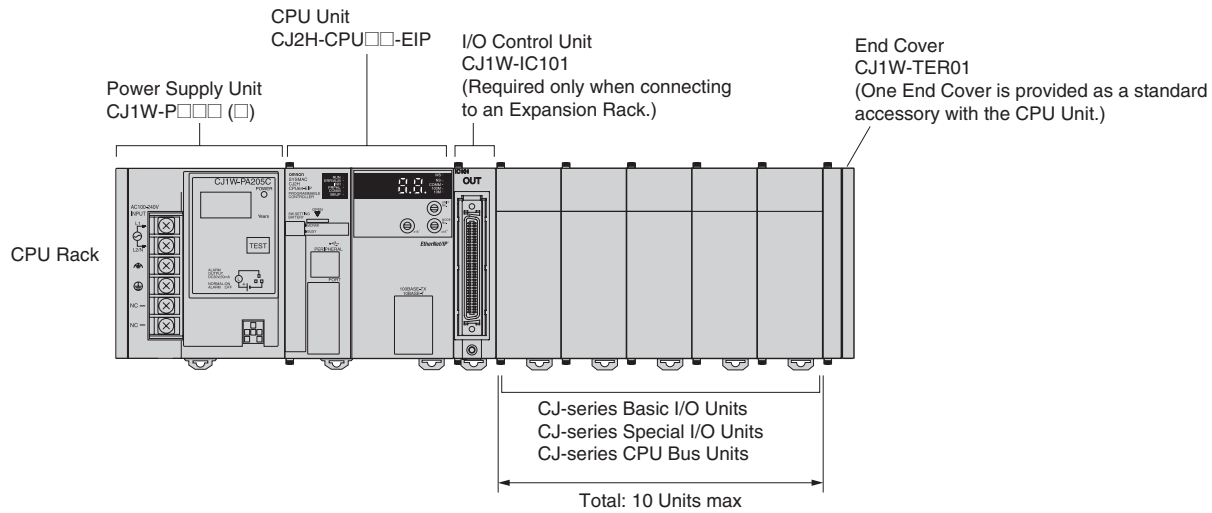
● Required Units

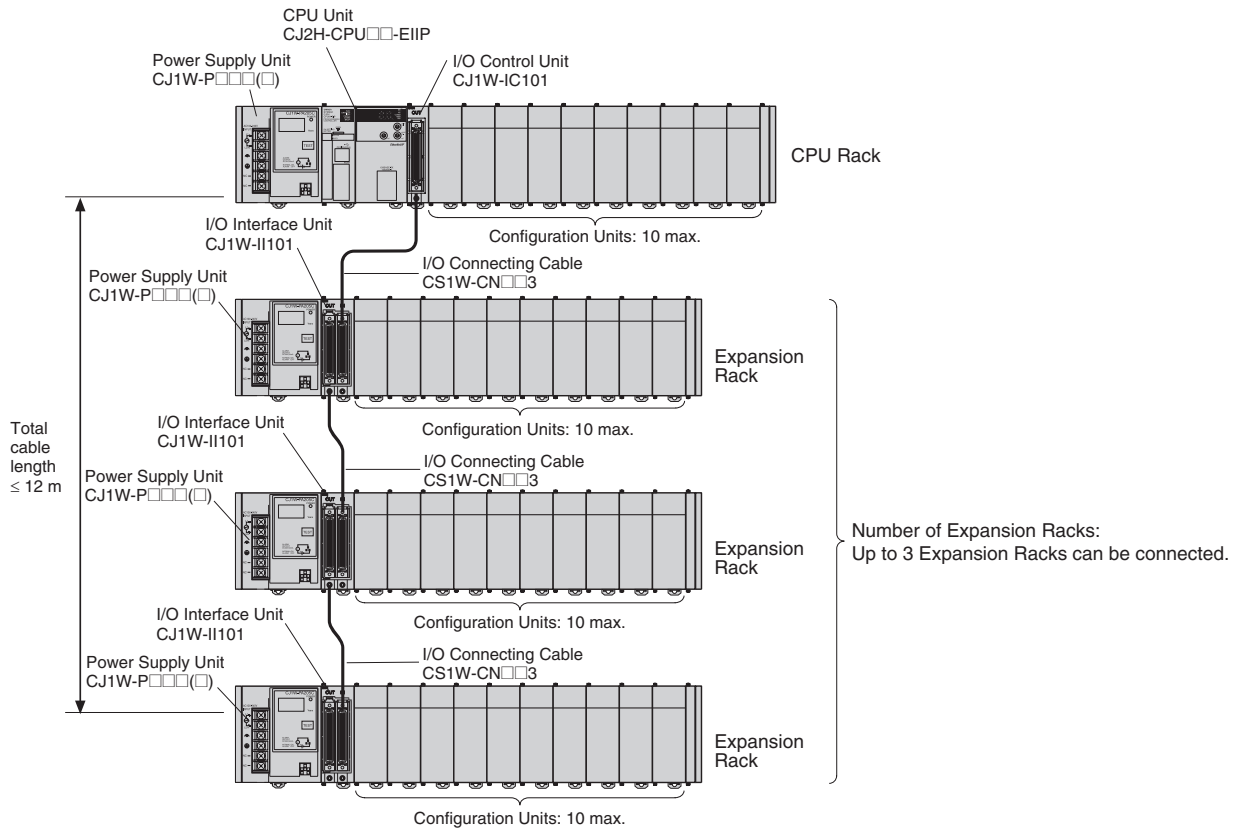| Rack	Unit name	Required number of Units
CPU Rack	**Power Supply Unit**	1
	CPU Unit	1
	I/O Control Unit	Required only for mounting to an Expansion Rack.
	Number of Configuration Units	10 max. (Same for all models of CPU Unit.) (The number of Basic I/O Units, Special I/O Units, and CPU Bus Units can be varied. The number does not include the I/O Control Unit.)
	End Cover	1 (Included with CPU Unit.)

● Types of Units

In the SYSMAC CJ Series, Units are classified into the following three types. The number of Racks differs depending on the type.

Type	Appearance (example)	Description	Unit recognition method	No. of units
Basic I/O Units		Units with contact inputs and contact outputs.	Recognized by the CPU Unit according to the position of the Rack and slot.	No restrictions.
Special I/O Units		Special I/O Units provide more advanced functions than do Basic I/O Units, including I/O other than contact inputs and contact outputs. Examples of Special I/O Units are Analog I/O Units and High-speed Counter Units. They differ from CPU Bus Units (including Network Communications Units) in having a smaller area for exchanging data with the CPU Unit.	Recognized by the CPU Unit according to the unit number (0 to 95) set with the rotary switches on the front panel.	A maximum of 96 Units can be connected. (Multiple unit numbers are allocated per Unit, depending on the model and settings.)
CPU Bus Units		CPU Bus Units exchange data with the CPU Unit via the CPU Bus. Examples of CPU Bus Units are Network Communications Units and Serial Communications Units. They differ from Special I/O Units in having a larger area for exchanging data with the CPU Unit.	Recognized by the CPU Unit according to the unit number (0 to F) set with the rotary switch on the front panel.	A maximum of 15 Units can be mounted. (The built-in EtherNet/IP port on the CPU Unit must be counted as one of the CPU Bus Units.)

