Read and Understand this Catalog

Please read and understand this catalog before purchasing the product. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

Application Considerations

Disclaimers

Note: Do not use this document to operate the Unit.

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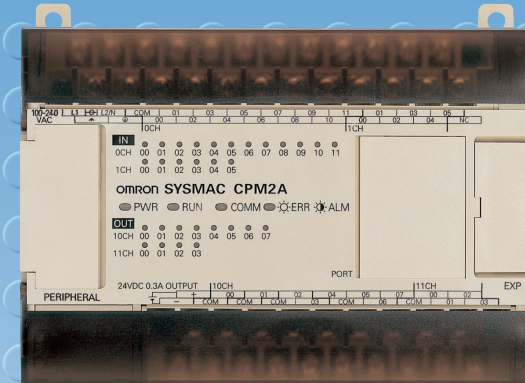Cat. No. P049-E1-10
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0306-1M

The "Just Fit" PLCs

More Powerful Micro PLCs

Advanced Micro PLCs

SYSMAC CPM2A
Programmable Controllers

Downsize Control Panels with the CPM2C

Ultra-slim Micro PLCs

SYSMAC CPM2C
Programmable Controllers

omron SYSMAC CPM2A

New Units Added to Series

Expansion I/O Unit
Analog I/O Unit

realizing
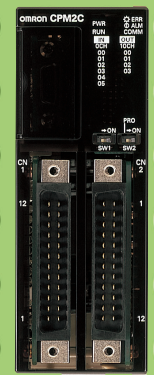
Advanced Functions and High Performance in a Very Small Package.
Improved Capabilities and Higher Added Value for the Food Packaging Industry, Distribution Industry, and Compact Equipment Manufacturers

The CPM2A and CPM2C Provide a Wide Variety of Functions for More Advanced Systems.

- High-speed counters easily measure high-speed workpieces.
- Synchronized pulse control provides easy timing adjustments.
- High-speed processing with a high-speed scan and high-speed interrupts.
- An OMRON Programmable Terminal is easily connected to provide visual confirmation of machine operation.
- Pulse outputs handle a variety of basic positioning applications.
- Achieve distributed control and analog control.

Surprisingly Low Prices

- The CPM2C adds value to equipment by providing advanced functions and high performance at very reasonable prices.

Compact Design - Fits into Just About Any Space

- Machinery downsizing is aided by the reduced PLC space requirements in the control panel or machine.

Need advanced capabilities in a compact PLC?

Advanced Micro PLCs

SYSMAC CPM2A
Programmable Controllers

Need a thin PLC to conserve space?

Ultra-slim Micro PLCs
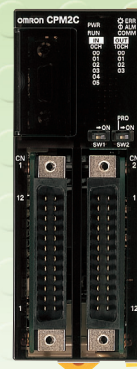
SYSMAC CPM2C
Programmable Controllers

Ultra-compact

Contents

Food Packaging Industry
Food Packaging Equipment

Downsizing and Multifunctional Capabilities for Small-scale Food Packaging Equipment

The CPM2A and CPM2C are equipped with advanced functions such as synchronized control and high-speed processing (quick-response inputs, interrupts, a 1-ms timer, and improved scanning speed), allowing faster line speeds as well as multi-product/small-lot production.

Synchronized Control

Synchronized pulse control multiplies the frequency of a pulse input by a preset scaling factor and generates a synchronized pulse output at that frequency. The scaling factor can be changed from the ladder program, so packaging can continue while adjusting the feed rate of packaging film or the position of labels.

Inverter
Encoder
Servo
Main motor
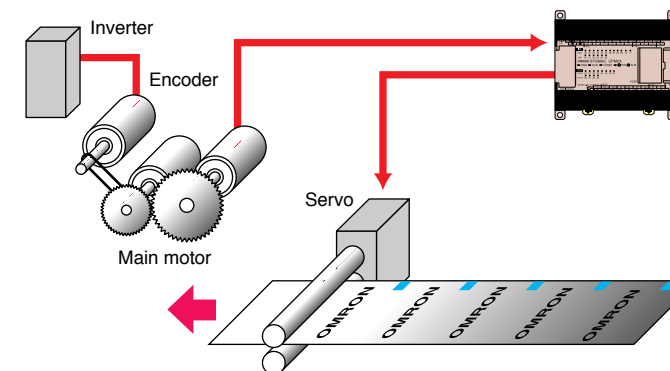
High-speed Processing

High-speed processing includes the 50-μs quick-response inputs, improved scan time (up to 500 program steps in 1 ms), and interrupts. Improved processing can increase productivity; for example, the timing between detection of a label mark and detection of the product can be adjusted.

Detection of Label Marks on High-speed Label Sheets

E3X-H High-speed Sensor
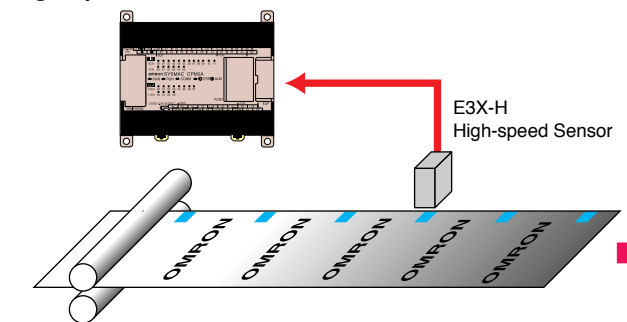
High-speed Counters
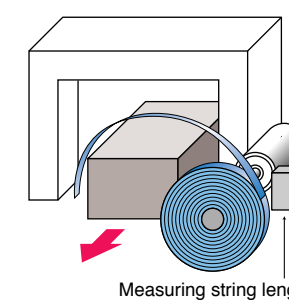
The CPM2A and CPM2C support one-axis high-speed counters (20-kHz single-phase or 5-kHz two-phase) and four-axis high-speed counters (2-kHz single-phase only). The length of workpieces such as cardboard or string can be measured at high speed.

- **Measure cardboard length.**
- **Measure string length.**

Measuring string length.

Analog Control

Analog control is possible using the Analog I/O Unit.

- Input from pressure sensors.
- Output to inverters.
- Interfaces with a wide range of devices.

2

3

Distribution Industry
Conveyor Belts

Faster and More Flexible Conveyor Operation

The CPM2A allows line additions, faster operation, and reduced system startup time.
For efficient distributed line control, the CPM2A provides the following Units:
CompoBus/S I/O Link Unit (8 input and 8 output links)
DeviceNet I/O Link Unit (32 input and 32 output links)
And the CPM2C provides the following Units:
CompoBus/S I/O Link Unit (8 input and 8 output links)
DeviceNet Programmable Slave (512 input and 512 output links)
With distributed control, the production line can be converted to modular systems for reduced startup time and higher line speeds.

Distributed Processing

Distributed control with the CompoBus/S and DeviceNet will reduce startup time and increase line speed.

Other Industries
Built-in Applications in Industries Other Than FA
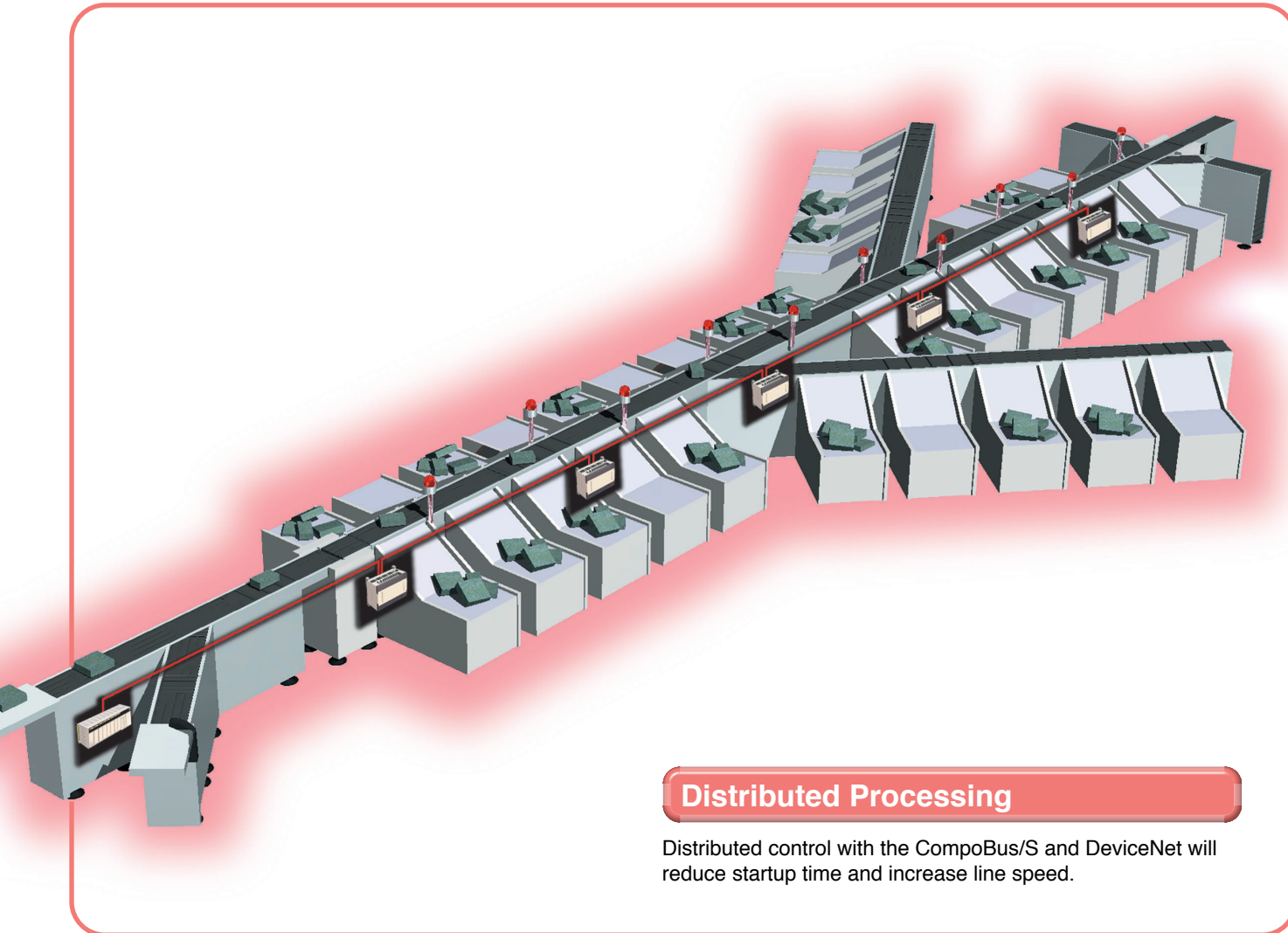
Supports Programmable Terminal Connections

The CPM2A and CPM2C provide a built-in RS-232C port to easily connect a Programmable Terminal for visual confirmation of operating conditions and debugging.
A Programming Console can also be connected to program and monitor the CPM2A/CPM2C.

CPM2A

PT

Programming Console   Peripheral port

RS-232C port

Programming Console

CPM2C -CIF01-V1   CPM2C CPU Unit

PT
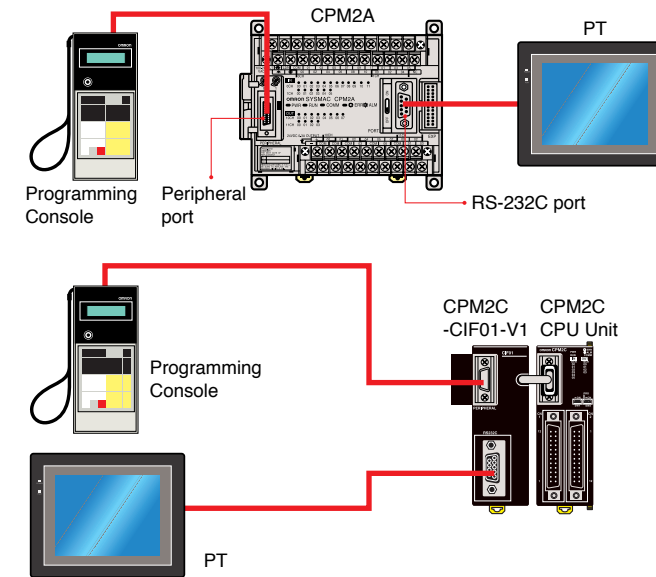
Example: Small Shrink-wrap Machine

Monitoring and Controlling Temperature

Mount a Temperature Sensor Unit to monitor and control temperatures using PID instruction operands and ON/OFF output signals sent with the PWM instruction. Use in combination with a PT for simple temperature monitoring and setting.

Raw Waste Processing Equipment
(Processing Garbage from Meal Centers)

PT

CPM2C

CPM2C Temperature Sensor Unit

PWM and other outputs   Temperature input

Position Control Functions

Adjust the Servomotor's feed rate.

Supports a one-axis pulse output (10 kHz) with trapezoidal acceleration and deceleration and two-axis simple pulse output.

■ Material output (fixed quantity output)
■ Adds a fixed quantity of the product.

Material movement
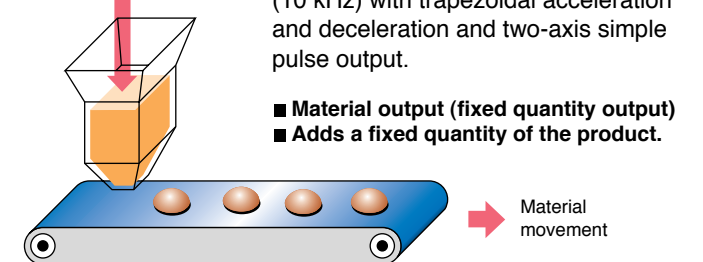
Built-in Clock

The internal clock and LONG TIMER instruction (with an SV of up to 99,990 seconds (27 hours, 46 minutes, and 30 seconds)) provide more effective data management.

Connections to Components

Data transfer between components and the CPM2C is easily achieved with the CPM2C-CIF21 Simple Communications Unit and a few initial settings.

Small Reflow Furnaces or Food Packaging Machines
■ Operations, including temperature settings, line speed, and inverter settings, can be easily made from a Programming Terminal (PT).
■ Setting and temperatures can be controlled.

PT or computer

RS485

RS232C

Temperature Sensor

3G3JV Inverter for conveyor control

CPM2C CPU Unit

● Monitoring is possible next to the heaters.
● Compensation leads can be shorter.

Easily Upgrade Machinery and Equipment

Line-Up | SYSMAC CPM2A

A variety of models are available to satisfy customer requirements for efficient machinery and production lines.
There are twelve models of CPU Unit with various combinations of power supplies (AC or DC), outputs (relay or transistor), and I/O points (20, 30, 40, or 60).
Choose the model that matches your application.
Expansion I/O Units are easy to connect to increase the number of I/O points.

20 I/O Points

90mm

130 mm

30 I/O Points

130 mm

40 I/O Points

90mm

150 mm

60 I/O Points

90mm

195 mm
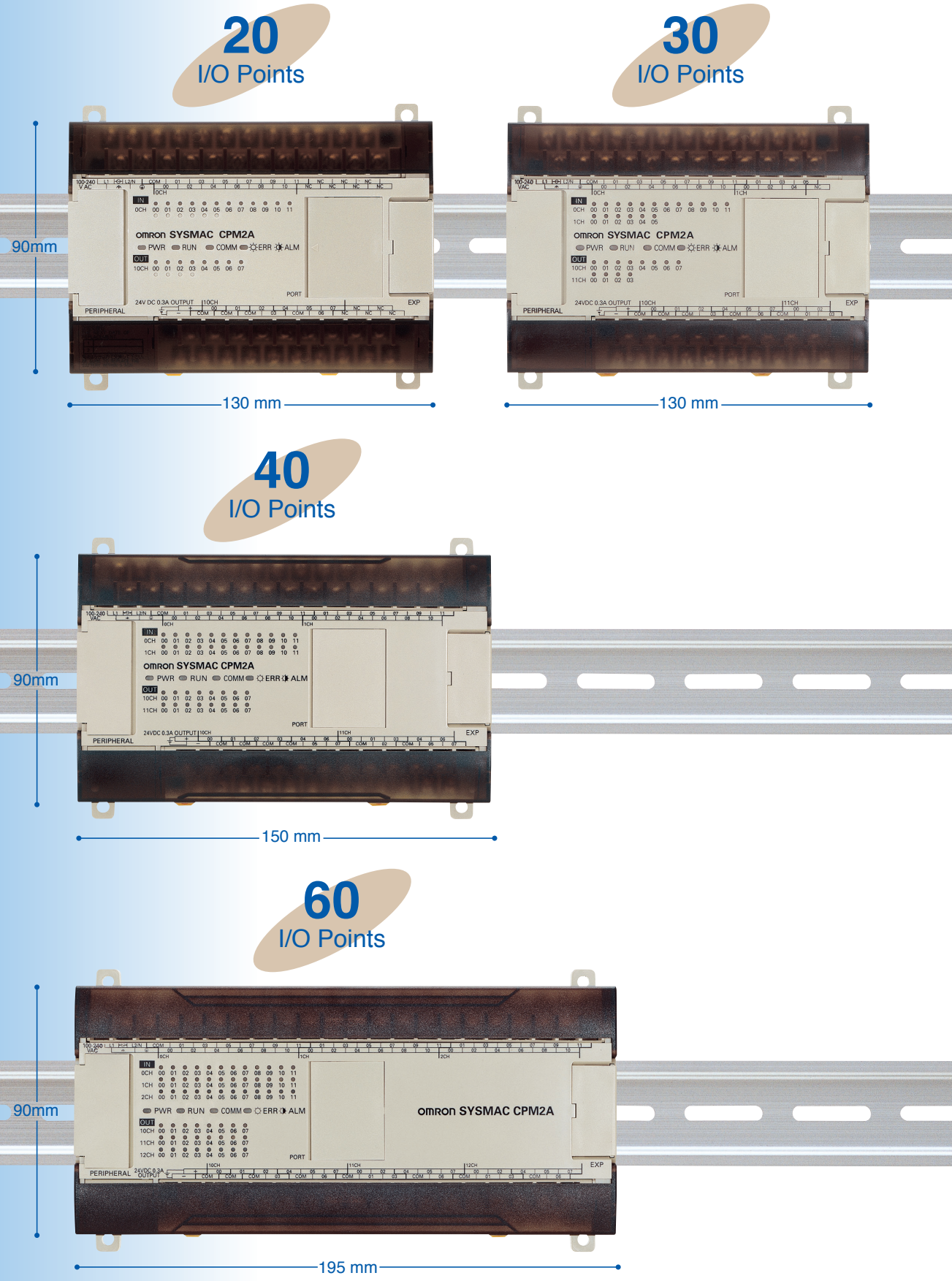
AC Power Supply Depth: 90 mm
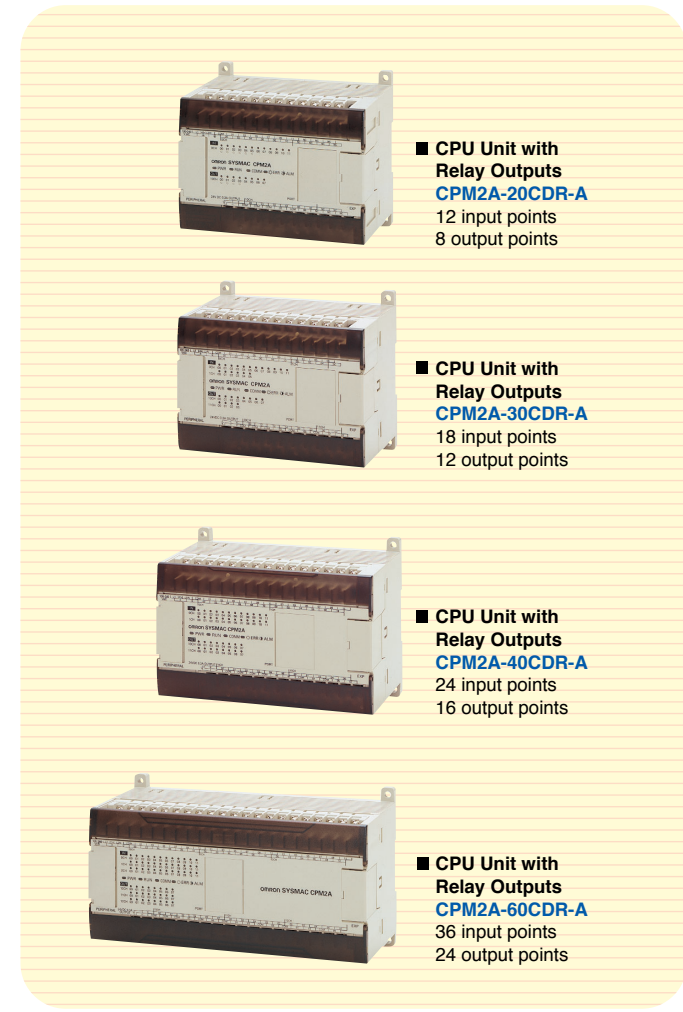
■ CPU Unit with Relay Outputs
CPM2A-20CDR-A
12 input points
8 output points

■ CPU Unit with Relay Outputs
CPM2A-30CDR-A
18 input points
12 output points

■ CPU Unit with Relay Outputs
CPM2A-40CDR-A
24 input points
16 output points

■ CPU Unit with Relay Outputs
CPM2A-60CDR-A
36 input points
24 output points

DC Power Supply Depth: 55 mm
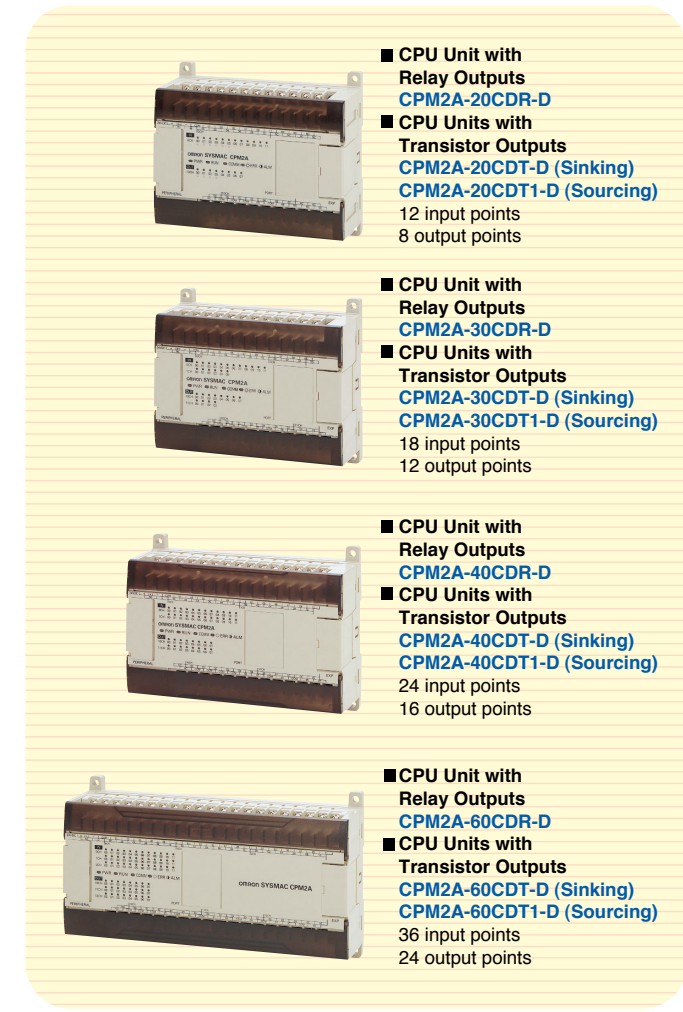
■ CPU Unit with Relay Outputs
CPM2A-20CDR-D
■ CPU Units with Transistor Outputs
CPM2A-20CDT-D (Sinking)
CPM2A-20CDT1-D (Sourcing)
12 input points
8 output points

■ CPU Unit with Relay Outputs
CPM2A-30CDR-D
■ CPU Units with Transistor Outputs
CPM2A-30CDT-D (Sinking)
CPM2A-30CDT1-D (Sourcing)
18 input points
12 output points

■ CPU Unit with Relay Outputs
CPM2A-40CDR-D
■ CPU Units with Transistor Outputs
CPM2A-40CDT-D (Sinking)
CPM2A-40CDT1-D (Sourcing)
24 input points
16 output points

■ CPU Unit with Relay Outputs
CPM2A-60CDR-D
■ CPU Units with Transistor Outputs
CPM2A-60CDT-D (Sinking)
CPM2A-60CDT1-D (Sourcing)
36 input points
24 output points

Model Numbers

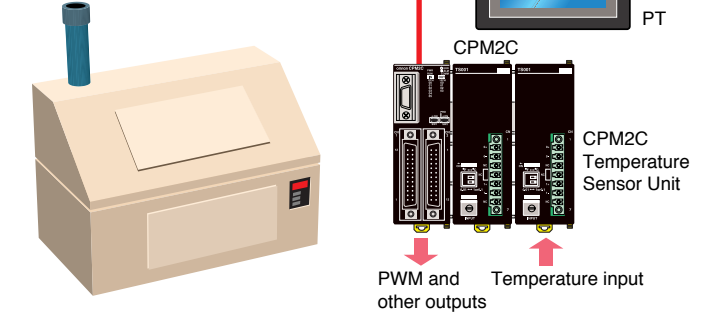| Name	Model number	Specifications
CPU Units with Relay Outputs (Built-in RS-232C port)	CPM2A-20CDR-A	20 I/O points, AC power supply
	CPM2A-20CDR-D	20 I/O points, DC power supply
	CPM2A-30CDR-A	30 I/O points, AC power supply
	CPM2A-30CDR-D	30 I/O points, DC power supply
	CPM2A-40CDR-A	40 I/O points, AC power supply
	CPM2A-40CDR-D	40 I/O points, DC power supply
	CPM2A-60CDR-A	60 I/O points, AC power supply
	CPM2A-60CDR-D	60 I/O points, DC power supply
CPU Units with Transistor Outputs (Built-in RS-232C port)	CPM2A-20CDT-D	20 I/O points (sinking outputs), DC power supply
	CPM2A-20CDT1-D	20 I/O points (sourcing outputs), DC power supply
	CPM2A-30CDT-D	30 I/O points (sinking outputs), DC power supply
	CPM2A-30CDT1-D	30 I/O points (sourcing outputs), DC power supply
	CPM2A-40CDT-D	40 I/O points (sinking outputs), DC power supply
	CPM2A-40CDT1-D	40 I/O points (sourcing outputs), DC power supply
	CPM2A-60CDT-D	60 I/O points (sinking outputs), DC power supply
	CPM2A-60CDT1-D	60 I/O points (sourcing outputs), DC power supply

Removable Terminal Blocks for Easy Maintenance

Removable terminal blocks* simplify PLC wiring.
(*CPU Unit only)

SYSMAC CPM2C

Despite its ultra-slim design, a CPM2C system can provide up to 192 I/O points!

A wide variety of models are available to provide very effective machine control in a surprisingly compact PLC.
CPU Units feature DC power supply and a wide range of model variations: Relay/transistor outputs, terminal blocks/connectors, clock functions, etc. I/O capacity can be selected according to the need of the application.
And select from Expansion I/O Units with 8, 10, 16, 20, 24, or 32 I/O points to build a PLC with an I/O capacity of up to 192 points.

