Micro Programmable Controller

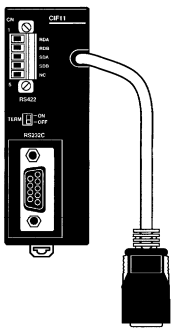
CPM2C

Omron's powerful CPM2C micro controller redefines the traditional micro PLC. The CPM2C's 33 mm width allows it to fit into small spaces, offers 119 instructions, and has processing speeds rivaling many 'small' PLCs. The 20 I/O units with relay outputs are the smallest in the industry. Multiple communication options along with advanced motion control features enable the CPM2C to provide a powerful solution to virtually any small-scale control application.

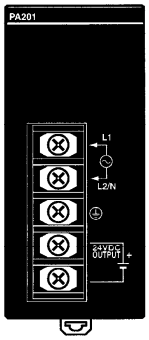
- Ultra compact design with 33 mm width
- Built-in combination RS-232C/Peripheral port
- Transistor Output types expand to 192 I/O (CPU + 5 Modules); Relay Output types expand to 180 I/O (CPU + 5 Modules)
- Screw terminal, Fujitsu and MIL (flat ribbon) style connections
- Connect high density MIL and Fujitsu models to Omron relay or terminal blocks for easy wiring and choice of I/O style
- 4K program memory, 2K data memory
- Synchronized pulse control allows synchronization of input devices to control devices
- Temperature sensor modules available
- Optional real-time clock
- Multiple high-speed counter inputs
- 10 kHz pulse outputs
- UL/CSA/CE

Basic Configuration

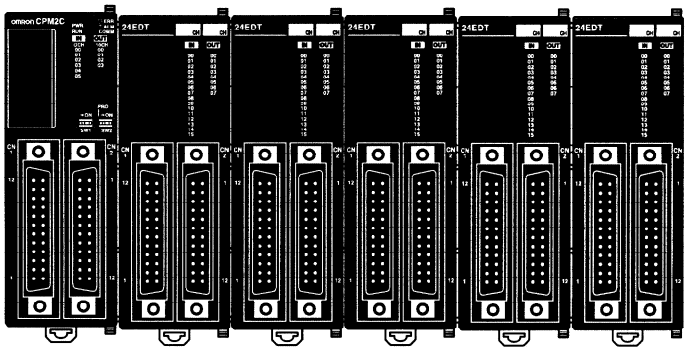
Up to five Expansion Modules or Expansion I/O Modules can be connected to a CPM2C CPU. The AC Power Supply Unit and the CPM2C-CIF01 or CPM2C-CIF11 Serial Communications Adapters can also be used with the CPU.



CPM2C-CIF01/CIF11 Serial Communications Adapters for the Mini-peripheral Port (optional)



AC Power Supply Unit



CPU

Up to 5 Expansion Modules or Expansion I/O Modules

Ordering Information

■ PART NUMBER NOMENCLATURE

CPM2C-□□□□□-□
1 2 3 4 5 6

1. **Number of I/O**
2. **RTC = C1**
   No RTC = C
3. **Input Power**
4. **PNP = T1**
   NPN = T
5. **Relay = R**
   MIL = M
   Connector = C
6. **Power Supply**

■ CPU MODULES WITH 10 I/O POINTS

Stock Note: Shaded models are normally stocked.

Description	CPU module			Inputs	Outputs	Clock	Part number
CPU with Relay Outputs via Terminal Block 	10 I/O points (6 inputs, 4 outputs)	I/O terminal block		6 inputs (24 VDC)	4 relay outputs	No	**CPM2C-10CDR-D**
						Yes	**CPM2C-10C1DR-D**
CPU with Transistor Outputs via Fujitsu-compatible Connector 		I/O connector	2 Fujitsu connectors	6 inputs (24 VDC)	4 transistor outputs (sinking)	No	**CPM2C-10CDTC-D**
						Yes	**CPM2C-10C1DTC-D**
					4 transistor outputs (sourcing)	No	**CPM2C-10CDT1C-D**
						Yes	**CPM2C-10C1DT1C-D**
CPU with Transistor Outputs via MIL Connector 			2 MIL connectors	6 inputs (24 VDC)	4 transistor outputs (sinking)	No	**CPM2C-10CDTM-D**
						Yes	**CPM2C-10C1DTM-D**
					4 transistor outputs (sourcing)	No	**CPM2C-10CDT1M-D**
						Yes	**CPM2C-10C1DT1M-D**

■ CPU MODULES WITH 20 I/O POINTS

Stock Note: Shaded models are normally stocked.

Description	CPU module			Inputs	Outputs	Clock	Part number
CPU with Relay Outputs via Terminal Block 	20 I/O points (12 inputs, 8 outputs)	I/O terminal block		12 inputs (24 VDC)	8 relay outputs	No	**CPM2C-20CDR-D**
						Yes	**CPM2C-20C1DR-D**
CPU with Transistor Outputs via Fujitsu-compatible Connector 		I/O connector	2 Fujitsu connectors	12 inputs (24 VDC)	8 transistor outputs (sinking)	No	**CPM2C-20CDTC-D**
						Yes	**CPM2C-20C1DTC-D**
					8 transistor outputs (sourcing)	No	**CPM2C-20CDT1C-D**
						Yes	**CPM2C-20C1DT1C-D**
CPU with Transistor Outputs via MIL Connector 			2 MIL connectors	12 inputs (24 VDC)	8 transistor outputs (sinking)	No	**CPM2C-20CDTM-D**
						Yes	**CPM2C-20C1DTM-D**
					8 transistor outputs (sourcing)	No	**CPM2C-20CDT1M-D**
						Yes	**CPM2C-20C1DT1M-D**

■ CPU MODULES WITH 32 I/O POINTS

Stock Note: Shaded models are normally stocked.