■ CJ-series Expansion Racks

A CJ-series Expansion Rack consists of a Power Supply Unit, an I/O Interface Unit, Configuration Units (Basic I/O Units, Special I/O Units, and CPU Bus Units), and an End Cover.
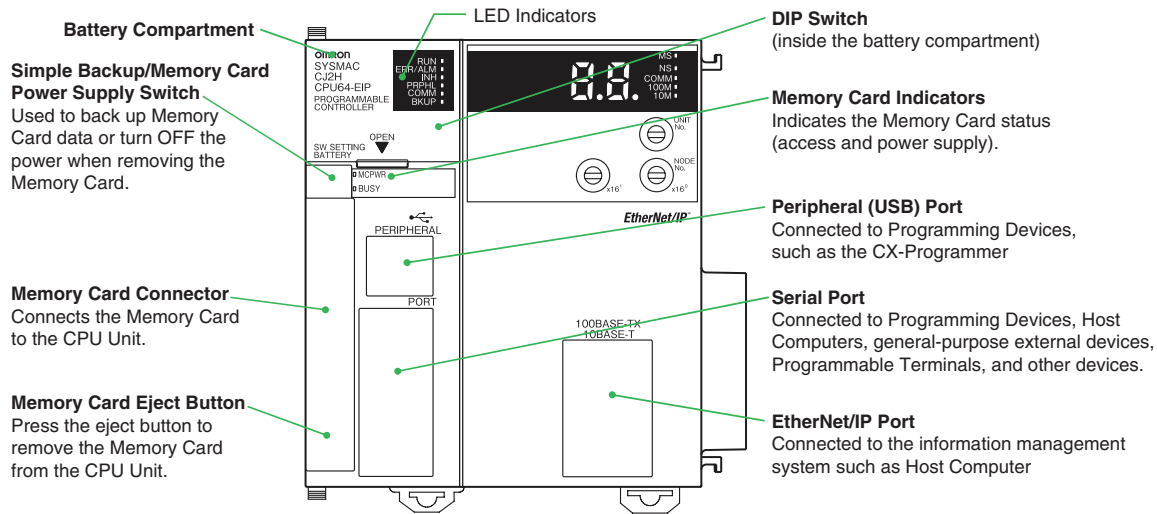

● Required Units

Rack	Unit name	Required number of Units
CPU Rack	**I/O Control Unit**	One Unit. Required only when an Expansion Rack is used. Mount the I/O Control Unit immediately to the right of the CPU Unit. (See note 1.)
Expansion Rack	**Power Supply Unit**	One Unit
	I/O Interface Unit	One Unit. Mount the I/O Interface Unit immediately to the right of the Power Supply Unit. (See note 2.)
	Number of Configuration Units	Ten Units max. (The number of Basic I/O Units, Special I/O Units, and CPU Bus Units can be varied. This number does not include the I/O Interface Unit.)
	End Cover	One (Included with the I/O Interface Unit.)

Note: 1. Mounting the I/O Control Unit in any other location may cause faulty operation.
   2. Mounting the I/O Interface Unit in any other location may cause faulty operation.

● Maximum Number of Configuration Units That Can Be Mounted

CPU Unit	Model	Total Units	No. of Units on CPU Rack	No. of Expansion Racks
CJ2H	**CJ2H-CPU68-EIP**	40	10 per Rack	3 Racks x 10 Units
	CJ2H-CPU67-EIP			
	CJ2H-CPU66-EIP			
	CJ2H-CPU65-EIP			
	CJ2H-CPU64-EIP			

External Interface

A CJ2H CPU Unit provides three communications ports for external interfaces: a peripheral (USB) port, a serial port and an EtherNet/IP port.

Battery Compartment

Simple Backup/Memory Card Power Supply Switch
Used to back up Memory Card data or turn OFF the power when removing the Memory Card.

Memory Card Connector
Connects the Memory Card to the CPU Unit.

Memory Card Eject Button
Press the eject button to remove the Memory Card from the CPU Unit.

LED Indicators

DIP Switch
(inside the battery compartment)

Memory Card Indicators
Indicates the Memory Card status (access and power supply).

Peripheral (USB) Port
Connected to Programming Devices, such as the CX-Programmer

Serial Port
Connected to Programming Devices, Host Computers, general-purpose external devices, Programmable Terminals, and other devices.

EtherNet/IP Port
Connected to the information management system such as Host Computer

OMRON

Item		CJ2H-				
		CPU64-EIP	CPU65-EIP	CPU66-EIP	CPU67-EIP	CPU68-EIP
Enclosure		Mounted in a panel				
Grounding		Less than 100 Ω				
CPU Rack Dimensions		90 mm × 65 mm × 80 mm (W × H × D)				
Weight		280 g or less				
Current Consumption		5 VDC, 0.82 A				
Use Environment	Ambient Operating Temperature	0 to 55°C				
	Ambient Operating Humidity	10% to 90%				
	Atmosphere	Must be free from corrosive gases.				
	Ambient Storage Temperature	−20 to 70°C (excluding battery)				
	Altitude	2,000 m or less				
	Pollution Degree	2 or less: Conforms to JIS B3502 and IEC 61131-2.				
	Noise Immunity	2 kV on power supply line (Conforms to IEC 61000-4-4.)				
	Overvoltage Category	Category II: Conforms to JIS B3502 and IEC 61131-2.				
	EMC Immunity Level	Zone B				
	Vibration Resistance	Conforms to JIS C60068-2-6. 5 to 8.4 Hz with 3.5-mm amplitude, 8.4 to 150 Hz Acceleration of 9.8 m/s^2 for 100 min in X, Y, and Z directions (10 sweeps of 10 min each = 100 min total)				
	Shock Resistance	Conforms to JIS C60068-2-27. 147 m/s^2, 3 times in X, Y, and Z directions (100 m/s^2 for Relay Output Units)				
Battery	Life	5 years at 25°C				
	Model	CJ1W-BAT01				
Applicable Standards		Conforms to cULus and EC Directives.				

Item		CJ2H-				
		CPU64-EIP	CPU65-EIP	CPU66-EIP	CPU67-EIP	CPU68-EIP
User Memory		50K steps	100K steps	150K steps	250K steps	400K steps
I/O Bits		2,560 bits				
Processing Speed	Overhead Processing Time	Normal Mode: 200 µs (If tag data links are used with EtherNet/IP, add the following to the above time: 100 µs + Number of transferred words × 0.33 µs)				
	Execution Time	Basic Instructions: 0.016 µs min.; Special Instructions: 0.048 µs min.				
	Interrupt Task Start Time	30 µs				
Maximum Number of Connectable Units		Total per CPU Rack or Expansion Rack: 10 Units max.; Total per PAC: 40 Units max.				
Maximum Number of Expansion Racks		3 max.				
CIO Area	I/O Area	2,560 bits (160 words): Words CIO 0000 to CIO 0159				
	Link Area	3,200 bits (200 words): Words CIO 1000 to CIO 1199				
	CPU Bus Unit Area	6,400 bits (400 words): Words CIO 1500 to CIO 1899				
	Special I/O Unit Area	15,360 bits (960 words): Words CIO 2000 to CIO 2959				
	DeviceNet Area	9,600 bits (600 words): Words CIO 3200 to CIO 3799				
	Internal I/O Area	3,200 bits (200 words): Words CIO 1300 to CIO 1499 37,504 bits (2,344 words): Words CIO 3800 to CIO 6143 Cannot be used for external I/O.				
Work Area		8,192 bits (512 words): Words W000 to W511 Cannot be used for external I/O.				
Holding Area		8,192 bits (512 words): Words H000 to H511 Bits in this area maintain their ON/OFF status when PAC is turned OFF or operating mode is changed. Words H512 to H1535: These words can be used only for function blocks. They can be used only for function block instances (i.e., they are allocated only for internal variables in function blocks).				
Auxiliary Area		Read-only: 31,744 bits (1,984 words) • 7,168 bits (448 words): Words A0 to A447 • 24,576 bits (1,536 words): Words A10000 to A11535 Read/write: 16,384 bits (1,024 words) in words A448 to A1471				
Temporary Area		16 bits: TR0 to TR15				
Timer Area		4,096 timer numbers (T0000 to T4095 (separate from counters))				
Counter Area		4,096 counter numbers (C0000 to C4095 (separate from timers))				
DM Area		32k words (Bits in the DM Area can be addressed either by bit or by word.) DM Area words for Special I/O Units: D20000 to D29599 (100 words × 96 Units) DM Area words for CPU Bus Units: D30000 to D31599 (100 words × 16 Units)				
EM Area		32k words/bank × 25 banks max.: E00_00000 to E18_32767 max. (Bits in the EM Area can be addressed either by bit or by word.)				
		32K words × 4 banks	32K words × 4 banks	32K words × 10 banks	32K words × 15 banks	32K words × 25 banks
	Force-set/reset Enabled Banks	EM3	EM3	EM6 to EM9	EM7 to EME	EM11 to EM18
		Force-setting/resetting is enabled only for areas specified for automatic address allocation.				
Index Registers		IR0 to IR15 These are special registers for storing PAC memory addresses for indirect addressing. (Index Registers can be set so that they are unique in each task or so that they are shared by all tasks.)				
Cyclic Task Flag Area		128 flags				
Memory Card		128 MB, 256 MB, or 512 MB				
Operating Modes		PROGRAM Mode: Programs are not executed. Preparations can be executed prior to program execution in this mode. MONITOR Mode: Programs are executed, and some operations, such as online editing, and changes to present values in I/O memory, are enabled in this mode. RUN Mode: Programs are executed. This is the normal operating mode.				
Execution Mode		Normal Mode				