Actual Size

Expansion I/O Units

- **CPM1A-8ED**
  8 input points
  DC inputs
- **CPM1A-8ET**
  8 input points
  Transistor outputs (sinking)
- **CPM1A-8ER**
  8 output points
  Relay outputs
- **CPM1A-8ET1**
  8 output points
  Transistor outputs (sourcing)

- **CPM1A-20EDR1**
  12 DC inputs
  8 relay outputs
- **CPM1A-20EDT**
  12 DC inputs
  8 transistor outputs (sinking)
- **CPM1A-20EDT1**
  12 DC inputs
  8 transistor outputs (sourcing)

NEW
- **CPM1A-40EDR**
  24 DC inputs
  16 relay outputs
- **CPM1A-40EDT**
  24 DC inputs
  16 transistor outputs (sinking)
- **CPM1A-40EDT1**
  24 DC inputs
  16 transistor outputs (sourcing)

DeviceNet I/O Link Unit

- **DeviceNet I/O Link Unit**
  CPM1A-DRT21
  32 input points
  32 output points

CompoBus/S I/O Link Unit

- **CompoBus/S I/O Link Unit**
  CPM1A-SRT21
  8 input points
  8 output points

Analog I/O Unit

- **Analog I/O Unit**
  CPM1A-MAD11
  2 analog inputs (resolution: 6,000)
  1 analog output (resolution: 6,000)
- **Analog I/O Unit**
  CPM1A-MAD01
  2 analog inputs (resolution: 256)
  1 analog output (resolution: 256)
- **Analog I/O Unit** NEW
  CPM1A-AD041
  4 analog inputs
  (resolution: 6,000)
- **Analog I/O Unit** NEW
  CPM1A-DA041
  4 analog outputs
  (resolution: 6,000)

Model Numbers

Name	Model number	Specifications
Expansion I/O Units	CPM1A-8ED	8 DC inputs
	CPM1A-8ER	8 relay outputs
	CPM1A-8ET	8 transistor outputs (sinking)
	CPM1A-8ET1	8 transistor outputs (sourcing)
	CPM1A-20EDR1	12 DC inputs, 8 relay outputs
	CPM1A-20EDT	12 DC inputs 8 transistor outputs (sinking)
	CPM1A-20EDT1	12 DC inputs 8 transistor outputs (sourcing)
	CPM1A-40EDR	24 DC inputs, 16 relay outputs
	CPM1A-40EDT	24 DC inputs 16 transistor outputs (sinking)
	CPM1A-40EDT1	24 DC inputs 16 transistor outputs (sourcing)
DeviceNet I/O Link Unit	CPM1A-DRT21	32 inputs, 32 outputs
CompoBus/S I/O Link Unit	CPM1A-SRT21	8 inputs, 8 output
Analog I/O Units	CPM1A-MAD11	2 analog inputs (resolution: 6,000) 1 analog output (resolution: 6,000)
	CPM1A-MAD01	2 analog inputs (resolution: 256) 1 analog output (resolution: 256)
	CPM1A-AD041	4 analog inputs (resolution: 6,000)
	CPM1A-DA041	4 analog outputs (resolution: 6,000)
Temperature Sensor Units	CPM1A-TS001	2 thermocouple inputs
	CPM1A-TS002	4 thermocouple inputs
	CPM1A-TS101	2 platinum resistance thermometer inputs
	CPM1A-TS102	4 platinum resistance thermometer inputs

Temperature Sensor Units

- **Temperature Sensor Units**
  CPM1A-TS001
  2 thermocouple inputs
  CPM1A-TS002
  4 thermocouple inputs
- **Temperature Sensor Units**
  CPM1A-TS101
  2 platinum resistance thermometer inputs
  CPM1A-TS102
  4 platinum resistance thermometer inputs

CPU Units

10 I/O Points
CPM2C-10CDR-D
CPU Unit
(I/O terminal block)

20 I/O Points
CPM2C-20CDR-D
CPU Unit
(I/O terminal block)

10 I/O Points
CPM2C-10CDTC-D
CPU Unit
(I/O connector)

20 I/O Points
CPM2C-20CDTC-D
CPU Unit
(I/O connector)

32 I/O Points
CPM2C-32CDTC-D
CPU Unit
(I/O connector)

90 mm

33 mm   33 mm   33 mm   33 mm   33 mm

CPU Units with 10 I/O Points

■ **CPU Units with Relay Outputs**
(I/O terminal block)
CPM2C-10C(1)DR-D
6 DC inputs
4 outputs

■ **CPU Unit with Transistor Outputs** (sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-10C(1)DT(1)C-D
[MIL connector]
CPM2C-10C(1)DT(1)M-D
6 DC inputs
4 outputs

CPU Units with 20 I/O Points

■ **CPU Unit with Relay Outputs**
(I/O terminal block)
CPM2C-20C(1)DR-D

■ **CPU Unit with Transistor Outputs** (sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-20C(1)DT(1)C-D
[MIL connector]
CPM2C-20C(1)DT(1)M-D
12 DC inputs
8 outputs

CPU Units with 32 I/O Points

■ **CPU Unit with Transistor Outputs**
(sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-32CDT(1)C-D
[MIL connector]
CPM2C-32CDT(1)M-D
16 DC inputs
16 outputs

Programmable Slave and CPU Unit with CompoBus/S Master

■ **Programmable Slave**
■ **CPU Unit with Transistor Outputs**
(sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-S1□0C-DRT
6 DC inputs
4 outputs

■ **CPU Unit with CompoBus/S Master**
■ **CPU Unit with Transistor Outputs**
(sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-S1□0C
6 DC inputs
4 outputs

Power Supply Unit

■ **AC Power Supply Unit**
CPM2C-PA201
Input: 100 to 240 VAC
Output: 24 VDC/600 mA

Simple Communications Unit

■ **Simple Communications Unit**
CPM2C-CIF21
Connect to RS-485 components
RS-232C

Adapter Units

■ **Peripheral/RS-232C Adapter Unit**
CPM2C-CIF01-V1

■ **RS-422/RS-232C Adapter Unit**
CPM2C-CIF11

Analog I/O Unit

■ **Analog I/O Unit**
CPM2C-MAD11
2 analog inputs
(resolution: 6,000)
1 analog output
(resolution: 6,000)

Temperature Sensor Units

■ **Temperature Sensor Unit**
CPM2C-TS001
2 thermocouple inputs

■ **Temperature Sensor Unit**
CPM2C-TS101
2 platinum resistance thermometer inputs

CompoBus/S I/O Link Unit

■ **CompoBus/S I/O Link Unit**
CPM2C-SRT21
8 input points
8 output points

Expansion I/O Units

Expansion I/O Units
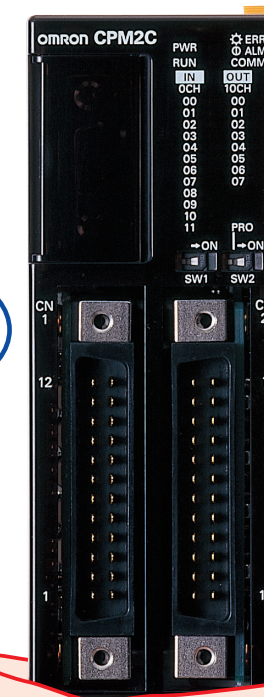
■ **Relay Output I/O Unit**
(I/O terminal block)
CPM2C-10EDR
6 DC inputs
4 outputs

■ **Relay Output I/O Unit**
(I/O terminal block)
CPM2C-20EDR
12 DC inputs
8 outputs

CPM2C-24EDT(1)C

■ **Transistor Output I/O Unit**
(sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-24EDT(1)C

■ **Transistor Output I/O Unit**
(sinking/sourcing)
[MIL connector]
CPM2C-24EDT(1)M
16 DC inputs
8 outputs

CPM2C-24EDT(1)C

■ **Transistor Output I/O Unit**
(sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-32EDT(1)C

■ **Transistor Output I/O Unit**
(sinking/sourcing)
[MIL connector]
CPM2C-32EDT(1)M
16 DC inputs
8 outputs

Expansion Output Units

■ **Relay Output I/O Unit**
CPM2C-8ER
(I/O terminal block)
8 relay outputs

CPM2C-8ET(1)C

■ **Transistor Output I/O Unit** (sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-8ET(1)C

■ **Transistor Output I/O Unit** (sinking/sourcing)
[MIL connector]
CPM2C-8ET(1)M
8 outputs

■ **Transistor Output I/O Unit** (sinking/sourcing)
[Fujitsu-compatible connector]
CPM2C-16ET(1)C

■ **Transistor Output I/O Unit** (sinking/sourcing)
[MIL connector]
CPM2C-16ET(1)M
16 outputs

CPM2C-16ET(1)C

Expansion Input Units

■ **I/O Unit**
[Fujitsu-compatible connector]
CPM2C-8EDC

■ **I/O Unit**
[MIL connector]
CPM2C-8EDM
8 DC inputs

CPM2C-8EDC

■ **I/O Unit**
[Fujitsu-compatible connector]
CPM2C-16EDC

■ **I/O Unit**
[MIL connector]
CPM2C-16EDM
16 DC inputs

CPM2C-16EDC

MIL Connectors for Transistor Outputs
(Not available on Programmable Slave or CPU Unit with CompoBus/S Master.)

Standard Models

Unit		Model number	Specifications	Clock
CPU Units with 10 I/O points	I/O terminal block	CPM2C-10C(1)DR-D	6 inputs (24-VDC), 4 relay outputs	Yes / No
	I/O connector	CPM2C-10C(1)DT(1)□-D	6 DC inputs 4 transistor outputs (sinking/sourcing)	Yes / No
CPU Units with 20 I/O points	I/O terminal block	CPM2C-20C(1)DR-D	12 inputs (24-VDC), 8 relay outputs	Yes / No
	I/O connector	CPM2C-20C(1)DT(1)□-D	12 DC inputs 8 transistor outputs (sinking/sourcing)	Yes / No
CPU Units with 32 I/O points	I/O connector	CPM2C-32CDT(1)□-D	16 DC inputs 16 transistor outputs (sinking/sourcing)	No
Programmable Slave (connector)		CPM2C-S1□0C-DRT	With CompoBus/S Master With DeviceNet Slave 6 inputs (24-VDC) 4 transistor outputs (sinking/sourcing)	Yes
CPU Unit with CompoBus/S Master		CPM2C-S1□0C	With CompoBus/S Master 6 inputs (24-VDC) 4 transistor outputs (sinking/sourcing)	Yes
Expansion I/O Units	I/O terminal block	CPM2C-10EDR	6 inputs (24-VDC) 4 relay outputs	
		CPM2C-20EDR	12 inputs (24-VDC) 8 relay outputs	
	I/O connector	CPM2C-24EDT(1)□	16 inputs (24-VDC) 8 transistor outputs (sinking/sourcing)	
		CPM2C-32EDT(1)□	16 inputs (24-VDC) 16 transistor outputs (sinking/sourcing)	
Expansion Input Units	I/O connector	CPM2C-8ED□	8 inputs (24-VDC)	
		CPM2C-16ED□	16 inputs (24-VDC)	
Expansion Output Units	I/O terminal block	CPM2C-8ER	8 relay outputs	
	I/O connector	CPM2C-8ET(1)□	8 transistor outputs (sinking/sourcing)	
		CPM2C-16ET(1)□	16 transistor outputs (sinking/sourcing)	
Analog I/O Unit		CPM2C-MAD11	2 analog inputs (resolution: 6,000) 1 analog output (resolution: 6,000)	
Temperature Sensor Units		CPM2C-TS001	2 thermocouple inputs	
		CPM2C-TS101	2 platinum resistance thermometer inputs	
CompoBus/S I/O Link Unit		CPM2C-SRT21	8 input points 8 output points	
AC Power Supply Unit		CPM2C-PA201	Input: 100 to 240 VAC Output: 24 VDC/600 mA	
Simple Communications Unit		CPM2C-CIF21	Connects to RS-485 components RS-232C	
Peripheral/RS232C Adapter Unit		CPM2C-CIF01-V1	Level conversion for peripheral port	
RS-422/RS-232C Adapter Unit		CPM2C-CIF11	Level conversion for peripheral port	

Serial Devices Connect Easily to the Built-in RS-232C Port

The built-in RS-232C port simplifies connections to serial devices and enables faster startup and program debugging from Programming Devices.

PT Connection

Compatible with the OMRON Programmable Terminal's Programming Console functions. Maintenance is simplified with the on-screen programming operations.

CPM2A
PT
XW2Z-200T (2m)
XW2Z-500T (5m)
RS-232C Port

Host Link

Host computer
CPM2A
Command
Response

Host computer
3G2A9-AL004-E Link Adapter
Command
Response

NT-AL001 RS-232C/422 Adapter
CPM1-CIF11 RS-422 Adapter
NT-AL001 RS-232C/422 Adapter

CPM2A
CPM2A
CPM2A

One-to-one Link

CPM2A
CPM2A
RS-232C cable

	Link area		Link area		
Write	LR 00	Write area	Read area	LR 00	Read
	LR 07			LR 07	
	LR 08			LR 08	
Read	LR 15	Read area	Write area	LR 15	Write

No-protocol Communications

Standard serial devices, such as bar code readers, can be connected with no-protocol communications.

CPM2A
Bar code reader

Complete Communications with Host Computers, Other PLCs, and Programmable Terminals

Simultaneous RS-232C and Programming Console Connections

By using the CPM2C-CIF01-V1 Peripheral/RS-232C Adapter Unit or the CPM2C-CN111 Connecting Cable, a Programming Device can be used while the CPU Unit is connected to another device via RS-232C.
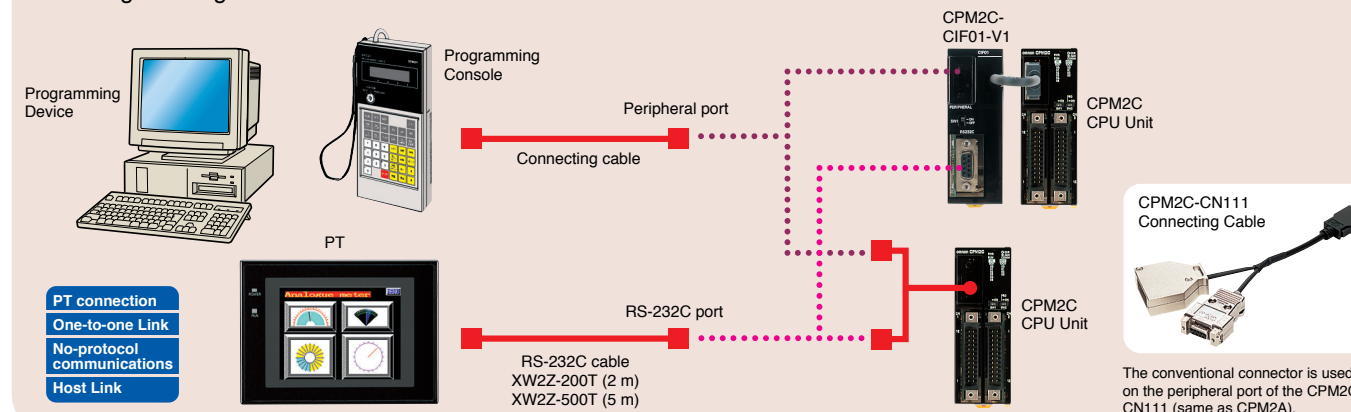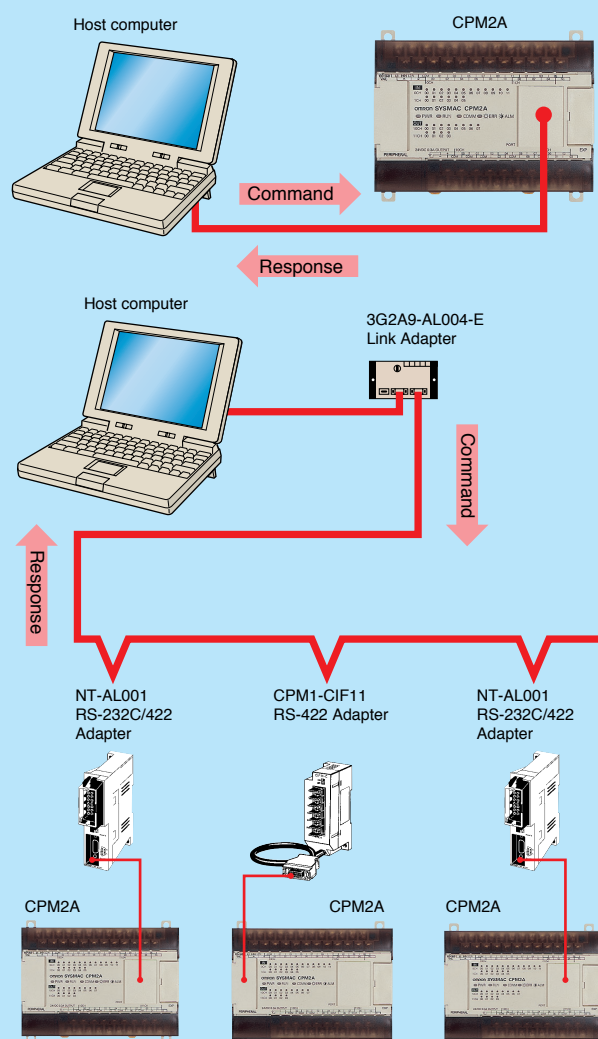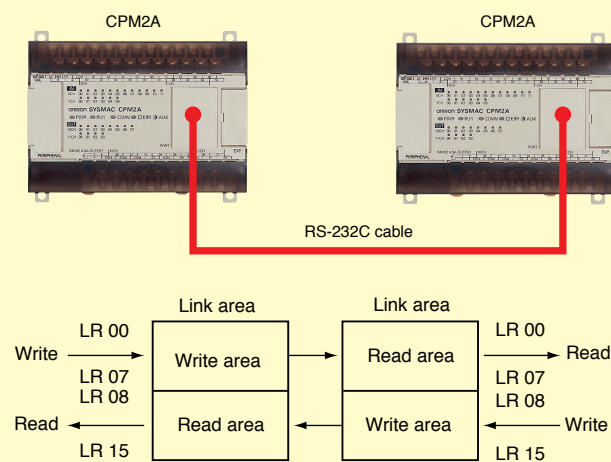
Programming Device
Programming Console
Connecting cable
Peripheral port
CPM2C-CIF01-V1
CPM2C CPU Unit

PT
RS-232C port
RS-232C cable
XW2Z-200T (2 m)
XW2Z-500T (5 m)
CPM2C CPU Unit

PT connection
One-to-one Link
No-protocol communications
Host Link

CPM2C-CN111 Connecting Cable

The conventional connector is used on the peripheral port of the CPM2C-CN111 (same as CPM2A).

Host Link

I/O memory and operating mode data can be transferred between a host computer and the CPM2C via a Host Link.

Host computer
CPM2C
Command
Response

1:N communications are possible using the CPM2C-CIF11 RS-422/RS-232C Adapter Unit.

Host computer
3G2A9-AL004-E Link Adapter
Command
Response

RS-422 port (peripheral port)
RS-232C port

PT connection
One-to-one Link
No-protocol communications
Host Link

CPM2C-CIF11
CPM2C
CPM2C
CPM2C

PT Connection

An OMRON Programmable Terminal can be connected with direct access.

PT
CPM2C
XW2Z-200T (2 m)
XW2Z-500T (5 m)
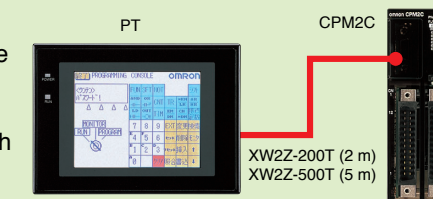
One-to-one Link

A 1:1 PLC Link connection can be established with another CPM2C, or a CQM1(H), CPM1, CPM1A, CPM2A, SRM1(-V2), C200HS, or C200HX/HG/HE PLC.
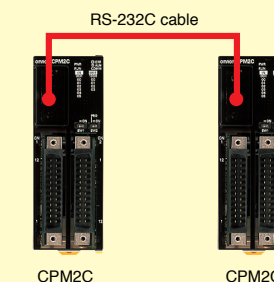
RS-232C cable
CPM2C
CPM2C

No-protocol Communications

Standard serial devices, such as bar code readers, can be connected with no-protocol communications.

Bar code reader
CPM2C
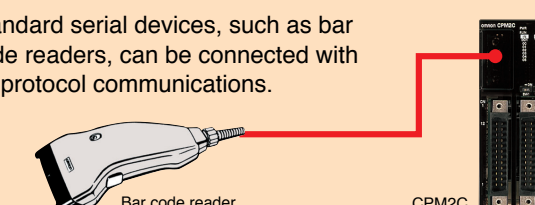
Further improvements to programming environment and instructions.

Programming is possible with the Programming Devices used with other PLCs,
such as personal computers or Programming Consoles,
and the operations can be performed in the same environment.
Version 1.2 or higher of the CX-Programmer supports the CPM2A and CPM2C.

Windows-based Support Software Available

Reduce costs by creating and editing programs with the CX-Programmer, Windows-based software
that features a wide variety of monitor display and debugging functions.
Existing Windows applications can also be used in this significantly improved programming environment.
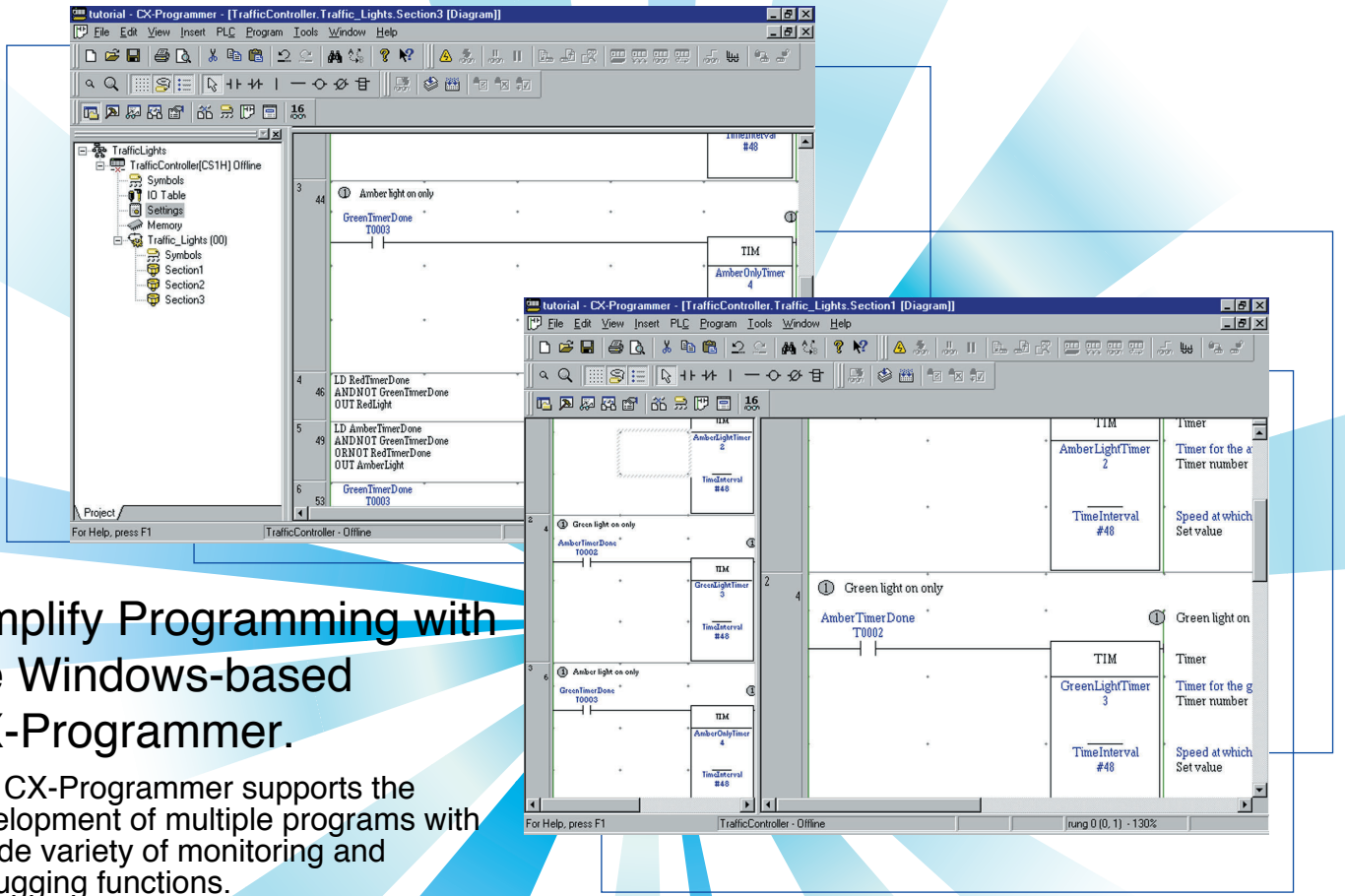
Simplify Programming with the Windows-based CX-Programmer.

The CX-Programmer supports the development of multiple programs with a wide variety of monitoring and debugging functions.

● Ease of operation.
● A wide variety of display and monitoring functions.
● Effective debugging functions.
● Remote programming and monitoring.
● Maintenance functions.
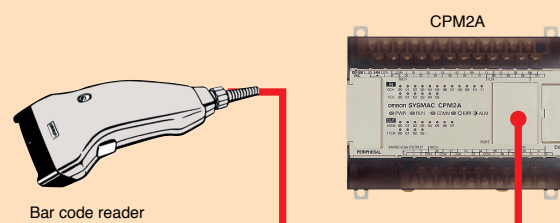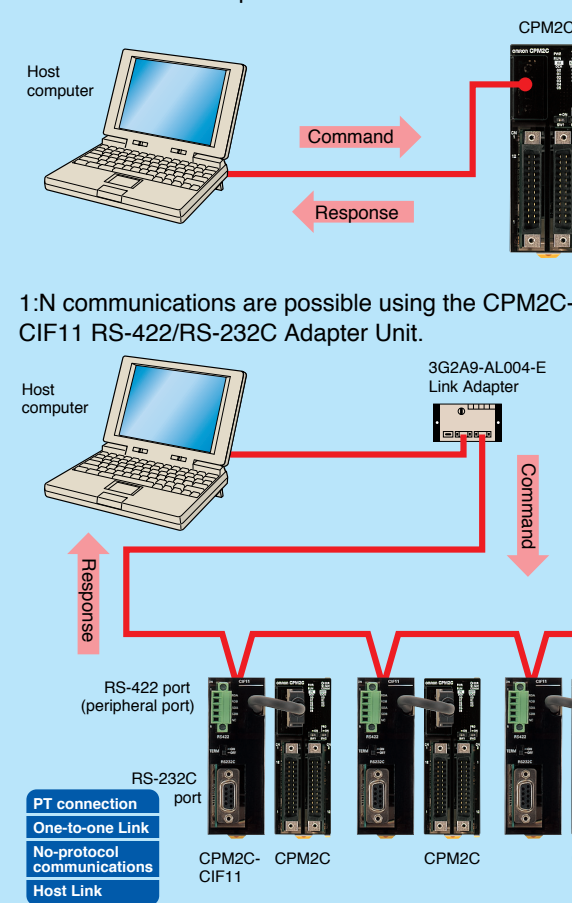● Use of existing Windows applications.

WS02-CXPC1-EJ-V3□ Offers the Same Functionality at a Low Cost Designed Solely for CPM1A, CPM2□, and SRM1 Micro PLCs

CS1W-CIF31 USB/Serial Conversion Cable

Computer (USB port)   CS1W-CIF31   RS-232C   Connecting Cable

Precautions

Using the SYSMAC Support Software (SSS)
Set the PLC model to "CQM1."
The SYNC (SYNCHRONIZED PULSE CONTROL), TIML (LONG TIMER), and TMHH (ONE-MS TIMER) instructions can be used by transferring expansion instructions from the CPM2A/CPM2C to the SSS.

For details, refer to the CPM2A Operation Manual (W352) or the CPM2C Operation Manual (W356). All the instructions can be used with the Programming Console.

Programming Console Connection Examples

The Programming Console connects to the peripheral port of the CPU Unit.

CQM1-PRO01-E Programming Console

SYSMAC CPM2A

CQM1-PRO01-E   Attached cable (2 m)   CPM2A   Peripheral port

C200H-PRO27-E Programming Console

Connecting Cable C200H-CN222 (2 m) C200H-CN422 (4 m)   CPM2A

C200H-PRO27-E   Peripheral port

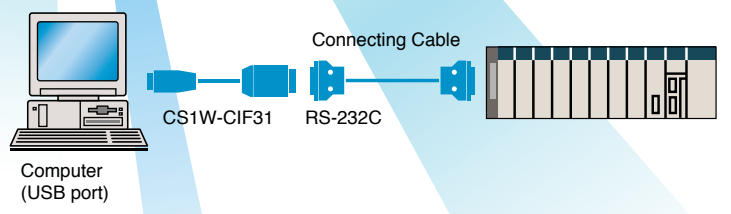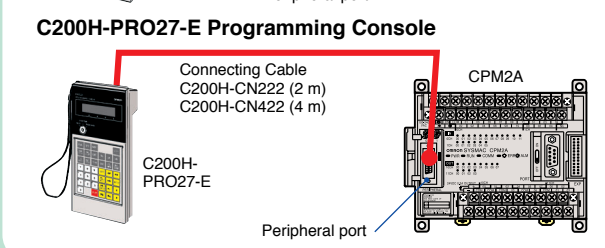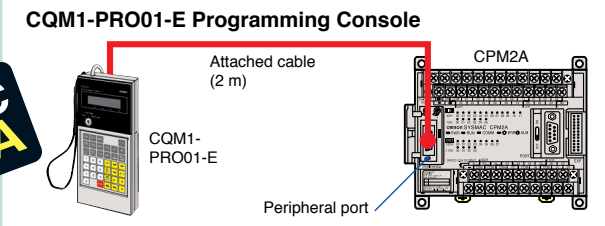### Support Software Connection Example

Connecting to the CPM2A's Peripheral Port

CPM2A   CQM1-CIF02   Computer   Peripheral port
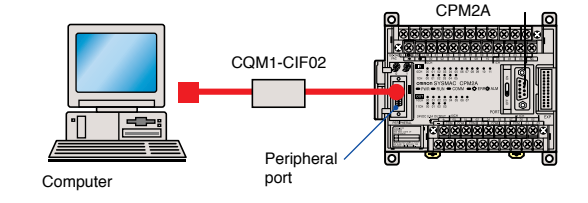
Connecting to the CPM2A's RS-232C Port

CPM2A   XW2Z-□00S-V   Computer   RS-232C port
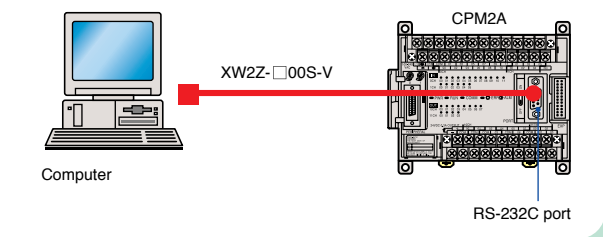
Programming Console Connection Examples

The Programming Console connects to the CPU Unit or CPM2C-CIF01-V1 Peripheral/RS-232C Adapter Unit through a Connecting Cable.

SYSMAC CPM2C

Attached cable (2 m)   CPM2C CPU Unit

CQM1-PRO01-E   CS1W-CN114 Connecting Cable   CPM2C-CIF01-V1 CPM2C CPU Unit

C200H-PRO27-E   Connecting Cable C200H-CN222/CN422
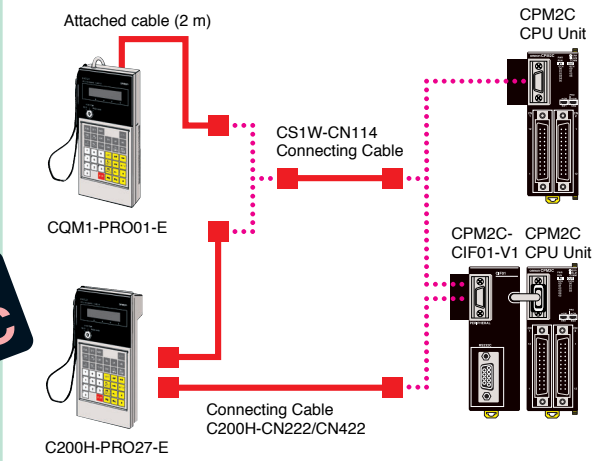
Support Software Connection Example

SYSMAC Support Software (SSS) for MS-DOS or SYSMAC-CX-P (version 1.2 onwards) for Windows can be used. Whichever is used, the computer connects to the CPU Unit or the CPM2C-CIF01-V1 Peripheral/RS-232C Adapter Unit through a Connecting Cable.

Connecting Cable CS1W-CN226/CN626   CPM2C CPU Unit

RS-232C Adapter CQM1-CIF02   CS1W-CN114 Connecting Cable   (See note.)