Description	CPU module			Inputs	Outputs	Clock	Part number
CPU with Transistor Outputs via Fujitsu-compatible Connector 	32 I/O points (16 inputs, 16 outputs)	I/O connector	2 Fujitsu connectors	16 inputs (24 VDC)	16 transistor outputs (sinking)	No	**CPM2C-32CDTC-D**
					16 transistor outputs (sourcing)	No	**CPM2C-32CDT1C-D**
CPU with Transistor Outputs via MIL Connector 			2 MIL connectors	16 inputs (24 VDC)	16 transistor outputs (sinking)	No	**CPM2C-32CDTM-D**
					16 transistor outputs (sourcing)	No	**CPM2C-32CDT1M-D**

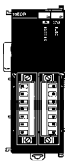
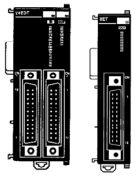
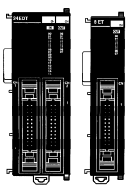
■ POWER SUPPLY MODULES

Stock Note: Shaded models are normally stocked.

Description	Input	Output	Part number
Power Supply 	100 to 240 VAC	24 VDC/600 mA	**CPM2C-PA201**

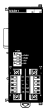
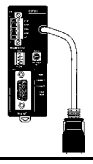
■ EXPANSION I/O MODULES

Stock Note: Shaded models are normally stocked.

Description	I/O capacity	Inputs	Outputs	Part number
Units with terminal blocks 	10 I/O points	6 points (24 VDC)	4 relay outputs	**CPM2C-10EDR**
	20 I/O points	12 points (24 VDC)	8 relay outputs	**CPM2C-20EDR**
	8 output points	—	8 relay outputs	**CPM2C-8ER**
Units with Fujitsu-compatible connectors 	24 I/O points	16 points (24 VDC)	8 transistor outputs (sinking)	**CPM2C-24EDTC**
			8 transistor outputs (sourcing)	**CPM2C-24EDT1C**
	32 I/O points	16 points (24 VDC)	16 transistor outputs (sinking)	**CPM2C-32EDTC**
			16 transistor outputs (sourcing)	**CPM2C-32EDT1C**
	8 input points	8 points (24 VDC)	—	**CPM2C-8EDC**
	16 input points	16 points (24 VDC)	—	**CPM2C-16EDC**
	8 output points	—	8 transistor outputs (sinking)	**CPM2C-8ETC**
			8 transistor outputs (sourcing)	**CPM2C-8ET1C**
	16 output points	—	16 transistor outputs (sinking)	**CPM2C-16ETC**
			16 transistor outputs (sourcing)	**CPM2C-16ET1C**
Units with MIL connectors 	24 I/O points	16 points (24 VDC)	8 transistor outputs (sinking)	**CPM2C-24EDTM**
			8 transistor outputs (sourcing)	**CPM2C-24EDT1M**
	32 I/O points	16 points (24 VDC)	16 transistor outputs (sinking)	**CPM2C-32EDTM**
			16 transistor outputs (sourcing)	**CPM2C-32EDT1M**
	8 input points	8 points (24 VDC)	—	**CPM2C-8EDM**
	16 input points	16 points (24 VDC)	—	**CPM2C-16EDM**
	8 output points	—	8 transistor outputs (sinking)	**CPM2C-8ETM**
			8 transistor outputs (sourcing)	**CPM2C-8ET1M**
	16 output points	—	16 transistor outputs (sinking)	**CPM2C-16ETM**
			16 transistor outputs (sourcing)	**CPM2C-16ET1M**

■ DEDICATED I/O MODULES

Stock Note: Shaded models are normally stocked.

Description	Specifications	Part number
Analog I/O module 	2 analog inputs and 1 analog output Voltage I/O: 0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC, or −10 to +10 VDC Current I/O: 0 to 20 mA or 4 to 20 mA	**CPM2C-MAD11**
Temperature sensor input module 	Two thermocouple inputs (Type K or Type J)	**CPM2C-TS001**
	Two platinum resistance thermometer inputs (Pt100 or JPt100)	**CPM2C-TS101**
CompoBus/S I/O Link Module 	Operates as a CompoBus/S Slave and provides 8 inputs and 8 outputs to the Master.	**CPM2C-SRT21**
	Flat cable, 4-core , 0.75 mm^2; 100 m length	**SCA1-4F10**
	Twisted pair cable, 2-core x 0.75 mm^2; available commercially	Belden #9409 cable
CompoWay/F Serial Interface Module 	Transfer data between the CPU and up to 32 OMRON components equipped with CompoWay/F or SYSWAY communications. This eliminates the need for ladder programming to transfer data between temperature controllers and digital panel meters and the CPU.	**CPM2C-CIF21**

■ FUJITSU-COMPATIBLE CONNECTORS (SEE NOTE)

Note: Fujitsu and MIL connector(s) not included with any of the units.

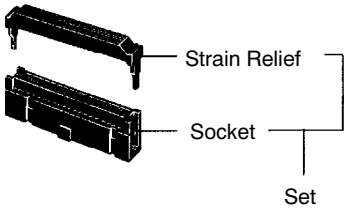
Stock Note: Shaded models are normally stocked.

Description		Part number
	24-pin soldered connector with cover	**C500-CE241**
	24-crimp connector with cover	**C500-CE242**
	24-pin pressure connector	**C500-CE243**

■ MIL FLAT CABLE CONNECTORS (SEE NOTE)

Note: Fujitsu and MIL connector(s) not included with any of the units.

Stock Note: Shaded models are normally stocked.

Description		Part number
	Socket	**XG4M-2030**
	Strain relief	**XG4T-2004**

■ CRIMP TOOLS (FOR MIL FLAT CABLE CONNECTORS)

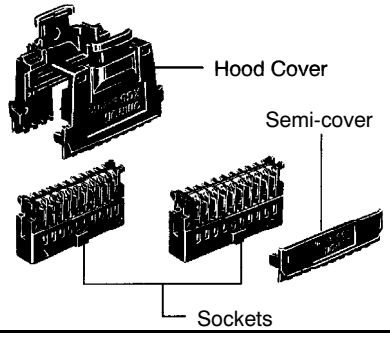
Stock Note: Shaded models are normally stocked.

Description	Part number
Crimp tool	**XY2B-0002**
Attachment	**XY2B-1007**

■ MIL LOOSE-WIRE, PRESSURE-FITTED CONNECTORS (SEE NOTE)

Note: Fujitsu and MIL connector(s) not included with any of the units.