Item		CJ2H-				
		CPU64-EIP	CPU65-EIP	CPU66-EIP	CPU67-EIP	CPU68-EIP
Programming Languages		Ladder Logic (LD), Sequential Function Charts (SFC), Structured Text (ST), and Instruction Lists (IL)				
Function Blocks	Maximum number of definitions	2,048				
	Maximum number of instances	2,048				
Tasks	Type of Tasks	Cyclic tasks Interrupt tasks (Power OFF interrupt tasks, scheduled interrupt tasks, I/O interrupt tasks, and external interrupt tasks)				
	Number of Tasks	Cyclic tasks: 128 Interrupt tasks: 256 (Interrupt tasks can be defined as cyclic tasks to create extra cyclic tasks. Therefore, the total number of cyclic tasks is actually 384 max.)				
Symbols (Variables)	Type of Symbols	• Local symbols: Can be used only within a single task in the PAC. • Global symbols: Can be used in all tasks in the PAC. • Network symbols (tags): I/O memory in the CPU Unit can be externally accessed using symbols, depending on parameter settings.				
	Data Type of Symbols	• BOOL (bit) • UINT (one-word unsigned binary) • UDINT (two-word unsigned binary) • ULINT (four-word unsigned binary) • UINT BCD (one-word unsigned BCD) • INT (one-word signed binary) • DINT (two-word signed binary) • LINT (four-word signed binary) • UDINT BCD (two-word unsigned BCD) • ULINT BCD (four-word unsigned BCD) • REAL (two-word floating-point) • LREAL (four-word floating-point) • CHANNEL (word) • NUMBER (constant or number) • WORD (one-word hexadecimal) • DWORD (two-word hexadecimal) • LWORD (four-word hexadecimal) • TIMER • COUNTER				
	Maximum Size of Symbol	32k words				
	Array Symbols (Array Variables)	One-dimensional arrays				
	Number of Array Elements	32,000 elements max.				
	Number of Registrable Network Symbols (Tags)	20,000 max.				
	Length of Network Symbol (Tag) Name	255 bytes max.				
	Encoding of Network Symbols (Tags)	UTF-8				
Data Tracing	Memory Capacity	8,000 words		16,000 words	32,000 words	
		(Up to 32k words x 25 banks when EM is specified in CX-Programmer)				
	Number of Samplings	Bits = 31, one-word data =16, two-word data = 8, four-word data = 4				
	Sampling Cycle	1 to 2,550 ms (Unit: 1 ms)				
	Trigger Conditions	ON/OFF of specified bit Data comparison of specified word Data size: 1 word, 2 words, 4 words Comparison Method: Equals (=), Greater Than (>), Greater Than or Equals (≥), Less Than (<), Less Than or Equals (≤), Not Equal (≠)				
	Delay Value	−32,768 to +32,767 ms				
File Memory		Memory Card (128, 256, or 512 Mbytes) (Use the Memory Cards provided by OMRON.) EM file memory (Part of the EM Area can be converted for use as file memory.)				
Source/Comment Memory	Function block program memory, comment file, program index file, symbol tables	Capacity: 3.5 Mbytes				

Item			CJ2H-				
			CPU64-EIP	CPU65-EIP	CPU66-EIP	CPU67-EIP	CPU68-EIP
Communications	Logical Ports for Communications	Logical Ports	8 ports (Used for SEND, RECV, CMND, PMCR, TXDU, and RXDU instructions.)				
		Extended Logical Ports	64 ports (Used for SEND2, RECV2, CMND2, and PMCR2 instructions.)				
	Cip Communications Specification	Class 3 (Number of Connections)	Number of connections: 64				
		UCMM (Non-connection Type)	Maximum number of clients that can communicate at the same time: 32 Maximum number of servers that can communicate at the same time: 40				
	Peripheral (USB) Port		USB 2.0-compliant B-type connector				
		Baud Rate	12 Mbps max.				
		Transmission Distance	5 m max.				
	Serial Port		Interface: Conforms to EIA RS-232C.				
		Communications Method	Half-duplex				
		Synchronization Method	Start-stop				
		Baud Rate	0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, or 115.2 (kbps)				
		Transmission Distance	15 m max.				
	EtherNet/IP Port		—				
	Transmission Specifications	Media Access Method	CSMA/CD				
		Modulation	Baseband				
		Transmission Paths	Star				
		Baud Rate	100 Mbps (100Base-TX)				
		Transmission Media	Shielded twisted-pair (STP) cable; Categories: 5, 5e				
		Transmission Distance	100 m (between hub and node)				
		Number of Cascade Connections	No restrictions if switching hub is used.				
	Communication Specifications	CIP Communications: Tag Data Links	—				
		Number of Connections	256				
		Packet Interval (Refresh period)	0.5 to 10,000 ms (Unit: 0.5 ms) Can be set for each connection. (Data will be refreshed at the set interval, regardless of the number of nodes.)				
		Permissible Communications Band	6,000 pps (See note 1.)				
		Number of Tag Sets	256				
		Type of Tags	CIO, DM, EM, HR, and WR				
		Number of Tags per Connection	8 (Seven tags if PAC status is included in the segment.)				
		Maximum Link Data Size per Node	184,832 words				
		Maximum Data Size per Connection	252 or 722 words (See note 2.) (Data is synchronized within each connection.)				
		Number of Registrable Tag Set	256 (1 connection = 1 segment)				
		Maximum Tag Set Size	722 words (One word is used when PAC status is included in the segment.)				
		Maximum Number of Tags Refreshable in a Single Cycle of CPU Unit (See note 3.)	Output/send (CPU Unit to EtherNet/IP): 256 Input/receive (EtherNet/IP to CPU Unit): 256				
		Data Size Refreshable in a Single Cycle of CPU Unit (See note 3.)	Output/send (CPU to EtherNet/IP): 6,432 words Input/receive (EtherNet/IP to CPU): 6,432 words				
		Change of Tag Data Link Parameter Settings during Operation	OK (See note 4.)				
		Multi-cast Packet Filter (See note 5.)	OK				
		CIP Communications: Explicit Messages	—				
		Class 3 (Number of Connections)	Number of connections: 128				
		UCMM (Non-connection Type)	Maximum number of clients that can communicate at the same time: 32 Maximum number of servers that can communicate at the same time: 32				
		CIP Routing	OK (CIP routing is enabled for the following remote Units: CJ1W-EIP21 and CJ2H-CPU6□-EIP.)				
		FINS Communications	—				
		FINS/UDP	OK				
		FINS/TCP	16 connections max.				
		EtherNet/IP Conformance Test	Conforms to A5.				
		EtherNet/IP Interface	10Base-T/100Base-TX Auto Negotiation/Fixed Setting				

Note 1. "Packets per second" is the number of communications packets that can be processed per second.

2. Large Forward Open (CIP optional specification) must be supported in order for 505 to 1,444 bytes to be used as the data size. Application is supported between CS/CJ-series PLCs. When connecting to devices from other manufacturers, make sure that the devices support the Large Forward Open specification.

3. If the maximum number is exceeded, refreshing will require more than one CPU Unit cycle.

4. When changing parameters, however, the EtherNet/IP port where the change is made will be restarted. In addition, a timeout will temporarily occur at the other node that was communicating with that port, and it will then recover automatically.

5. The EtherNet/IP port supports an IGMP client, so unnecessary multicast packets are filtered by using a switching hub that supports IGMP snooping.

International Standards

- The standards indicated in the "Standards" column are those current for UL, CSA, cULus, cUL, NK, and Lloyd standards and EC Directives as of the end of May 2008. The standards are abbreviated as follows: U: UL, U1: UL Class I Division 2 Products for Hazardous Locations, C: CSA, UC: cULus, UC1: cULus Class I Division 2 Products for Hazardous Locations, CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Ask your OMRON representative for the conditions under which the standards were met.

● **EC Directives**

The EC Directives applicable to PAC's, PLC's include the EMC Directives and the Low Voltage Directive. OMRON complies with these directives as described below.

● EMC Directives Applicable Standards
  EMI: EN61000-6-4, EN61131-2
  EMS: EN61000-6-2, EN61131-2
  PAC's, PLC's are electrical devices that are incorporated in machines and manufacturing installations. OMRON PAC's, PLC's conform to the related EMC standards so that the devices and machines into which they are built can more easily conform to EMC standards. The actual PAC's, PLC's have been checked for conformity to EMC standards. Whether these standards are satisfied for the actual system, however, must be checked by the customer.
  EMC-related performance will vary depending on the configuration, wiring, and other conditions of the equipment or control panel in which the PAC, PLC is installed. The customer must, therefore, perform final checks to confirm that the overall machine or device conforms to EMC standards.