Computer   CS1W-CN118 Connecting Cable   CPM2C-CIF01-V1 CPM2C CPU Unit

RS-232C Connecting Cable XW2Z-200S-V/500S-V XW2Z-200S-CV/500S-CV
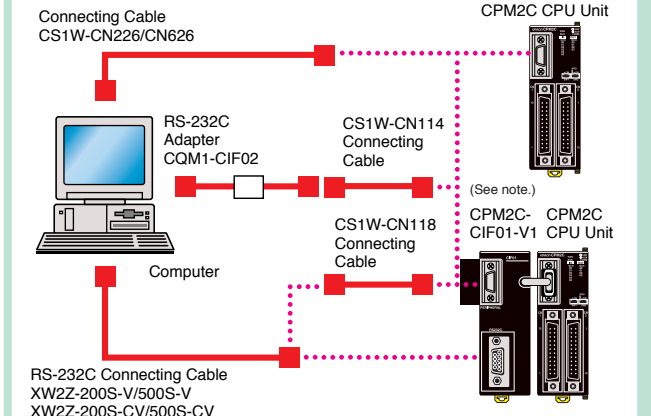
Note: The CS1W-CN226/CN626 Connecting Cable cannot be used for the CPM2C-CIF01 Peripheral/RS-232C Adapter Unit. When using the CS1W-CN226/CN626 Connecting Cable, use the CPM2C-CIF01-V1 Peripheral/RS-232C Adapter Unit.

Examples of Programming Console/Support Software Connection Using CPM2C-CN111 Connecting Cable

CQM1-PRO01-E   Attached cable (2 m)   Peripheral port   CPM2C CPU Unit

C200H-PRO27-E   Connecting Cable C200H-CN222/CN422   RS-232C Adapter CQM1-CIF02   CPM2C-CN111 Connecting Cable

Computer   RS-232C cable

WWW.BSNEW.IR
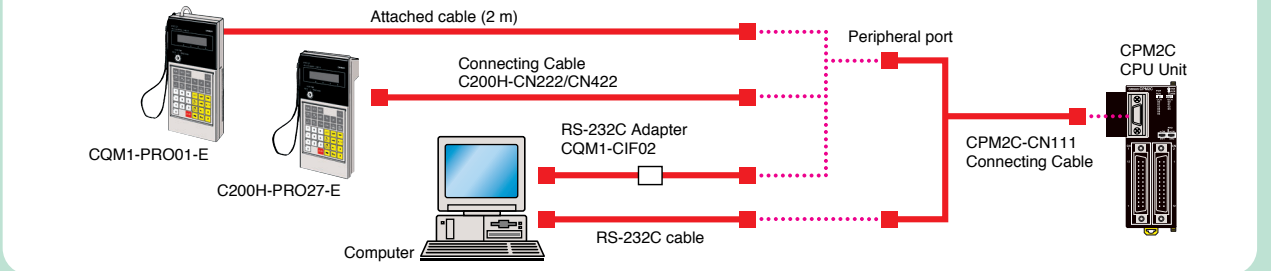
And Now a Slave with the Composite Functionality Required for Distributed Blocks

CompoBus/S Master Increases Efficiency and Expandability in Small-scale Control Systems

Programmable Slave CPM2C-S100C/110C-DRT

The Programmable Slave enables handling a block of sensors, actuators, and other devices as a single DeviceNet slave. Powerful support for distributed control is further strengthened by the ability to standardize programming in units and reduce the programming load on the master. I/O and operation checks can also be performed by unit to eliminate the need to assemble the entire system before starting system debugging.

Features

The Programmable Slave provides DeviceNet and PLC functionality along with expandability to handle a wide range of applications.

- 2-ms cycle time for 500 programming steps
- High-speed counters
- Pulse outputs
- Interrupt inputs
- 256 timers/counters
- Clock/calendar

DeviceNet™

Multi-word I/O links and a message service enable controlling Slave data from the master. Message communications easily handle data, such as log data, that does not need to be sent continuously.

- 1,024-pt I/O link
- Explicit messages
- DeviceNet-CompoBus/S gateway

RS-232C

Connect to bar code readers or PTs and process data at the Slave to reduce the load on the master.

- No-protocol communications
- NT Links
- Host Links

Expansion Units (3 max.)

One Unit handles a distributed block. High-density capability eliminates the need for communications, reducing costs.

- Digital I/O
- Temperature Sensor
- Relay Output
- Power Supply
- Analog I/O

CompoBus/S

Reduce wiring for remote locations (e.g., signal lights, pushbuttons), expansion terminal blocks, and solenoid valves. Connect with VCTF cable or easy-to-branch flat cable.

- 256-pt (128/128) expansion
- Long-distance mode: 6 ms at 500 m
- High-speed mode: 0.8 ms at 100 m
- VCTF/flat cable wiring
- Complete lineup

Open Multivendor Network: DeviceNet™

A DeviceNet network runs under the PLC to enable more intelligent control of production lines and equipment.

Simple, Flexible Wiring

- Distributed control of up to 63 slaves in multidrop, T-branch, branch line, or star connections.
- Max. trunk length: 500 m, Max. branch length: 6 m, Max. total branch length: 129 m
- Standard communications cables and connectors for each installation.

Versatile Communications Methods

- Use remote I/O or message communications to handle both ON/OFF data and device parameters

A Completely Open Network with a Wealth of Available Slaves

- Remote I/O, analog devices, temperature controllers, inverters, motion devices, displays, and PLCs can be connected to achieve the ideal distributed system.
- Multivendor product lineups are also available for valves, robots, load cells, and many other devices.

Advanced Support

- All devices have defined profiles and network devices provide interchangeability and compatibility.

- All devices provide information in EDS files to enable smooth setting of device parameters and easy maintenance.

Standardization of Programs and Operations in a Multivendor Environment

- EDS files and configurators can be used to provide consistent setting methods. Files can be saved and read to make setting up the system even easier.

CMP2C-S100C/-S110C CPU Units with CompoBus/S Master

Super Compact to Fit Onsite
The CompoBus/S Master and 10 I/O points all come in a package only 40 x 90 x 65 mm large (WxHxD), yet provides the versatile expandability required to meet onsite needs.

A Lineup of Expansion I/O Units to Reduce Costs
Up to three Expansion I/O Units can be combined with I/O terminals connected via CompoBus/S to reduce wiring both inside and outside the control panel. Reduced panel size is accompanied by lower costs for cables, terminal blocks, and wiring work.

Easier Designing, Modifications, and Expansions
CompoBus/S Remote I/O Terminals can be used as terminal blocks to increase I/O speed and reduce wiring. Expandability can be designed into the system to facilitate later modifications or expansions.

Built-in Clock/Calendar for Easier Machine Management
Collected data and error logs can be time-stamped, or weekly timers can be set up as required by the application.

Control Panel

PT

Terminal Block

Master

Valves

Machine

Machine

Master   I/O Link Unit

CompoBus/S

The CompoBus/S High-speed ON/OFF Bus

Build a high-speed remote I/O system under the PLC to reduce wiring for in-machine sensors and actuators.

Use the High-speed or the New Long-distance Communications Mode.

- High-speed Mode: 100-m communications distance at 750 kbits/s (using 2-conductor VCTF cable)
- Long-distance Mode: 500-m communications distance at 93.75 kbits/s (using 2-conductor VCTF cable)

High-speed Remote I/O Communications: 1 ms Max.

- The High-speed Communications Mode achieves a communications cycle of 1 ms maximum for 32 slaves with 128 input and 128 output points, and 0.5 ms maximum for 16 slaves with 64 input and 64 output points.

Remote I/O

CompoBus/S
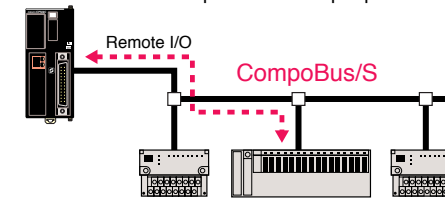
Special Cables to Reduce Wiring

- Connect with special flat cable or VCTF cable.

Complete Lineup of Slaves

- Connect contact I/O, contact I/O modules, or sensor inputs (photoelectric or proximity). Analog inputs and analog outputs are also supported.

Long-distance Mode for Flexible Branching with Special Flat Cable or 4-conductor VCTF Cable

- Completely flexible branching can be achieved for a total wiring length of up to 200 m.

CPM2A Specifications

■ CPM2A General Specifications

Item		CPU Units with 20 I/O points	CPU Units with 30 I/O points	CPU Units with 40 I/O points	CPU Units with 60 I/O points
Supply voltage	AC power	100 to 240 VAC, 50/60 Hz			
	DC power	24 VDC			
Operating voltage range	AC power	85 to 264 VAC			
	DC power	20.4 to 26.4 VDC			
Power consumption	AC power	60 VA max.			
	DC power	20 W max. (See separate table following this one for details.)			
Inrush current	AC power	60 A max.			
	DC power	20 A max.			
External power supply (AC power supplies only)	Supply voltage	24 VDC			
	Output capacity	300 mA (See notes 1, 2, 3.)			
Insulation resistance		20 MΩ min. (at 500 VDC) between the external AC terminals and protective earth terminals			
Dielectric strength		2,300 VAC 50/60 Hz for 1 min between the external AC and protective earth terminals, leakage current: 10 mA max.			
Noise immunity		Conforms to IEC61000-4-4, 2 kV (power lines)			
Vibration resistance		10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8 m/s^2 in X, Y, and Z directions for 80 minutes each (Time coefficient; 8 minutes × coefficient factor 10 = total time 80 minutes)			
Shock resistance		147 m/s^2 three times each in X, Y, and Z directions			
Ambient temperature		Operating: 0° to 55°C Storage: –20° to 75°C			
Humidity		10% to 90% (with no condensation)			
Atmosphere		Must be free from corrosive gas			
Terminal screw size		M3			
Power interrupt time		AC power supply: 10 ms min. DC power supply: 2 ms min.			
CPU Unit weight	AC power	650 g max.	700 g max.	800 g max.	1,000 g max.
	DC power	550 g max.	600 g max.	700 g max.	900 g max.
Expansion Unit weight		Units with 40 I/O Points: 380 g max. Units with 20 I/O Points: 300 g max. Units with 8 Output Points: 250 g max. Units with 8 Input Points: 200 g max. MAD01 Analog I/O Unit: 150 g max. MAD11 Analog I/O Unit: 250 g max. AD041 Analog Input Unit: 200 g max. DA041 Analog Output Unit: 200 g max. Temperature Sensor Units 250 g max. CompoBus/S I/O Link Units: 200 g max. DeviceNet I/O Link Unit: 200 g max.			

Note:
1. Use the external power supply as the power supply for input devices only. (It cannot be used as to drive output devices.)
2. If the external power supply current exceeds the rated current, or there is a short-circuit, the external power supply voltage will drop and PC operation will stop.
3. If there are 3 CPM1A-MAD11 Units mounted to a CPM2A-60CDR-A, the current for the external power supply must not exceed 200 mA.

CPM2A Specifications

Power Consumption for CPM2A CPU Units with DC Power Supplies

Use the following information when computing CPM2A power capacities.

CPM2A CPU Unit	Power consumption (W)
CPM2A-20CDR-D	4
CPM2A-30CDR-D	4.5
CPM2A-40CDR-D	6
CPM2A-60CDR-D	7.5
CPM2A-20CDT/T1-D	3.5
CPM2A-30CDT/T1-D	4
CPM2A-40CDT/T1-D	4.5
CPM2A-60CDT/T1-D	5

CPM1A Expansion I/O Unit or Expansion Unit	Power consumption (W)
CPM1A-40EDR	3.5
CPM1A-40EDT/T1	1.5
CPM1A-20EDR1	2.5
CPM1A-20EDT/T1	1.5
CPM1A-8ED	1
CPM1A-8ER	2
CPM1A-8ET/T1	1
CPM1A-DRT21	1
CPM1A-SRT21	1
CPM1A-MAD01/MAD11	3.5
CPM1A-AD041	3
CPM1A-DA041	3.3
CPM1A-TS001/TS101	3
CPM1A-TS002/TS102	3

Note: When calculating the total power consumption, it is also necessary to include the power consumption of Programming Consoles, RS-232C Adapter Units, and other devices.

■ CPM2A Characteristics

Item		Specification			
Control method		Stored program method			
I/O control method		Cyclic scan with direct output (Immediate refreshing can be performed with IORF(97).)			
Programming language		Ladder diagram			
Instruction length		1 step per instruction, 1 to 5 words per instruction			
Instructions		Basic instructions: 14 Special instructions: 105 instructions, 185 variations			
Execution time		Basic instructions: 0.64 µs (LD instruction) Special instructions: 7.8 µs (MOV instruction)			
Program capacity		4,096 words			
I/O capacity	CPU Unit only	20 points	30 points	40 points	60 points
	With Expansion I/O Units	80 points max.	90 points max.	100 points max.	120 points max.
Input bits		IR 00000 to IR 00915 (Words not used for input bits can be used for work bits.)			
Output bits		IR 01000 to IR 01915 (Words not used for output bits can be used for work bits.)			
Work bits		928 bits: IR 02000 to IR 04915 (Words IR 020 to IR 049) and IR 20000 to IR 22715 (Words IR 200 to IR 227)			
Special bits (SR area)		448 bits: SR 22800 to SR 25515 (Words IR 228 to IR 255)			
Temporary bits (TR area)		8 bits (TR0 to TR7)			
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (Words HR 00 to HR 19)			
Auxiliary bits (AR area)		384 bits: AR 0000 to AR 2315 (Words AR 00 to AR 23)			
Link bits (LR area)		256 bits: LR 0000 to LR 1515 (Words LR 00 to LR 15)			
Timers/Counters		256 timers/counters (TIM/CNT 000 to TIM/CNT 255) 1-ms timers: TMHH(—) 10-ms timers: TIMH(15) 100-ms timers: TIM 1-s/10-s timers: TIML(—) Decrementing counters: CNT Reversible counters: CNTR(12)			

CPM2A Specifications

Item		Specification
Data memory		Read/Write: 2,048 words (DM 0000 to DM 2047)* Read-only: 456 words (DM 6144 to DM 6599) PC Setup: 56 words (DM 6600 to DM 6655) *The Error Log is contained in DM 2000 to DM 2021.
Basic interrupts	Interrupt processing	External interrupts: 4 (Shared by the external interrupt inputs (counter mode) and the quick-response inputs.)
	Interval timer interrupts	1 (Scheduled Interrupt Mode or Single Interrupt Mode)
High-speed counter	High-speed counter	One high-speed counter: 20 kHz single-phase or 5 kHz two-phase (linear count method)
		Counter interrupt: 1 (set value comparison or set-value range comparison)
	Interrupt Inputs (counter mode)	Four inputs (Shared with external interrupt inputs (counter mode) and quick-response inputs.)
		Counter interrupts: 4 (Shared by the external interrupt inputs and quick-response inputs.)
Pulse output		Two points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control. One point with waveform acceleration/deceleration, 10 Hz to 10 kHz, and direction control. Two points with variable duty-ratio outputs using PWM(—). (Pulse outputs can be used with transistor outputs only, they cannot be used with relay outputs.)
Synchronized pulse control		One point: A pulse output can be created by combining the high-speed counter with the pulse output and multiplying the frequency of the input pulses from the high-speed counter by a fixed factor. (This output is possible with transistor outputs only, it cannot be used with relay outputs.)
Quick-response inputs		Four points (Min. input pulse width: 50 μs min.)
Analog controls		2 controls, setting range: 0 to 200
Input time constant		Can be set for all input points. (1 ms, 2 ms, 3 ms, 5 ms, 10 ms, 20 ms, 40 ms, or 80 ms; default setting: 10 ms)
Clock function		Shows the year, month, day of the week, day, hour, minute, and second. (Battery backup)
Communications functions		Built-in peripheral port: Supports host link, peripheral bus, no-protocol, or Programming Console connections. Built-in RS-232C port: Supports host link, no-protocol, 1:1 Slave Unit link, 1:1 Master Unit link, or 1:1 NT Link connections.
Functions provided by Expansion Units		Analog I/O Unit: Provides 2 analog inputs and 1 analog output. CompoBus/S I/O Link Unit: Provides 8 inputs and 8 outputs as a CompoBus/S Slave. Temperature Sensor Units: Provide 2 or 4 thermocouple inputs, or 2 or 4 temperature-resistance thermometer inputs.
Memory protection		HR area, AR area, program contents, read/write DM area contents, and counter values maintained during power interruptions.
Memory backup		Flash memory: Program, read-only DM area, and PC Setup Battery backup: The read/write DM area, HR area, AR area, and counter values are backed up by a battery. (Battery life is approximately 5 years at an ambient temperature of 25°C.)
Self-diagnostic functions		CPU Unit failure (watchdog timer), I/O bus error, and memory failure, battery error
Program checks		No END instruction and programming errors are checked at the start of operation.

■ CPM2A I/O Specifications

1. CPU Unit Input Specifications

Item	Inputs	Specification
Input voltage	All	24 VDC $^{+10\%}/_{-15\%}$
Input impedance	IN00000 to IN00001	2.7 kΩ
	IN00002 to IN00006	3.9 kΩ
	IN00007 and up	4.7 kΩ
Input current	IN00000 to IN00001	8 mA typical
	IN00002 to IN00006	6 mA typical
	IN00007 and up	5 mA typical
ON voltage/current	IN00000 to IN00001	17 VDC min., 5 mA
	IN00002 and up	14.4 VDC min., 3 mA
OFF voltage/current	All	5.0 VDC max., 1 mA
ON delay	All	1 to 80 ms max. Default: 10 ms (See note.)
OFF delay	All	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	IN00000 to IN00001	IN / Input LED / 10,000 pF / Internal Circuits / COM / 2.7 kΩ / 680 Ω
	IN00002 to IN00006	IN / Input LED / 750 Ω / Internal Circuits / COM / 3.9 kΩ
	IN00007 and up	IN / Input LED / 750 Ω / Internal Circuits / COM / 4.7 kΩ

Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup.

High-speed Counter Inputs

Inputs IN00000 through IN00002 can be used as high-speed counter inputs, as shown in the following table. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

Input	Function			
	Differential phase mode	Pulse + direction input mode	Up/down input mode	Increment mode
IN00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN00002	Z-phase pulse input/Hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

Interrupt Inputs

Inputs IN00003 through IN00006 can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 0.05 ms.

CPM2A Specifications

2. Expansion I/O Unit Input Specifications

Item	Specification
Input voltage	24 VDC $^{+10\%}/_{-15\%}$
Input impedance	4.7 kΩ
Input current	5 mA typical
ON voltage	14.4 VDC min.
OFF voltage	5.0 VDC max.
ON delay	1 to 80 ms max. Default: 10 ms (See note.)
OFF delay	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	

Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup. For the CPM1A-40EDR/EDT/EDT1, the constant is fixed at 16 ms.

■ CPM2A Output Specifications (CPU Unit and Expansion I/O Unit)
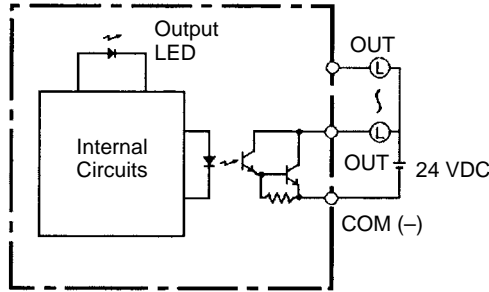
1. Relay Output

Item	Specification
Max. switching capacity	2 A, 250 VAC (cosφ = 1) 2 A, 24 VDC (4 A/common)
Min. switching capacity	10 mA, 5 VDC
Service life of relay	Electrical: 150,000 operations (24-VDC resistive load) 100,000 operations (240-VAC inductive load, cosφ = 4) Mechanical: 20,000,000 operations
ON delay	15 ms max.
OFF delay	15 ms max.
Circuit configuration	

2. Transistor Output (Sinking)

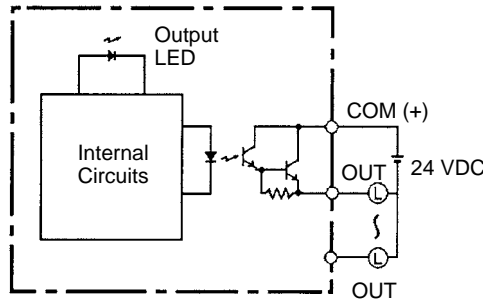| Item	Specification						
	20CDT-D	**30CDT-D**	**40CDT-D**	**60CDT-D**	**8ET**	**20EDT**	**40EDT**
Max. switching capacity	OUT01000, 01001: 4.5 to 30 VDC, 0.2 A/output OUT01002 and up: 4.5 to 30 VDC, 0.3 A/output					24 VDC$^{+10\%}/_{-5\%}$, 0.3 A/output	4.5 to 30 VDC, 0.3 A/output
	0.8 A/common 1.6 A/Unit	0.8 A/common 2.4 A/Unit	0.8 A/common 3.2 A/Unit	0.8 A/common 4.8 A/Unit	0.9 A/common 1.8 A/Unit	0.9 A/common 1.8 A/Unit	0.9 A/common 3.6 A/Unit
Leakage current	0.1 mA max.						
Residual voltage	1.5 V max.						
ON delay	OUT01000 and OUT01001: 20 μs max. OUT01002 and up: 0.1 ms max.					0.1 ms max.	
OFF delay	OUT01000 and OUT01001: 40 μs max. (4.5 to 26.4 V, 10 to 100 mA) 0.1 ms max. (4.5 to 30 V, 10 to 200 mA) OUT01002 and up: 1 ms max. (4.5 to 30 V, 10 to 300 mA)					1 ms max. (24 VDC$^{+10\%}/_{-5\%}$, 5 to 300 mA)	
Fuse (see note)	1 fuse/output					1 fuse/common	None
Circuit configuration	4.5 to 30 VDC, 0.3 A/output						

Note: Cannot be replaced by the user.

CPM2A Specifications

3. Transistor Output (Sourcing)

Item	Specification						
	20CDT1-D	**30CDT1-D**	**40CDT1-D**	**60CDT1-D**	**8ET1**	**20DET1**	**40EDT1**
Max. switching capacity	OUT01000, 01001: 4.5 to 30 VDC, 0.2 A/output OUT01002 and up: 4.5 to 30 VDC, 0.3 A/output					24 VDC$^{+10\%}/_{-5\%}$, 0.3 A/output	4.5 to 30 VDC 0.3 A/output
	0.8 A/common 1.6 A/Unit	0.8 A/common 2.4 A/Unit	0.8 A/common 3.2 A/Unit	0.8 A/common 4.8 A/Unit	0.9 A/common 1.8 A/Unit	0.9 A/common 1.8 A/Unit	0.9 A/common 3.6 A/Unit
Leakage current	0.1 mA max.						
Residual voltage	1.5 V max.						
ON delay	OUT01000 and OUT01001: 20 µs max. OUT01002 and up: 0.1 ms max.					0.1 ms max.	
OFF delay	OUT01000 and OUT01001: 40 µs max. (4.5 to 26.4 V, 10 to 100 mA) 0.1 ms max. (4.5 to 30 V, 10 to 200 mA) OUT01002 and up: 1 ms max. (4.5 to 30 V, 10 to 300 mA)					1 ms max. (24 VDC$^{+10\%}/_{-5\%}$, 5 to 300 mA)	
Fuse (see note)	1 fuse/output					1 fuse/common	None
Circuit configuration	4.5 to 30 VDC, 0.3 A/output 						

Note: Cannot be replaced by the user.

■ CPM1A-MAD01/MAD11 Analog I/O Unit

Up to 3 Expansion I/O Units or Expansion Units (including the CPM1A-MAD01/MAD11 Analog I/O Unit) can be connected to a CPM2A CPU Unit.

Item		CPM1A-MAD01		CPM1A-MAD11	
		Voltage I/O	**Current I/O**	**Voltage I/O**	**Current I/O**
Analog inputs	Number of inputs	2		2 (allocated 2 words)	
	Input signal ranges	0 to 10 V or 1 to 5 V	4 to 20 mA	0 to 5 V, 1 to 5 V, 0 to 10 V, −10 to 10 V	0 to 20 mA, 4 to 20 mA
	Maximum rated input	±15 V	±30 mA	±15 V	±30 mA
	External input impedance	1 MΩ min.	250 Ω rated	1 MΩ min.	250 Ω
	Resolution	1/256		1/6,000 (full scale)	
	Overall precision	1.0% of full scale		25°C: ±0.3% of full scale	25°C: ±0.4% of full scale
				0 to 55°C: ±0.6% of full scale	0 to 55°C: ±0.8% of full scale
	Converted A/D data	8-bit binary		Binary data (4-digit hexadecimal) −10 to 10 V: F448 to 0BB8 Hex full scale Other: 0000 to 1770 Hex full scale	
Analog output (See note 1.)	Averaging	---		Supported (set for each input with DIP switch)	
	Disconnected line detection	---		Supported	
	Number of outputs	1		1 (allocated 1 word)	
	Output signal ranges	0 to 10 V or −10 to 10 V	4 to 20 mA	1 to 5 V, 0 to 10 V, −10 to 10 V	0 to 20 mA, 4 to 20 mA
	External output max. current	5 mA	---	---	---
	External output allowed load resistance	---	350 Ω	1 kΩ min.	600 Ω max.
	External output impedance	---		0.5 Ω max.	---
	Resolution	1/256 (1/512 when the output signal range is −10 to 10 V.)		1/6,000 (full scale)	
	Overall precision	1.0% of full scale		25°C: ±0.4% of full scale	
				0 to 55°C: ±0.8% of full scale	
	Data setting	8-bit binary with sign bit		---	
	D/A data setting	---		Binary data (4-digit hexadecimal) −10 to 10 V: F448 to 0BB8 Hex full scale Other: 0000 to 1770 Hex full scale	
Conversion time (See note 2.)		10 ms/Unit max.		2 ms/point (6 ms/all analog I/O)	
Isolation method		Photocoupler isolation between I/O terminals and PC (There is no isolation between the analog I/O signals.)		Photocoupler isolation between analog I/O and internal circuits. (Individual analog I/O signals are not isolated.)	

Note   **1.** The voltage output and current output can be used at the same time, but the total output current cannot exceed 21 mA.

      2. The conversion time is the total time for 2 analog inputs and 1 analog output.

CPM2A Specifications

■ Analog Input Unit

CPM1A-AD041

Item		CPM1A-AD041	
		Input voltage	**Input current**
Number of inputs		4	
Input signal range		0 to 5 V, 1 to 5 V, 0 to 10 V, or −10 to 10 V	0 to 20 mA or 4 to 20 mA
Max. rated input		±15 V	±30 mA
External input impedance		1 MΩ min.	Approx. 250 Ω
Resolution		6,000	
Overall accuracy	25°C	±0.3% of full scale	±0.4% of full scale
	0 to 55°C	±0.6% of full scale	±0.8% of full scale
Conversion time		2.0 ms/point	
A/D conversion data		Binary data with resolution of 6,000 Full scale for −10 to 10 V: F448 (E890) to 0BB8 (1770) hex Full scale for other ranges: 0000 to 1770 (2EE0) hex	
Averaging		Supported	
Open-circuit detection		Supported	
Insulation resistance		20 MΩ min. (at 250 VDC, between isolated circuits)	
Dielectric strength		500 VAC for 1 min (between isolated circuits)	
Isolation method		Photocoupler isolation (between analog inputs and secondary internal circuits.) No isolation between input signals.	

■ Analog Output Unit

CPM1A-DA041

Item		CPM1A-DA041	
		Output voltage	**Output current**
Number of outputs		4	
Output signal range		0 to 5 V, 0 to 10 V, or −10 to 10 V	0 to 20 mA or 4 to 20 mA
Allowable external output load resistance		2 kΩ min.	350 kΩ max.
External output impedance		0.5 Ω max.	---
Resolution		6,000	
Overall accuracy	25°C	±0.4% of full scale	
	0 to 55°C	±0.8% of full scale	
Conversion time		2.0 ms/point	
D/A conversion data		Binary data with resolution of 6,000 Full scale for −10 to 10 V: F448 (E890) to 0BB8 (1770) hex Full scale for other ranges: 0000 to 1770 (2EE0) hex	
Insulation resistance		20 MΩ min. (at 250 VDC)	
Dielectric strength		500 VAC for 1 min between isolated circuits	
Isolation method		Photocoupler isolation between analog outputs and secondary internal circuits. No isolation between output signals.	

■ CPM1A-SRT21 CompoBus/S I/O Link Unit

The CPM2A PC can function as a Slave to a CompoBus/S Master Unit (or SRM1 CompoBus/S Master Control Unit) when a CPM1A-SRT21 CompoBus/S I/O Link Unit is connected. The CompoBus/S I/O Link Unit establishes an I/O link of 8 inputs and 8 outputs between the Master Unit and the CPM2A. Up to 3 Expansion I/O Units or Expansion Units can be connected to a CPM2A CPU Unit.
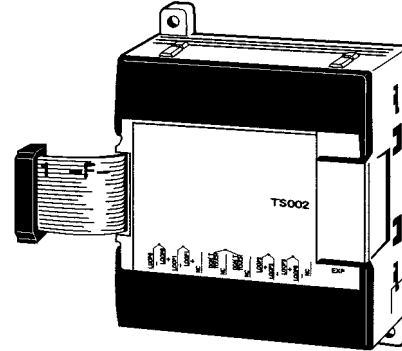

CompoBus/S Master Unit (or SRM1 CompoBus/S Master Control Unit)

CPM2A CPU Unit

CPM1A-SRT21 CompoBus/S I/O Link Unit

CS1, CJ1, C200H□, CQM1 (H), SRM1, or CPM2C-S PLC

Special flat cable or VCTF cable

Up to 16 Slaves can be connected. (Up to 8 Slaves with the CQM1-SRM21-V1.)
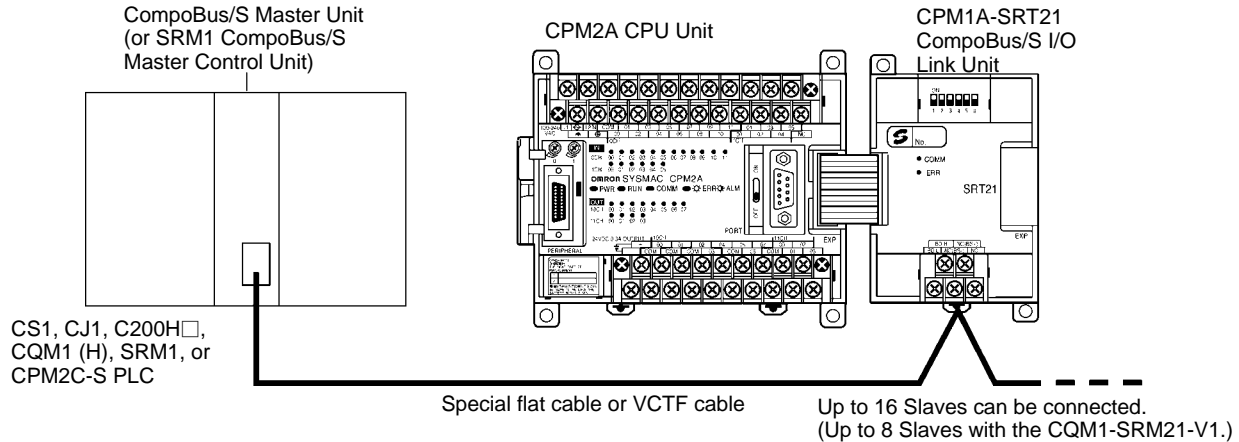
Specifications

Item	Specification
Model number	CPM1A-SRT21
Master/Slave	CompoBus/S Slave
Number of I/O bits	8 input bits, 8 output bits
Number of words occupied in CPM2A I/O memory	1 input word, 1 output word (Allocated in the same way as other Expansion I/O Units or Expansion Units)
Node number setting	Set using the DIP switch. (Set before turning ON power for the CPU Unit.)