Stock Note: Shaded models are normally stocked.

Description			Part number
	Socket	AWG24	**XG5M-2032-N**
		AWG26 to AWG28	**XG5M-2035-N**
	Hood cover		**XG5S-2012**
	Semi-cover (Two required for each socket)		**XG5S-1001**

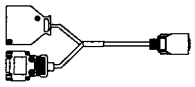
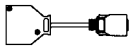
■ PRESSURE FITTING TOOL (FOR MIL LOOSE-WIRE, PRESSURE-FITTED CONNECTORS)

Stock Note: Shaded models are normally stocked.

Description	Part number
Simple pressure fitting tool	**XY2B-7006**

■ COMMUNICATIONS PORT CONNECTING CABLES

Stock Note: Shaded models are normally stocked.

Connector	Description	Cable length	Part number
	Converts the CPM2C CPU's mini-peripheral port to a peripheral port and RS-232C port.	0.15 m (about 4 in)	**CPM2C-CN111**
	Converts the CPM2C CPU's mini-peripheral port to a peripheral port.	0.05 m (about 2 in)	**CS1W-CN114**
	Converts the CPM2C CPU's mini-peripheral port to an RS-232C port.	0.1 m (about 2 in)	**CS1W-CN118**

■ COMMUNICATION ADAPTERS AND CONNECTING CABLES

Stock Note: Shaded models are normally stocked.

Using this port	Name	Description	Part number
Communications	RS-232C Adapter Unit	RS-232C port (DIN mount) CPU's mini-peripheral port → Mini-peripheral port + RS-232C port	**CPM2C-CIF01-V1**
	RS-422/RS-232C Adapter Unit	RS-422/RS-232C adapter (DIN mount) CPU's mini-peripheral port → RS422 port + RS-232C port	**CPM2C-CIF11**
	Direct CPM2C CPU to NT cable	NT21/31/631/20/600/11 and NS series to CS1/CJ1/CQM1H/CPM2C mini-peripheral port (2 m)	**XW2Z-200T-2**
	Direct CPM2C CPU to NT cable	NT21/31/631/20/600/11 and NS series to CS1/CJ1/CQM1H/CPM2C mini-peripheral port (5 m)	**XW2Z-500T-2**
	Direct CPM2C CPU to NT2S cable	NT2S-SF121- to CS1/CJ1/CQM1H/CPM2C mini-peripheral port (2 m)	**NT2S-CN223**
	Direct CPM2C CPU to NT2S cable	NT2S-SF122- and SF123- to CS1/CJ1/CQM1H/CPM2C mini-peripheral port (2 m)	**NT2S-CN224**
RS-232C	RS-232C cable	For 25-pin computer serial port (2 m)	**XW2Z-200S**
		For 25-pin computer serial port (5 m)	**XW2Z-500S**
		For a 9-pin computer serial port (2 m)	**XW2Z-200S-V**
		For a 9-pin computer serial port (5 m)	**XW2Z-500S-V**

■ PROGRAMMING CONSOLES AND CABLES

Stock Note: Shaded models are normally stocked.

Product		Part number
Programming Console with 2 m cable attached; connects directly to the peripheral port		**CQM1-PRO01-E**
Programming Console (Requires separate cable)		**C200H-PRO27-E**
Connecting Cable for C200H-PRO27-E; connects directly to a Peripheral port	2 m length	**C200H-CN222**
	4 m length	**C200H-CN422**
Connecting Cable for C200H-PRO27-E allows direct connection to the CPM2C CPU Communications port	2 m length	**CS1W-CN224**
	4 m length	**CS1W-CN624**
Connecting Cable used only from CPU's peripheral port to computer (D-sub 9-pin)	2 m length	**CS1W-CN226**
	6 m length	**CS1W-CN626**

■ SUPPORT SOFTWARE

Stock Note: Shaded models are normally stocked.

Item	Description	Part number
CX-Programmer Jr.	Windows based programming software for micro controllers	**WS02-CXPC1-EJ-V□.□**
CX-Programmer	Full programming software package for all controllers	**WS02-CXPC1-E-V□.□**

■ PROGRAM TRANSFER EQUIPMENT

Stock Note: Shaded models are normally stocked.

Product	Description	Part number
Expansion Memory Unit	Uploads and downloads program and setup memory areas to and from the controller.	**CPM1-EMU01-V1**
EEPROM (256 kbits)	Used with the Expansion Memory Unit	**EEPROM-CPM1-EMU01**

■ MAINTENANCE ACCESSORIES

Stock Note: Shaded models are normally stocked.

Product	Description	Part number
Battery	Backs up memory in the CPM2C CPU. (One battery is already installed in CPUs containing a clock.)	**CPM2C-BAT01**

■ MANUALS

Product	Description	Part number
Operation manual	CPM2C programmable controller operation manual	**W356**
Programming manual	CPM1/CPM1A/CPM2A/CPM2C programming manual	**W353**

