CJ1 Programmable Controllers

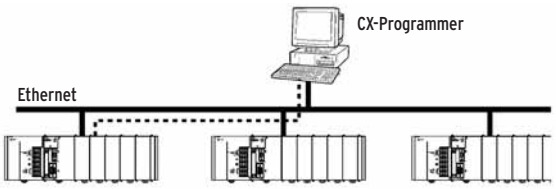
Smallest, Most Powerful Solution for Advanced Production Systems

Best for Industrial Networking

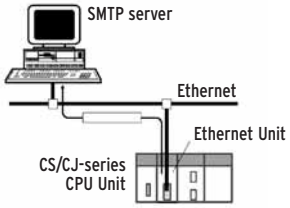
Ethernet Information Network

Connects Internet and front office/management information needs with factory floor operation.

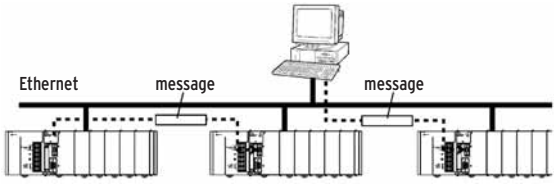
- **Remote programming and monitoring** of all the PLCs connected the Ethernet network via a computer running Omron's CX-One software



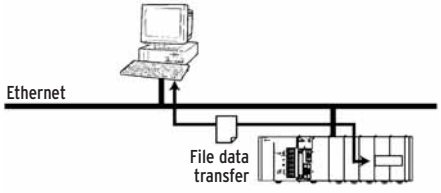
- **E-mail Transmission** Ethernet module CJ1W-ETN21 is able to send user-created data, error log data and CPU status data as e-mail attachments using a SMTP server.



- **Message Routing Service** built into Ethernet module CJ1W-ETN21 exchanges messages between connected PLCs and host computers without direct program commands.



- **FTP Service (File Transfer Protocol) Transfer** and receive files between Memory Cards in the PLC CPU and computer memory (CJ1W-ETN21 module).



Controller Link Network

Provides high-speed deterministic PLC-to-PLC message and data exchange.

DeviceNet and PROFIBUS-DP Networks

These provide an open network that exchanges device data, messaging and status.

Serial Communications

Omron Serial modules support simple-to-use links with all serial devices to exchange data and make remote settings available to host computers, controller and other serial devices.

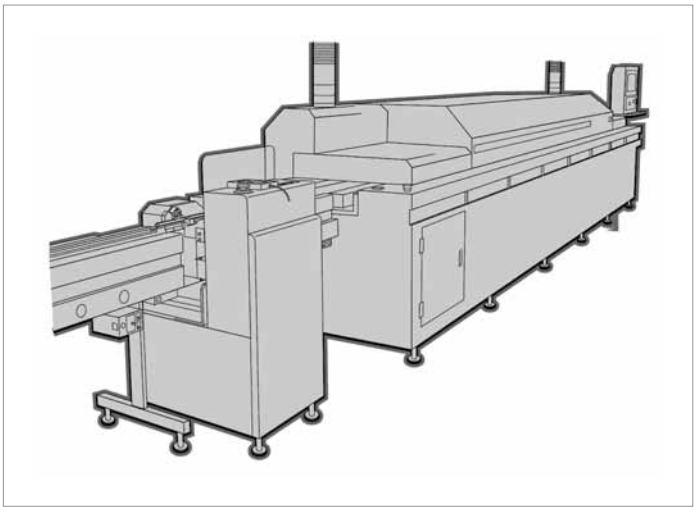
CJ1 Features

- Add advanced capability with Special I/O Modules: Position and motion control for 1, 2, 4, 16 or 30 axes; high speed counters; temperature control; analog I/O; and RFID control
- CJ1 PLCs communicate to nearly any third-party device via serial, Modbus-ASCII master, and Modbus-RTU master/slave
- Task oriented programming uses function-block, structured text and ladder logic languages
- One software package (CX-One) is all you need for programming, monitoring, motion controller setup, network configuration and more
- RoHS compliant: contains no lead (Pb) or hazardous materials
- Safety ratings: UL, cUL and CE; UL Class I, Division 2, Groups A, B, C and D for use in hazardous locations; contact Omron for rating details