● Low Voltage Directive
  Applicable Standard:EN61131-2
  VDC must satisfy the appropriate safety requirements. With PAC's, PLC's, this applies to Power Supply Units and I/O Units that operate in these voltage ranges.
  These Units have been designed to conform to EN61131-2, which is the applicable standard for PAC's and PLC's.

Basic Configuration Units

CPU Units

■ CJ2 CPU Units

Product name	Specifications				Current consumption (A)		Model	Standards
	I/O capacity/ Mountable Units (Expansion Racks)	Program capacity	Data memory capacity	Function block program, comment, symbol memory	5 V	24 V		
CJ2 CPU Units	2,560 points/ 40 Units (3 Expansion Racks max.)	400K steps	832K words (DM: 32K words, EM: 32K words × 25 banks)	3.5MB	0.82 (See note.)	—	CJ2H-CPU68H-EIP	UC1, N, L, CE
		250K steps	512K words (DM: 32K words, EM: 32K words × 15 banks)				CJ2H-CPU67H-EIP	
		150K steps	352K words (DM: 32K words, EM: 32K words × 10 banks)				CJ2H-CPU66H-EIP	
		100K steps	160K words (DM: 32K words, EM: 32K words × 4 bank)				CJ2H-CPU65H-EIP	
		50K steps	160K words (DM: 32K words, EM: 32K words × 4 bank)				CJ2H-CPU64H-EIP	

Note: Add 0.15 A per Adapter when using NT-AL001 RS-232C/RS-222A Adapters.
Add 0.04 A per Adapter when using CJ1W-CIF11 RS-422A Adapters.

The following accessories are included with the CPU Unit.

Item	Specifications
Battery	CJ1W-BAT01
End Cover	CJ1W-TER01(The End Cover must be connected to the right end of the CPU Rack.)
End Plate	PFP-M(2 stoppers)

■ Power Supply Units

One Power Supply Unit is required for each Rack.

Product name	Power supply voltage	Output capacity			Options			Model	Standards
		5-VDC output capacity	24-VDC output capacity	Total power consumption	24-VDC service power supply	RUN output	Maintenance forecast monitor		
AC Power Supply Unit	100 to 240 VAC	5 A	0.8 A	25 W	No	No	Yes	CJ1W-PA205C	UC1, N, L, CE
						Yes	No	CJ1W-PA205R	
		2.8 A	0.4 A	14 W		No	No	CJ1W-PA202	
DC Power Supply Unit	24 VDC	5A	0.8 A	25 W		No	No	CJ1W-PD025	UC1, CE
		2 A	0.4 A	19.6 W		No	No	CJ1W-PD022	

Select the I/O Control Unit, I/O Interface Unit, Expansion Connecting Cable, and CJ-series Power Supply Unit.

■ CJ-series I/O Control Unit (Mounted on CPU Rack when Connecting Expansion Racks)

Product name	Specifications	Current consumption (A)		Model	Standards
		5 V	**24 V**		
CJ-series I/O Control Unit	Mount one I/O Control Unit on the CJ-series CPU Rack when connecting one or more CJ-series Expansion Racks. Connecting Cable: CS1W-CN□□3 Expansion Connecting Cable Connected Unit: CJ1W-II101 I/O Interface Unit Mount to the right of the CPU Unit.	0.02	—	CJ1W-IC101	UC1, N, L, CE

Note: Mounting the I/O Control Unit in any other location may cause faulty operation.

■CJ-series I/O Interface Unit (Mounted on Expansion Rack)

Product name	Specifications	Current consumption (A)		Model	Standards
		5 V	**24 V**		
CJ-series I/O Interface Unit	One I/O Interface Unit is required on each Expansion Rack. Connecting Cable: CS1W-CN□□3 Expansion Connecting Cable Mount to the right of the CPU Unit.	0.13	—	CJ1W-II101	UC1, N, L, CE

Note: Mounting the I/O Interface Unit in any other location may cause faulty operation.

■I/O Connecting Cables

Product name	Specifications		Model	Standards
I/O Connecting Cable	• Connects an I/O Control Unit on CJ-series CPU Rack to an I/O Interface Unit on a CJ-series Expansion Rack. or • Connects an I/O Interface Unit on CJ-series Expansion Rack to an I/O Interface Unit on another CJ-series Expansion Rack.	Cable length: 0.3 m	CS1W-CN313	N, L, CE
		Cable length: 0.7 m	CS1W-CN713	
		Cable length: 2 m	CS1W-CN223	
		Cable length: 3 m	CS1W-CN323	
		Cable length: 5 m	CS1W-CN523	
		Cable length: 10 m	CS1W-CN133	
		Cable length: 12 m	CS1W-CN133-B2	

Programming Devices

■Support Software

Product name	Specifications	Number of licenses	Media	Model	Standards
FA Integrated Tool Package CX-One Ver. 3.□	The CX-One is a comprehensive software package that integrates Support Software for OMRON PAC's , PLC's and components. CX-One runs on the following OS. Windows 2000 (Service Pack 3 or higher), XP, or Vista CX-One Version 3.□ includes CX-Programmer Ver.8.□ and CXSimulator Ver. 1.□. For details, refer to the CX-One catalog (Cat. No. R134).	1 license	CD	CXONE-AL01C-V3	—
		3 licenses		CXONE-AL03C-V3	
		10 licenses		CXONE-AL10C-V3	
		30 licenses		CXONE-AL30C-V3	
		50 licenses		CXONE-AL50C-V3	

Note: If the complete CX-One package is installed, approximately 2.5 GB of Hard disk space will be required.

Programming Device Connecting Cable

■ Peripheral (USB) Port

Use commercially available USB cable.

Specifications: USB 1.1 or 2.0 cable (A connector - B connector), 5.0 m max.

■EtherNet/IP Port

Support Software can also be connected via the built-in EtherNet/IP port. Use commercially available 100Base-TX twisted-pair cable with the same specifications as for an EtherNet/IP Unit.

Specifications: Twisted-pair cable with RJ45 modular connectors at both ends. Connect between EtherNet/IP Unit or built-in EtherNet/IP port and switching hub. Use STP (shielded twisted-pair) cable of category 5 or 5e.
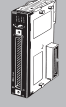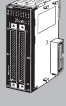
Optional Products and Maintenance Products

Product name	Specifications	Model	Standards
Memory Cards	Flash memory, 128 MB	HMC-EF183	
	Flash memory, 256 MB	HMC-EF283	N, L, CE
	Flash memory, 512 MB	HMC-EF583	
	Memory Card Adapter (for computer PCMCIA slot)	HMC-AP001	CE

Product name	Specifications		Model	Standards
Battery Set	Battery for CJ2H-CPU□□-EIP and CJ1M-CPU□□ CPU Unit maintenance	Note 1. The battery is included as a standard accessory with the CPU Unit. 2. The battery service life is 5 years at 25°C. (The service life depends on the ambient operating temperature and the power conditions.) 3. Use batteries within two years of manufacture.	CJ1W-BAT01	CE
End Cover	Mounted to the right-hand side of CJ-series CPU Racks or Expansion Racks.	One End Cover is provided as a standard accessory with each CPU Unit and I/O Interface Unit.	CJ1W-TER01	UC1, N, L, CE

OMRON

Basic I/O Units

■ Input Units

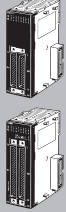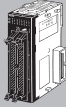| Unit classification	Product name	Specifications					No. of words allocated	Current consumption (A)		Model	Standards
		I/O points	Input voltage and current	Commons	Additional functions	External connection		5 V	24 V		
CJ Basic I/O Units	DC Input Units	8 inputs	12 to 24 VDC, 10 mA	Independent contacts	—	Removable terminal block	1 word	0.09	—	CJ1W-ID201	UC1, N, L, CE
		16 inputs	24 VDC, 7 mA	16 points, 1 common		Removable terminal block	1 word	0.08	—	CJ1W-ID211	
		32 inputs	24 VDC, 4.1 mA	16 points, 1 common		Fujitsu connector	2 words	0.09	—	CJ1W-ID231 (See note.)	
		32 inputs	24 VDC, 4.1 mA	16 points, 1 common		MIL connector	2 words	0.09	—	CJ1W-ID232 (See note.)	
		64 inputs	24 VDC, 4.1 mA	16 points, 1 common		Fujitsu connector	4 words	0.09	—	CJ1W-ID261 (See note.)	
		64 inputs	24 VDC, 4.1 mA	16 points, 1 common		MIL connector	4 words	0.09	—	CJ1W-ID262 (See note.)	
	AC Input Units	16 inputs	100 to 120 VAC, 7 mA (100 V, 50 Hz)	16 points, 1 common		Removable terminal block	1 word	0.09	—	CJ1W-IA111	
		8 inputs	200 to 24 VAC, 10 mA (200 V, 50 Hz)	8 points, 1 common		Removable terminal block	1 word	0.08	—	CJ1W-IA201	

Note: Connectors are not provided with these connector models. Either purchase one of the following 40-pin Connectors, or use an OMRON XW2☐ Connector-Terminal Block Conversion Unit or a G7☐ I/O Relay Terminal.