Note: See the *CompoBus/S Catalog (Q103)* for more details on CompoBus/S communications.

CPM2A Specifications

■ CPM1A-TS001/TS002/TS101/TS102 Temperature Sensor Units

By connecting a Temperature Sensor Unit (CPM1A-TS001/TS002/TS101/TS102) to the CPM2A, inputs can be received from thermocouples or temperature-resistance thermometers. Inputs converted to binary data (4-digit hexadecimal) and stored in the IR area. Refer to page 30 for details on the maximum number of connectable Units.

Specifications

Item	Specification	
Model	CPM1A-TS001/002	CPM1A-TS101/102
Number of inputs	TS001: 2; TS002: 4	TS101: 2; TS102: 4
Input types	K or J selectable (The same input type must be used for all inputs.)	Pt100, JPt1100 selectable (The same input type must be used for all inputs.)
Accuracy	±0.5% or ±2% of the stored value whichever is larger (see note) ± 1 digit max.	±0.5% or ±1% of the stored value whichever is larger (see note) ± 1 digit max.
Conversion cycle	250 ms/2 points (TS001 or TS101) or 250 ms/4 points (TS002 or TS102)	
Converted temperature data	Binary data (4-digit hexadecimal)	
Isolation method	Photocoupler isolation between input signals	

Note: Accuracy for K thermocouples at temperatures less than –100°C: ±4°C ± 1 digit max.

Input Temperature Ranges for CPM1A-TS001/002

The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

Item	Range in °C	Range in °F
K	–200 to 1,300	–300 to 2,300
	0.0 to 500.0	0.0 to 900.0
J	–100 to 850	–100 to 1,500
	0.0 to 400.0	0.0 to 750.0

Input Temperature Ranges for CPM1A-TS101/102

The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

Item	Range in °C	Range in °F
Pt100	–200.0 to 650.0	–300 to 1,200.0
JPt100	–200.0 to 650.0	–300 to 1,200.0

■ CPM1A-DRT21 DeviceNet I/O Link Unit

The CPM1A-DRT21 DeviceNet I/O Link Unit can be connected to the CPM2A to function as a slave under a DeviceNet Master Unit. This enables an I/O Link with the Master Unit via 32 input and 32 output points.

CPM2A CPU Unit

CPM1A-DRT21 DeviceNet I/O Link Unit

DeviceNet Master Unit

CS1□, C200H□, CV-series or CVM1 PLC

Connect up to 63 nodes (with an CS1 Master Unit)
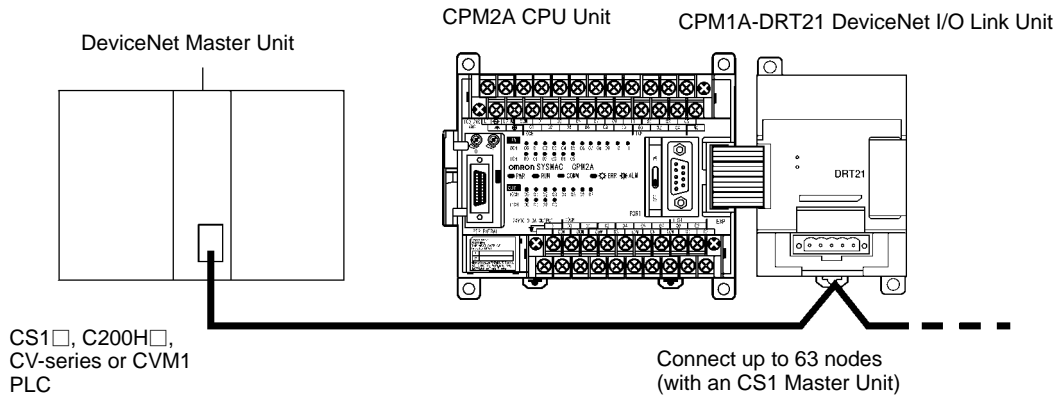
■ Specifications

Item	Specification
Model number	CPM1A-DRT21
Master/slave	DeviceNet slave
I/O capacity to master	32 input and 32 output points
I/O memory allocated in CPM2A	2 input words and 2 output words (same as other Expansion Units)
Node address setting	DIP switch (Set before turning ON power for the CPU Unit.)
Maximum number of nodes (depending on PC to which Master Unit is mounted)	CS1: 63 nodes CVM1/CV: 32 nodes C200HX/HG/HE: 25 nodes C200HS: 16 nodes

CPM2A Dimensions

CPM2A System Configuration Example

Up to three Expansion I/O Units or Expansion Units other than the CPM1A-TS002/102 Temperature Sensor Units and the CPM1A-AD041/DA041 Analog I/O Units can be connected to a CPM2A CPU Unit. If a CPM1A-TS002/102 or a CPM1A-AD041/DA041 is connected to the CPU Unit, only one other Unit (and not a CPM1A-TS002/102 or a CPM1A-AD041/DA041) can be connected.

| CPU Unit | Expansion Unit or Expansion I/O Unit | Expansion Unit or Expansion I/O Unit | Expansion Unit or Expansion I/O Unit |
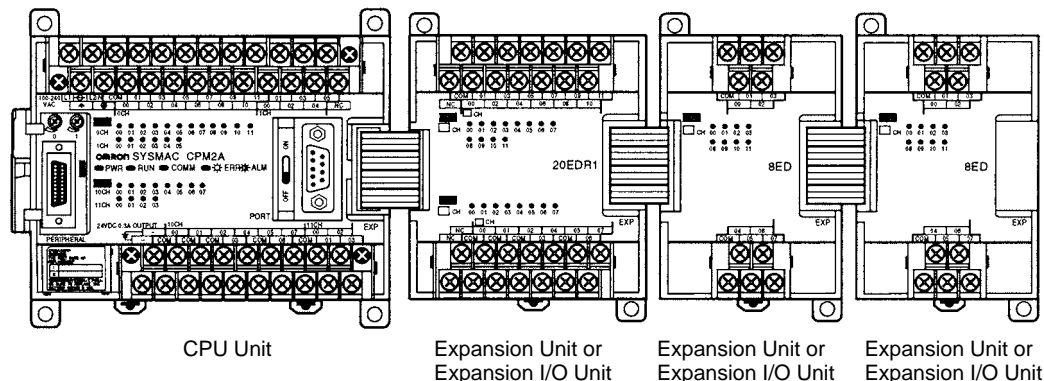
Expansion Unit Connection Groups

Group 1 (G1)	Group 2 (G2)
Expansion I/O Units CPM1A-MAD01/11 Analog I/O Units CompoBus/S I/O Link Units CPM1A-TS001/TS101 Temperature Sensor Units DeviceNet I/O Link Unit	CPM1A-TS002/TS102 Temperature Sensor Units CPM1A-AD041/DA041 Analog I/O Units

The sequences in which Units in the above groups can be connected to the CPU Unit are shown in the following table.

Expansion Unit Group Combinations

Expansion sequence 1	Expansion sequence 2	Expansion sequence 3
G1	G1	G1
G2	G1	G2 Units cannot be connected after a G1 Unit.

Note: 1. The mounting sequence does not affect the number of Units that can be mounted.

2. If the NT-AL001 RS-422 Adapter is connected to the RS-232C port, only one Expansion Unit or Expansion I/O Unit can be added.

3. If three CPM1A-MAD11/MAD01 Analog I/O Units are connected to a CPM2A-60CDR-A CPU Unit, keep the output capacity of the external power supply (24 VDC) to 200 mA or less.

CPM2A-20CD□-□/30CD□-□ CPU Units
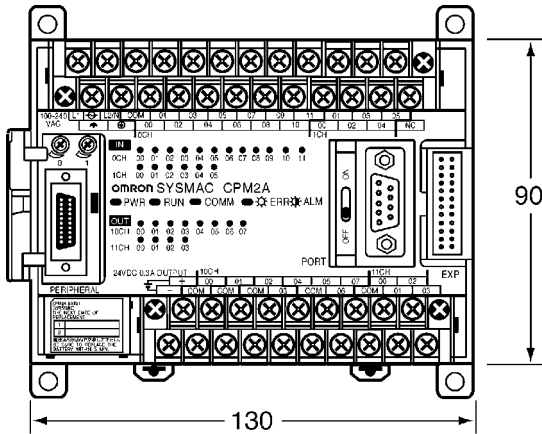
CPU Units with DC Power   CPU Units with AC Power
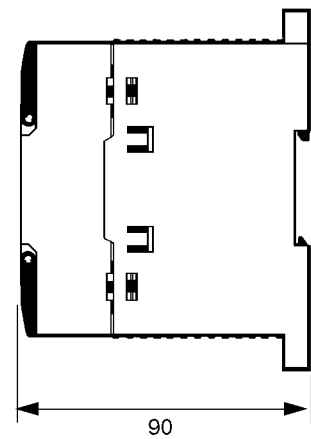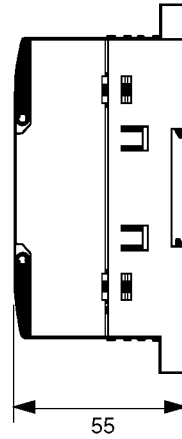
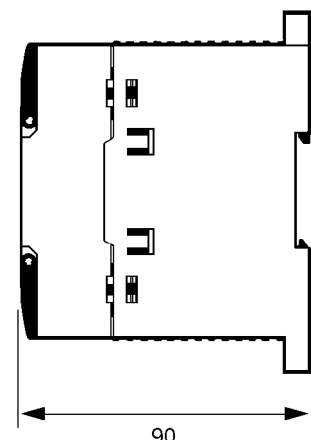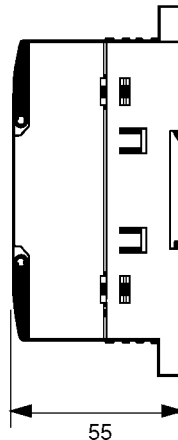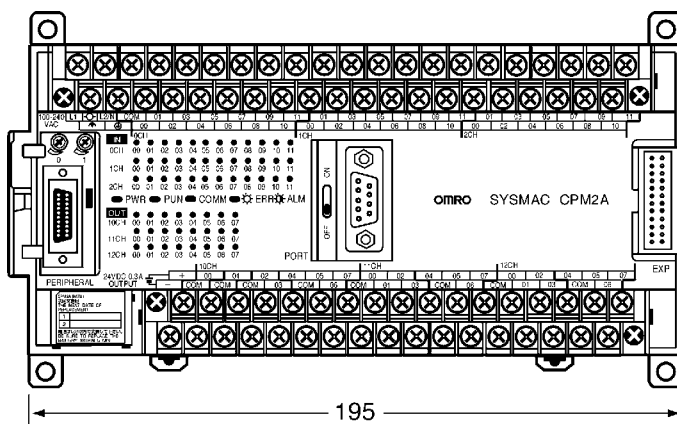## CPM2A-40CD□-□ CPU Units
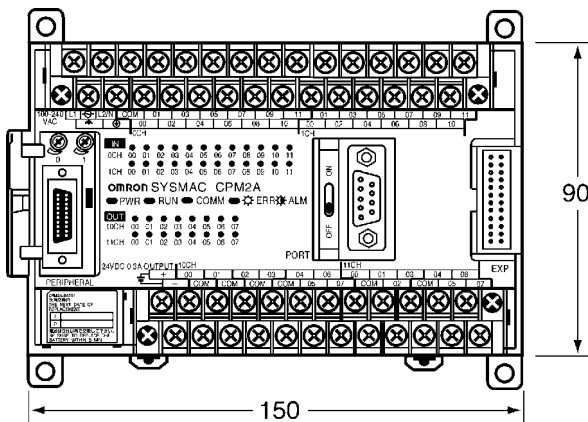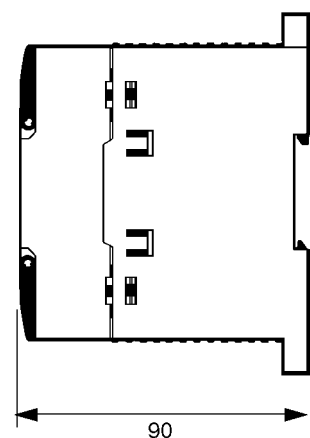
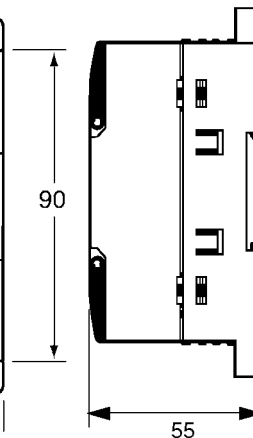CPU Units with DC Power   CPU Units with AC Power

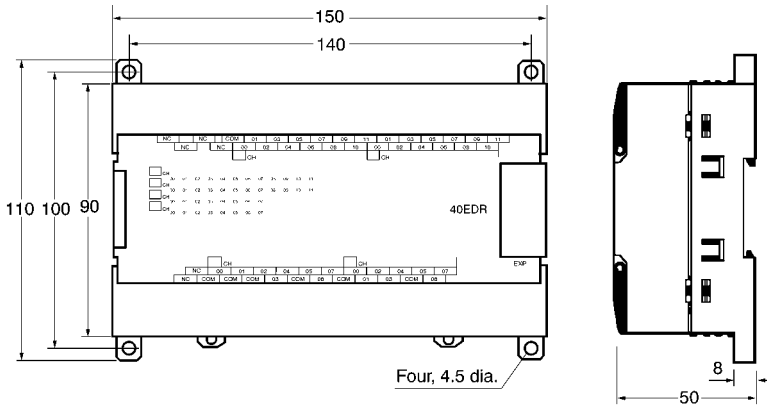## CPM2A-60CD□-□ CPU Units
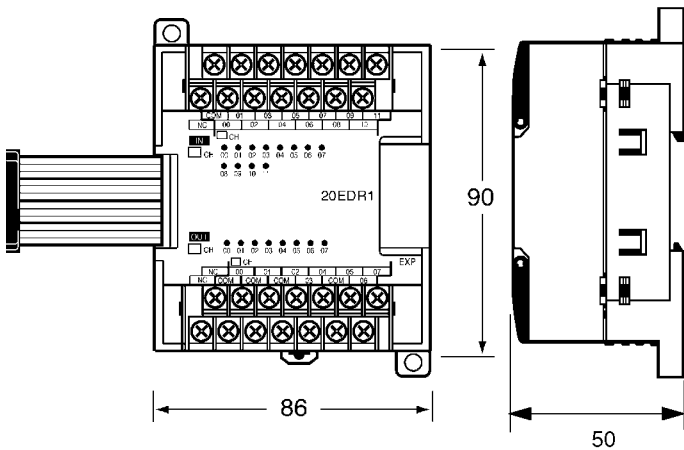
CPU Units with DC Power   CPU Units with AC Power

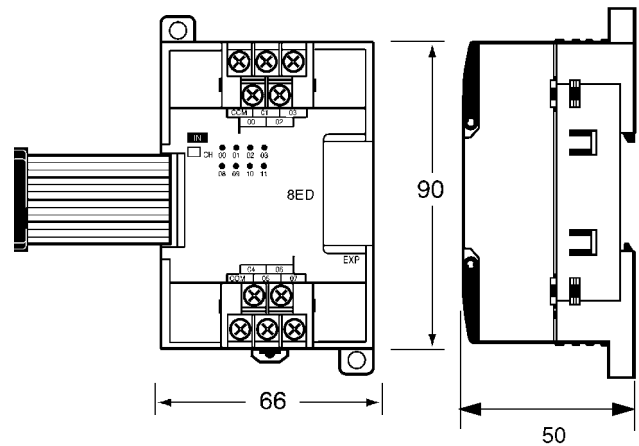**Note:** All dimensions are in mm.
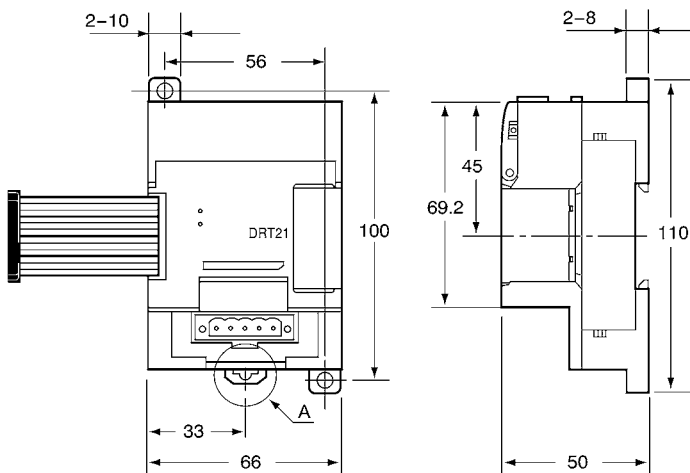
CPM2A Dimensions

CPM1A-40ED□ Expansion I/O Units

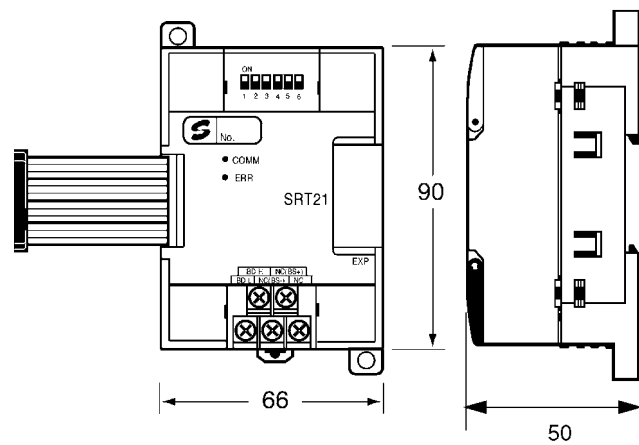## CPM1A-20ED□ Expansion I/O Units

CPM1A-8□□□ Expansion I/O Units

CPM1A-DRT21 DeviceNet I/O Link Unit
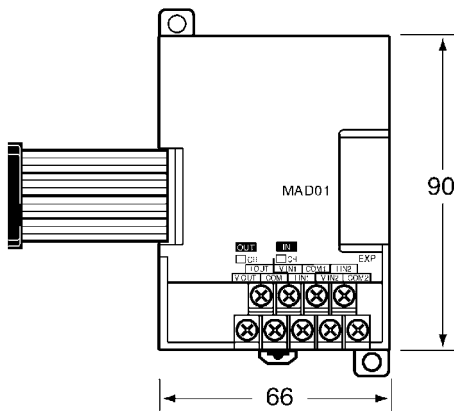

CPM1A-SRT21 CompoBus/S I/O Link Unit

The terminal block is included.
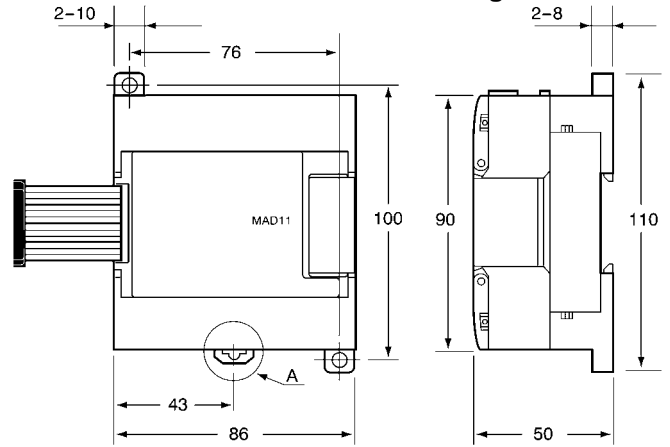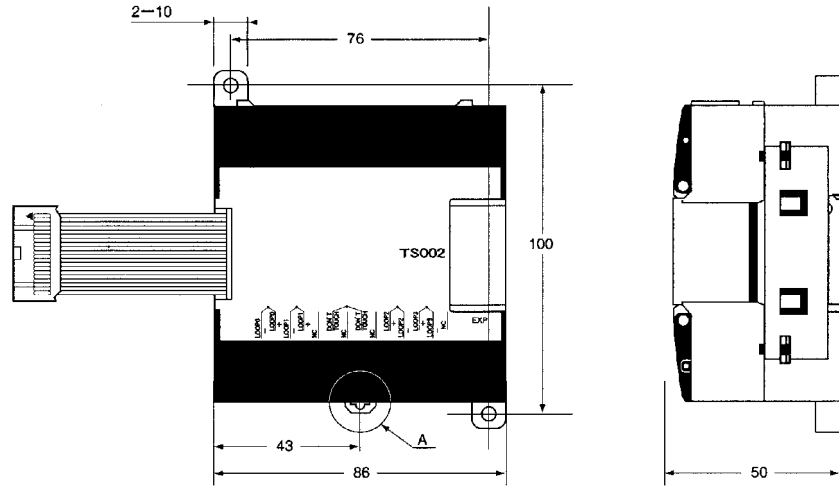
Note: All dimensions are in mm.

CPM1A-MAD01 Analog I/O Unit

90

MAD01

66

50

CPM1A-MAD11/AD041/DA041 Analog I/O Unit

2-10

76

2-8

MAD11

100

90

110

43

A

86

50

CPM1A-TS☐☐☐ Temperature Sensor Unit

2-10

76

TS002

100

EXP

43

A

86

50

CPM1-CIF01 RS-232C Adapter

Two, 4.8 dia.

30

56

21

50

CIF01

90

81

RS232C

205

CPM1-CIF11 RS-422 Adapter

Two, 4.8 dia.

30

61

21

50

CIF11

90

81

RS422

205
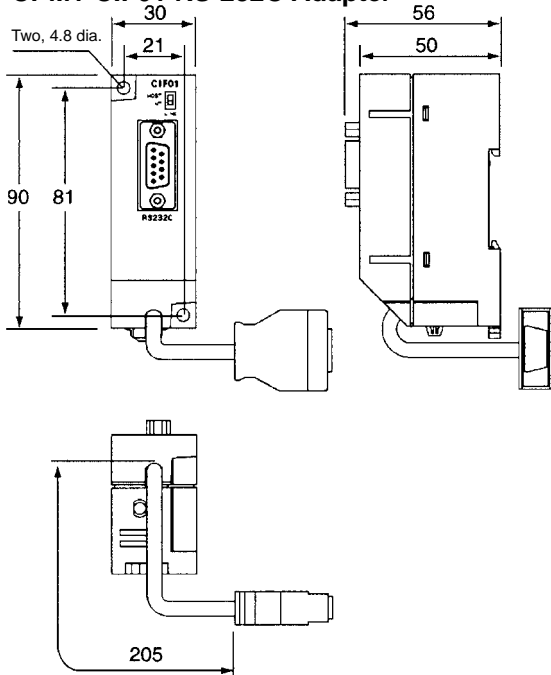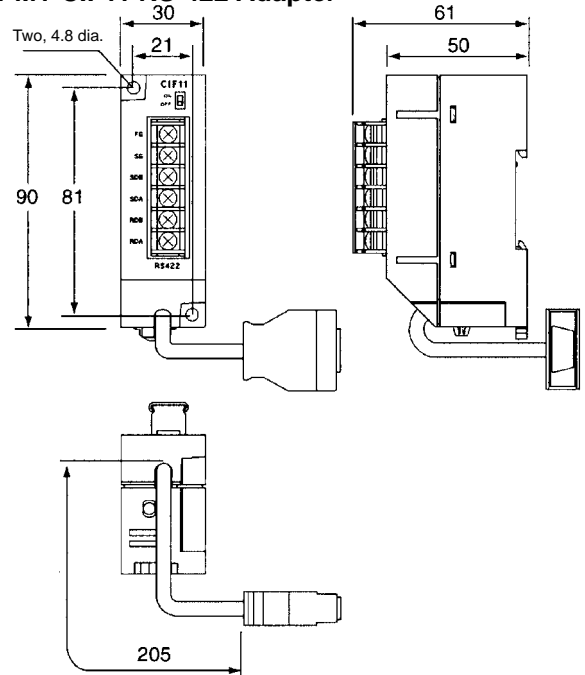
Note: All dimensions are in mm.

CPM2C Specifications

■ CPM2C General Specifications

Item	CPU Unit Specification					
	CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs)
Supply voltage	24 VDC					
Operating voltage range	20.4 to 26.4 VDC					
Power consumption (Add Expansion Unit consumption from following tables.)	4 W	3 W	4 W	3 W	3 W	3 W
Inrush current	25 A max.					
Insulation resistance	20 MΩ min. (at 500 VDC) between isolated circuits					
Dielectric strength	2,300 VAC for 1 min (between isolated circuits)					
Noise immunity	Conforms to IEC61000-4-4, 2 kV (power lines)					
Vibration resistance	Conforming to JIS C0040: 10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8 m/s^2 in X, Y, and Z directions for 80 minutes each (Time coefficient; 8 minutes × coefficient factor 10 = total time 80 minutes)					
Shock resistance	Conforming to JIS C0041: 147 m/s^2 three times each in X, Y, and Z directions					
Ambient temperature	Operating: 0° to 55°C Storage: −20° to 75°C (except for the battery)					
Humidity	10% to 90% (with no condensation)					
Atmosphere	Must be free from corrosive gas					
I/O interface	Terminal block	Connector	Terminal block	Connector		
Power interrupt time	2 ms min.					
Weight	200 g max.	200 g max.	250 g max.	200 g max.	200 g max.	160 g max.
	Expansion I/O Unit with 10 I/O points (relay outputs)			200 g max.		
	Expansion I/O Unit with 20 I/O points (relay outputs)			200 g max.		
	Expansion I/O Units with 24 I/O points (transistor outputs)			200 g max.		
	Expansion I/O Unit with 32 I/O points (transistor outputs)			200 g max.		
	Expansion I/O Unit with 8 input points			150 g max.		
	Expansion I/O Unit with 16 input points			150 g max.		
	Expansion I/O Units with 8 output points (transistor outputs)			150 g max.		
	Expansion I/O Units with 16 output points (transistor outputs)			150 g max.		
	Expansion I/O Unit with 8 output points (relay outputs)			200 g max.		
	Simple Communications Unit			150 g max.		
	Peripheral/RS232C Adapter Unit			150 g max.		
	RS422/RS232C Adapter Unit			150 g max.		
	AC Power Supply Unit			250 g max.		
	Analog I/O Unit			200 g max.		
	Temperature Sensor Unit			200 g max.		
	CompoBus/S I/O Link Unit			150 g max.		

CPM2C Power Consumption

Use the following power consumption tables to calculate the total power capacity required when using a CPM2C PC. The rated output for the CPM2C-PA201 AC Power Supply Unit is 15 W. Any surplus power not required for the PC directly can be used as service power supply for sensors and other devices.

CPM2C Power Supplies

CPU Unit	Power consumption (W)
CPM2C-10C(1)DR-D	4
CPM2C-20C(1)DR-D	4
CPM2C-S1☐0C-DRT1	3
CPM2C-S1☐0C	3
CPM2C-10C(1)DT(1)☐-D	3
CPM2C-20C(1)DT(1)☐-D	3
CPM2C-32C(1)DT(1)☐-D	3

The power consumption of the CPU Unit includes power for the Programming Consoles and Adapter Units.

Add the following consumptions when using Expansion I/O Units.

Expansion I/O Unit	Power consumption (W)
CPM2C-10EDR	1
CPM2C-20EDR	2
CPM2C-24EDT(1)☐	1
CPM2C-32EDT(1)☐	1
CPM2C-MAD11	3.5
CPM2C-SRT21	1
CPM2C-TS001/002	1.5
CPM2C-8ED☐/16ED☐	1
CPM2C-8ER	2
CPM2C-8ET(1)☐/16ET(1)☐	1

CPM2C Specifications

■ CPM2C Characteristics

Item		CPU Unit Specification					
		CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs)
Control method		Stored program method					
I/O control method		Cyclic scan with direct output (Immediate refreshing can be performed with IORF(97).)					
Programming language		Ladder diagram					
Instruction length		1 step per instruction, 1 to 5 words per instruction					
Instructions		Basic instructions: 14 Special instructions: 105 instructions, 185 variations					
Execution time		Basic instructions: 0.64 μs (LD instruction) Special instructions: 7.8 μs (MOV instruction)					
Program capacity		4,096 words					
I/O capacity	CPU Unit only	10 points		20 points		32 points	10 points
	With Expansion I/O Units	170 points max.		180 points max.		192 points max.	362 points max.
Input bits		IR 00000 to IR 00915 (Words not used for input bits can be used for work bits.)					
Output bits		IR 01000 to IR 01915 (Words not used for output bits can be used for work bits.)					
CompoBus/S input bits		---				128 inputs: IR 02000 to IR 02715	I/O bits not used for I/O be used for work bits.
CompoBus/S output bits		---				128 outputs: IR 03000 to IR 03715	
Work bits		928 bits: IR 02000 to IR 04915 (Words IR 020 to IR 049) and IR 20000 to IR 22715 (Words IR 200 to IR 227)					672 bits: IR 02800 to IR 02915 (Words IR 028 to IR 029), IR 03800 to IR 04915 (Words IR 038 to IR 049)and IR 20000 to IR 22715 (Words IR 200 to IR 227
Special bits (SR area)		448 bits: SR 22800 to SR 25515 (Words SR 228 to SR 255)					
Temporary bits (TR area)		8 bits (TR0 to TR7)					
Holding bits (HR area)		320 bits: HR 0000 to HR 1915 (Words HR 00 to HR 19)					
Auxiliary bits (AR area)		384 bits: AR 0000 to AR 2315 (Words AR 00 to AR 23)					
Link bits (LR area)		256 bits: LR 0000 to LR 1515 (Words LR 00 to LR 15)					
Timers/Counters		256 timers/counters (TIM/CNT 000 to TIM/CNT 255) 1-ms timers: TMHH(—) 10-ms timers: TIMH(15) 100-ms timers: TIM 1-s/10-s timers: TIML(—) Decrementing counters: CNT Reversible counters: CNTR(12)					
Data memory		Read/Write: 2,048 words (DM 0000 to DM 2047)* Read-only: 456 words (DM 6144 to DM 6599) PC Setup: 56 words (DM 6600 to DM 6655) *The Error Log is contained in DM 2000 to DM 2021.					