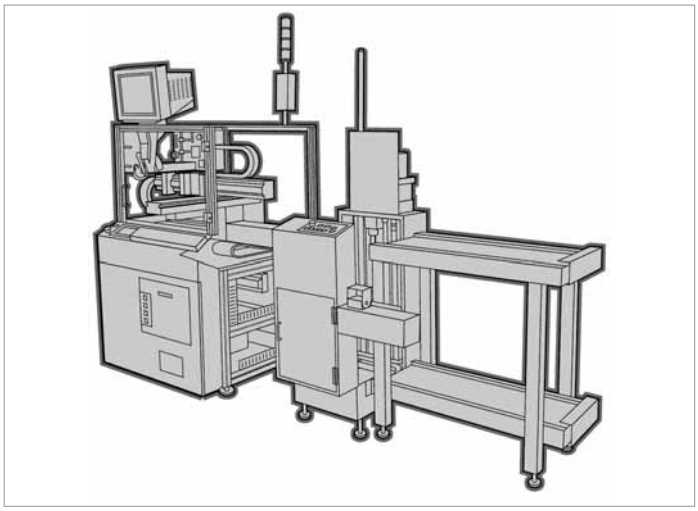
Specifications

- I/O capacity: CJ1M: 640 I/O and CJ1G: 2560 I/O
- Program capacity: CJ1M: 5K to 20K steps
  CJ1G/H: 10K to 120K steps
- Processing speed: CJ1M: 0.1 μs (using Load instruction)
  CJ1G/H: up to 0.02 μs
- Communications: Ethernet, Controller Link, DeviceNet, PROFIBUS-DP, Serial, CompoBus/S
- Real-time clock: Yes
- Supply voltage: 100 to 240 VAC or 24 VDC
- Dimensions: 90 H x 65 D mm; width depends on model; I/O units are 20 or 31 mm wide

Applications



Reflow oven uses the CJ1G for temperature monitoring and control, and data logging



Small scale machines that do positioning use CJ1M with pulse I/O and built-in inputs/outputs

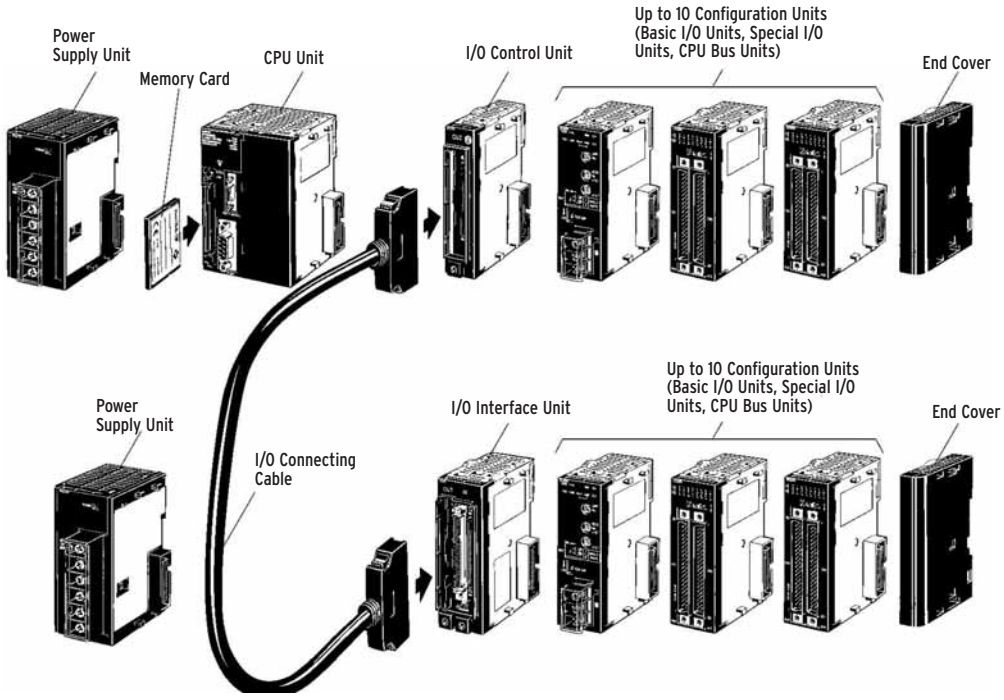
Typical Configuration

Basic Configuration

A CJ1 Series basic configuration consists of a CPU, power supply unit, and up to 10 basic I/O, special I/O and bus units, and an end cover. Add up the current consumption for all the modules and the CPU, then select the power supply unit suitable for the application.