Specifications

■ GENERAL SPECIFICATIONS FOR CPU AND EXPANSION UNITS

Item	CPUs with 10/20 I/O points		CPUs with 32 I/O points transistor outputs	Expansion I/O Units and Expansion Units
	Relay outputs	Transistor outputs		
Supply voltage	24 VDC			
Operating voltage range	20.4 to 26.4 VDC			
Power consumption (See Note)	CPM2C-10C□DR-□: 4 W CPM2C-10C□DT□C-D: 3 W CPM2C-10C□DT□M-D: 3 W CPM2C-20C□DR-□: 4 W CPM2C-20C□DT□C-D: 3 W CPM2C-20C□DT□M-D: 3 W CPM2C-32CDT□C-D: 3 W CPM2C-32CDT□M-D: 3 W Note: The above values for CPU power consumption include the power consumption for Programming Consoles and Communications Adapter Units (CIF□□).			CPM2C-10EDR: 1 W CPM2C-20EDR: 2 W CPM2C-8ER: 2 W CPM2C-24EDTC: 1 W CPM2C-24EDT1C 1 W CPM2C-32EDTC: 1 W CPM2C-32EDT1C 1 W CPM2C-8EDC: 1 W CPM2C-16EDC: 1 W CPM2C-8ETC: 1 W CPM2C-8ET1C: 1 W CPM2C-16ETC: 1 W CPM2C-16ET1C: 1 W CPM2C-24EDTM: 1 W CPM2C-24EDT1M: 1 W CPM2C-32EDTM: 1 W CPM2C-32EDT1M: 1 W CPM2C-8EDM: 1 W CPM2C-16EDM: 1 W CPM2C-8ETM: 1 W CPM2C-8ET1M: 1 W CPM2C-16ETM: 1 W CPM2C-16ET1M: 1 W CPM2C-MAD11: 3.5 W CPM2C-TS001: 1.5 W CPM2C-TS101: 1.5 W CPM2C-SRT21: 1 W CPM2C-CIF21: 1 W
Inrush current	25 A max.			
Insulation resistance	20 MΩ min. (at 500 VDC) between insulated circuits			
Dielectric strength	2,300 VAC for 1 min (between insulated circuits)			
Noise immunity	Conforms to IEC61000-4-4; 2 kV (power lines)			
Vibration resistance	10 to 57 Hz, 0.075-mm double 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 (32° to 131°F) Storage: −20° to 75°C (−4° to 167°F) except for the battery			
Humidity	10% to 90% (with no condensation)			
Atmosphere	Must be free from corrosive gas			
Power interrupt time	2 ms min.			
Weight	10 I/O: 200 g max. 20 I/O: 250 g max.	200 g max.	200 g max.	8 and 16 inputs: 150 g 8 and 16 transistor outputs 150 g 8 relay outputs 200 g 10 I/O (relay outputs) 200 g 24 I/O (transistor outputs) 200 g 32 I/O (transistor outputs) 200 g Peripheral/RS-232C Adapter 150 g RS-422/RS-232C Adapter 150 g AC power supply unit 250 g Analog I/O, Temperature units 200 g CompoBus/S unit 150 g

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

■ CPU CHARACTERISTICS

Item		10 I/O points (relay/transistor outputs)	20 I/O points (relay/transistor outputs)	32 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		
User data memory capacity		2,048 words		
I/O capacity	CPU only	10 points	20 points	32 points
	With Expansion I/O Modules	170 points max.	180 points max.	192 points max.
Clock function		Shows the year, month, day of the week, day, hour, minute, and second. (Battery backup) CPUs with “C1” in the model number have a built-in clock.		Not provided on CPUs with 32 I/O points.
Communications functions		A CPM2C-CN111, CS1W-CN114 or CS1W-CN118 connecting cable is required to connect to the CPM2C’s communications port. The communications port can be used as both a peripheral and RS-232C port. 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.		
Memory protection (see notes 1 and 2)		HR area, AR area, program contents, read/write DM area contents, and counter values are maintained during power interruptions.		
Memory backup (see notes 1 and 2)		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 CPU with clock (battery): 2-year lifetime at 25°C CPU without clock (capacitor): 10-day backup at 25°C CPU without clock (lithium battery): 5-year lifetime at 25°C		
Self-diagnostic functions		CPU failure (watchdog timer), I/O bus error, battery error, and memory failure		
Program checks		No END instruction, programming errors (checked when operation is started)		
Basic interrupts	Interrupt processing	2 interrupts	4 interrupts	4 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)		
	Interrupt Inputs (Counter mode)	2 inputs	4 inputs	4 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. (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	4 inputs	4 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)		

Notes are on the next page.

CPU Characteristics table notes:

Note: 1. The DM area, HR area, AR area, and counter values are backed up. If the backup battery or capacitor is discharged, the contents of these ares will be lost and the data values will revert to the defaults.

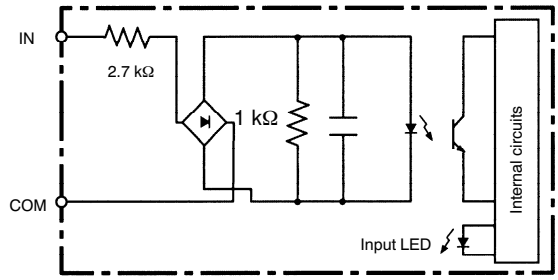
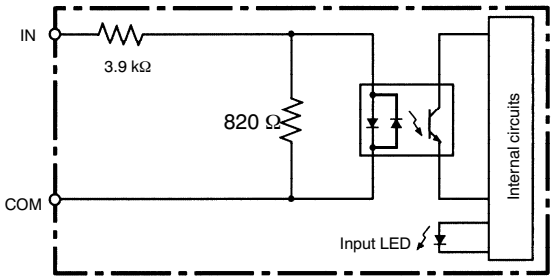
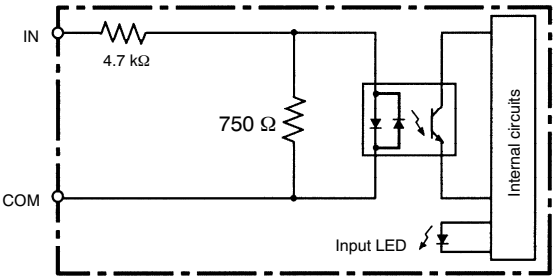
2. The contents of the program area, read-only DM area (DM 6144 to DM 6599), and PC setup (DM 6600 to DM 6655) are stored in flash memory. The contents of these areas will be read from flash memory the next time the power is turned ON, even if the backup battery or capacitor is discharged.
When data has been changed in any of these areas, write the new values to flash memory by switching the CMP2C to MONITOR or RUN mode, or by turning the power OFF and then ON again.

■ I/O ALLOCATION

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
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.