Item		CPU Unit Specification					
		CPU Units with 10 I/O points (relay outputs)	**CPU Units with 10 I/O points (transistor outputs)**	**CPU Units with 20 I/O points (relay outputs)**	**CPU Units with 20 I/O points (transistor outputs)**	**CPU Units with 32 I/O points (transistor outputs)**	**CPM2C-S CPU Unit with 10 I/O points (transistor outputs)**
CompoBus/S master functions		---		---			Connects to up to 32 slaves with up to 256 I/O link points
DeviceNet slave functions		---		---			DeviceNet remote I/O links (See note.)
							Up to 1,024 I/O link points Explicit messages
							Read/write of specified areas from PC with Master Unit
Basic interrupts	Interrupt processing	2 interrupts	2 interrupts	4 interrupts	4 interrupts	4 interrupts	2 interrupts
		Shared by the external interrupt inputs (counter mode) and the quick-response inputs.					
	Interval timer interrupts	1 (Scheduled Interrupt Mode or Single Interrupt Mode)					
High-speed counter	High-speed counter	One high-speed counter: 20 kHz single-phase or 5 kHz two-phase (linear count method)					
		Counter interrupt: 1 (set value comparison or set-value range comparison)					
High-speed counter	Interrupt inputs (Counter mode)	2 inputs	2 inputs	4 inputs	4 inputs	4 inputs	2 inputs
		Shared by the external interrupt inputs and the quick-response inputs.					
	Counter interrupts	2 inputs	2 inputs	4 inputs	4 inputs	4 inputs	2 inputs
		Shared by the external interrupt inputs and the quick-response inputs.					
Pulse output		Two points with no acceleration/deceleration, 10 Hz to 10 kHz each, and no direction control. One point with trapezoid acceleration/deceleration, 10 Hz to 10 kHz, and direction control. Two points with variable duty-ratio outputs (using PWM(—)).					
		(Pulse outputs can be used with transistor outputs only, they cannot be used with relay outputs.)					
Synchronized pulse control		One point: A pulse output can be created by combining the high-speed counter with pulse outputs and multiplying the frequency of the input pulses from the high-speed counter by a fixed factor.					
		(This output is possible with transistor outputs only, it cannot be used with relay outputs.)					
Quick-response inputs		2 inputs	2 inputs	4 inputs	4 inputs	4 inputs	2 inputs
		Shared by the external interrupt inputs and the interrupt inputs (counter mode). Min. input pulse width: 50 µs max.					
Input time constant (ON response time = OFF response time)		Can be set for all input points. (1 ms, 2 ms, 3 ms, 5 ms, 10 ms, 20 ms, 40 ms, or 80 ms)					
Clock function		Shows the year, month, day of the week, day, hour, minute, and second. (Battery backup)					
Communications functions		Peripheral port: Supports Host Link, peripheral bus, no-protocol, or Programming Console connections.					
		RS-232C port: Supports Host Link, no-protocol, 1:1 Slave Unit Link, 1:1 Master Unit Link, or 1:1 NT Link connections.					
		A CPM2C-CN111, CS1W-CN114, or CS1W-CN118 Connecting Cable, or an Interface Unit (CPM2C-CIF01-V1 or CPM2C-CIF11) is required to connect to the CPM2C's communications port.					
Memory protection		HR area, AR area, program contents, read/write DM area contents, and counter values are maintained during power interruptions.					

CPM2C Specifications

Item	CPU Unit Specification					
	CPU Units with 10 I/O points (relay outputs)	CPU Units with 10 I/O points (transistor outputs)	CPU Units with 20 I/O points (relay outputs)	CPU Units with 20 I/O points (transistor outputs)	CPU Units with 32 I/O points (transistor outputs)	CPM2C-S CPU Unit with 10 I/O points (transistor outputs)
Memory backup	Flash memory: Program, read-only DM area, and PC Setup Memory backup: The read/write DM area, HR area, AR area, and counter values are backed up. With CPU Units that are equipped with a clock, the battery will backup memory for 2 years at 25°C. With CPU Units that are not equipped with a clock, if a battery is not installed, the internal capacitor will backup memory for 10 days at 25°C. If a battery (optional CPM2C-BAT01 Battery) is installed, it will backup memory for 5 years at 25°C.					
Self-diagnostic functions	CPU Unit failure (watchdog timer), I/O bus error, battery error, and memory failure					
Program checks	No END instruction, programming errors (checked when operation is started)					

Note: CPM2C-S1□0C-DRT only.

■ CPM2C I/O Specifications

1. CPU Unit Input Specifications

Item	Specifications			Circuit configuration
	Units with 10 I/O points	Units with 20 I/O points	Units with 32 I/O points	
Input voltage	24 VDC $^{+10\%}/_{-15\%}$			Input numbers: 00000 to 00001
Input impedance	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00004: 3.9 kΩ IN00005: 4.7 kΩ	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00006: 3.9 kΩ IN00007 and up: 4.7 kΩ	IN00000 to IN00001: 2.7 kΩ IN00002 to IN00006: 3.9 kΩ IN00007: 4.7 kΩ IN00100 to IN001007: 4.7 kΩ	
Input current	IN00000 to IN00001: 8 mA typical IN00002 to IN00004: 6 mA typical IN00005: 5 mA typical	IN00000 to IN00001: 8 mA typical IN00002 to IN00006: 6 mA typical IN00007 and up: 5 mA typical	IN00000 to IN00001: 8 mA typical IN00002 to IN00006: 6 mA typical IN00007: 5 mA typical IN00100 to IN001007: 5 mA typical	Units with 10 I/O points: 00002 to 00004 Units with 20/32 I/O points: 00002 to 00006
ON voltage/current	IN00000 to IN00001: 17 VDC min., 5 mA IN00002 and up: 14.4 VDC min., 3.5 mA			
OFF voltage/current	5.0 VDC max., 1.1 mA			Units with 10 I/O points: 00005 Units with 20 I/O points: 00007 to 00011 Units with 32 I/O points: 00007 to 00011, 00100 to 00107
ON delay	1 to 80 ms max. Default: 10 ms (See note.)			
OFF delay	1 to 80 ms max. Default: 10 ms (See note.)			

Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup.

High-speed Counter Inputs

The following CPU Unit input bits can be used as high-speed counter inputs. The maximum count frequency is 5 kHz in differential phase mode and 20 kHz in the other modes.

Input	Function			
	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN00002	Z-phase pulse input or hardware reset input (IN00002 can be used as a normal input when it is not used as a high-speed counter input.)			

Interrupt Inputs

CPM2C PCs have inputs that can be used as interrupt inputs (interrupt input mode or counter mode) and quick-response inputs. The minimum pulse width for these inputs is 50 μs.

In CPU Units with 10 I/O points, inputs IN00003 and IN00004 can be used as interrupt inputs. In CPU Units with 20 or 32 I/O points, inputs IN00003 through IN00006 can be used as interrupt inputs.

CPM2C Specifications

■ CPM2C-S

■ Communications Specifications

DeviceNet

Item	Specification
Communications method	DeviceNet
Connection types	Multi-drop or T-branch (See note 1.)
Baud rate	125, 250, or 500 kbps (set via switch)
Communications media	Special 5-wire cable (2 signal lines, 2 power supply lines, 1 shield)
Communications distances	(see table below)
Maximum number of nodes	64 nodes (Including master, max. slaves: 63)
Error control	CRC, node address duplications, scan list verification

Baud rate	Max. network length (See notes 2 and 3.)	Branch length	Total branch length
500 kbit/s	100 m max.	6 m max.	39 m max.
250 kbit/s	250 m max.	6 m max.	78 m max.
125 kbit/s	500 m max.	6 m max.	156 m max.

Note: 1. Terminating resistance required.

2. Distance to farthest node.

3. If Thin Cable is used, 100 m maximum.
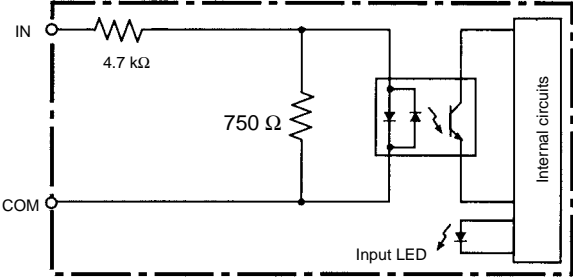
CompoBus/S

Item		Specification
Communications method		CompoBus/S protocol
Code		Manchester
Connection types		Multi-drop or T-branch (See note 1.)
Baud rate		High-speed Communications Mode: 750 kbps Long-distance Communications Mode: 93.75 kbps (See note 2.)
Communications cycle time	High-speed Communications Mode	0.5 ms with 8 input slaves and 8 output slaves
		0.8 ms with 16 input slaves and 16 output slaves
	Long-distance Communications Mode	4.0 ms with 8 input slaves and 8 output slaves
		6.0 ms with 16 input slaves and 16 output slaves
Communications media		2-conductor cable (VCTF0.75X2), 4-conductor cable (VCTF0.75X4), or special flat cable
Communications distances		2-conductor VCTF Cable 4-conductor VCTF Cable/Special Flat Cable
Maximum number of nodes		32
Error control		Manchester code check, frame length check, parity check

2-conductor VCTF Cable

Communications mode	Trunk line	Branch lines	Total of branch lines
High-speed	100 m max.	3 m max.	50 m max.
Long-distance	500 m max.	6 m max.	120 m max.

4-conductor VCTF Cable/Special Flat Cable

Communications mode	Trunk line	Branch lines	Total of branch lines
High-speed (See note 3.)	30 m max.	3 m max.	30 m max.
Long-distance (See note 4.)	Flexible branching to a maximum of 200 m total cable length.		

Note: 1. Terminating resistance required.

2. Set in DM Area (default: 750 kbps).

3. Maximum total length is 100 m and maximum branch length is 50 m for 16 nodes or less.

4. There are no restrictions in branching, trunk length, branch length, or total branch length. Connect terminating resistance to node farthest from master.
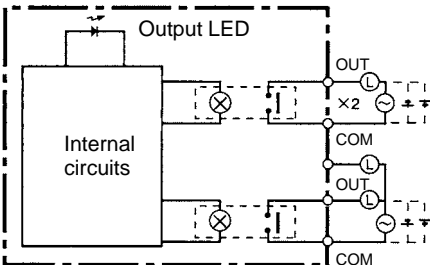
CPM2C Specifications

2. Expansion I/O Unit Input Specifications

Item	Specification
Input voltage	24 VDC $^{+10\%}/_{-15\%}$
Input impedance	4.7 kΩ
Input current	5 mA typical
ON voltage/current	14.4 VDC min., 3.5 mA
OFF voltage/current	5.0 VDC max., 1.1 mA
ON delay	1 to 80 ms max. Default: 10 ms (See note.)
OFF delay	1 to 80 ms max. Default: 10 ms (See note.)
Circuit configuration	

Note: The input time constant can be set to 1, 2, 3, 5, 10, 20, 40, or 80 ms in the PC Setup.

■ CPM2C Output Specifications (CPU Units and Expansion I/O Units)
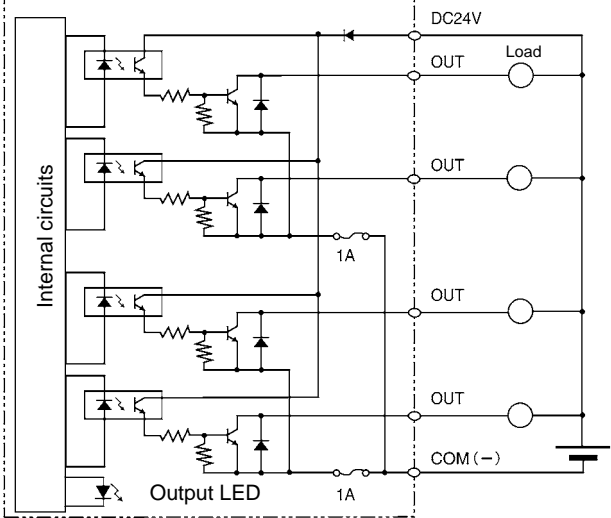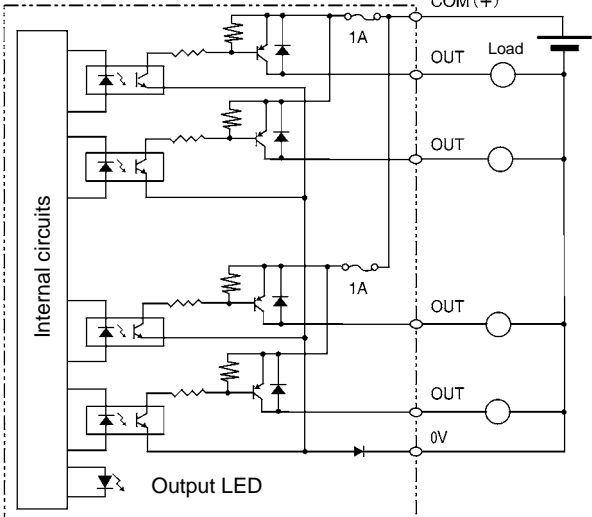
1. Relay Output

Item	Specification
Max. switching capacity	2 A, 250 VAC (cosφ = 1) 2 A, 24 VDC (4 A/common)
Min. switching capacity	10 mA, 5 VDC
Service life of relay	Electrical: 150,000 operations (24-VDC resistive load) 100,000 operations (240-VAC inductive load, cosφ = 0.4) Mechanical: 20,000,000 operations
ON delay	15 ms max.
OFF delay	15 ms max.
Circuit configuration	

2. Transistor Outputs (Sinking or Sourcing) for CPU Units and Expansion I/O Units

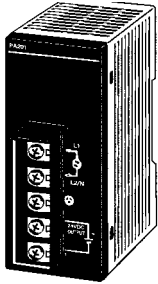| Item	Specification
Max. switching capacity	CPU Units with 10 or 20 I/O Points 01000 to 01007: 40 mA at 4.5 VDC to 300 mA at 20.4 VDC, 300 mA (20.4 to 26.4 V) CPU Units with 32 I/O Points 01000 to 01007: 40 mA at 4.5 VDC to 300 mA at 20.4 VDC, 300 mA (20.4 to 26.4 V) 01100 to 01107: 40 mA at 4.5 VDC to 100 mA at 20.4 VDC, 100 mA (20.4 to 26.4 V) (See note.) Expansion I/O Units 01□00 to 01□07: 40 mA at 4.5 VDC to 300 mA at 20.4 VDC, 300 mA (20.4 to 26.4 V) 01□08 to 01□15: 40 mA at 4.5 VDC to 100 mA at 20.4 VDC, 100 mA (20.4 to 26.4 V) (See note.)

Item	Specification
Min. switching capacity	0.5 mA
Max. inrush current	0.9 A for 10 ms (charging and discharging waveform)
Leakage current	0.1 mA max.
Residual voltage	0.8 V max.
ON delay	OUT01000 and OUT01001: 20 μs max. OUT01002 and up: 0.1 ms max.
OFF delay	OUT01000 and OUT01001: 40 μs max. for 4.5 to 26.5 V, 10 to 300 mA 0.1 ms max. for 4.5 to 30 V, 0.5 to 10 mA OUT01002 and up: 1 ms max.
Fuse	1 fuse for each 2 outputs (The fuse cannot be replaced by the user.)
Circuit configuration	**Sinking Outputs** **Sourcing Outputs**

Note: Connect dummy resistance as required and maintain the load current between 10 and 150 mA when using 01000 and 01001 for pulse outputs. The ON/OFF response time will increase if the load current is below 10 mA, preventing outputting high-speed pulses. The transistors will heat if the output current is greater than 150 mA, possibly destroying the elements.
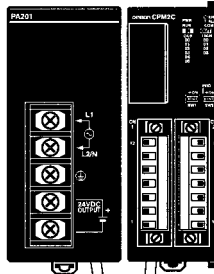
CPM2C Specifications

■ CPM2C-PA201 AC Power Supply Unit

The CPM2C-PA201 is a slim and compact AC Power Supply Unit of the same shape as the CPM2C's CPU Unit. It can be connected simply using the connecting cable (23 cm) provided. It can also be used for CPM1A and CPM2A CPU Units and as display power supply (wired by the user).
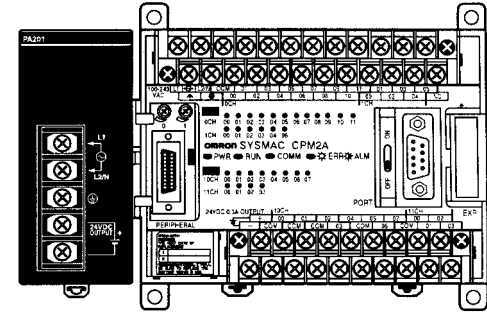
AC Power Supply Unit   AC Power Supply Unit

Service power supply
for external devices
such as sensors (24 V).

Attached connecting cable

■ CPM2C-PA201 AC Power Supply Unit Specifications

Item			Specification
Rated output			15 W
Output voltage			24 V
Output current			600 mA
Efficiency			75% min. (at rated output)
Input conditions	Rated voltage		100 to 240 VAC
	Allowable voltage range		85 to 264 VAC
	Frequency		47 to 63 Hz
	Current	100 V	0.4 A
		200 V	0.2 A
	Leakage current	100 V	0.5 mA max. (at rated output)
		200 V	1 mA max. (at rated output)
	Inrush current	100 V	15 A max. (at 25°C cold start)
		200 V	30 A max. (at 25°C cold start)
Output characteristics	Output voltage accuracy		10%/–15% (including input, load, and temperature fluctuations)
	Minimum output current		30 mA
	Ripple noise voltage		2% (p-p) max.
	Input fluctuation		0.75% max.
	Load fluctuation		4% max.
	Temperature fluctuation		0.05%/°C max.
	Startup time		300 ms max. (at input voltage of 100 VAC or 200 VAC and the rated output)
	Output hold time		10 ms (at input voltage of 100 VAC or 200 VAC and the rated output)
Overcurrent protection			Self-resetting, operates at 105% to 335% of the rated current, suspended and independent operation
Overvoltage protection			None
Ambient operating temperature			0° to 55°C
Ambient storage temperature			–20° to 75°C (no condensation or icing)
Ambient operating humidity			10% to 90% (no condensation)
Dielectric strength			2,000 V for 1 min between all inputs and GR Leakage current: 10 mA
			3,000 V for 1 min between all inputs and all outputs Leakage current: 10 mA
			1,000 V for 1 min between all outputs and GR Leakage current: 10 mA
Insulation resistance			100 MΩ min. at 500 VDC between all outputs and any input, and between all outputs and GR
Vibration resistance			10 to 57 Hz, amplitude, 57 to 150 Hz, acceleration: 9.8 m/s^2 in X, Y, and Z directions for 80 minutes according (Time coefficient: 8 minutes × coefficient factor 10 = total time 80 min.)
Shock resistance			147 m/s^2 3 times each in X, Y, and Z directions
Noise terminal voltage			FCC class A
Weight			250 g max.

CPM2C Specifications

■ CPM2C-MAD11 Analog I/O Unit

Up to four CPM2C-MAD11 Analog I/O Units can be connected to the CPM2C. Each Unit provides 2 analog inputs and 1 analog output, i.e., up to 8 analog inputs and 4 analog outputs can be supported by one CPM2C.
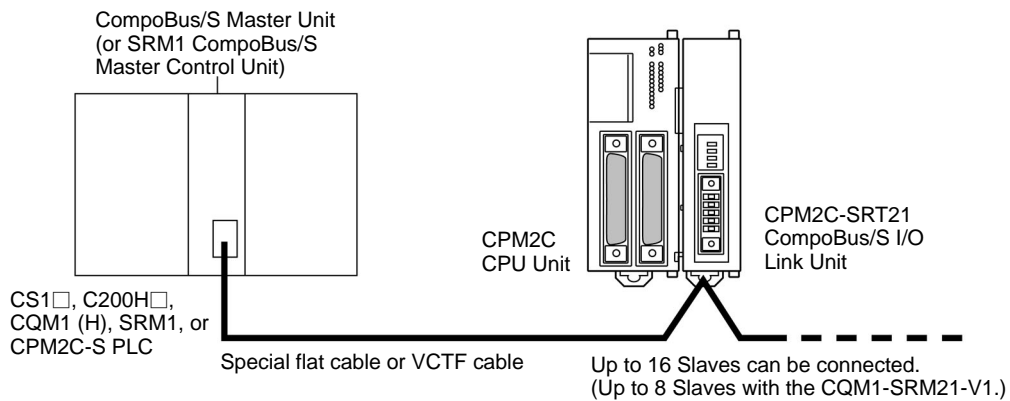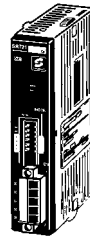

Example Application: Packaging Machines

Specifications

	Item	Voltage I/O	Current I/O
Analog inputs	Number of inputs	2 (allocated 2 words)	
	Input signal ranges	0 to 5 V, 1 to 5 V, 0 to 10 V, −10 to 10 V	0 to 20 mA, 4 to 20 mA
	Maximum rated input	±15 V	±30 mA
	External input impedance	1 MΩ min.	Approx. 250 Ω
	Resolution	1/6,000 (full scale)	
	Overall precision	25°C:　　±0.3% of full scale	25°C:　　±0.4% of full scale
		0 to 55°C: ±0.6% of full scale	0 to 55°C: ±0.8% of full scale
	Converted A/D data	Binary data (4-digit hexadecimal) −10 to 10 V:　　F448 to 0BB8 Hex full scale Other:　　0000 to 1770 Hex full scale	
	Averaging	Supported (set for each input with DIP switch)	
	Disconnected line detection	Supported	
Analog output	Number of outputs	1 (allocated 1 word)	
	Output signal ranges	1 to 5 V, 0 to 10 V, −10 to 10 V	0 to 20 mA, 4 to 20 mA
	External output allowed load resistance	1 kΩ min.	600 Ω max.
	External output impedance	0.5 Ω max.	---
	Resolution	1/6,000 (full scale)	
	Overall precision	25°C:　　±0.4% of full scale	
		0 to 55°C: ±0.8% of full scale	
	D/A data setting	Binary data (4-digit hexadecimal) −10 to 10 V:　　F448 to 0BB8 Hex full scale Other:　　0000 to 1770 Hex full scale	
Conversion time		2 ms/point (6 ms/all analog I/O)	
Isolation method		Photocoupler isolation between analog I/O and internal circuits. (Individual analog I/O signals are not isolated.)	
Power consumption		3.5 W	
Weight		200 g max.	

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■ CPM2C-SRT21 CompoBus/S I/O Link Unit

The CPM2C PC can function as a Slave to a CompoBus/S Master Unit (or SRM1 CompoBus/S Master Control Unit) when a CPM2C-SRT21 CompoBus/S I/O Link Unit is connected. The CompoBus/S I/O Link Unit establishes an I/O link of 8 inputs and 8 outputs between the Master Unit and the CPM2C. Up to 3 Expansion I/O Units or Expansion Units can be connected to a CPM2C CPU Unit.

CompoBus/S Master Unit (or SRM1 CompoBus/S Master Control Unit)

CS1□, C200H□, CQM1 (H), SRM1, or CPM2C-S PLC

Special flat cable or VCTF cable

CPM2C CPU Unit

CPM2C-SRT21 CompoBus/S I/O Link Unit

Up to 16 Slaves can be connected. (Up to 8 Slaves with the CQM1-SRM21-V1.)

Specifications

Item	Specification
Model number	CPM2C-SRT21
Master/Slave	CompoBus/S Slave
Number of I/O bits	8 input bits, 8 output bits
Number of words occupied in CPM2C I/O memory	1 input word, 1 output word (Allocated in the same way as other Expansion I/O Units or Expansion Units)
Node number setting	Set using the DIP switch.
Power consumption	1 W
Weight	150 g

Note: See the *CompoBus/S Catalog (Q103)* for more details on CompoBus/S communications.

CPM2C Specifications

■ CPM2C-TS001/TS101 Temperature Sensor Units

Up to four CPM2C-TS001/TS101 Temperature Sensor Units can be connected to the CPM2C. Each Unit provides 2 input points for temperature sensors, including thermocouples or temperature resistance thermometers , i.e., up to 8 temperature sensors can be input to one CPM2C.

Application Examples:
Foodstuff Equipment and Packaging Machines

Specifications

Item	CPM2C-TS001	CPM2C-TS002
Temperature sensor	Thermocouple	Temperature resistance thermometer
Input types	K or J selectable (The same input type must be used for all inputs.)	Pt100, JPt1100 selectable (The same input type must be used for all inputs.)
Number of inputs	2 (2 words allocated)	
Accuracy	±0.5% or ±2°C of the stored value whichever is larger ± 1 digit max. (see note)	±0.5% or ±1°C of the stored value whichever is larger (see note) ± 1 digit max.
Conversion cycle	250 ms/2 inputs	
Converted temperature data	Binary data (4-digit hexadecimal)	
Isolation method	Photocoupler isolation between input signals	
Power consumption	1.5 W	
Weight	200 g max.	

Note: Accuracy for K thermocouples at temperatures less than −100°C: ±4°C ± 1 digit max.

Input Temperature Ranges for CPM2C-TS001

The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

Item	Range in °C	Range in °F
K	−200 to 1,300	−300 to 2,300
	0.0 to 500.0	0.0 to 900.0
J	−100 to 850	−100 to 1,500
	0.0 to 400.0	0.0 to 750.0

Input Temperature Ranges for CPM2C-TS101

The input type is selected with a rotary switch. The ranges for each of the input types are shown in the following table.

Item	Range in °C	Range in °F
Pt100	−200.0 to 650.0	−300 to 1,200.0
JPt100	−200.0 to 650.0	−300 to 1,200.0

■ CPM2C-CIF21 Simple Communications Unit
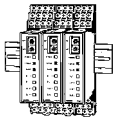
Easy initial settings enable data exchange between the CPM2C and components.

E5GN Temperature Controller   K3GN Digital Panel Meter   H8GN Electronic Timer/Counter
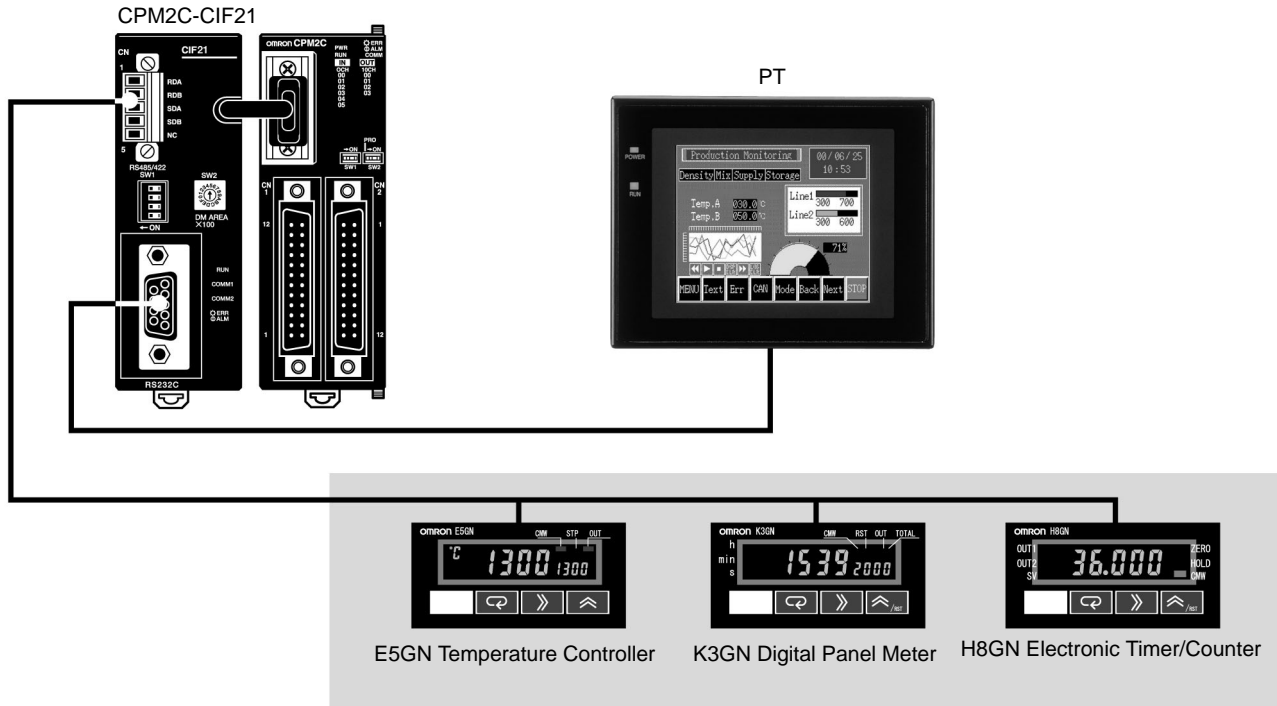
CPM2C Specifications

■ Connectable Devices

A Wide Range of Devices Supporting CompoWay/F or SYSWAY Communications

Classifica-tion	Product	Model	SYSWAY	Segments	Compo Way/F	Remarks
Controllers	Temperature Controllers	E5GN	Yes	1	Yes	---
		E5CN	Yes	1	Yes	---
		E5EN	Yes	1	Yes	---
		E5AN	Yes	1	Yes	---
	Modular Temperature Controller	E5ZN	No	---	Yes	---
	Digital Controllers	E5CK	Yes	1	No	---
		E5EK	Yes	1	No	---
		E5AK	Yes	1	No	---
	Digital Controllers for control valves	E5EK	Yes	1	No	Valve system communications not supported.
		E5AK	Yes	1	No	
	Digital Controller, basic type	E5CK-T	No	---	No	---
		E5EK-T	No	---	No	---
		E5AK-T	No	---	No	---
	Digtal Controllers for control valves, programmable	E5EK-T	No	---	No	---
		E5AK-T	No	---	No	---
	Temperature Controllers	E5EJ	Yes	1	No	---
		E5AJ	Yes	1	No	---
	Fuzzy Temperature Controller	E5AF	Yes	1	No	---
Timers	Electronic Timer/Counter	H8GN	No	---	Yes	---
Digital Panels	Digital Panel Meter	K3GN	No	---	Yes	---
	Process Meter	K3NX	Yes	2	Limited	Some commands cannot be used with some models (options). Only the CompoWay/F variable area can be read.
	Weighing Meter	K3NV	Yes	2	Limited	
	Frequency/Rate Meter	K3NR	Yes	2	Limited	
	Period Meter	K3NP	Yes	2	Limited	
	Up/Down Counter Meter	K3NC	Yes	2	Limited	
	Temperature Meter	K3NH	Yes	2	Limited	
	Intelligent Signal Processor	K3TS	Yes	2	No	SYSWAY communications only (See note 2.)