CPU and Expansion Racks

If the number of modules per rack exceeds 10 or the current consumption is greater than the capacity of the power supply units, use the CPU and expansion rack configuration. This divides the load from the modules across two power supply units. To allow communication and automatic channel assignment in programming, order an I/O control module for the CPU rack and an I/O interface module on each expansion rack.



CPUs

Number of I/O	Program capacity	Data memory storage	Maximum I/O modules	per CPU Max. I/O expansion	racks per CPU Features	Current usage	Model
160 points	5K steps	32K words	10	0	--	0.58 A, 5 V	CJ1M-CPU11
160 points	5K steps	32K words	10	0	Built-in Ethernet	0.58 A, 5 V	CJ1M-CPU11-ETN
160 points	5K steps	32K words	10	0	10 I/O built in	0.65 A, 5 V	CJ1M-CPU21
320 points	10K steps	32K words	10	0	--	0.58 A, 5 V	CJ1M-CPU12
320 points	10K steps	32K words	10	0	Built-in Ethernet	0.58 A, 5 V	CJ1M-CPU12-ETN
320 points	10K steps	32K words	10	0	10 I/O built in	0.65 A, 5 V	CJ1M-CPU22
640 points	20K steps	32K words	20	1	--	0.58 A, 5 V	CJ1M-CPU13
640 points	20K steps	32K words	20	1	Built-in Ethernet	0.58 A, 5 V	CJ1M-CPU13-ETN
640 points	20K steps	32K words	20	1	10 I/O built in	0.65 A, 5 V	CJ1M-CPU23
960 points	10K steps	64K words	30	2	--	0.91 A, 5 V	CJ1G-CPU42H
960 points	20K steps	64K words	30	2	--	0.91 A, 5 V	CJ1G-CPU43H
1280 points	30K steps	64K words	40	3	--	0.91 A, 5 V	CJ1G-CPU44H
1280 points	60K steps	128K words	40	3	--	0.91 A, 5 V	CJ1G-CPU45H
2560 points	60K steps	128K words	40	3	--	0.99 A, 5 V	CJ1H-CPU65H
2560 points	120K steps	256K words	40	3	--	0.99 A, 5 V	CJ1H-CPU66H
2560 points	250K steps	448K words	40	3	--	0.99 A, 5 V	CJ1H-CPU67H

Expansion Rack Units

Item	Description	Current consumption	Model
I/O Control module	Mount next to CPU for expansion rack connection	0.02 A, 5 V	CJ1W-IC101
I/O Interface module	Mount next to expansion rack power supply for CPU interface	0.13 A, 5 V	CJ1W-II101

Expansion Rack Connecting Cables

Description	Function	Length	Model
Expansion rack connecting cables	Connects Expansion Racks to the CPU Rack or another Expansion Rack	0.3 m	CS1W-CN313
		0.7 m	CS1W-CN713
		2 m	CS1W-CN223
		3 m	CS1W-CN323
		5 m	CS1W-CN523
		10 m	CS1W-CN133
		12 m	CS1W-CN133-B2

Power Supply

Input voltage	Output rating	Output capacity	Current usage	Model
100 to 240 VAC	5 A, 5 VDC with 2 A RUN output	25 W max.	0.8 A, 24 VDC	CJ1W-PA205R
100 to 240 VAC	2.8 A, 5 VDC	14 W max.	0.4 A, 24 VDC	CJ1W-PA202
24 VDC	5 A, 5 VDC	25 W max.	0.8 A, 24 VDC	CJ1W-PD025
24 VDC	2 A, 5 VDC	10 W max.	0.4 A, 24 VDC	CJ1W-PD022