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■Output Units

Unit classification	Product name	Specifications					No. of words allocated	Current consumption (A)		Model	Standards
		I/O points	Maximum switching capacity	Commons	Additional functions	External connection		5 V	24 V		
CJ Basic I/O Units	Relay Contact Output Units	8 outputs	250 VAC/ 24 VDC, 2 A	Independent contacts		Removable terminal block	1 word	0.09	0.048 max.	CJ1W-OC201	UC1, N, L, CE
		16 outputs	250 VAC/ 24 VDC, 2 A	16 points, 1 common	—	Removable terminal block	1 word	0.11	0.096 max.	CJ1W-OC211	
	Transistor Output Units	8 outputs	12 to 24 VDC, 2 A, sinking	4 points, 1 common		Removable terminal block	1 word	0.09	—	CJ1W-OD201	
		8 outputs	24 VDC, 2 A, sourcing	4 points, 1 common	Short-circuit protection, disconnection detection	Removable terminal block	1 word	0.11	—	CJ1W-OD202	
		8 outputs	12 to 24 VDC, 0.5 A, sinking	8 points, 1 common	—	Removable terminal block	1 word	0.10	—	CJ1W-OD203	
		8 outputs	24 VDC, 0.5 A, sourcing	8 points, 1 common	Short-circuit protection	Removable terminal block	1 word	0.10	—	CJ1W-OD204	
		16 outputs	12 to 24 VDC, 0.5 A, sinking	16 points, 1 common	—	Removable terminal block	1 word	0.10	—	CJ1W-OD211	
		16 outputs	24 VDC, 0.5 A,	16 points, 1 common	Short-circuit protection	Removable terminal block	1 word	0.10	—	CJ1W-OD212	
		32 outputs	12 to 24 VDC, 0.5 A, sinking	16 points, 1 common	—	Fujitsu connector	2 words	0.14	—	CJ1W-OD231 (See note.)	
		32 outputs	12 to 24 VDC, 0.5 A, sourcing	16 points, 1 common	Short-circuit protection	MIL connector	2 words	0.15	—	CJ1W-OD232 (See note.)	
		32 outputs	12 to 24 VDC, 0.5 A, sinking	16 points, 1 common	—	MIL connector	2 words	0.14	—	CJ1W-OD233 (See note.)	
		64 outputs	12 to 24 VDC, 0.3 A, sinking	16 points, 1 common	—	Fujitsu connector	4 words	0.17	—	CJ1W-OD261 (See note.)	
		64 outputs	12 to 24 VDC, 0.3 A, sourcing	16 points, 1 common	—	MIL connector	4 words	0.17	—	CJ1W-OD262 (See note.)	
		64 outputs	12 to 24 VDC, 0.3 A, sinking	16 points, 1 common	—	MIL connector	4 words	0.17	—	CJ1W-OD263 (See note.)	
	Triac Output Unit	8 outputs	250 VAC, 0.6 A	8 points, 1 common	—	Removable terminal block	1 word	0.22	—	CJ1W-OA201	

Note: Connectors are not provided with these connector models. Either purchase one of the following 40-pin Connectors, or use an OMRON XW2□ Connector-Terminal Block Conversion Unit or a G7□ I/O Relay Terminal.

■I/O Units

Unit classification	Product name	Specifications					No. of words allocated	Current consumption (A)		Model	Standards
		I/O points	Input voltage, Input current / Maximum switching capacity	Commons	Additional functions	External connection		5 V	24 V		
CJ Basic I/O Units	DC Input/ Transistor Output Units	16 inputs	24 VDC, 7 mA	16 point, 1 common	—	Fujitsu connector	2 words	0.13	—	CJ1W-MD231 (See note 2.)	UC1, N, CE
		16 inputs	250 VAC/24 VDC, 0.5 A, sinking	16 point, 1 common	—						
		16 inputs	24 VDC, 7 mA	16 point, 1 common	—	MIL connector	2 words	0.13	—	CJ1W-MD232 (See note 2.)	UC1, N, L, CE
		16 inputs	24 VDC, 0.5 A, sourcing	16 point, 1 common	Short-circuit protection						
		16 inputs	24 VDC, 7 mA	16 point, 1 common	—	MIL connector	2 words	0.13	—	CJ1W-MD233 (See note 2.)	UC1, N, CE
		16 inputs	12 to 24 VDC, 0.5 A, sinking	16 point, 1 common	—						
		32 inputs	24 VDC, 4.1 mA	16 point, 1 common	—	Fujitsu connector	4 words	0.14	—	CJ1W-MD261 (See note 1.)	
		32 inputs	12 to 24 VDC, 0.3 A, sinking	16 point, 1 common	—						
		32 inputs	24 VDC, 4.1 mA	16 point, 1 common	—	MIL connector	4 words	0.14	—	CJ1W-MD263 (See note 1.)	
		32 inputs	12 to 24 VDC, 0.3 A, sinking	16 point, 1 common	—						
	TTL I/O Units	32 inputs	5 VDC, 35 mA	16 point, 1 common	—	MIL connector	4 words	0.19	—	CJ1W-MD563 (See note 1.)	
		32 inputs	5 VDC, 35 mA	16 point, 1 common	—						

Note 1. Connectors are not provided with these connector models. Either purchase one of the following 40-pin Connectors, or use an OMRON XW2☐ Connector-Terminal Block Conversion Unit or a G7☐ I/O Relay Terminal.

2. Connectors are not provided with these connector models. Either purchase one of the following 20-pin or 24-pin Connectors, or use an OMRON XW2☐ Connector-Terminal Block Conversion Unit or a G7☐ I/O Relay Terminal.

Ordering Information

■Interrupt Input Units

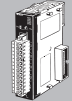| Unit classification	Product name	Specifications						No. of words allocated	Current consumption (A)		Model	Standards
		I/O points	Input voltage current	Commons	Input pulse width conditions	Max. Units mountable per Unit	External connection		5 V	24 V		
CJ Basic I/O Units	Interrupt Input Unit	16 outputs	24 VDC, 7 mA	16 point, 1 common	ON time: 0.05 ms max. OFF time: 0.5 ms max.	2	Removable terminal block	1 word	0.08	—	CJ1W-INT01	UC1, N, L, CE

Note 1. Can be used only on CPU Racks, and not on Expansion Racks.
2. The locations where the Units can be mounted depend on the CPU Rack and the CPU Unit model.
CJ1G, CJ1H: From the slot next to the CPU Unit until the fifth slot.
CJ1M: From the slot next to the CPU Unit until the third slot.

■High-speed Input Units

Unit classification	Product name	Specifications					No. of words allocated	Current consumption (A)		Model	Standards
		I/O points	Input voltage, Input current	Commons	Input pulse width conditions	External connection		5 V	24 V		
CJ Basic I/O Units	High-speed Input Unit	16 outputs	24 VDC, 7 mA	16 point, 1 common	ON time: 0.05 ms max. OFF time: 0.5 ms max.	Removable terminal block	1 word	0.08	—	CJ1W-IDP01	UC1, N, L, CE

Note: There are no restrictions on the mounting position or number of Units.