Limited: Connection possible for limited functions.

Note: 1. SYSWAY segment 1 and SYSWAY segment 2 can be combined.

2. When a K3TS is connected, connect the other components via SYSWAY as well.

■ CMP2C-CIF21 Simple Communications Unit

■ Component Parameters Supported for Communications

The communications protocol for components can be set in the CPM2C's DM Area to CompoWay/F or SYSWAY. The data that can be read and written depends on the protocol that is set.

CompoWay/F

Reading and writing is possible for all component data (except for some Digital Panel Meters). The amount of data that can be read/written in one operation per component is limited to 12 data items for reading and 12 data items for writing. Reading and writing is enabled by setting the address for each parameter in DM.

SYSWAY

Reading and writing is possible for the data shown in the following table.

Segment	Read/write	Item	Command group				
			1	2	3	4	5
1: Controllers	Read	Present temperature	Yes	Yes	Yes	Yes	Yes
		Status	Yes	Yes	Yes	Yes	Yes
		Temperature set value	Yes	Yes	Yes	Yes	Yes
		Alarm 1 set value			Yes	Yes	Yes
		Alarm 2 set value			Yes	Yes	Yes
		Proportional band				Yes	Yes
		Integral time				Yes	Yes
		Derivative time				Yes	Yes
		Heater current					Yes
		Heater current status					Yes
	Write	Temperature set value	Yes	Yes	Yes	Yes	Yes
		Operation command		Yes	Yes	Yes	Yes
		Alarm 1 set value			Yes	Yes	Yes
		Alarm 2 set value			Yes	Yes	Yes
		Proportional band				Yes	Yes
		Integral time				Yes	Yes
		Derivative time				Yes	Yes
		Heater burnout detection value					Yes
2: Digital Meters	Read	Display value	Yes	Yes	Yes	Yes	Yes
		Display status	Yes	Yes	Yes	Yes	Yes
		Peak hold		Yes	Yes		Yes
		Peak hold status		Yes	Yes		Yes
		Bottom hold		Yes	Yes		Yes
		Bottom hold status		Yes	Yes		Yes
		HH comparison value				Yes	Yes
		H comparison value				Yes	Yes
		L comparison value				Yes	Yes
		LL comparison value				Yes	Yes
	Write	Operation command			Yes		Yes
		HH comparison value				Yes	Yes
		H comparison value				Yes	Yes
		L comparison value				Yes	Yes
		LL comparison value				Yes	Yes

The command groups for which reading or writing is performed are determined by settings in the DM area.

CPM2C Specifications

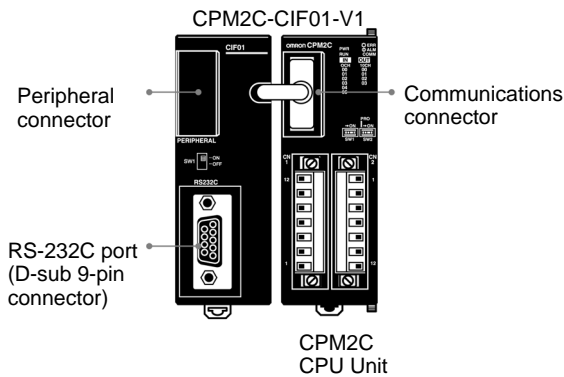## ■ CPM2C-CIF21 Simple Communications Unit Specifications

Item		Specification
Applicable PLC		CPM2C
RS-485/422 (top port)	Maximum number of connectable components	32
	Component connection port	Components connected to RS-485/422 terminal block. Connected to CPM2C CPU Unit via peripheral port (see diagram below).
	Baud rate for connection to components	9.6, 19.2, 38.4, or 57.6 kbps
	Baud rate for connection to CPU Unit	9.6 or 19.2 kbps
RS-232C (bottom port)	Signal conversion	Output from CPU Unit's RS-232C interface with no conversion
	Communications functions	One of the following: Host Link, no-protocol, 1:1 Link, 1:1 NT Link
Power supply		From CPU Unit
Power consumption		1 W
Weight		150 g max.

■ Internal Configuration
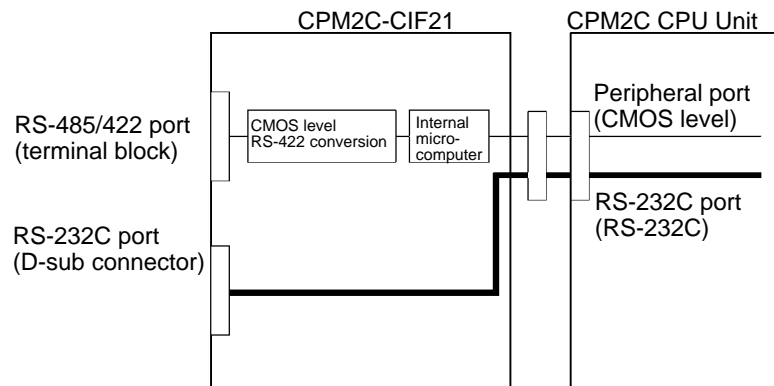
CPM2C Specifications

CPM2C-CIF01-V1
Peripheral/RS-232C Adapter Unit

CPM2C-CIF01-V1

Peripheral connector

Communications connector

RS-232C port (D-sub 9-pin connector)

CPM2C CPU Unit

CPM2C-CIF11
RS-422/RS-232C Adapter Unit

CPM2C-CIF11

RS-422 port (terminal block)

Communications connector

RS-232C port (D-sub 9-pin connector)

CPM2C CPU Unit

Internal Configuration

CPM2C-CIF01-V1 CPM2C CPU Unit

Peripheral port (CMOS/RS-232C)

CMOS level

CMOS level → RS-232C conversion

Peripheral port (CMOS level)

RS-232C port (RS-232C)

RS-232C port (RS-232C)
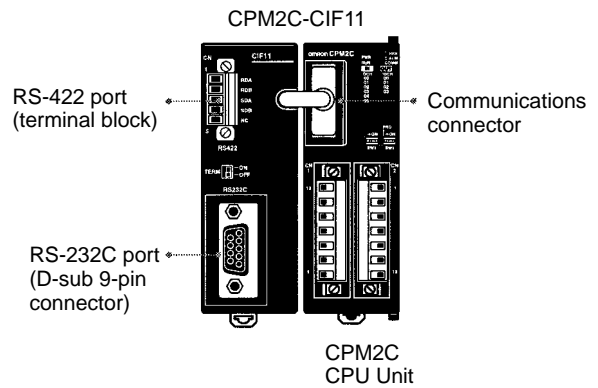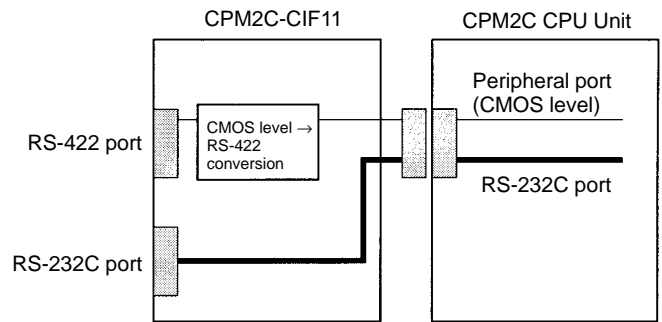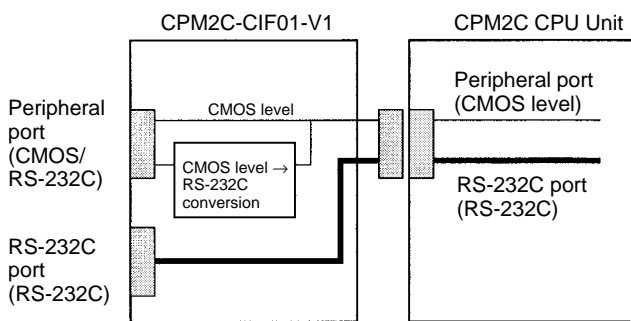
Note: When using the CS1W-CN226/CN626 Connecting Cable for personal computer connection, turn ON the switch.

CPM2C-CIF11 CPM2C CPU Unit

RS-422 port

CMOS level → RS-422 conversion

Peripheral port (CMOS level)

RS-232C port

RS-232C port

Note: A Programming Console cannot be connected to the RS-422 port.

CPM2C-CIF01-V1/CIF11 Specifications

Item		Specification	
		CPM2C-CIF01-V1	**CPM2C-CIF11**
Upper port	Signal conversion	Outputs signals from the CPU Unit's CMOS interface without conversion, or converts CMOS level (CPU Unit side) to RS-232C (connected device side).	Converts CMOS level (CPU Unit side) to RS-422 (connected device side). RS-422 (externally connected device) insulated using DC/DC converter or photocoupler.
	Function	Host Link, peripheral bus, no-protocol, or Programming Console connections.	Host Link, peripheral bus, or no-protocol connections.
Lower port	Signal conversion	Outputs signals from the CPU Unit's CMOS interface without conversion.	Outputs signals from the CPU Unit's CMOS interface without conversion.
	Function	Host Link, no-protocol, 1:1 Link, or 1:1 NT Link connections.	Host Link, no-protocol, 1:1 Link, or 1:1 NT Link connections.
Power supply		Power supplied from CPU Unit.	
Current consumption		0.3 A max. at 5 V	
Weight		150 g max.	

Note: Neither the CPM2C-CIF01-V1 nor the CPM2C-CIF11 can be used with any PC other than the CPM2C. A CPM2C-CIF11 or another CPM2C-CIF01-V1 cannot be connected to the CPM2C if a CPM2C-CIF01-V1 is already connected to it.

CPM2C Specifications

■ Number of Connectable Units

Up to 5 Units can be connected to a CPM2C CPU Unit except for the CPM2C-S1□OC-DRT Programmable Slave and CPM2C-S1□OC CompoBus/S Master Unit, which are limited to 3 Units. The number of words that can be used by Expansion Units, however, is limited, and these limits must not be exceeded.

Model	Max. No. of Units	Applicable I/O words
CPU Units except those listed below	5	Inputs: IR 001 to IR 009 (CPU Unit uses IR 000) Outputs: IR 011 to IR 019 (CPU Unit uses IR 010)
CPU Units with 32 I/O points (CMP2C-32CDT□C-D)	5	Inputs: IR 002 to IR 009 (CPU Unit uses IR 000 and IR 001) Outputs: IR 012 to IR 019 (CPU Unit uses IR 010 and IR 011)
CPM2C-S1□OC-DRT Programmable Slave and CPM2C-S1□OC CompoBus/S Master Unit	3	Inputs: IR 001 to IR 009 (CPU Unit uses IR 000) Outputs: IR 011 to IR 019 (CPU Unit uses IR 010)

Note: 1. An AC Power Supply Unit can be used for the CPU Units.

2. The CPM2C-CIF01-V1/CIF11/CIF21 can be used with the CPU Units

■ Number of I/O Words Allocated to Expansion Units

Unit	Model number	Input words	Output words
Expansion Input Units	CPM2C-8ED□	1	---
	CPM2C-16ED□	1	---
Expansion Output Units	CPM2C-8ER	---	1
	CPM2C-8ET(1)□	---	1
	CPM2C-16ET(1)□	---	1
Expansion I/O Units	CPM2C-10EDR	1	1
	CPM2C-24EDT(1)□	1	1
Expansion I/O Units	CPM2C-20EDR	1	1
	CPM2C-32EDT(1)□	1	1
Analog I/O Unit	CPM2C-MAD11	2	1
Temperature Sensor Units	CPM2C-TS001	2	---
	CPM2C-TS101	2	---
CompoBus/S I/O Link Unit	CPM2C-SRT21	1	1

■ Word Allocation Examples

CMP2C-20CDTC-D CPU Unit

5 Units max.

CPU Unit

Unit	Model number	Inputs	Outputs
CPU Unit	CPM2C-20CDTC-D	IR 000	IR 010
Expansion I/O Unit	CPM2C-24EDTC	IR 001	IR 011
Expansion Output Unit	CPM2C-16ETC	---	IR 012
Analog I/O Unit	CPM2C-MAD11	IR 002 IR 003	IR 013
Temperature Sensor Unit	CPM2C-TS001	IR 004 IR 005	---
CompoBus/S I/O Link Unit	CPM2C-SRT21	IR 006	IR 014

CMP2C-32CDTC-D CPU Unit

5 Units max.
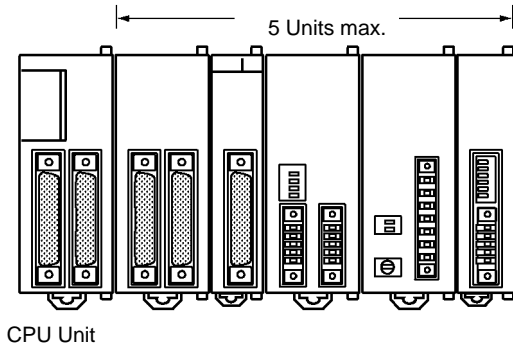
CPU Unit

Unit	Model number	Inputs	Outputs
CPU Unit	CPM2C-32CDTC-D	IR 000 IR 001	IR 010 IR 011
Expansion I/O Unit	CPM2C-24EDTC	IR 002	IR 012
Expansion Output Unit	CPM2C-16ETC	---	IR 013
Analog I/O Unit	CPM2C-MAD11	IR 003 IR 004	IR 014
Temperature Sensor Unit	CPM2C-TS001	IR 005 IR 006	---
CompoBus/S I/O Link Unit	CPM2C-SRT21	IR 007	IR 015

CMP2C-S100-DRT Programmable Slave

3 Units max.

CPU Unit
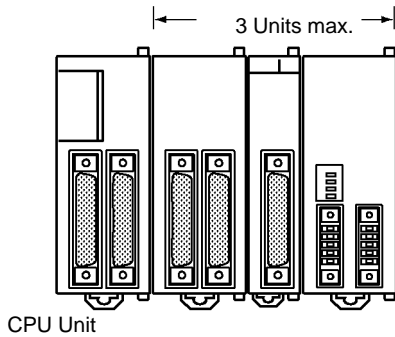
Unit	Model number	Inputs	Outputs
Programmable Slave	CPM2C-S100-DRT	IR 000	IR 010
Expansion I/O Unit	CPM2C-24EDTC	IR 001	IR 011
Expansion Output Unit	CPM2C-16ETC	---	IR 012
Analog I/O Unit	CPM2C-MAD11	IR 002 IR 003	IR 013

Note: Words allocated for CompoBus/S I/O are not affected by the Expansion Units that are connected.
CompoBus/S inputs: IR 20 to IR 27
CompoBus/S outputs: IR 30 to IR 37

CPM2C Dimensions

CPU Units

CPU Units with Relay Outputs
(CPM2C-10C(1) DR-D, CPM2C-20C(1)DR-D)
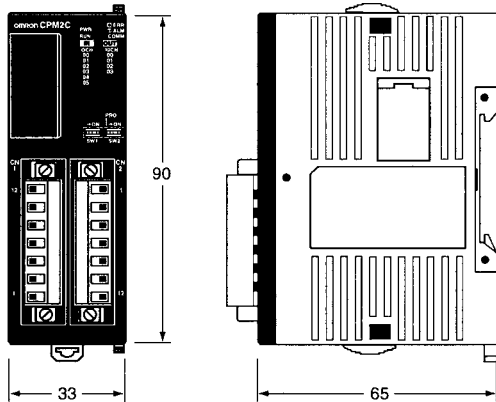
CPU Units with Transistor Outputs
(CPM2C-10C(1)DT(1)C-D, CPM2C-10C(1)DT(1)M-D,
CPM2C-20C(1)DT(1)C-D, CPM2C-20C(1)DT(1)M-D,
CPM2C-32CDT(1)C-D, CPM2C-32CDT(1)M-D)
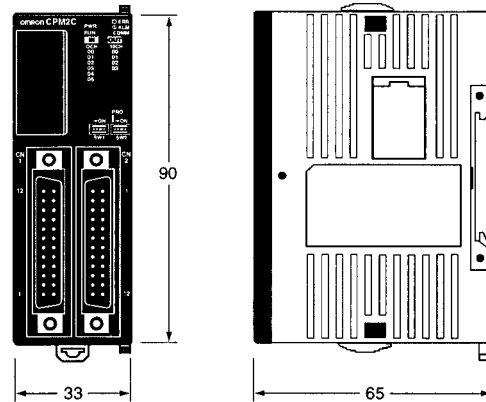
CPU Units with Relay Outputs
(CPM2C-S1□0C)
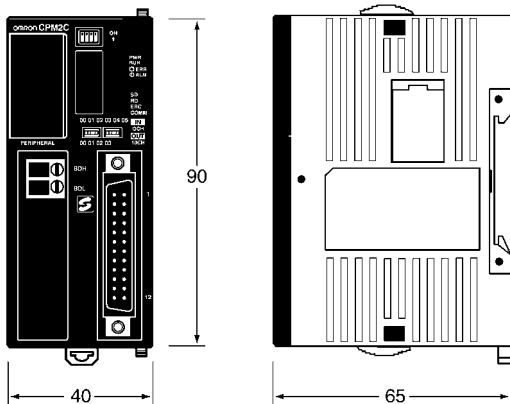
CPU Units with Transistor Outputs
(CPM2C-S1□0C-DRT)

Note: All dimensions are in mm.

Expansion I/O Units

Units with Relay Outputs
(CPM2C-8ER, CPM2C-10EDR, CPM2C-20EDR)
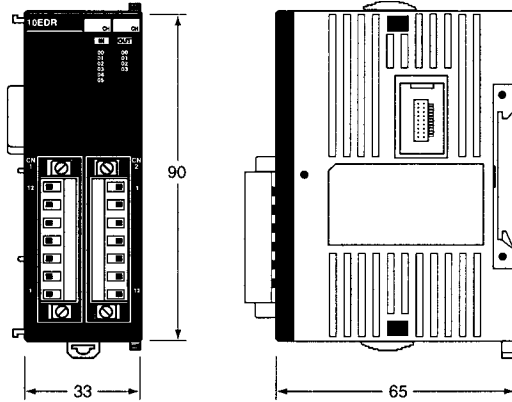
Units with Transistor Outputs
(CPM2C-24EDT(1)C, CPM2C-24EDT(1)M,
CPM2C-32EDT(1)C, CPM2C-32EDT(1)M)
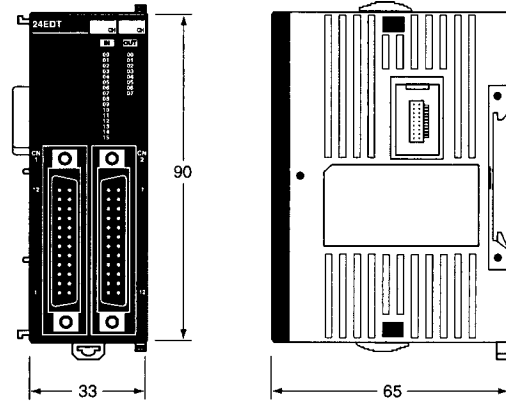
Units with Transistor Outputs Only and Units with Inputs Only
(CPM2C-8ED(1), CPM2C-8ET(1)C, CPM2C-8ET(1)M,
CPM2C-16ED(1), CPM2C-16ET(1)C, CPM2C-16ET(1)M)
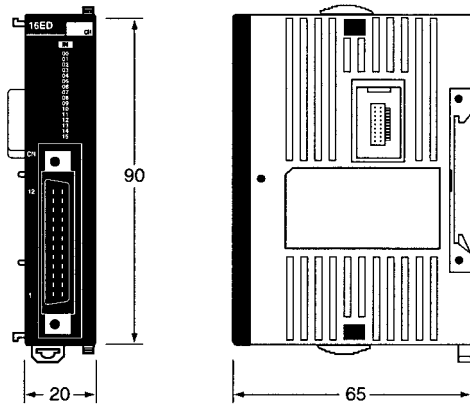
Note: All dimensions are in mm.

CPM2C Dimensions

**AC Power Supply Unit
(CPM2C-PA201)**
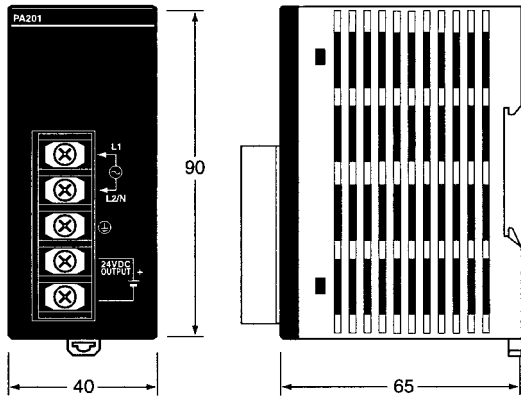
**Analog I/O Unit
(CPM2C-MAD11)**
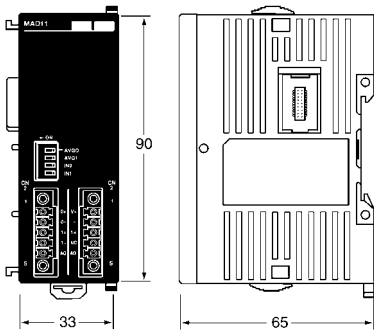
**Temperature Sensor Unit
(CPM2C-TS001, CPM2C-TS101)**
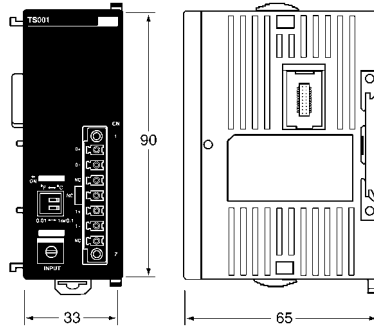
**CompoBus/S I/O Link Unit
(CPM2C-SRT21)**
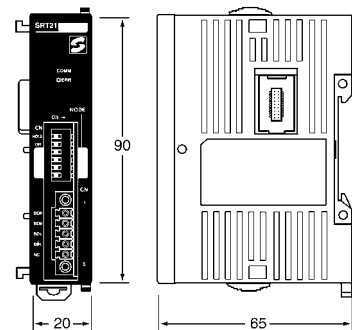
**Simple Communications Unit
(CPM2C-CIF21)**
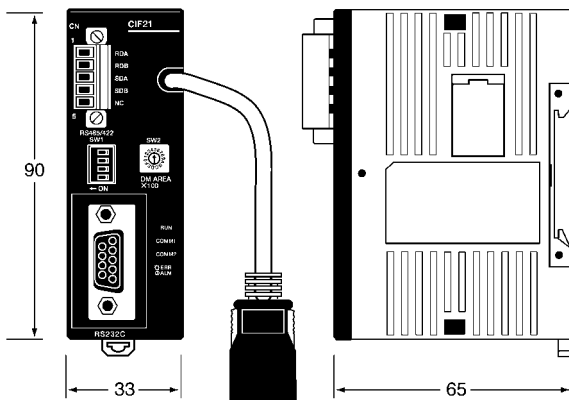
**Peripheral/RS-232C Adapter Unit
(CPM2C-CIF01-V1)**
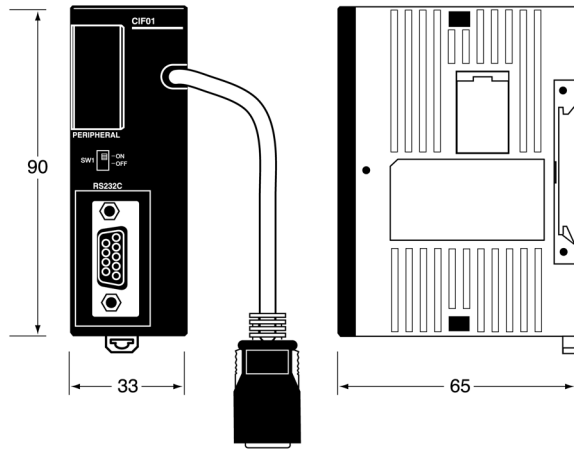
**RS-422/RS-232C Adapter Unit
(CPM2C-CIF11)**
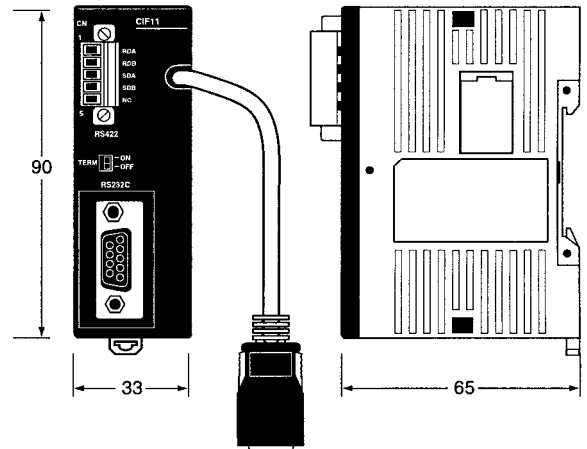
Functions

The illustrations in this section show CPM2A PCs, but the same functions are available in CPM2C PCs unless otherwise stated.

■ Interrupts

The CPM2A and CPM2C provide the following kinds of interrupt processing.

Interrupt Inputs
Interrupt programs are executed when inputs to the CPU Unit's built-in input points (00003 to 00006) are turned from OFF to ON. Interrupt subroutine numbers 000 to 003 are allocated to input points 00003 to 00006.

Interval Timer Interrupts
Interval timer interrupt programs are executed with a precision of 0.1 ms. Interrupt subroutine numbers 000 to 049 are allocated by instructions.

Count-up Interrupts
Input signals to the CPU Unit's built-in input points (00003 to 00006) are counted at high speed (up to 2 kHz), and the normal program is stopped and an interrupt program is executed when the count reaches the SV. Interrupt subroutine numbers 000 to 003 are allocated to input points 00003 to 00006.

Count-check Interrupts Using the High-speed Counter
Pulse inputs to the CPU Unit's built-in input points (00000 to 00002) are counted at high speed (up to 20 kHz or 5 kHz), and an interrupt program is executed when the present value matches the target value or falls within a given range. Interrupt subroutine numbers 000 to 049 are allocated by instructions.