Flash Memory Cards

Item	Description	Model
Flash Memory Cards	64 MB	HMC-EF672
Memory Card Adapter	Mounts a memory card to fit the PCMCIA card slot on a computer	HMC-AP001

Digital Input and Output Modules

Type	Points	Rating	Connection	Current usage	Model
DC input	16 inputs	7 mA, 24 VDC	Terminal block	0.08 A, 5 VDC	CJ1W-ID211
	32 inputs	4.1 mA, 24 VDC	Fujitsu connector	0.09 A, 5 VDC	CJ1W-ID231
	32 inputs	4.1 mA, 24 VDC	MIL-type connector	0.09 A, 5 VDC	CJ1W-ID232
	64 inputs	4.1 mA, 24 VDC	Fujitsu connector	0.09 A, 5 VDC	CJ1W-ID261
	64 inputs	4.1 mA, 24 VDC	MIL-type connector	0.09 A, 5 VDC	CJ1W-ID262
AC input	16 inputs	7 mA, 100-120 VAC	Terminal block	0.09 A, 5 VDC	CJ1W-IA111
Interrupt input	16 inputs	7 mA, 24 VDC	Terminal block	0.08 A, 5 VDC	CJ1W-INT01
Relay bit output	8 outputs	2 A, 250 VAC/24 VDC, independent contacts	Terminal block	0.048 A, 24 VDC	CJ1W-OC201
	16 outputs	2 A, 250 VAC/24 VDC, independent contacts	Terminal block	0.096 A, 24 VDC	CJ1W-OC211
Transistor output	16 outputs	0.5 A, 12 to 24 VDC, NPN (sinking)	Terminal block	0.10 A, 5 VDC	CJ1W-OD211
	16 outputs	0.5 A, 24 VDC, PNP (sourcing) load short-circuit protection, disconnection detection, alarm	Terminal block	0.10 A, 5 VDC	CJ1W-OD212
	32 outputs	0.5 A, 12 to 24 VDC, NPN (sinking)	Fujitsu connector	0.14 A, 5 VDC	CJ1W-OD231
	64 outputs	0.3 A, 12 to 24 VDC, NPN (sinking)	Fujitsu connector	0.17 A, 5 VDC	CJ1W-OD261

Dimensions

Item	Models	Dimensions H x W x D mm
8-/16-point I/O modules	CJ1W-ID201/211, CJ1W-IA11/-201	90 x 31 x 89
	CJ1W-OD201/202/203/204	90 x 31 x 89
	CJ1W-OD211/212	90 x 31 x 89
	CJ1W-OC201/211	90 x 31 x 89
	CJ1W-OA201	90 x 31 x 89
32-point I/O modules	CJ1W-ID231/232	90 x 20 x 69.3 (140 w/connector)
	CJ1W-OD231/232	90 x 20 x 69.3 (140 w/connector)
64-point I/O modules	CJ1W-ID261/ID262	90 x 31 x 66.5 (112.5 w/connector)
	CJ1W-OD261/262/263	90 x 31 x 66.5 (112.5 w/connector)
Interrupt input module	CJ1W-INT01	90 x 31 x 69.3 (140 w/connector)

Special I/O and Control Modules

Type	Axes	I/O type	Rating	Connection	Current usage	Model
Position control module	1 axis	Open collector, 24 V	500 kpps pulse outputs, inputs for origin, limit switches, stop interrupt	Connector	0.25 A, 5 VDC	CJ1W-NC113
	1 axis	Line driver		Connector	0.25 A, 5 VDC	CJ1W-NC133
	2 axes	Open collector, 24 V		Connector	0.25 A, 5 VDC	CJ1W-NC213
	2 axes	Line driver		Connector	0.25 A, 5 VDC	CJ1W-NC233
	4 axes	Open collector, 24 V		Connector	0.36 A, 5 VDC	CJ1W-NC413
	4 axes	Line driver		Connector	0.36 A, 5 VDC	CJ1W-NC433
	16 axes	MECHATROLINK-II provides instant communications between the position controller and Omron's W-Series servo drives	Use CX-Motion-NCF software Response: 0.25 to 8 ms for 16 axes Functions: Position, speed and torque control; accesses all drive parameters	ML-II connector	0.36 A, 5 VDC	CJ1W-NCF71