■B7A Interface Units

Unit classification	Product name	Specifications		No. of words allocated	Current consumption (A)		Model	Standards
		I/O points	External connection		5 V	24 V		
CJ Basic I/O Units	B7A Interface Units	64 inputs	Removable terminal block	4 words	0.07	—	CJ1W-B7A14	UC1, CE
		64 outputs			0.07	—	CJ1W-B7A04	
		32 inputs/outputs			0.07	—	CJ1W-B7A22	

Special I/O Units and CPU Bus Units

■ Process I/O Units

● Isolated-type Units with Universal Inputs

Unit classification	Product name	Input points	Signal range selection	Signal range	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model	Standards
									5 V	24 V		
CJ Special I/O Units	Process Input Units (Isolated-type Units with Universal Inputs)	4 inputs	Set separately for each input	Universal inputs: Pt100 (3-wire), JPt100 (3-wire), Pt1000 (3-wire), Pt100 (4-wire), K, J, T, E, L, U, N, R, S, B, WRe5-26, PL II, 4 to 20 mA, 0 to 20 mA, 1 to 5 V, 0 to 1.25 V, 0 to 5 V, 0 to 10 V, ±100 mV selectable range −1.25 to 1.25 V, −5 to 5 V, −10 to 10 V, ±10 V selectable range, potentiometer	Resolution (conversion speed): 1/256,000 (conversion cycle: 60 ms/ 4 inputs) 1/64,000 (conversion cycle: 10 ms/ 4 inputs) 1/16,000 (conversion cycle: 5 ms/ 4 inputs)	Standard accuracy: ±0.05% of F.S.	Removable terminal block	1	0.30	—	CJ1W-PH41U	UCI, CE
		4 inputs	Set separately for each input	Universal inputs: Pt100, JPt100, Pt1000, K, J, T, L. R, S, B, 4 to 20 mA, 0 to 20 mA, 1 to 5 V, 0 to 5 V, 0 to 10 V	Conversion speed: 250 ms/ 4 inputs	Accuracy: Platinum resistance thermometer input: (±0.3% of PV or ±0.8°C, whichever is larger) ±1 digit max. Thermocouple input: ±0.3% of PV or ±1.5°C, whichever is larger) ±1 digit max. (See note.) Voltage or current input: ±0.3% of F.S. ±1 digit max.			.032	—	CJ1W-AD04U	UCI, CE

Note: L and −100°C or less for K and T are ±2°C±1 digit max., and 200°C or less for R and S is ±3°C±1 digit max. No accuracy is specified for 400°C or less for B.

● Isolated-type Thermocouple Input Units

Unit classification	Product name	Input points	Signal range selection	Signal range	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model	Standards
									5 V	24 V		
CJ Special I/O Units	Process Input Units (Isolated-type Thermo-couple Input Units)	2 inputs	Set separately for each input	Thermocouple: B, E, J, K, L, N, R, S, T, U, WRe5-26, PLII DC voltage: ±100 mV	Conversion speed: 10 ms/ 2 inputs, Resolution: 1/64,000	Standard accuracy: ±0.05% of F.S. (See note 1.)	Removable terminal block	1	0.18	0.06 (See note 2.)	CJ1W-PTS15	UC1, CE
		4 inputs		Thermocouple: R, S, K, J, T, L, B	Conversion speed: 250 ms/ 4 inputs	Accuracy: (±0.3% of PV or ±1°C, whichever is larger) ±1 digit max. (See note 3.)			0.25	—	CJ1W-PTS51	

Note 1. The accuracy depends on the sensors used and the measurement temperatures. For details, refer to the user's manual.

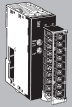   **2.** This is for an external power supply, and not for internal current consumption.

    3. L and −100°C or less for K and T are ±2°C±1 digit max., and 200°C or less for R and S is ±3°C±1 digit max. No accuracy is specified for 400°C or less for B.

● Isolated-type Resistance Thermometer Input Units

Unit classification	Product name	Input points	Signal range selection	Signal range	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model	Standards
									5 V	24 V		
CJ Special I/O Units	Process Analog Input Units (Isolated-type Resistance Thermometer Input Units)	2 inputs	Set separately for each input	Resistance thermometer: Pt100, JPt100, Pt50, Ni508.4	Conversion speed: 10 ms/ 2 inputs, Resolution: 1/64,000	Accuracy: ±0.05% of F.S. or ±0.1°C, whichever is larger.	Removable terminal block	1	0.18	0.07 (See note.)	CJ1W-PTS16	UC1, CE
		4 inputs	Common inputs	Resistance thermometer: Pt100, JPt100	Conversion speed: 250 ms/ 4 inputs	Accuracy: ±0.3°C of PV or ±0.8°C, whichever is larger, ±1 digit max.			0.25	—	CJ1W-PTS52	

Note: This is for an external power supply, and not for internal current consumption.

● Isolated-type DC Input Units

Unit classification	Product name	Input points	Signal range selection	Conversion speed (resolution)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model	Standards
								5 V	24 V		
CJ Special I/O Units	Isolated-type DC Input Units	2 inputs	DC voltage: 0 to 1.25 V, −1.25 to 1.25 V, 0 to 5 V, 1 to 5 V, −5 to 5 V, 0 to 10 V, −10 to 10 V, ±10 V selectable range DC current: 0 to 20 mA, 4 to 20 mA	Conversion speed: 10 ms/ 2 inputs Resolution: 1/64,000	Standard accuracy: ±0.05% of F.S.	Removable terminal block	1	0.18	0.09 (See note.)	CJ1W-PDC15	UC1, CE

Note: This is for an external power supply, and not for internal current consumption.

■ Analog I/O Units

● Analog Input Units

Unit classification	Product name	Input points	Signal range selection	Signal range	Resolution	Conversion speed	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model	Standards
										5 V	24 V		
CJ Special I/O Units	Analog Input Units	8 inputs	Set separately for each input	1 to 5 V, 0 to 5 V, 0 to 10 V, −10 to 10 V, 4 to 20 mA	1/8000, (Settable to 1/4000) (See note 1.)	250 μs/point max. (Settable to 1 ms/point) (See note 1.)	Voltage: ±0.2% of F.S. Current: ±0.4% of F.S. (See note 2.)	Removable terminal block	1	0.42	—	CJ1W-AD081-V1	UC1, N, L, CE
		4 inputs								0.42	—	CJ1W-AD041-V1	

Note 1. The resolution and conversion speed cannot be set independently. If the resolution is set to 1/4,000, then the conversion speed will be 1 ms/point.
2. At 23 ±2°C

● **Analog Output Units**

Unit classification	Product name	Output points	Signal range selection	Signal range	Resolution	Conversion speed	Accuracy (at ambient temperature of 25°C)	External connection	External power supply	No. of unit numbers allocated	Current consumption (A)		Model	Standards
											5 V	24 V		
CJ Special I/O Units	Analog Putput Units	8 outputs	Set separately for each input	1 to 5 V, 0 5 to 5 V, 0 to 10 V, −10 to 10 V	1/4,000 (Settable to 1/8,000)	1 ms/ point max. (Settable to 250 μs/point)	±0.3% of F.S.	Removable terminal block	24 VDC +10% −15%, 140 mA max.	1	0.14	0.14 (See note.)	CJ1W-DA08V	UC1, N, L, CE
		8 outputs		4 to 20 mA					24 VDC +10% −15%, 170 mA max.		0.14	0.17 (See note.)	CJ1W-DA08C	UC1, N, CE
		4 outputs		1 to 5 V, 0 to 5 V, 0 to 10 V, −10 to 10 V, 4 to 20 mA	1/4000	1 ms/ point max.	Voltage output: ±0.3% of F.S. Current output: ±0.5% of F.S.		24 VDC +10% −15%, 200 mA max.		0.12	0.2 (See note.)	CJ1W-DA041	UC1, N, L, CE
		2 outputs							24 VDC +10% −15%, 140 mA max.		0.12	0.14 (See note.)	CJ1W-DA021	

Note: This is for an external power supply, and not for internal current consumption
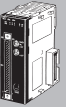
● **Analog I/O Units**

Unit classification	Product name	No. of points	Signal range selection	Signal range	Resolution (See note.)	Conversion speed (See note.)	Accuracy (at ambient temperature of 25°C)	External connection	No. of unit numbers allocated	Current consumption (A)		Model	Standards
										5 V	24 V		
CJ Special I/O Units	Analog I/O Units	4 inputs	Set separately for each input	1 to 5 V, 0 to 5 V, 0 to 10 V, −10 to 10 V, 4 to 20 mA	1/4,000 (Settable to 1/8,000)	1 ms/point (Settable to 500 μs/	Voltage input: ±0.2% of F.S. Current input: ±0.2% of F.S.	Removable terminal block	1	0.58	—	CJ1W-MAD42	UC1, N, L, CE
		2 outputs					Voltage output: ±0.3% of F.S. Current output: ±0.3% of F.S.						