■ Interval Timer Interrupts
The CPM2A/CPM2C has one interval timer (precision: 0.1 ms) that can be set from 0.5 ms to 319,968 ms. There are two interrupt modes: the single-interrupt mode, in which a single interrupt is executed when the time is up, and the scheduled-interrupt mode, in which interrupts are executed at regular intervals.
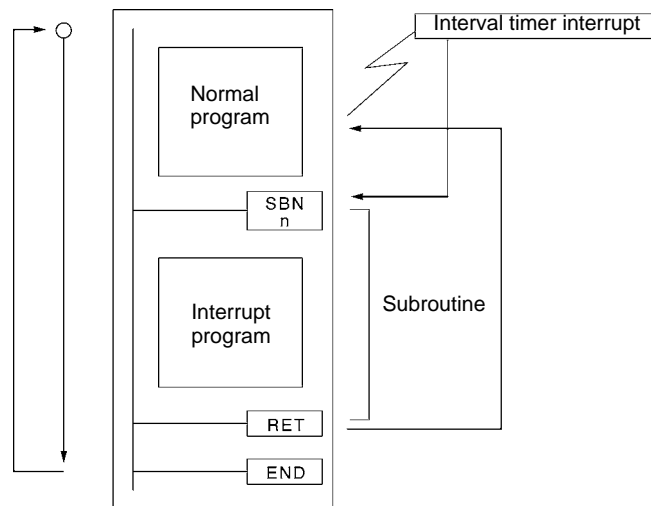
| Item	Single-interrupt mode	Scheduled-interrupt mode
Operation	Interrupt is executed once when time has elapsed.	Interrupts are executed at regular intervals.
Set time	0.5 to 319,968 ms (Unit: 0.1 ms)	
Interrupt response time	0.3 ms (from when time has elapsed until execution of interrupt program)	

■ High-speed Counters

The CPM2A/CPM2C CPU Unit has a built-in high-speed counter that can count input pulses at up to 20 kHz. When combined with the interrupt function, the high-speed counter can be used for target-value comparison or range comparison control that is unaffected by the cycle time.
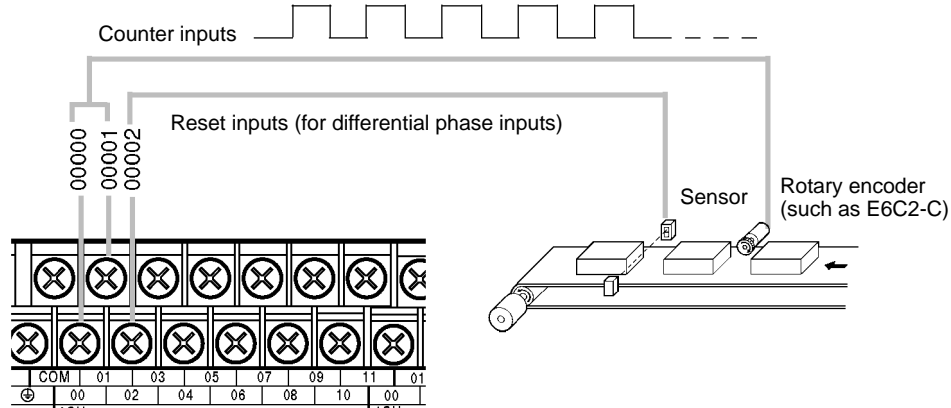
Input	Response frequency	Input mode (count value)	Counter PV Storage	Control method
00000 00001 00002	5 kHz	Differential phase input mode (-8,388,608 to 8,388,607)	SR 248 and SR 249	Target value comparison interrupts
	20 kHz	Pulse + direction input mode (-8,388,608 to 8,388,607)		
		Up/down pulse input mode (-8,388,608 to 8,388,607)		Range comparison interrupts
		Increment mode (0 to 16,777,215)		

■ Interrupt Inputs (Counter Mode)

The four built-in interrupt inputs in the CPM2A/CPM2C's CPU Unit can be used in counter mode to count inputs of up to 2 kHz. These inputs can be used as either incrementing counters or decrementing counters and can trigger an interrupt (i.e., execute an interrupt subroutine) when the count matches the set value.
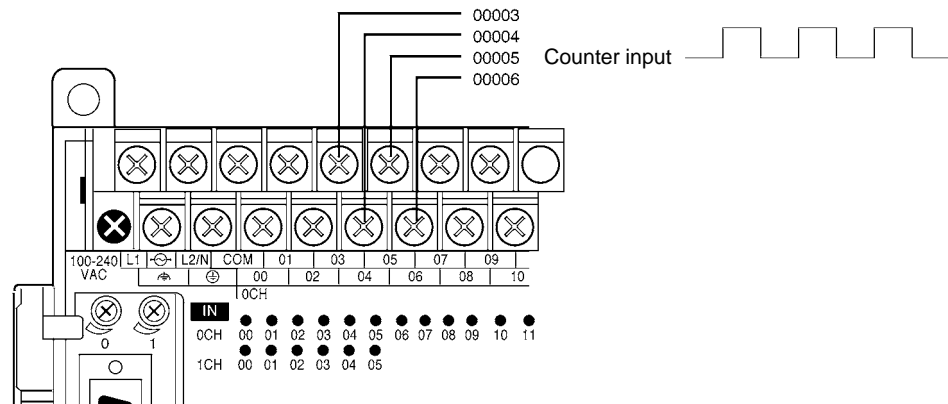

Input	Counter number	Set value location	Present value location	Response frequency	Input mode (count value)	Control method
00003	Counter 0	SR 240	SR 244	2 kHz	Incrementing counter (0000 to FFFF)	Count-up interrupts
00004	Counter 1	SR 241	SR 245		Decrementing counter (0000 to FFFF)	
00005	Counter 2	SR 242	SR 246			
00006	Counter 3	SR 243	SR 247			

Functions

■ Pulse Outputs

The CPM2A/CPM2C has two pulse outputs. The PC Setup can be set to use these outputs as two single-phase outputs without acceleration and deceleration, two variable duty-ratio pulse outputs, or pulse outputs with trapezoidal acceleration/deceleration (one pulse + direction output and one up/down pulse output). The pulse output's PV coordinate system can also be specified in the PC Setup as either relative or absolute.
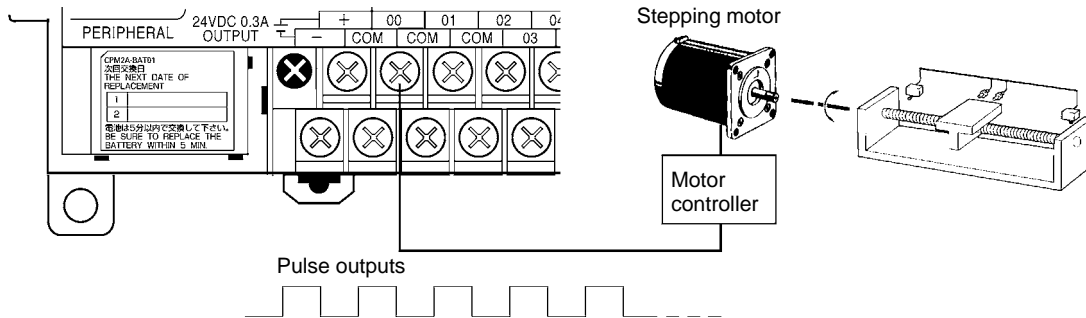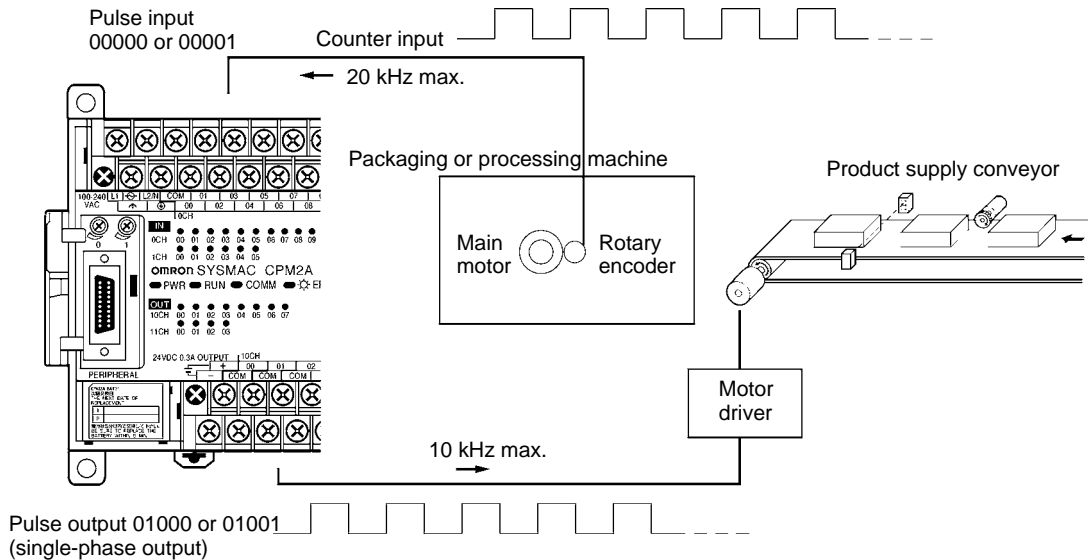

Item		Single-phase pulse output without accel/decel	Variable duty-ratio pulse output	Single-phase pulse output with trapezoidal acceleration/deceleration			
				Pulse + direction output		Up/down pulse output	
Controlling instruction(s)		PULS(65) and SPED(64)	PWM(—)	PULS(65) and ACC(—)			
Output number	01000	Pulse output 0 (See note.)	Pulse output 0 (See note.)	Pulse output 0	Pulse output	Pulse output 0	CW pulse output
	01001	Pulse output 1 (See note.)	Pulse output 1 (See note.)		Direction output		CCW pulse output
Output frequency range		10 Hz to 10 kHz	0.1 Hz to 999.9 Hz	10 Hz to 10 kHz		10 Hz to 10 kHz	
	Pitch	10 Hz	0.1 Hz	10 Hz		10 Hz	
Duty ratio		50%	0 to 100%	50%		50%	

Note: With single-phase pulse outputs, pulse outputs 0 and 1 can each be output independently.

■ Synchronized Pulse Control

The CPM2A/CPM2C's high-speed counter function can be combined with the pulse output function to generate an output pulse at a specified multiple of the input pulse frequency. (The expansion instructions must be read from the CPM2A/CPM2C when using the SSS.)


Item		Input mode			
		Phase differential input mode	**Pulse + direction input mode**	**Up/down pulse input mode**	**Increment mode**
Input number	00000	A-phase input	Count input	CW input	Count input
	00001	B-phase input	Direction input	CCW input	See note 1.
Input method		Phase differential quadruple input	Single-phase input	Single-phase input	Single-phase input
Input frequency range		10 Hz to 500 Hz (accuracy ±1 Hz) 20 Hz to 1 kHz (accuracy ±1 Hz) 300 Hz to 20 kHz (accuracy ±25 Hz) (See note 2.)			
Output frequency range		10 Hz to 10 kHz (accuracy 10 Hz)			
Frequency ratio (scaling factor)		1 % to 1,000% (Can be specified in units of 1%.)			
Synchronized control cycle		10 ms			

Note 1. Can be used as an ordinary input.

2. The accuracy is ±10 Hz when the input frequency is 10 kHz or less.

■ Quick-response Inputs

The CPM2A CPU Units and CPM2C CPU Units with 20 I/O points have four inputs that can be used for quick-response inputs. The CPM2C CPU Units with 10 I/O points have two inputs that can be used for quick response inputs. These inputs are shared with interrupt inputs and 2-kHz high-speed counter inputs. Quick-response inputs are received into an internal buffer, so signals that change status within a cycle can be received.
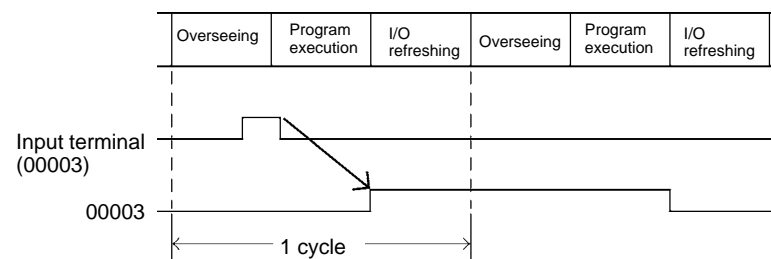
Input number	Min. input signal
00003	50 μs
00004	
00005	
00006	

Inputs 00003 through 00006 can be used as interrupt inputs, 2-kHz high-speed counter inputs, or quick-response inputs. These inputs can be used as ordinary inputs if they are not used as interrupt inputs, 2-kHz high-speed counter inputs, or quick-response inputs.

Inputs 00005 and 00006 cannot be used with the CPM2C CPU Unit with 10 I/O points.

Functions
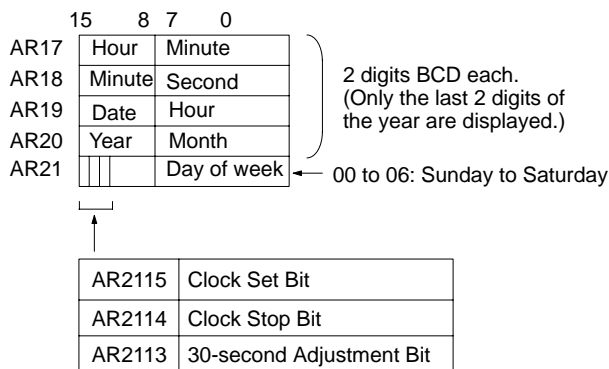
■ Analog Controls (CPM2A Only)

The CPM2A CPU Unit has two analog controls that can be used for a wide range of timer and counter analog settings. As these controls are turned, values from 0 to 200 (BCD) are stored in the SR Area.

Control	Storage area	Set value (BCD)
Analog control 0	SR 250	0000 to 0200
Analog control 1	SR 251	0000 to 0200

■ Clock Function

The CPM2A and some CPM2Cs have a built-in clock (accuracy: ±1 minute/month) that allows the date and time to be read from the ladder program. The time can be overwritten from a Programming Console or other Programming Device, but the CPM2A is also equipped with a 30-second Compensation Bit. The time will be rounded off to the nearest minute when this bit is turned ON, so the time can be set very accurately by turning ON this bit when the "time tone" is heard on the radio.

(The CPM2C CPU Units have models with the clock function and models without.)

```
        15      8 7      0
AR17  | Hour   | Minute |
AR18  | Minute | Second |      2 digits BCD each.
AR19  | Date   | Hour   |      (Only the last 2 digits of
AR20  | Year   | Month  |      the year are displayed.)
AR21  |    | Day of week | ←— 00 to 06: Sunday to Saturday
```

AR2115	Clock Set Bit
AR2114	Clock Stop Bit
AR2113	30-second Adjustment Bit

■ Additional Timer Functions

VERY HIGH-SPEED TIMER (Units: 1 ms)	Starts a very high-speed decrementing ON-delay timer with the specified timer number. The set value can be 0 to 9,999 ms. (Set in 1-ms units.)
LONG TIMER (Units: 1 s or 10 s)	Starts a long-term decrementing ON-delay timer with the specified timer number. The set value can be 0 to 9,999 s (when set in 1-s units) or 0 to 99,990 s (when set in 10-s units).

Note: This function is supported only by the SSS.

■ NT Link

The CPM2A/CPM2C can be connected to an OMRON PT (Programmable Terminal) in NT Link mode (1:1). A communications program is not required in the CPM2A/CPM2C. The RS-232C port can be used for the NT Link.

CPM2A CPU Unit

RS-232C cable

OMRON PT

RS-232C port
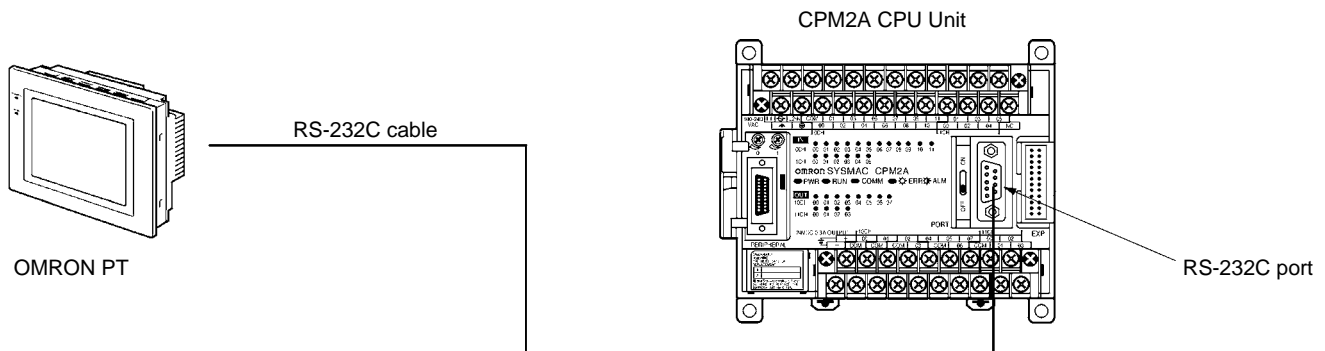
Instructions

The CPM2A and CPM2C support 119 basic and special instructions.

■ Ladder Diagram Instructions

Name	Mnemonic	Variations
LOAD	LD	---
LOAD NOT	LD NOT	---
AND	AND	---
AND NOT	AND NOT	---
OR	OR	---
OR NOT	OR NOT	---
AND LOAD	AND LD	---
OR LOAD	OR LD	---

■ Bit Control Instructions

Name	Mnemonic	Variations
OUTPUT	OUT	---
OUTPUT NOT	OUT NOT	---
SET	SET	---
RESET	RSET	---
KEEP	KEEP(11)	---
DIFFERENTIATE UP	DIFU(13)	---
DIFFERENTIATE DOWN	DIFD(14)	---

■ Sequence Control Instructions

Name	Mnemonic	Variations
NO OPERATION	NOP(00)	---
END	END(01)	---
INTERLOCK	IL(02)	---
INTERLOCK CLEAR	ILC(03)	---
JUMP	JMP(04)	---
JUMP END	JME(05)	---

■ Timer and Counter Instructions

Name	Mnemonic	Variations
TIMER	TIM	---
COUNTER	CNT	---
REVERSIBLE COUNTER	CNTR(12)	---
HIGH-SPEED TIMER	TIMH(15)	---
ONE-MS TIMER	TMHH(—[1])[2]	---
LONG TIMER	TIML(—[1])[2]	---

■ Comparison Instructions

Name	Mnemonic	Variations
COMPARE	CMP(20)	---
TABLE COMPARE	TCMP(85)	@
DOUBLE COMPARE	CMPL(60)[1]	---
BLOCK COMPARE	BCMP(68)[1]	@
AREA RANGE COMPARE	ZCP(—[1])[2]	---
DOUBLE AREA RANGE COMPARE	ZCPL(—[1])[2]	---

■ Data Movement Instructions

Name	Mnemonic	Variations
MOVE	MOV(21)	@
MOVE NOT	MVN(22)	@
BLOCK TRANSFER	XFER(70)	@
BLOCK SET	BSET(71)	@
DATA EXCHANGE	XCHG(73)	@
SINGLE WORD DISTRIBUTE	DIST(80)	@
DATA COLLECT	COLL(81)	@
MOVE BIT	MOVB(82)	@
MOVE DIGIT	MOVD(83)	@

■ Shift Instructions

Name	Mnemonic	Variations
SHIFT REGISTER	SFT(10)	---
WORD SHIFT	WSFT(16)	@
ARITHMETIC SHIFT LEFT	ASL(25)	@
ARITHMETIC SHIFT RIGHT	ASR(26)	@
ROTATE LEFT	ROL(27)	@
ROTATE RIGHT	ROR(28)	@
ONE DIGIT SHIFT LEFT	SLD(74)	@
ONE DIGIT SHIFT RIGHT	SRD(75)	@
REVERSIBLE SHIFT REGISTER	SFTR(84)	@
ASYNCHRONOUS SHIFT REGISTER	ASFT(17)[1]	@

■ Increment/Decrement Instructions

Name	Mnemonic	Variations
INCREMENT	INC(38)	@
DECREMENT	DEC(39)	@

■ Calculation Instructions

Name	Mnemonic	Variations
BCD ADD	ADD(30)	@
BCD SUBTRACT	SUB(31)	@
BCD MULTIPLY	MUL(32)	@
BCD DIVIDE	DIV(33)	@
BINARY ADD	ADB(50)	@
BINARY SUBTRACT	SBB(51)	@
BINARY MULTIPLY	MLB(52)	@
BINARY DIVIDE	DVB(53)	@
DOUBLE BCD ADD	ADDL(54)	@
DOUBLE BCD SUBTRACT	SUBL(55)	@
DOUBLE BCD MULTIPLY	MULL(56)	@
DOUBLE BCD DIVIDE	DIVL(57)	@

Note 1. Expansion instructions with default function codes.

2. Instructions not supported by the CPM1A.

Instructions

■ Conversion Instructions

Name	Mnemonic	Variations
BCD-TO-BINARY	BIN(23)	@
BINARY-TO-BCD	BCD(24)	@
DOUBLE BCD-TO-DOUBLE BINARY	BINL(58)[2]	@
DOUBLE BINARY-TO-DOUBLE BCD	BCDL(59)[2]	@
DATA DECODER	MLPX(76)	@
DATA ENCODER	DMPX(77)	@
ASCII CONVERT	ASC(86)	@
ASCII-TO-HEXADECIMAL	HEX(—1)[2]	@
2'S COMPLEMENT	NEG(—1)[2]	@
HOURS-TO-SECONDS	SEC(—1)[2]	@
SECONDS-TO-HOURS	HMS(—1)[2]	@

■ Table Data Manipulation Instructions

Name	Mnemonic	Variations
FRAME CHECKSUM	FCS(—1)[2]	@
SUM	SUM(—1)[2]	@
DATA SEARCH	SRCH(—1)[2]	@
FIND MAXIMUM	MAX(—1)[2]	@
FIND MINIMUM	MIN(—1)[2]	@

■ Data Control Instructions

Name	Mnemonic	Variations
SCALING	SCL(66)[1, 2]	@
SCALING 2	SCL2(—1)[2]	@
SCALING 3	SCL3(—1)[2]	@
PID CONTROL	PID(—1)[2]	---
AVERAGE VALUE	AVG(—1)[2]	---

■ Logic Instructions

Name	Mnemonic	Variations
COMPLEMENT	COM(29)	@
LOGICAL AND	ANDW(34)	@
LOGICAL OR	ORW(35)	@
EXCLUSIVE OR	XORW(36)	@
EXCLUSIVE NOR	XNRW(37)	@

■ Special Calculation Instructions

Name	Mnemonic	Variations
BIT COUNTER	BCNT(67)[1]	@

■ Subroutine Instructions

Name	Mnemonic	Variations
SUBROUTINE CALL	SBS(91)	@
SUBROUTINE ENTRY	SBN(92)	---
SUBROUTINE RETURN	RET(93)	---
MACRO	MCRO(99)	@

■ Interrupt Control Instructions

Name	Mnemonic	Variations
INTERRUPT CONTROL	STIM(69)[1]	@
INTERVAL TIMER	INT(89)[1, 3]	@

■ Pulse Control Instructions

Name	Mnemonic	Variations
MODE CONTROL	INI(61)[1, 3]	@
HIGH-SPEED COUNTER PV READ	PRV(62)[1, 3]	@
REGISTER COMPARISON TABLE	CTBL(63)[1, 3]	@

■ Pulse Output Control Instructions

Name	Mnemonic	Variations
SPEED OUTPUT	SPED(64)[1, 3]	@
SET PULSES	PULS(65)[1, 3]	@
PULSE W/ VARIABLE DUTY RATIO	PWM(—1)[2]	@
ACCELERATION CONTROL	ACC(—1)[2]	@
SYNCHRONIZED PULSE CONTROL	SYNC(—1)[2]	@

■ I/O Unit Instructions

Name	Mnemonic	Variations
7-SEGMENT DECODER	SDEC(78)	@
I/O REFRESH	IORF(97)	@

■ Communications Instructions

Name	Mnemonic	Variations
RECEIVE	RXD(47)[1, 2]	@
TRANSMIT	TXD(48)[1, 2]	@
CHANGE RS-232C SETUP	STUP(—1)[2]	@

■ Step Instructions

Name	Mnemonic	Variations
STEP DEFINE	STEP(08)	---
STEP START	SNXT(09)	---

■ User Error Instructions

Name	Mnemonic	Variations
FAILURE ALARM AND RESET	FAL(06)	@
SEVERE FAILURE ALARM	FALS(07)	---

■ Display Instructions

Name	Mnemonic	Variations
MESSAGE DISPLAY	MSG(46)	@

■ Carry Flag Instructions

Name	Mnemonic	Variations
SET CARRY	STC(40)	@
CLEAR CARRY	CLC(41)	@

Note
1. Expansion instructions with default function codes.
2. Instructions not supported by the CPM1A.
3. Instructions improved in the CPM2A/CPM2C.

ORDERING GUIDE

International Standards

- The standards indicated in the "Standards" column are those current for UL, CSA, cULus, NK, and Lloyd standards and EC Directives as of the end of January 2005. The standards are abbreviated as follows: U: UL, UR: UL Recognition mark, 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 PLCs include the EMC Directives and the Low Voltage Directive. OMRON complies with these directives as described below.

EMC Directives

Applicable Standards (See note.)

EMI: EN61000-6-4
EMS: EN61131-2 and EN61000-6-2

PLCs are electrical devices that are incorporated in machines and manufacturing installations. OMRON PLCs 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 PLCs 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 PLC is installed. The customer must, therefore, perform final checks to confirm that the overall machine or device conforms to EMC standards.

Note: The applicable EMI and EMS standards depend on the product.

Low Voltage Directive

Applicable Standard
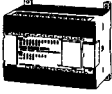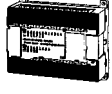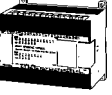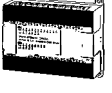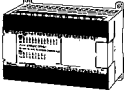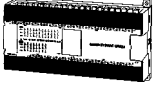
EN61131-2

Devices that operate at voltages from 50 to 1,000 VAC or 75 to 150 VDC must satisfy the appropriate safety requirements. With PLCs, 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 PLCs.

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
CPM2A Ordering Guide

■ CPM2A CPU Units

CPU Unit		Power supply	Output type	Inputs	Outputs	Model	Standards
20 I/O points		AC	Relay	12	8	CPM2A-20CDR-A	U, C, CE, N, L
		DC	Relay			CPM2A-20CDR-D	U, C, CE, N, L
			Transistor (sinking)			CPM2A-20CDT-D	U, C, CE, N, L
			Transistor (sourcing)			CPM2A-20CDT1-D	U, C, CE, N, L
30 I/O points		AC	Relay	18	12	CPM2A-30CDR-A	U, C, CE, N, L
		DC	Relay			CPM2A-30CDR-D	U, C, CE, N, L
			Transistor (sinking)			CPM2A-30CDT-D	U, C, CE, N, L
			Transistor (sourcing)			CPM2A-30CDT1-D	U, C, CE, N, L
40 I/O points		AC	Relay	24	16	CPM2A-40CDR-A	U, C, CE, N, L
		DC	Relay			CPM2A-40CDR-D	U, C, CE, N, L
			Transistor (sinking)			CPM2A-40CDT-D	U, C, CE, N, L
			Transistor (sourcing)			CPM2A-40CDT1-D	U, C, CE, N, L
60 I/O points		AC	Relay	36	24	CPM2A-60CDR-A	U, C, CE, N, L
		DC	Relay			CPM2A-60CDR-D	U, C, CE, N, L
			Transistor (sinking)			CPM2A-60CDT-D	U, C, CE, N, L
			Transistor (sourcing)			CPM2A-60CDT1-D	U, C, CE, N, L

■ Expansion Units and Expansion I/O Units

Unit	Output type	Inputs	Outputs	Model	Standards
Expansion I/O Units	Relay	24	16	CPM1A-40EDR	CE, N
	Transistor (sinking)			CPM1A-40EDT	CE, N
	Transistor output (sourcing)			CPM1A-40EDT1	CE, N
	Relay	12	8	CPM1A-20EDR1	U, C, CE, N, L
	Transistor (sinking)			CPM1A-20EDT	U, C, CE, N, L
	Transistor (sourcing)			CPM1A-20EDT1	U, C, CE, N, L
	---	8	---	CPM1A-8ED	U, C, CE, N, L
	Relay	---	8	CPM1A-8ER	U, C, CE, N, L
	Transistor (sinking)	---	8	CPM1A-8ET	U, C, CE, N, L
	Transistor (sourcing)			CPM1A-8ET1	U, C, CE, N, L
Analog I/O Unit	Analog (resolution: 1/256)	2	1	CPM1A-MAD01	U, C, CE, N, L
	Analog (resolution: 1/6,000)	2	1	CPM1A-MAD11	U, C, CE, N
Analog Input Unit	Analog (resolution: 1/6,000)	4	---	CPM1A-AD041	U, C, N, CE
Analog Output Unit	Analog (resolution: 1/6,000)	---	4	CPM1A-DA041	UC1, CE
DeviceNet I/O Link Unit	---	I/O Link of 32 input bits and 32 output bits		CPM1A-DRT21	U, C, CE
CompoBus/S I/O Link Unit	---	I/O Link of 8 input bits and 8 output bits		CPM1A-SRT21	U, C, CE, N, L
Temperature Sensor Units	2 thermocouple inputs			CPM1A-TS001	U, C, CE, N, L
	4 thermocouple inputs			CPM1A-TS002	U, C, CE, N, L
	2 platinum resistance thermometer inputs			CPM1A-TS101	U, C, CE, N, L
	4 platinum resistance thermometer inputs			CPM1A-TS102	U, C, CE, N, L

■ Programming Consoles and Cables

Product		Model	Standards
Programming Console (2-m cable attached)		CQM1-PRO01-E	U, C, N, CE
Programming Console (Requires separate cable. See below.)		C200H-PRO27-E	U, C, N, CE
Connecting Cable for C200H-PRO27-E	2-m cable	C200H-CN222	N
	4-m cable	C200H-CN422	---

CPM2A Ordering Guide

■ Programming Software

Name	Specifications		Model	Standards
CX-One FA Integrated Tool **Package Ver. 1.1**	1 license	The CX-One is an integrated tool package that provides programming and monitoring software **for OMRON PLCs and components. The** CX-One runs on any of the following operating systems: Windows 98 SE, Me, NT 4.0 (Service Pack 6a), 2000 (Service Pack 3 or higher), or XP. **The following Support Software is included:** CX-Programmer version 6.□ and CX-Process **Tool version 5.□.** Refer to the CX-One Catalog (R134) for details. (See note.)	CXONE-AL01C-E	---
	3 licenses		CXONE-AL03C-E	
	10 licenses		CXONE-AL10C-E	
	30 licenses		CXONE-AL30C-E	
	50 licenses		CXONE-AL50C-E	
	The CX-Programmer can also be ordered individually using the following model numbers.			
CX-Programmer Ver. 6.□	1 license	Windows-based Support Software for ladder programming on Windows 98SE, Me, NT 4.0 (Service Pack 6a), 2000 (Service Pack 3 or higher), or XP	WS02-CXPC1-E-V6□	---
	3 licenses		WS02-CXPC1-E03-V6□	
	10 licenses		WS02-CXPC1-EL10-V6□	

Note: Site-licensed products are available for users who will run CX-One on multiple computers. Ask your OMRON sales representative for details.

Product	Model	Standards
Expansion Memory Unit	CPM1-EMU01-V1	---
EEPROM (256 K)	EEROM-JD	---

■ Personal Computer Connecting Cables

CPM2A port	Computer port	Specifications	Cable length	Model	Standards
Peripheral	For a D-sub 9-pin port	---	3.3 m	CQM1-CIF02	U, C, N, L, CE
RS-232C	For a D-sub 9-pin port	---	2 m	XW2Z-200S-V	---
			5 m	XW2Z-500S-V	---
		Can be used with a peripheral bus or Host Link. Uses connector that prevents ESD (electrostatic discharge.)	2 m	XW2Z-200S-CV	---
			5 m	XW2Z-500S-CV	---
	For a D-sub 25-pin port	---	2 m	XW2Z-200S	---
			5 m	XW2Z-500S	---
	For a half-pitch 14-pin port	---	2 m + 0.15 m	XW2Z-200S	---
				XW2Z-S001	---
			5 m + 0.15 m	XW2Z-500S	---
				XW2Z-S001	---

■ Adapters

Product	Function		Model	Standards
RS-232C Adapter	Peripheral port level conversion		CPM1-CIF01	U, C, N, L, CE
RS-422 Adapter			CPM1-CIF11	U, C, N, L, CE
Link Adapter	RS-232C to RS-422A conversion	For personal computer connection (Can also be connected to the CPM2A.)	3G2A9-AL004-E	---
RS-232C to RS422A Conversion Adapter		For CPM2A connection (Can also be connected to a personal computer, but requires an external 5-V power supply.)	NT-AL001	---
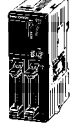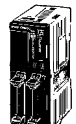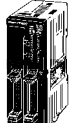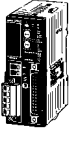
■ Battery

Product	Function	Model	Standards
Backup Battery (See note.)	Backs up memory in the CPM2A CPU Unit.	CPM2A-BAT01	L

Note: One internal Backup Battery is provided as standard.