■ I/O SPECIFICATIONS

CPU Input Specifications

Item	Inputs	Specification		
		10 I/O CPU	20 I/O CPU	32 I/O CPU
Input voltage	All	24 VDC $^{+10\%}/_{-15\%}$		
Input impedance	IN00000 to IN00001	2.7 kΩ		
	IN00002 to IN00004	3.9 kΩ	—	—
	IN00002 to IN00006	—	3.9 kΩ	3.9 kΩ
	IN00005	4.7 kΩ	—	—
	IN00007 and up	—	4.7 kΩ	4.7 kΩ
Input current	IN00000 to IN00001	8 mA typical		
	IN00002 to IN00004	6 mA typical	—	—
	IN00002 to IN00006	—	6 mA typical	6 mA typical
	IN00005 and up	5 mA typical	—	—
	IN00007 and up	—	5 mA typical	—
	IN00007	—	—	5 mA typical
	IN00100 to IN00107	—	—	5 mA typical
ON voltage/current	IN00000 to IN00001	17 VDC min., 5.0 mA		
	IN00002 and up	14.4 VDC min., 3.5 mA		
OFF voltage/current	All	5.0 VDC max., 1.1 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			
	CPUs with 10 I/O points: IN00002 to IN00004 CPUs with 20 or 32 I/O points: IN00002 to IN00006			
	CPUs with 10 I/O points: IN00005 CPUs with 20 I/O points: IN00007 to IN00011 CPUs with 32 I/O points: IN00007 and IN00100 to IN00107			

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

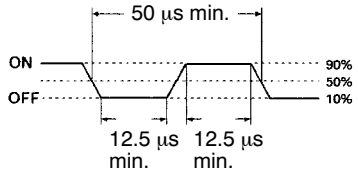
High-speed Counter Inputs

The following CPU 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.

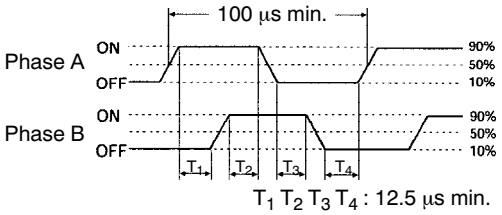
Input	Function			
	Differential phase mode	Pulse plus direction input mode	Up/down input mode	Increment mode
IN00000	A-phase pulse input	Pulse input	Increment pulse input	Increment pulse input
IN00001	B-phase pulse input	Direction input	Decrement pulse input	Normal input
IN00002	Z-phase pulse input or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

Note: The minimum pulse widths for inputs IN00000 (A-phase input) and IN00001 (B-phase input) are as follows:

Pulse plus direction input mode, Up/down input mode, Increment mode

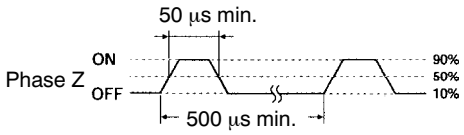


Differential phase mode



T_1 T_2 T_3 T_4 : 12.5 μs min.

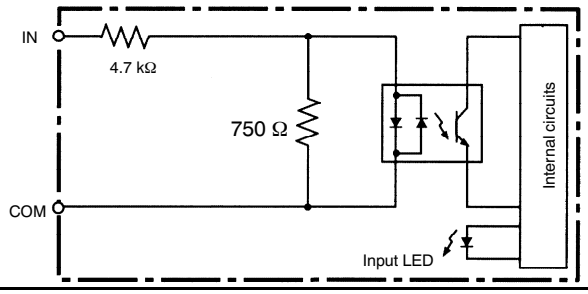
The minimum pulse width for input IN00002 (Z-phase input) is as follows:



Interrupt Inputs

CPM2C PLCs 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 CPUs with 10 I/O points, inputs IN00003 and IN00004 can be used as interrupt inputs. In CPUs with 20 I/O points, inputs IN00003 through IN00006 can be used as interrupt inputs.

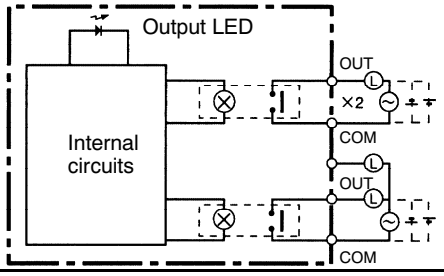
■ EXPANSION I/O MODULE INPUT SPECIFICATIONS

Item	Specification
Input voltage	24 VDC $^{+10\%}/_{-15\%}$
Input impedance	4.7 kΩ
Input current	5 mA typical
ON voltage	14.4 VDC min., 3.5 mA
OFF voltage	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 PLC Setup.

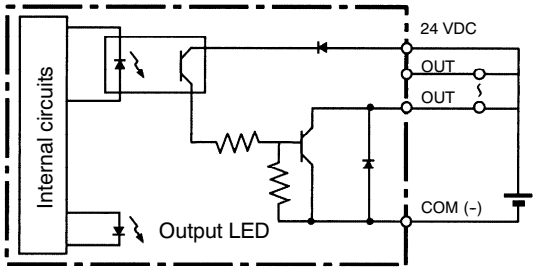
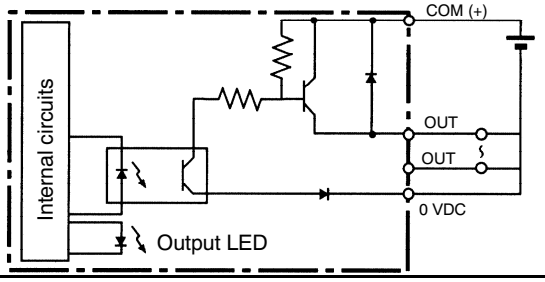
■ CPM2C OUTPUT SPECIFICATIONS (CPUs AND EXPANSION I/O MODULES)

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 (30-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	

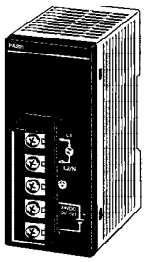
■ TRANSISTOR OUTPUTS (NPN OR PNP)