Note: The resolution and conversion speed cannot be set independently. If the resolution is set to 1/4,000, then the conversion speed will be 1 ms/point.
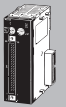
■Temperature Control Units

Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model	Standards
		No. of loops	Temperature sensor inputs	Control outputs		5 V	24 V		
CJ Special I/O units	Temperature Control Units	4 loops	Thermocouple input (R, S, K, J, T, B, L)	Open collector NPN outputs (pulses)	2	0.25	—	CJ1W-TC001	UC1, N, L, CE
		4 loops		Open collector PNP outputs (pulses)		0.25	—	CJ1W-TC002	
		2 loops, heater burnout detection function		Open collector NPN outputs (pulses)		0.25	—	CJ1W-TC003	
		2 loops, heater burnout detection function		Open collector PNP outputs (pulses)		0.25	—	CJ1W-TC004	
		4 loops	Platinum resistance thermometer input (JPt100, Pt100)	Open collector NPN outputs (pulses)		0.25	—	CJ1W-TC101	
		4 loops		Open collector PNP outputs (pulses)		0.25	—	CJ1W-TC102	
		2 loops, heater burnout detection function		Open collector NPN outputs (pulses)		0.25	—	CJ1W-TC103	
		2 loops, heater burnout detection function		Open collector PNP outputs (pulses)		0.25	—	CJ1W-TC104	

■ High-speed Counter Unit
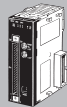
Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Countable channels	Encoder A and B inputs, pulse input Z signals	Max. counting rate		5 V	24 V		
CJ Special I/O units	High-speed Counter Unit	2	Open collector Input voltage: 5 VDC, 12 V, or 24 V (5 V and 12 V are each for one axis only.)	50 kcps	4	0.28	—	CJ1W-CT021	UC1, N, L, CE
			RS-422 line driver	500 kcps					

■Position Control Units

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model	Standards
		No. of axea	Control output interface		5 V	24 V		
CJ Special I/O units	Position Control Units	1 axis	Pulse train, open collector output	1	0.25	—	CJ1W-NC113	UC1, CE
		2 axes	Pulse train, open collector output		0.25	—	CJ1W-NC213	
		4 axes	Pulse train, open collector output (See note.)	2	0.36	—	CJ1W-NC413	
		1 axis	Pulse train, line driver output	1	0.25	—	CJ1W-NC133	
		2 axes	Pulse train, line driver output		0.25	—	CJ1W-NC233	
		4 axes	Pulse train, line driver output (See note.)	2	0.36	—	CJ1W-NC433	
	Space Unit	Use a CJ1W-SP001 Space Unit if the operating temperature is 0 to 55°C.					CJ1W-SP001	UC1, CE

Note: The ambient operating temperature for 4-Axis Position Control Units is 0 to 50°C; the allowable voltage fluctuation on the external 24-VDC power supply is 22.8 to 25.2 VDC (24 V ±5%).

■ MECHATROLINK-II-compatible Position Control Units

Unit classification	Product name	Specifications	No. of unit numbers allocated	Current consumption (A)		Model	Standards
				5 V	24 V		
CJ CPU Bus Units	MECHATROLINK-II-compatible Motion Control Units	Control commands executed by MECHATROLINK-II synchronous communications. 16 axes max. Direct operation by ladder programming. Control mode: Position control, speed control, or torque control	1	0.36	—	CJ1W-NCF71	UC1, CE

■ MECHATROLINK-II-compatible Motion Control Units

Unit classification	Product name	Specifications	No. of unit numbers allocated	Current consumption (A)		Model	Standards
				5 V	24 V		
CJ CPU Bus Units	MECHATROLINK-II-compatible Motion Control Units	Position, speed, and torque commands by MECHATROLINK-II 32 axes max. (Physical axes: 30, Virtual axes: 2) Motion control language	1	0.6	—	CJ1W-MCH71	UC1, CE

Note: The CJ1W-MCH71 requires the space of three Units (but just one unit number). A maximum of 10 Units can be mounted on a single CJ-series Rack, up to three CJ1W-MCH71 Motion Control Units plus one other Unit can be mounted per Rack.

■Serial Communications Units

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Communications Interface	Communications functions		5 V	24 V		
CJ CPU Bus Units	Serial Communications Units	1 RS-232C port and 1 RS-422A/485 port	The following functions can be selected for each port: Protocol macro Host Link NT Links (1:N mode) Serial Gateway (See note 1.) No-protocol (See note 2.) Modbus-RTU Slave (See note 3.)	1	0.38 (See note 4.)	—	CJ1W-SCU41-V1	UC1, N, L, CE
		2 RS-232C ports			0.28 (See note 4.)	—	CJ1W-SCU21-V1	
		2 RS-422A/485 ports			0.38	—	CJ1W-SCU31-V1	

Note 1. The Serial Gateway function is enabled only for Serial Communications Units of unit version 1.2 and later.
    2. The no-protocol function is enabled only for Serial Communications Units of unit version 1.2 and later (and a CPU Unit of unit version 3.0 or later is also required).
    3. The Modbus-STU Slave function is enabled only for Serial Communications Units of unit version 1.3 and later.
    4. When an NT-AL001 RS-232C/RS-422A Conversion Unit is used, this value increases by 0.15 A/Unit. When a CJ1W-CIF11 RS-422A Conversion Unit is used, it increases by 0.04 A/Unit.

■ EtherNet/IP Unit

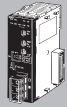| Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Communications cable	Communications functions	Max.Units mountable per CPU Unit		5 V	24 V		
CJ CPU Bus Units	EtherNet/IP Unit	STP (shielded twisted-pair) cable of category 5, 5e, or higher.	Tag data link message service	8 (See note)	1	0.41	—	CJ1W-EIP21	UC1, N, L, CE

Note: Up to seven EtherNet/IP Units can be connected to a CJ2H-CPU□□-EIP CPU Unit.

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■ EtherNet Unit

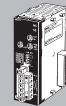| Unit classification	Product name	Specifications		Max.Units mountable per CPU Unit	No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Communications cable	Communications functions			5 V	24 V		
CJ CPU Bus Units	EtherNet Unit	100Base-TX	FINS communications service (TCP/ IP, UDP/IP), FTP server functions, socket services, mail transmission service, mail reception (remote command receive), automatic adjustment of PAC's, PLC's built-in clock, server/host name specifications	4	1	0.37	—	CJ1W-ETN21	UC1, N, L, CE

■ Controller Link Units

● Controller Link Units

Unit classification	Product name	Specifications				No. of words allocated	Current consumption (A)		Model	Standards
		Communications cable	Communications type	Duplex support	Max. Units mountable per CPU Unit		5 V	24 V		
CJ CPU Bus Unit	Controller Link Unit	Wired shielded twisted-pair cable (See note.)	Data links and message service	No	8	1	0.35	—	CJ1W-CLK23	UC1, N, L, CE

Note: Use the following special cable for shielded, twisted-pair cable.
  • #9207 (Belden: US Company)

■ FL-net Unit

Unit classification	Product name	Specifications			No. of words allocated	Current consumption (A)		Model	Standards
		Communications interface	Communications functions	Max. Units mountable per CPU Unit		5 V	24 V		
CJ CPU Bus Unit	FL-net Unit	100Base-TX	With FL-net Ver. 2.0 specifications (OPCN-2) Data links and message service	4	1	0.37	—	CJ1W-FLN22	UC1, CE

■ DeviceNet Unit

Unit classification	Product name	Specifications	Communications type	No. of unit numbers allocated	Current consumption (A)		Model	Standards
					5 V	24 V		
CJ CPU Bus Units	DeviceNet Unit	Functions as master and/ or slave; allows control of 32,000 points max. per master.	• Remote I/O communications master (fixed or user-set allocations) • Remote I/O communications slave (fixed or user-set allocations) • Message communications	1	0.29	—	CJ1W-DRM21	UC1, N, L, CE

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■CompoNet Master Unit

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Communications functions	No. of I/O points per Master Unit		5 V	24 V		
CJ Special I/O Units	CompoNet Master Unit	• Remote I/O communications • Message communications	Word Slaves: 2,048 max. (1.024 inputs and 1,024 outputs) Bit Slaves: 512 max. (256 inputs and 256 outputs)	1, 2, 4, or 8	0.4	—	CJ1W-CRM21	U1, CE, UC1 certification pending