CPM2C Ordering Guide

■ CPM2C CPU Units

CPU Unit		Inputs	Outputs	Internal clock	Model	Standards
Units with 10 I/O points Inputs: 6 Outputs: 4	I/O terminal block	6 inputs (24 VDC)	4 relay outputs	---	CPM2C-10CDR-D	U, C, CE
				Yes	CPM2C-10C1DR-D	U, C, CE
Units with 10 I/O points Inputs: 6 Outputs: 4	2 Fujitsu connectors	6 inputs (24 VDC)	4 sinking transistor outputs	---	CPM2C-10CDTC-D	U, C, CE
				Yes	CPM2C-10C1DTC-D	U, C, CE
			4 sourcing transistor outputs	---	CPM2C-10CDT1C-D	U, C, CE
				Yes	CPM2C-10C1DT1C-D	U, C, CE
	2 MIL connectors	6 inputs (24 VDC)	4 sinking transistor outputs	---	CPM2C-10CDTM-D	U, C, CE
			4 sinking transistor outputs	Yes	CPM2C-10C1DTM-D	
			4 sourcing transistor outputs	---	CPM2C-10CDT1M-D	
			4 sourcing transistor outputs	Yes	CPM2C-10C1DT1M-D	
Units with 20 I/O points Inputs: 12 Outputs: 8	2 terminal blocks	12 inputs (24 VDC)	8 relays	---	CPM2C-20CDR-D	U, C, CE
				Yes	CPM2C-20C1DR-D	
	2 I/O connector		8 sinking transistor outputs	---	CPM2C-20CDTC-D	U, C, CE
				Yes	CPM2C-20C1DTC-D	U, C, CE
			8 sourcing transistor outputs	---	CPM2C-20CDT1C-D	U, C, CE
				Yes	CPM2C-20C1DT1C-D	U, C, CE
	2 MIL connectors	12 inputs (24 VDC)	8 sinking transistor outputs	---	CPM2C-20CDTM-D	U, C, CE
			8 sinking transistor outputs	Yes	CPM2C-20C1DTM-D	
			8 sourcing transistor outputs	---	CPM2C-20CDT1M-D	
			8 sourcing transistor outputs	Yes	CPM2C-20C1DT1M-D	
Units with 32 I/O points Inputs: 16 Outputs: 16	2 Fujitsu connectors	16 inputs (24 VDC)	16 sinking transistor outputs	---	CPM2C-32CDTC-D	U, C, CE
			16 sourcing transistor outputs	---	CPM2C-32CDT1C-D	
	2 MIL connectors	16 inputs (24 VDC)	16 sinking transistor outputs	---	CPM2C-32CDTM-D	U, C, CE
			16 sourcing transistor outputs	---	CPM2C-32CDT1M-D	
Programmable Slave with DeviceNet slave and CompoBus/S Master, 10 I/O points Inputs: 6 Outputs: 4	1 Fujitsu connector	6 inputs (24 VDC)	4 sinking transistor outputs	Yes	CPM2C-S100C-DRT	U, C, CE
			4 sourcing transistor outputs	Yes	CPM2C-S110C-DRT	

CPU Unit		Inputs	Outputs	Internal clock	Model	Standards
Unit with CompoBus/S Master, 10 I/O points Inputs: 6 Outputs: 4		1 Fujitsu connector	6 inputs (24 VDC)	4 sinking transistor outputs	Yes	CPM2C-S100C	U, C, CE
				4 sourcing transistor outputs	Yes	CPM2C-S110C	
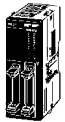
■ Power Supply Unit

Unit		Input	Output	Model	Standards
AC Power Supply Unit		100 to 240 VAC	24 VDC/600 mA	CPM2C-PA201	U, C, CE

■ Expansion I/O Units

Expansion I/O Unit		Inputs	Outputs	Model	Standards
Units with inputs only Inputs: 8		1 Fujitsu connector	8 inputs (24 VDC)	---	CPM2C-8EDC	U, C, CE
		1 MIL connector	8 inputs (24 VDC)	---	CPM2C-8EDM	U, C, CE
Units with inputs only Inputs: 16		1Fujitsu connector	16 inputs (24 VDC)	---	CPM2C-16EDC	U, C, CE
		1 MIL connector	16 inputs (24 VDC)	---	CPM2C-16EDM	U, C, CE
Units with relay outputs only Outputs: 8		I/O terminal block	---	8 relay outputs	CPM2C-8ER	U, C, CE
		1 Fujitsu connector	---	8 sinking transistor outputs	CPM2C-8ETC	U, C, CE
			---	8 sourcing transistor outputs	CPM2C-8ET1C	U, C, CE
		1 MIL connector	---	8 sinking transistor outputs	CPM2C-8ETM	U, C, CE
			---	8 sourcing transistor outputs	CPM2C-8ET1M	U, C, CE
Units with transistor outputs only Outputs: 16		1 Fujitsu connector	---	16 sinking transistor outputs	CPM2C-16ETC	U, C, CE
			---	16 sourcing transistor outputs	CPM2C-16ET1C	U, C, CE
		1 MIL connector	---	16 sinking transistor outputs	CPM2C-16ETM	U, C, CE
			---	16 sourcing transistor outputs	CPM2C-16ET1M	U, C, CE

CPM2C Ordering Guide

Expansion I/O Unit		Inputs	Outputs	Model	Standards
Units with 10 I/O points Inputs: 6 Outputs: 4	1 I/O terminal block	6 inputs (24 VDC)	4 relay outputs	CPM2C-10EDR	U, C, CE
Units with 20 I/O points Inputs: 12 Outputs: 8	1 I/O terminal block	12 inputs (24 VDC)	8 relay outputs	CPM2C-20EDR	U, C, CE
Units with 24 I/O points Inputs: 16 Outputs: 8	2 Fujitsu connectors	16 inputs (24 VDC)	8 sinking transistor outputs	CPM2C-24EDTC	U, C, CE
			8 sourcing transistor outputs	CPM2C-24EDT1C	U, C, CE
	2 MIL connectors	16 inputs (24 VDC)	8 sinking transistor outputs	CPM2C-24EDTM	U, C, CE
			8 sourcing transistor outputs	CPM2C-24EDT1M	U, C, CE
Units with 32 I/O points Inputs: 16 Outputs: 16	2 Fujitsu connectors	16 inputs (24 VDC)	16 sinking transistor outputs	CPM2C-32EDTC	U, C, CE
			16 sourcing transistor outputs	CPM2C-32EDT1C	U, C, CE
	2 MIL connectors	16 inputs (24 VDC)	16 sinking transistor outputs	CPM2C-32EDTM	U, C, CE
			16 sourcing transistor outputs	CPM2C-32EDT1M	U, C, CE

■ Analog I/O Units

Product		Specifications	Model	Standards
Analog I/O Unit		2 analog inputs and 1 analog output	CPM2C-MAD11	U, C, CE

■ Temperature Sensor Unit

Product		Specifications	Model	Standards
Temperature Sensor Unit		2 inputs for thermocouples	CPM2C-TS001	U, C, CE
		2 inputs for temperature resistance thermometers	CPM2C-TS101	

■ CompoBus/S I/O Link Units

Product		Specifications	Model	Standards
CompoBus/S I/O Link Units		I/O Links: 8 inputs, 8 outputs	CPM2C-SRT21	U, C, CE

■ I/O Connectors

(Connectors are not provided with CPU Unit. Select the appropriate ones from the following table. One CPU Unit requires two sets of Connectors.)

Fujitsu Connectors

Connection method	From OMRON		From Fujitsu	
Soldered	C500-CE241	1 set	FCN-361J024-AU FCN-360C024-J2	Connector Connector Cover
Crimped	C500-CE242		FCN-363J024 FCN-363J-AU FCN-360C024-J2	Housing Contacts Connector Cover
Pressure-welded	C500-CE243		FCN-367J024-AU/F	

MIL Connectors

Connection method	Model	Number in box	Specifications
Pressure-welded	XG4M-2030-T	100	Poles: 20

■ Programming Consoles and Cables

Product		Model	Standards
Programming Console (2-m cable attached)		CQM1-PRO01-E	U, C, CE, N
Programming Console (Requires separate cable. See below.)		C200H-PRO27-E	U, C, N, CE
Connecting Cable for connecting CQM1-PRO01-E to a peripheral port		CS1W-CN114	CE
Connecting Cable for C200H-PRO27-E	2-m cable	C200H-CN222	N
	4-m cable	C200H-CN422	---
Connecting Cable for C200H-PRO27-E allowing direct connection to the CPM2C CPU Unit	2-m cable	CS1W-CN224	CE
	6-m cable	CS1W-CN624	CE

CPM2C Ordering Guide

■ Programming Software

Name		Specifications		Model	Standards
CX-One FA Integrated Tool **Package Ver. 1.1**	1 license	The CX-One is an integrated tool package that provides programming and monitoring software **for OMRON PLCs and components**. The CX-One runs on any of the following operating systems: Windows 98 SE, Me, NT 4.0 (Service Pack 6a), 2000 (Service Pack 3 or higher), or XP. **The following Support Software is included:** CX-Programmer version 6.□ and CX-Process **Tool version 5.□**. Refer to the CX-One Catalog (R134) for details. (See note.)		CXONE-AL01C-E	---
	3 licenses			CXONE-AL03C-E	
	10 licenses			CXONE-AL10C-E	
	30 licenses			CXONE-AL30C-E	
	50 licenses			CXONE-AL50C-E	
	The CX-Programmer can also be ordered individually using the following model numbers.				
CX-Programmer Ver. 6.□	1 license	Windows-based Support Software for ladder programming on Windows 98SE, Me, NT 4.0 (Service Pack 6a), 2000 (Service Pack 3 or higher), or XP		WS02-CXPC1-E-V6□	---
	3 licenses			WS02-CXPC1-E03-V6□	
	10 licenses			WS02-CXPC1-EL10-V6□	

Note: Site-licensed products are available for users who will run CX-One on multiple computers. Ask your OMRON sales representative for details.

Product	Model	Standards
Expansion Memory Unit	CPM1-EMU01-V1	---
EEPROM (256 K)	EEROM-JD	---

■ Peripheral Port Adapters and Connecting Cables

Description		Computer port	Length	Model	Standards
Personal Computer Connecting Cables		For a D-sub 9-pin port	2 m	CS1W-CN226	CE
			6 m	CS1W-CN626	CE
			3.3 m	CQM1-CIF02	U, C, N, L, CE
	Peripheral Port Cable		0.05 m	CS1W-CN114	CE

■ RS-232C Cables

Product	Computer port	Specifications	Length	Model	Standards
RS-232C Cable	For a D-sub 9-pin port	---	2 m	XW2Z-200S-V	---
			5 m	XW2Z-500S-V	---
		Can be used with a peripheral bus or Host Link. Uses connector that prevents ESD (electrostatic discharge.)	2 m	XW2Z-200S-CV	---
			5 m	XW2Z-500S-CV	---
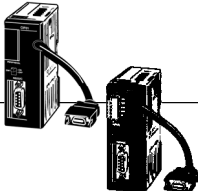
■ Communications Port Connecting Cables

Description	Cable length	Model	Standards
Converts to a Peripheral port and RS-232C port.	0.1 m (about 4")	CPM2C-CN111	CE
Converts to a Peripheral port only.	0.05 m (about 2")	CS1W-CN114	CE
Converts to an RS-232C port only.	0.1 m (about 4")	CS1W-CN118	CE

■ Simple Communications Unit

Product	Specifications	Model	Standards
Simple Communications Unit	RS-485/RS-232C ports for connection to components	CPM2C-CIF21	U, C, CE

■ Adapters
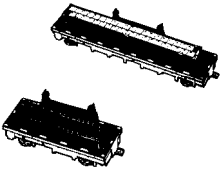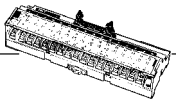
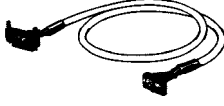| Product	Function		Model	Standards
Peripheral/ RS-232C Adapter Unit	Peripheral port level conversion		CPM2C-CIF01-V1	---
RS-422/ RS-232C Adapter Unit			CPM2C-CIF11	U, C, CE
Link Adapter	RS-232C to RS-422A conversion	For personal computer connection (Can also be connected to the CPM2A.)	3G2A9-AL004-E	---
RS-422A Adapter		For CPM2A connection (Can also be connected to a personal computer, but requires an external 5-V power supply.)	NT-AL001	---

CPM2C Ordering Guide

■ Battery

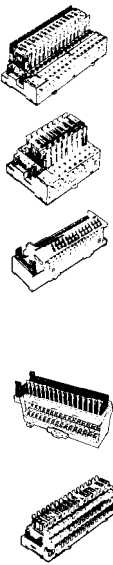| Product	Function	Model	Standards
Battery	Backs up memory in the CPM2C CPU Unit.	CPM2C-BAT01	CE

■ Connector-Terminal Conversion Units and Connecting Cables

Product		Description	No. of inputs/out-puts	Model	Standards
Connector-Terminal Block Conversion Units		Slim type with M3 slotted screw terminal block	20	XW2D-20G6	---
		Flat cable connector with M2.5 slotted screw terminal block	20	XW2B-20G4	---
Common terminals (3-tier inputs)		---		XW2E-20G5-IN16	---
Common terminals (2-tier outputs)		---		XW2C-20G6-IO16	---

Product	Cable length		Model	Standards
Special Connecting Cable	With Fujitsu connector	0.5 m	XW2Z-050A	---
		1 m	XW2Z-100A	---
		1.5 m	XW2Z-150A	---
		2 m	XW2Z-200A	---
		3 m	XW2Z-300A	---
		5 m	XW2Z-500A	---
	With MIL connector	2.5 m	G79-025C	---
		5 m	G79-050C	---

■ I/O Terminals and Connecting Cables

Product	Mounted relay	I/O points	Processing	Rated voltage	Model	Stan-dards	CPM2C Output type	Connecting Cables Fujitsu connector	Connecting Cables MIL connector
I/O Relay Terminals	G7T	16 inputs	NPN (– common)	24 VDC	G7TC-ID16	U, C	---	G79-□00C	G79-O□□C
				100 (110) VAC	G7TC-IA16			G79-□00C	G79-O□□C
				200 (220) VAC				G79-□00C	G79-O□□C
		16 outputs	NPN (+ common, sinking output)	24 VDC	G7TC-OC16		Sinking	G79-□00C	G79-O□□C
		16 outputs	PNP (– common)	24 VDC	G7TC-OC16-1	---	Sourcing	G79-□00C	G79-O□□C
		8 outputs	NPN (+ common, sinking output)	24 VDC	G7TC-OC08	---	Sinking	G79-□00C	G79-O□□C
	G6D	16 outputs	NPN (+ common, sinking output)	24 VDC	G70D-SOC16	---	Sinking	G79-□00C	G79-O□□C
			PNP (– common, sourcing output)	24 VDC	G70D-SOC16-1	---	Sourcing	---	G79-I□□C
	G3DZ (Power MOS FET Relay)		NPN (+ common, sinking output)	24 VDC	G70D-FOM16	---	Sinking	G79-□00C	G79-O□□C
			PNP (– common, sourcing output)	24 VDC	G70D-FOM16-1	---	Sourcing	---	G79-I□□C
	G6D		NPN (+ common, sinking output)	24 VDC	G70D-VSOC16	---	Sinking	G79-□00C	G79-O□□C
	G3DZ (Power MOS FET Relay)		NPN (+ common, sinking output)	24 VDC	G70D-VFOM16	---	Sinking	G79-□00C	G79-O□□C
	(Sold separately) G2R G3RN G3RN H3RN		NPN (+ common, sinking output)	24 VDC	G70A-ZOC16-3	---	Sinking	G79-□00C	G79-O□□C
			PNP (– common, sourcing output)		G70A-ZOC16-4	---	Sourcing	---	G79-I□□C

Product	Cable length		Model	Standards
Connecting Cable with connector (1:1)	With Fujitsu connector	1 m	G79-100C	---
		1.5 m	G79-150C	---
		2 m	G79-200C	---
		3 m	G79-300C	---
		5 m	G79-500C	---
	With MIL connector	2.5 m	G79-O25C	---
		5 m	G79-O50C	---
		2.5 m	G79-I25C	---
		5 m	G79-I50C	---

■ DC Power Supplies
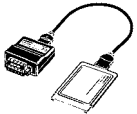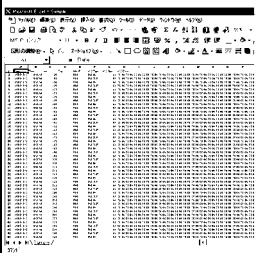
Product	Output voltage/current	Input voltage	Model	Standards
DC Power Supply (3 W)	24 VDC, 0.13 A	85 VAC to 264 VAC	S82K-00324	U, C
DC Power Supply (7.5 W)	24 VDC, 0.3 A	85 VAC to 264 VAC	S82K-00724	U, C
DC Power Supply (15 W)	24 VDC, 0.6 A	85 VAC to 264 VAC	S82K-01524	U, C
DC Power Supply (30 W)	24 VDC, 1.3 A	85 VAC to 264 VAC	S82K-03024	U, C
DC Power Supply (50 W)	24 VDC, 2.1 A	85 VAC to 264 VAC	S82K-05024	U, C

CPM2C Ordering Guide

■ DeviceNet Masters

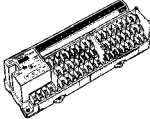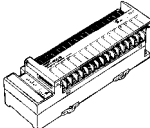| Product	Appearance	Model	Specifications	Standards
DeviceNet Units		CJ1W-DRM21	For CJ Series Functions as either a master or a slave. 2,048 I/O points	UC, N, CE
		CS1W-DRM21-V1	For CS Series Functions as either a master or a slave. 2,048 I/O points	
Open Network Controller		ITNC-EIS01-DRM	No expansion slots, two COM ports, DeviceNet	U, C, CE
		ITNC-EIX01-DRM	Expansion slots, COM port, DeviceNet	

■ DeviceNet Configurator/Software
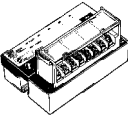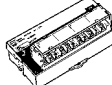
Product	Appearance	Model	Specifications	Standards
DeviceNet Configurator		WS02-CFDC1-E	Software for Windows 95, 98, NT 4.0, 2000, or XP	---
		3G8E2-DRM21-EV1	PC card with software for Windows 95, 98, Me, 2000, or XP	---
NX-Server		WS02-NXD1-E	DDE Edition	---

Note: Refer to the following catalogs for details: SYSMAC CS1 Series (P047), SYSMAC C200HX/HG/HE (P036), and DeviceNet (Q102).
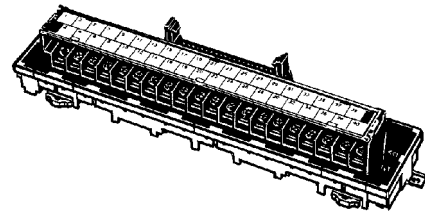
■ CompoBus/S Slaves

Product	Appearance	Model	Specifications	Standards
Remote I/O Terminals with Transistors		SRT2-ID04	4 NPN inputs (+ common)	U, C, CE
		SRT2-ID04-1	4 PNP inputs (− common)	
		SRT2-OD04	4 NPN outputs (− common)	
		SRT2-OD04-1	4 PNP outputs (+ common)	
		SRT2-ID08	8 NPN inputs (+ common)	
		SRT2-ID08-1	8 PNP inputs (− common)	
		SRT2-OD08	8 NPN outputs (− common)	
		SRT2-OD08-1	8 PNP outputs (+ common)	
		SRT2-ID16	16 NPN inputs (+ common)	
		SRT2-ID16-1	16 PNP inputs (− common)	
		SRT2-OD16	16 NPN outputs (− common)	
		SRT2-OD16-1	16 PNP outputs (+ common)	
Remote I/O Terminals with Transistors (3 tiers)		SRT2-ID16T	16 NPN inputs (+ common)	U, C, CE
		SRT2-ID16T-1	16 PNP inputs (− common)	
		SRT2-MD16T	16 NPN I/O points (inputs: + common, outputs: − common)	
		SRT2-MD16T-1	16 PNP I/O points (inputs: − common, outputs: + common)	
		SRT2-OD16T	16 NPN outputs (− common)	
		SRT2-OD16T-1	16 PNP outputs (+ common)	
Remote I/O Terminals with Mounted Relays		SRT2-ROC08	8 output relays mounted	U, C, CE
		SRT2-ROC16	16 output relays mounted	
		SRT2-ROF08	8 power MOS FET relays mounted	
		SRT2-ROF16	16 power MOS FET relays mounted	
32-point Remote I/O Terminals with Transistors and MIL Connectors		SRT2-ID32ML	32 NPN inputs (+ common)	CE
		SRT2-ID32ML-1	32 PNP inputs (− common)	
		SRT2-OD32ML	32 NPN outputs (− common)	
		SRT2-OD32ML-1	32 PNP outputs (+ common)	
		SRT2-MD32ML	32 NPN inputs (inputs: + common, outputs: − common)	
		SRT2-MD32ML-1	32 PNP inputs (inputs: − common, outputs: + common)	
Remote I/O Terminals with Transistors and Sensor Connectors		SRT2-VID08S	8 NPN inputs (+ common)	U, C, CE
		SRT2-VID08S-1	8 PNP inputs (− common)	
		SRT2-VOD08S	8 NPN outputs (− common)	
		SRT2-VOD08S-1	8 PNP outputs (+ common)	
16-point Remote I/O Terminals with Transistors and MIL Connectors		SRT2-VID16ML	16 NPN inputs (+ common)	
		SRT2-VID16ML-1	16 PNP inputs (− common)	
		SRT2-VOD16ML	16 NPN outputs (− common)	
		SRT2-VOD16ML-1	16 PNP outputs (+ common)	
Analog Input Terminal		SRT2-AD04	1 to 4 analog inputs (set via DIP switch)	U, C, CE
Analog Output Terminal		SRT2-DA02	1 or 2 analog outputs (set via DIP switch)	U, C, CE

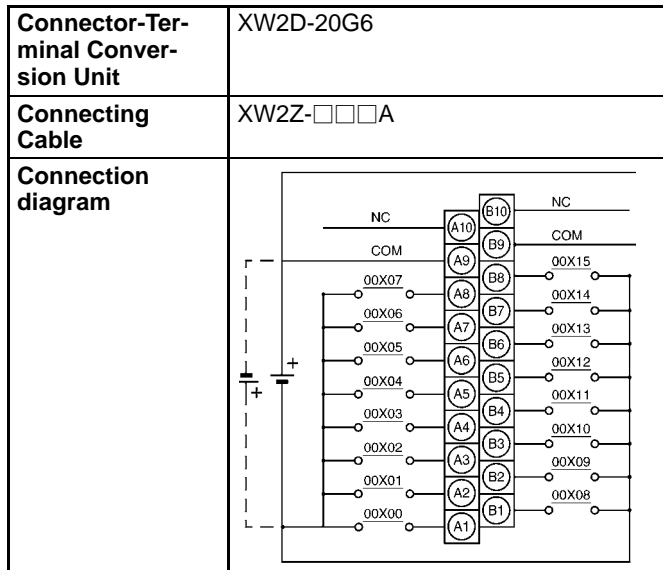**Note:** Refer to the CompoBus/S catalog (Q103) for details.

CPM2C Peripheral Devices
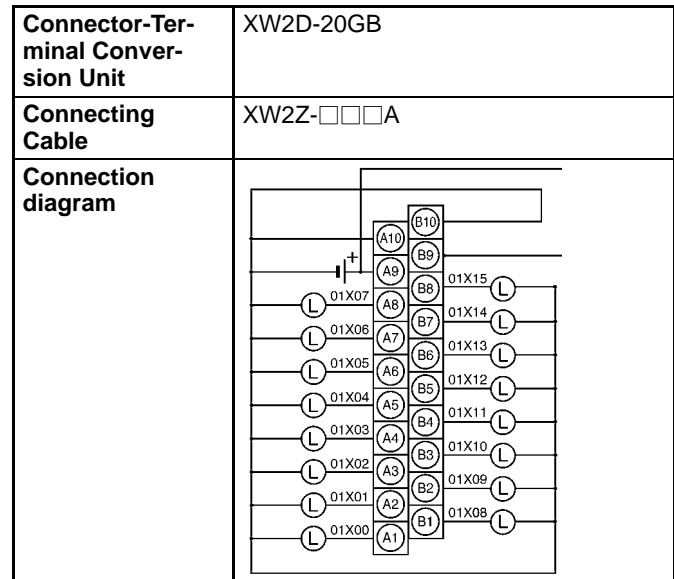
■ **Connector-Terminal Conversion Unit Wiring**

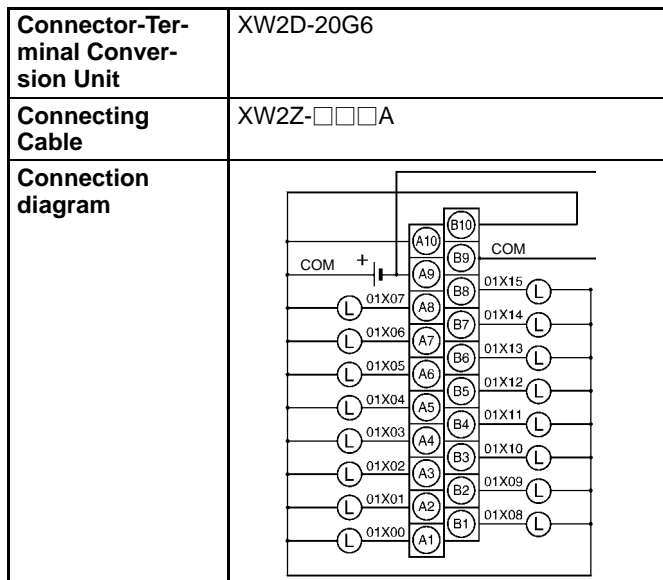The wiring for input terminals is as shown below.

■ Connecting to the CPM2C

CPM2C Input Wiring

Connector-Ter-minal Conver-sion Unit	XW2D-20G6
Connecting Cable	XW2Z-□□□A
Connection diagram	

CPM2C Output Wiring for Sinking Outputs

Connector-Ter-minal Conver-sion Unit	XW2D-20G6
Connecting Cable	XW2Z-□□□A
Connection diagram	

CPM2C Output Wiring for Sourcing Outputs

Connector-Ter-minal Conver-sion Unit	XW2D-20GB
Connecting Cable	XW2Z-□□□A
Connection diagram	

Note: The relay numbers that can be used vary with the Unit used, as shown in the following table.

Unit	Input numbers	Output numbers
CPU Unit with 10 I/O points	00□00 to 00□05	01□00 to 01□03
CPU Unit with 20 I/O points	00□00 to 00□11	01□00 to 01□07
CPU Unit with 32 I/O points	00□00 to 00□15	01□00 to 01□15
Expansion I/O Unit with 10 I/O points	00□00 to 00□05	01□00 to 01□03
Expansion I/O Unit with 24 I/O points	00□00 to 00□15	01□00 to 01□07
Expansion I/O Unit with 32 I/O points	00□00 to 00□15	01□00 to 01□15
Expansion I/O Unit with 8 input points	00□00 to 00□07	---
Expansion I/O Unit with 16 input points	00□00 to 00□15	---
Expansion I/O Unit with 8 output points	---	01□00 to 01□07
Expansion I/O Unit with 16 output points	---	01□00 to 01□15

Note: Allocations to 32-point CPU Units are as follows: Inputs: 00000 to 00007, 00100 to 00107; Outputs: 01000 to 01007, 01100 to 01107
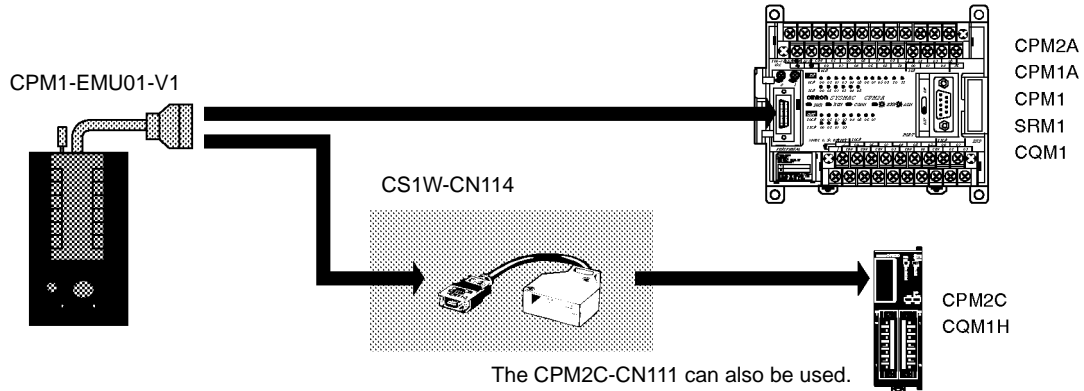
CPM2C Peripheral Devices

■ Expansion Memory Unit

The Expansion Memory Unit can be used to upload and download user programs and data memory with the press of a button allowing simple program maintenance.


■ Connections

CPM1-EMU01-V1

CS1W-CN114

CPM2A
CPM1A
CPM1
SRM1
CQM1

CPM2C
CQM1H

The CPM2C-CN111 can also be used.
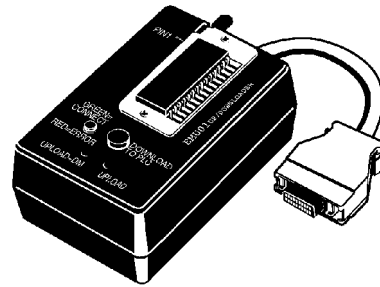
■ Specifications

Item	Specification
Supported PCs	CPM1, CPM1A, CPM2A, CPM2C, SRM1 (-V2), CQM1, CQM1H
Read/Write memory areas	User program: 15.2 Kwords max. Data memory: DM 6144 to DM 6655 (Read-only DM and PC Setup) Expansion instructions: 18 instructions
Connector	Connector compatible with peripheral port on CPM1, CPM1A, CPM2A, SRM1 (-V2), and CQM1 PCs. For CPM2C and CQM1H PCs, connect via CS1W-CN114 or CPM2C-CN111 Connecting Cable.
EEPROM (See note.)	256-Kbit EEPROM 　ATMEL:　　AT28C256 　OMRON:　　EEROM-JD
Current consumption	129 mA max.
Dimensions	Main body (not including cables or connectors): 57 × 92 × 38 mm (W × H × D)
Weight	200 g max. (not including EEPROM)
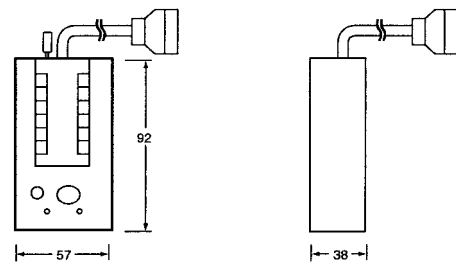
Note: The EEPROM must be purchased separately.

■ Dimensions (mm)

92

57

38

■ Memory Areas

The memory areas that are uploaded or downloaded vary with the button used as shown in the following table.

Area	Button		
	UPLOAD + DM	UPLOAD	DOWNLOAD TO PLC
Ladder program and expansion instructions	Read from PLC to EEPROM.	Read from PLC to EEPROM.	All contents of EEPROM written to PLC.
DM 6144 to 6655		Not affected.	

For details on program size, DM area, and the availability of expansion instructions, refer to the relevant PLC manual.