For CPUs and Expansion I/O Modules

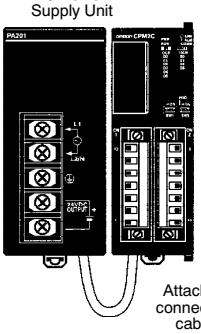
Item	Specification
Max. switching capacity	CPUs with 10 or 20 I/O points: OUT01000 to OUT01007: 40 mA/4.5 VDC to 300 mA/20.4 VDC, 300 mA (20.4 VDC to 26.4 VDC) CPUs with 32 I/O points: OUT01000 to OUT01007: 40 mA/4.5 VDC to 300 mA/20.4 VDC, 300 mA (20.4 VDC to 26.4 VDC) OUT01100 to OUT01107: 40 mA/4.5 VDC to 100 mA/20.4 VDC, 100 mA (20.4 VDC to 26.4 VDC) Expansion I/O Modules: OUT01□00 to OUT01□07: 40 mA/4.5 VDC to 300 mA/20.4 VDC, 300 mA (20.4 VDC to 26.4 VDC) OUT01□08 to OUT01□15: 40 mA/4.5 VDC to 100 mA/20.4 VDC, 100 mA (20.4 VDC to 26.4 VDC) Note: When using OUT01000 or OUT01001 as a pulse output, connect a dummy resistor as required to bring the load current between 10 and 150 mA. If the load current is below 10 mA, the ON/OFF response time will be longer and high-speed pulses will not be output. The transistor will heat if used at 150 mA or higher, possibly damaging elements.
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 10 to 300 mA 0.1 ms max. for 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	**NPN Outputs**  **PNP Outputs** 

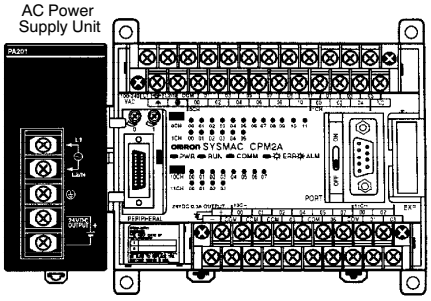
■ AC POWER SUPPLY UNIT

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



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





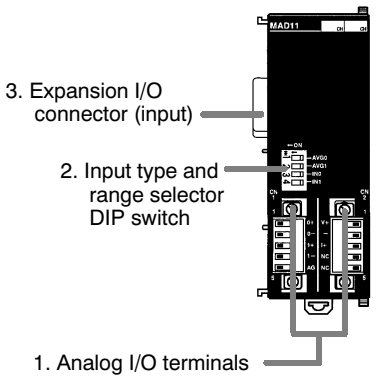
CPM2C-PA201 AC Power Supply Unit Specifications

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 (85 to 264 VAC allowable voltage range)
	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		5%/–10%, 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 (32° to 131°F)
Ambient storage temperature			–20° to 70°C (–4° to 158°F)
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.

■ DEDICATED I/O MODULES SPECIFICATIONS

Mixed Analog I/O Module CPM2C-MAD11 (2 input and 1 output channels)

For process input variables such as pressure, flow, and humidity, use a Mixed Analog I/O Module. The single analog output can provide a signal for recording devices, valve controllers or a transfer output of the analog signal. Up to 4 Mixed Analog I/O Modules can be used in a CPM2C system with other Expansion I/O Modules. A maximum of 5 Expansion I/O Modules, including Dedicated I/O Modules, can be used in a CPM2C system.

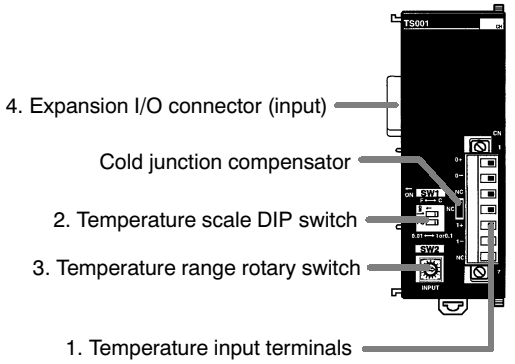


Item			Voltage I/O	Current I/O
Analog input section	Number of inputs		2 inputs (2 words allocated)	
	Input signal range		0 to 5 VDC, 1 to 5 VDC, 0 to 10 VDC, or −10 to +10 VDC	0 to 20 mA or 4 to 20 mA
	Max. rated input		±15 V	±30 mA
	External input impedance		1 MΩ min.	250 Ω
	Resolution		1/6000 (full scale)	
	Overall accuracy	25°C	0.3% full scale	0.4% full scale
		0 to 55°C	0.6% full scale	0.8% full scale
	A/D conversion data		16-bit binary (4-digit hexadecimal) Full scale for −10 to +10 V: F448 to 0BB8 Hex Full scale for other ranges: 0000 to 1770 Hex	
	Averaging function		Supported (Settable for individual inputs via DIP switch)	
	Open-circuit detection function		Supported	
Analog output section	Number of outputs		1 output (1 word allocated)	
	Output signal range		1 to 5 VDC, 0 to 10 VDC, or −10 to +10 VDC	0 to 20 mA or 4 to 20 mA
	Allowable external output load resistance		1 kΩ min.	600 Ω max.
	External output impedance		0.5 Ω max.	—
	Resolution		1/6000 (full scale)	
	Overall accuracy	25°C	0.4% full scale	
		0 to 55°C	0.8% full scale	
	Set data (D/A conversion)		16-bit binary (4-digit hexadecimal) Full scale for −10 to +10 V: F448 to 0BB8 Hex Full scale for other ranges: 0000 to 1770 Hex	
Conversion time			2 ms/point (6 ms/all points)	
Isolation method			Photocoupler isolation between analog I/O terminals and internal circuits. No isolation between analog I/O signals.	

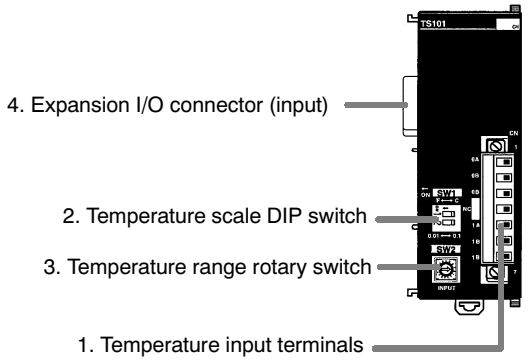
Temperature Sensor Input Modules CPM2C-TS001 and CPM2C-TS101 (2 input channels)

By connecting a Temperature Sensor Module to the CPM2C, inputs can be received from thermocouples or platinum resistance thermometers. Inputs are converted to binary data (4-digit hexadecimal) and stored in the IR area. A maximum of four Temperature Sensor Input Modules can be used in a CPM2C system.