■ CompoBus/S Master Unit

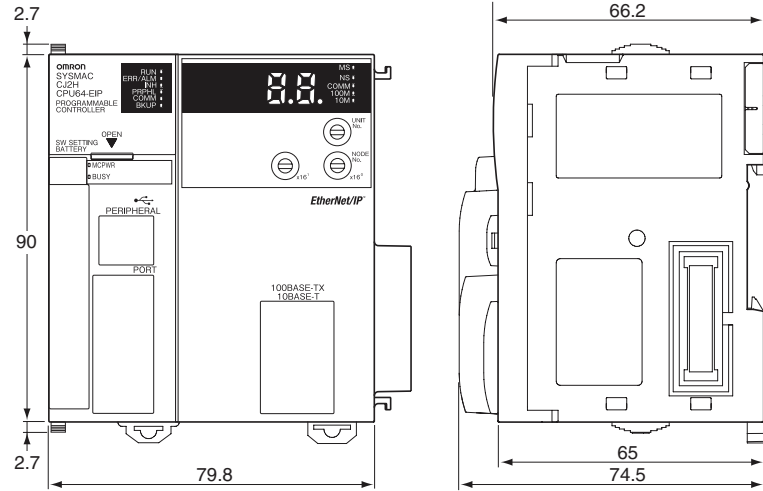| Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Communications functions	No. of I/O points	Max. Units mountable per CPU Unit		5 V	24 V		
CJ Special I/O Units	CompoBus/S Master Unit	Remote I/O communications	256 max. (128 inputs and 128 outputs) 128 max. (64 inputs and 64 outputs)	40	1 or 2 (variable)	0.15	—	CJ1W-SRM21	UC1, N, L, CE

■ ID Sensor Units

Unit classification	Product name	Specifications			No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Connected ID Systems	No. of connected R/W heads	External power supply		5 V	24 V		
CJ CPU Bus Units	ID Sensor Units	V680 Series RFID System	1	Not required.	1	0.26 (See note.)	0.13 (See note.)	CJ1W-V680C11	UC, CE certification pending
			2		2	0.32	0.26	CJ1W-V680C12	
		V600 Series RFID System	1	Not required.	1	0.26	0.12	CJ1W-V600C11	UC, CE
			2		2	0.32	0.24	CJ1W-V600C12	

Note: To use a V680-H01 Antenna, refer to the *V680 Series RFID System Catalog* (Cat. No. Q151).

■SYSMAC SPU (High-speed Data Storage Unit)

Unit classification	Product name	Specifications		No. of unit numbers allocated	Current consumption (A)		Model	Standards
		PC Card slot	EtherNet (LAN) port		5 V	24 V		
CJ CPU Bus Units	SYSMAC SPU Ver. 2 (High-speed Data Storage Unit)	CF Card Type I/II × 1 slot Use an OMRON HMC-EF□□□ Memory Card.	1 port (10/100Base-TX)	1	0.56	—	CJ1W-SPU01-V2	UC1, CE
	SPUConsole Ver. 2.0	Functions: Unit settings, sampling settings, etc., for High-speed Data Collection Units (required for making settings for this Unit) OS: Windows 2000 or XP					WS02-SPTC1-V2	—
	Ver. 2.0 SYSMAC SPU Data Management Middleware Ver. 2.0	Function: Data files collected by SYSMAC SPU Data Management Middleware are automatically acquired at the personal computer, and can be registered in a database. OS: Windows 2000 or XP		1 license			WS02-EDMC1-V2	
				5 licenses			WS02-EDMC1-V2L05	
	Memory Cards	Flash memory, 128 MB		**Note:** Memory Card is required for data collection.			HMC-EF183	N, L, CE
		Flash memory, 256 MB (SYSMAC SPU only)					HMC-EF283	
		Flash memory, 512 MB (SYSMAC SPU only)					HMC-EF583	

CJ2H CPU Unit


```
2.7

OMRON                    RUN          MS
SYSMAC                   ERR/ALM      NS
CJ2H                     INH          COMM
CPU64-EIP                PRPHL        100M
PROGRAMMABLE             COMM         10M
CONTROLLER               BKUP

           OPEN
SW SETTING
BATTERY

   MCPWR                           UNIT
   BUSY                            No.
                                   NODE
                                   No.
         PERIPHERAL        ×16¹  ×16⁰

90                          EtherNet/IP

         PORT
                       100BASE-TX
                       10BASE-T

2.7
              79.8
```

```
              66.2

              65
             74.5
```

After selecting a Power Supply Unit based on considerations such as the power supply voltage, calculate the current and power requirements for each Rack.

Condition 1: Current Requirements
There are two voltage groups for internal power consumption: 5 V and 24 V.
Current consumption at 5 V (internal logic power supply)
Current consumption at 24 V (relay driving power supply)
Condition 2: Power Requirements

For each Rack, the upper limits are determined for the current and power that can be provided to the mounted Units. Design the system so that the total current consumption for all the mounted Units does not exceed the maximum total power or the maximum current supplied for the voltage groups shown in the following tables.
The maximum current and total power supplied for CPU Racks and Expansion Racks according to the Power Supply Unit model are shown below.

Note 1. For CPU Racks, include the CPU Unit current and power consumption in the calculations. When expanding, also include the current and power consumption of the I/O Control Unit in the calculations.
　　　2. For Expansion Racks, include the I/O Interface Unit current and power consumption in the calculations.

Power Supply Units	Max. current supplied		Max. total power supplied
	5 V	24 V (relay driving current)	
CJ1W-PA205C	5.0 A	0.8 A	25 W
CJ1W-PA205R	5.0 A	0.8 A	25 W
CJ1W-PA202	2.8 A	0.4 A	14 W
CJ1W-PD025	5.0 A	0.8 A	25 W
CJ1W-PD022	2.0 A	0.4 A	19.6 W

Conditions 1 and 2 below must be satisfied.

Condition 1: Maximum Current

   (1) Total Unit current consumption at 5 V ≤ (A) value

   (2) Total Unit current consumption at 24 V ≤ (B) value

Condition 2: Maximum Power

(1) × 5 V + (2) × 24 V ≤ (C) value

■ Example: Calculating Total Current and Power Consumption

Example: When the Following Units are Mounted to a CJ-series CPU Rack Using a CJ1W-PA205R Power Supply Unit

Unit type	Model	Quantity	Voltage group	
			5 V	24 V
CPU Unit	CJ2H-CPU68-EIP	1	0.820 A	—
I/O Control Unit	CJ1W-IC101	1	0.020 A	—
Basic I/O Units (Input Units)	CJ1W-ID211	2	0.080 A	—
	CJ1W-ID231	2	0.090 A	—
Basic I/O Units (Output Units)	CJ1W-OC201	2	0.090 A	0.048 A
Special I/O Unit	CJ1W-DA041	1	0.120 A	—
CPU Bus Unit	CJ1W-CLK23	1	0.350 A	—
Current consumption	Total		0.820 + 0.020 + 0.080 × 2 + 0.090 × 2 + 0.090 × 2 + 0.120 + 0.350	0.048 A × 2
	Result		1.83 A (≤ 5.0 A)	0.096 A (≤ 0.8 A)
Power consumption	Total		1.83 × 5 V = 9.15 W	0.096 A × 24 V = 2.30 W
	Result		9.15 + 2.30 = 11.45 W (≤ 25 W)	

Note: For details on Unit current consumption, refer to *Ordering Information*.

■Using the CX-Programmer to Display Current Consumption and Width

CPU Rack and Expansion Rack current consumption and width can be displayed by selecting Current Consumption and Width from the Options Menu in the CJ2 Table Window. If the capacity of the Power Supply Unit is exceeded, it will be displayed in red characters.

Example:

39
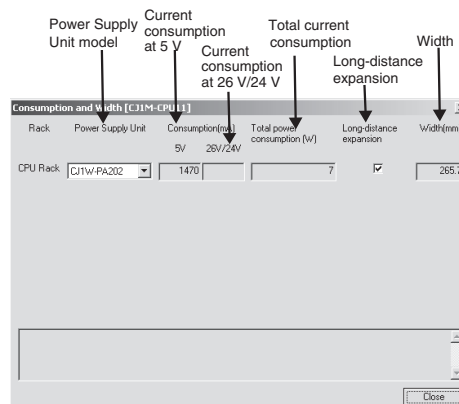
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