Special I/O and Control Modules (continued)

Type	Channels	I/O type	Rating	Connection	Current usage	Model
Motion control module	30 axes	MECHATROLINK-II provides instant communications between the motion controller and Omron's W-Series servo drives	Use CX-Motion software Functions: Electronic cam profiles and axis synchronization; Registration inputs; accesses all drive parameters	ML-II connector	0.6 A, 5 VDC	CJ1W-MCH71
High-speed counter module	2 inputs	Line driver, 24 V	Input frequency: 500 kHz max. Functions: Simple counter; linear or ring counter 2 configurable digital inputs + outputs	Connector	0.28 A, 5 VDC	CJ1W-CT021
	2 SSI inputs (absolute position data)	Synchronous Serial Protocol	Functions: Baud rate, encoding type, data length, etc. can be set per channel	Terminal	0.30 A, 5 VDC	CJ1W-CTS21-E
	4 inputs	Line driver, 24 V	Input frequency: 100 kHz max. Function: Target values trigger interrupt to CPU 4 configurable digital inputs + outputs	Connector	0.32 A, 5 VDC	CJ1W-CTL41-E
Analog I/O	4	Input ranges: 0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V, 4 to 20 mA	Resolution: 1/8,000 Accuracy: V: 0.2% of PV; I: 0.4% of PV Conversion time: 250 μs/ point Features: Offset/gain adjustment, peak hold, moving average, alarms	Terminal block	0.42 A, 5 VDC	CJ1W-AD041-V1
	8	Input ranges: 0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V, 4 to 20 mA	Resolution: 1/8,000 Accuracy: V: 0.2% of PV; I: 0.4% of PV Conversion time: 250 μs/ point Features: Offset/gain adjustment, peak hold, moving average, alarms	Terminal block	0.42 A, 5 VDC	CJ1W-AD081-V1
	2	Analog output 0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V, 4 to 20 mA	Resolution: 1/4,000 Accuracy: V: 0.3% of PV I: 0.5% of PV Conversion time: 1 ms/point Features: Offset/gain adjustment, output hold	Terminal block	0.12 A, 5 VDC	CJ1W-DA021
	4	Analog output 0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V, 4 to 20 mA	Resolution: 1/4,000 Accuracy: V: 0.3% of PV I: 0.5% of PV Conversion time: 1 ms/point Features: Offset/gain adjustment, output hold	Terminal block	0.12 A, 5 VDC	CJ1W-DA041
	8	Voltage output 0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V	Resolution: 1/8,000 Accuracy: 0.3% of PV Conversion time: 250 μs/point Features: Offset/gain adjustment, output hold	Terminal block	0.14 A, 5 VDC	CJ1W-DA08V
	8	Current output 4 to 20 mA	Resolution: 1/8,000 Accuracy: 0.5% of PV Conversion time: 250 μs/point Features: Offset/gain adjustment, output hold	Terminal block	0.14 A, 5 VDC	CJ1W-DA08C
	4 + 2	Input + Output ranges: 0 to 5 V, 0 to 10 V, -10 to 10 V, 1 to 5 V, 4 to 20 mA	Resolution: 1/8,000 Accuracy: Input: 0.2% of PV Output: 0.3% of PV Conversion time: 1 ms/ point Features: Offset/gain adjustment, scaling, peak hold, moving average, alarms, output hold	Terminal block	0.58 A, 5 VDC	CJ1W-MAD042

Special I/O and Control Modules (continued)