CPM2C-TS001



CPM2C-TS101

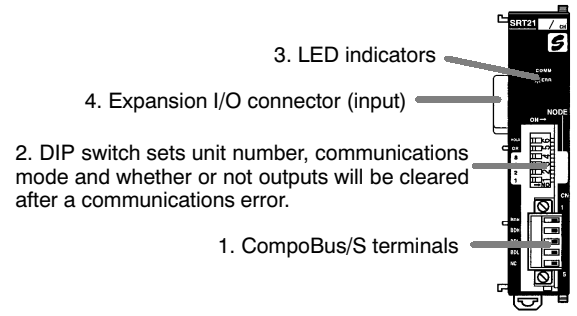


Item	CPM2C-TS001	CPM2C-TS101
Temperature sensors	Thermocouples Switchable between Types K and J, but same type must be used for all inputs.	Platinum resistance thermometer Switchable between Pt100 and JPt100, but same type must be used for all inputs.
Number of inputs	2	
Allocated input words	2	
Max. number of modules	4	4
Temperature ranges	Type K: −200° to 1300°C, 0.0° to 500.0°C −300° to 2300°F, 0.0° to 900.0°F Type J: −100° to 850°C, 0.0° to 400.0°C −100° to 1500°F, 0.0° to 750.0°F	Both Pt100 and JPt100: −200.0° to 650.0°C −300.0° to 1200.0°F
Accuracy (See Note 2)	The larger of ±0.5% of converted value or ±2°C, ±1 digit max. (See Note 1)	The larger of ±0.5% of converted value or ±1°C, ±1 digit max.
Conversion time	250 ms for 2 input points	
Converted temperature data	16-bit binary data (4-digit hexadecimal)	
Isolation	Photocouplers between all temperature input signals	

Note: 1. Accuracy for a K-type sensor at −100°C or less is ±4°C ±1 digit max.
2. The error deviation for temperatures in °F is double that for °C.

CompoBus/S I/O Link Module CPM2C-SRT21

The CPM2C controller can function as a Slave to a CompoBus/S Master Module when a CPM2C-SRT21 CompoBus/S I/O Link Module is connected. The CompoBus/S I/O Link Module links 8 inputs and 8 outputs between the Master Module and the CPM2C. Up to 5 Expansion I/O Modules or Expansion Modules can be connected to a CPM2C CPU.

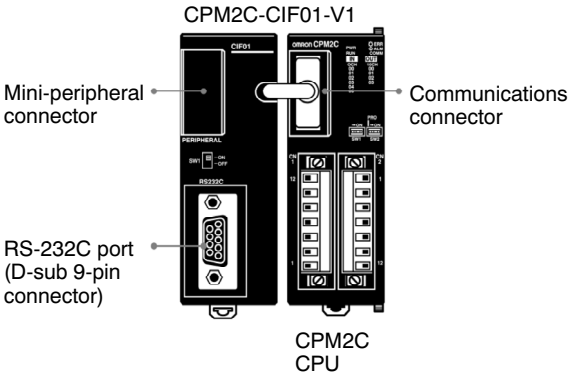


Number of I/O bits	8 input bits, 8 output bits
Max. number of connectable nodes	16
Number of words occupied in CPM2C I/O memory	1 input word, 1 output word (Allocated in the same way as other Expansion I/O Modules or Expansion Modules)
Node number setting	Set using the DIP switch.

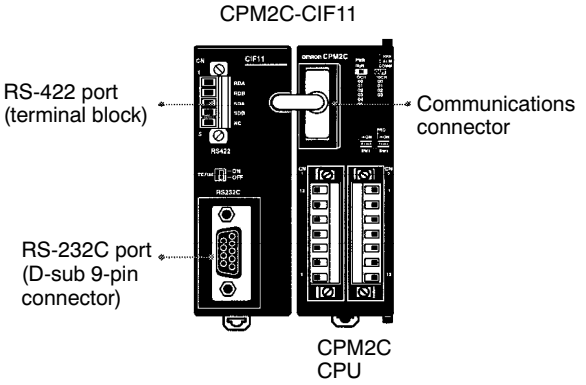
Note: See the CompoBus/S section of Omron's *Remote I/O and Wiring Solutions Catalog (GC RIO1*) for more details on CompoBus/S communications.

■ SERIAL COMMUNICATIONS MODULES

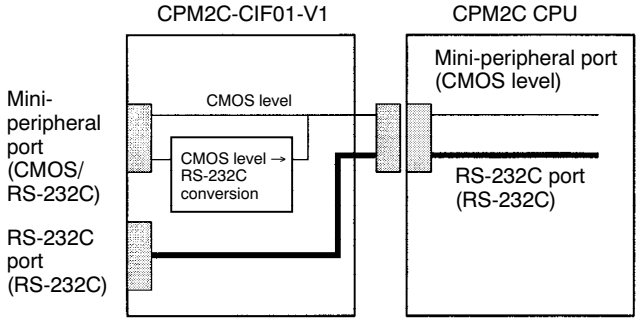
CPM2C-CIF01-V1
Mini-peripheral/RS-232C Adapter Unit



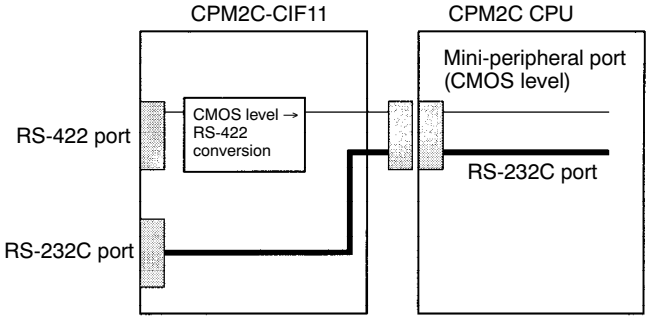
CPM2C-CIF11
RS-422/RS-232C Adapter Unit



Internal Configuration



Note: When using the CS1W-CN226/CN626 Connecting Cable for personal computer connection, turn ON the switch.