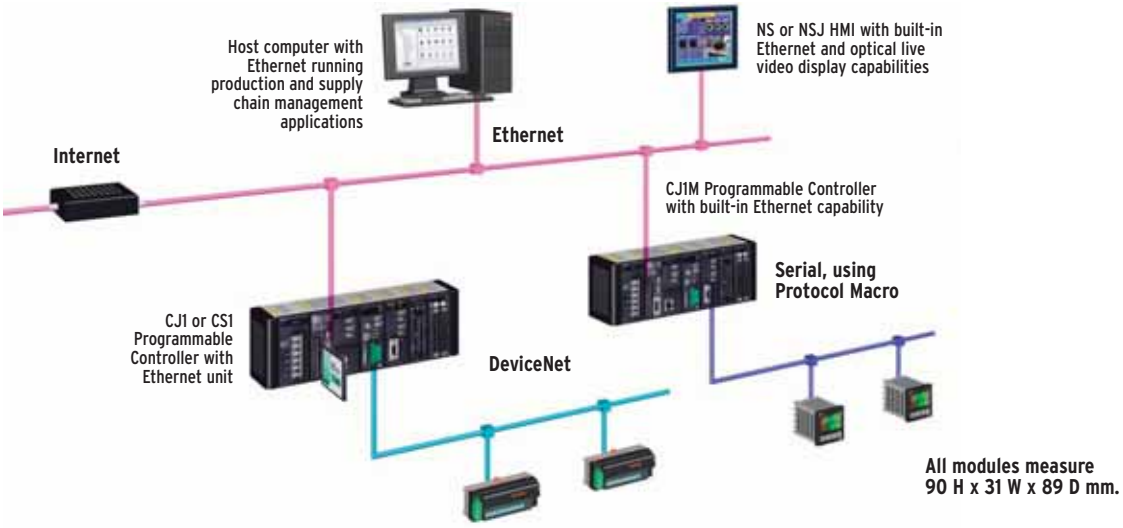
Type	Channels	I/O type	Rating	Connection	Current usage	
Process input	2	1 to 5V, 0 to 5V, +/-5V, 0 to 10V, +/-10V, 0 to 1.25V, +/-1.25V, 4 to 20 mA, 0 to 20 mA	Resolution: 1/64,000 Accuracy: 0.05% of PV Conversion time: 5 ms/ point Features: Isolated inputs, configurable alarms, maintenance functions, user-defined scaling	Terminal block	0.18 A, 5 VDC (Use an external 90 mA, 5 VDC power supply)	CJ1W-PDC15
Temperature input modules	2	Isolated Thermocouple input: Types B, E, J, K, L, N, R, S, T, U, WRe-5-26, PL2; -100 to 100 mV	Resolution: 1/64,000 Accuracy: 0.05% of PV Conversion time: 5 ms/point	Terminal block	0.18 A, 5 VDC (Use an external 60 mA, 24 VDC power supply)	CJ1W-PTS15
	2	Isolated RTD input: Pt100, JPt100, Pt50, or Ni508.4	Resolution: 1/64,000 Accuracy: 0.05% of PV Conversion time: 5 ms/point	Terminal block	0.18 A, 5 VDC (Use an external 60 mA, 24 VDC power supply)	CJ1W-PTS16
	4	Isolated Thermocouple input: Types K, J, L, R, S, T, B	Resolution: -- Accuracy: ±0.3% of PV Conversion time: 62.5 ms/point	Terminal block	0.25 A, 5 VDC	CJ1W-PTS51
	4	Isolated RTD input: Pt100, JPt100	Resolution: -- Accuracy: ±0.3% of PV Conversion time: 62.5 ms/point	Terminal block	0.25 A, 5 VDC	CJ1W-PTS52
Temperature controller modules, thermo-couple input	4 loops	NPN output	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC001
	4 loops	PNP output	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC002
	2 loops	NPN output, heater burnout detection	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC003
	2 loops	PNP output, heater burnout detection	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC004
Temperature controller modules, platinum RTD input	4 loops	NPN output	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC101
	4 loops	PNP output	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC102
	2 loops	NPN output, heater burnout detection	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC103
	2 loops	PNP output, heater burnout detection	0.1°C resolution; 0.3% of PV accuracy	Terminal block	0.25 A, 5 VDC	CJ1W-TC104

Dimensions

Item	Models	Dimensions H x W x D mm
Special I/O Modules	All versions	90 x 31 x 65
Motion controller	CJ1W-MCH71	90 x 80 x 65

Industrial Networking and Communications Modules

Transparent message routing: program-free access to field devices and easy, fast data exchange over Ethernet.



Network type	Description	Rating	Current usage	Model
Ethernet, 100 Base Tx/ 10 Base T	UDP, TCP/IP, FTP server, socket services, DNS client, SMTP (email services), SNTP (time adjust services), FINS routing	100 Mbps max. speed; 2.5 km distance; 254 nodes; twisted pair cable	0.38 A, 5 VDC	CJ1W-ETN21
Controller Link	Data links and message communications between PLCs and computers; Omron proprietary protocol	2 Mbps max. speed; 1.5 km distance; 62 nodes (using 2 repeater units); shielded twisted pair cable	0.35 A, 5 VDC	CJ1W-CLK21-V1
	PCI board with support software	Shielded twisted pair cable	--	3G8F7-CLK21-EV1
DeviceNet	Master unit provides remote I/O and message communications; functions as master and/or slave	500 kbps; 500 m distance; 63 nodes; DeviceNet cable; can control up to 32,000 points max. per master	0.33 A, 5 VDC	CJ1W-DRM21
Profibus-DP	Master unit provides data exchange, diagnostics and message communi-cations	12 Mbps; 1200 m distance; 125 nodes; shielded twisted pair cable; allows 7,168 words of I/O data per PLL; one RS-485 port	0.40 A, 5 VDC	CJ1W-PRM21
	Slave unit	Max. 180 words of input and output; one RS-485 port	0.40 A, 5 VDC	CJ1W-PRT21
CompoBus/S distributed I/O	Master unit remote I/O data exchange with 256 points	750 kbps; 500 m distance; 32 nodes; 2- or 4- conductor VCTF cable	0.15 A, 5 VDC	CJ1W-SRM21
Serial	Exchanges data using Protocol Macro for automatic handshaking with Omron serial devices (CompoWay/F); Host Link to computers; and 1:N NT link for Omron HMIs; Modbus and user-defined protocols	Two RS-232C ports	0.28 A, 5 VDC	CJ1W-SCU21-V1
		Two RS-422/RS-485 ports	0.38 A, 5 VDC	CJ1W-SCU31-V1
		One RS-232C port and one RS-422/ RS-485 port	0.38 A, 5 VDC	CJ1W-SCU41-V1
	RS-232C to RS-422A Conversion module	1 RS-232C port and 1 RS-422A terminal block	0.15 A, 5 VDC	NT-AL001-E
	RS-232C to RS422/RS-485 adapter	Used for serial PLC Link with CJ1M. Converts an RS-232C port to an RS-422/RS-485 port. Mounts directly to the CPU.	--	CJ1W-CIF11

Programming and Diagnostic Software

One Software

CX-One is the single programming and configuration software used to build and program networks, PLCs, HMIs, motion control systems, drives, temperature controllers and sensors. It provides seamless communications between system components because they all speak a common language. The benefit of using a single software is reduced complexity of configuration so it can be completed with minimal training.

One Connection

With CX-One software and one connection to your machine, you can fully access all settings, programs and configurations. Upload and download all programs, comments, settings, fieldbus configurations, HMI and intelligent device configurations. You can gain remote access to service your complete machine, and reset and restart operations from an HMI.

One Minute

Accomplish more every minute with Omron's "drag-and-drop" functionality. It simplifies control system configuration and HMI visualization so projects are completed in minutes instead of days.

Our pre-built object libraries only require you to add parameters to automatically establish communications with Omron devices.

Software name	Description	Quantity	Model
CX-One	Programming and configuration management software that lets you build, configure and program networks, PLCs, HMIs, motion control systems, temperature controllers and sensors	1 license	CXONE-AL01C-E
		3 licenses	CXONE-AL03C-E
		10 licenses	CXONE-AL10C-E

Programming Cables

Name	Specifications	Cable length	Model
Peripheral Device Connecting Cables (for peripheral port)	Connects computers, D-Sub 9-pin	0.1 m	CS1W-CN118
		2.0 m	CS1W-CN226
		6.0 m	CS1W-CN626
Peripheral Device Connecting Cable (for RS-232C port)	Connects computers, D-Sub 9-pin	2.0 m	C200H-CN229-EU
USB-Serial conversion cable	Use with one of the cables above	0.5 m	CS1W-CIF31

Note: Specifications are subject to change.

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Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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