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's CMOS interface without conversion, or converts CMOS level (CPU side) to RS-232C (connected device side).	Converts CMOS level (CPU 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's CMOS interface without conversion.	Outputs signals from the CPU'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.	
Current consumption		0.3 A max. at 5 V	
Weight		150 g max.	

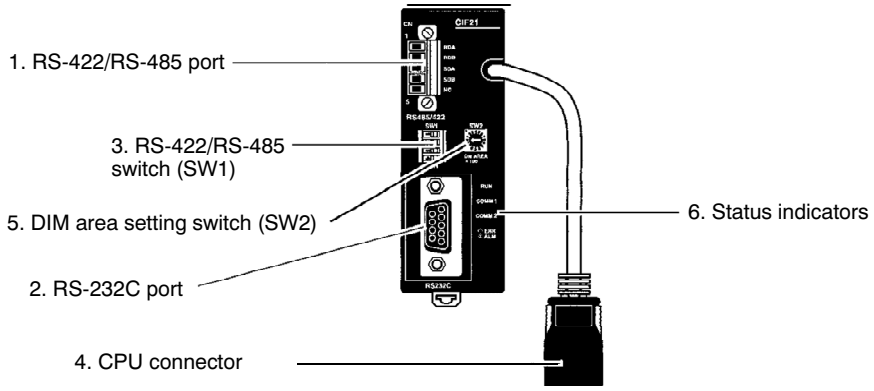
Note: Neither the CPM2C-CIF01-V1 nor the CPM2C-CIF11 can be used with any PC other than the CPM2C. A CPM2C-CIF11 or another CPM2C-CIF01-V1 cannot be connected to the CPM2C if a CPM2C-CIF01-V1 is already connected to it.

■ COMPOWAY/F SERIAL INTERFACE MODULE

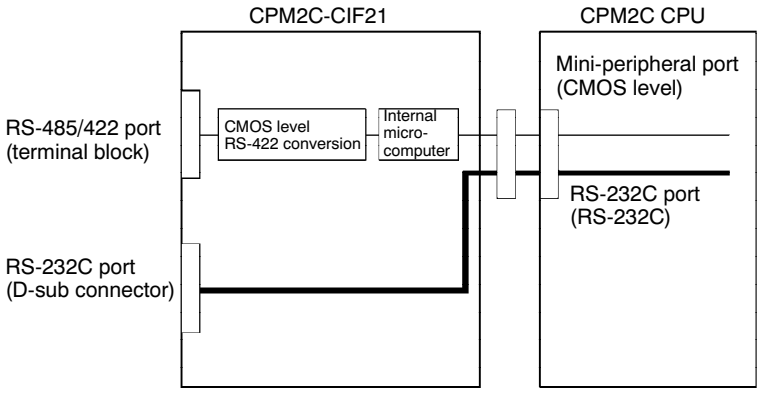
CPM2C-CIF21

The CompoWay/F Serial Interface Module exchanges data between the CPU's DM area and OMRON components (temperature controllers, electronic timers/counters, and digital panel meters). This eliminates the need for ladder programming used to transfer data between the CPU and the supported OMRON components. Up to 32 OMRON components equipped with the CompoWay/F or SYSWAY communications can be connected.

Front View



Internal Configuration



CPM2C-CIF21 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 via peripheral port.
	Baud rate for connection to components	9.6, 19.2, 38.4, or 57.6 kbps
	Baud rate for connection to CPU	9.6 or 19.2 kbps
RS-232C (bottom port)	Signal conversion	Output from CPU's RS-232C interface with no conversions.
	Communications functions	One of the following: Host Link, no-protocol, 1:1 Link, 1:1 NT Link
Power supply		From CPU
Power consumption		1 W
Weight		150 g max.

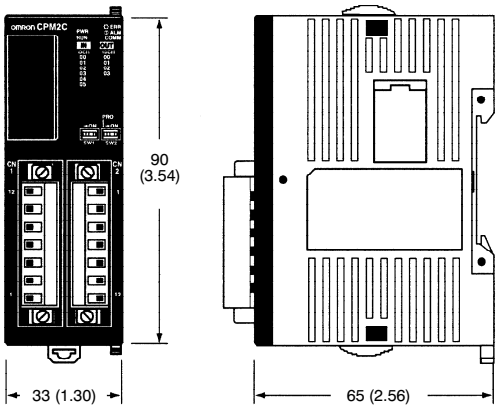
Note: The CPM2C-CIF21 can only be used with the CPM2C.

Dimensions

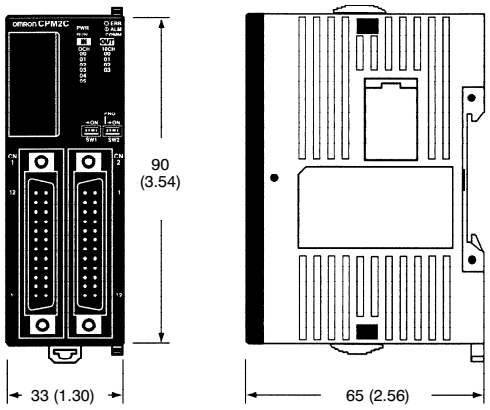
Unit: mm (inch)

■ CPUS

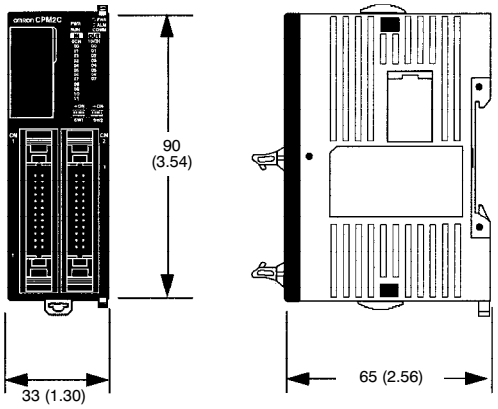
CPU with Relay Outputs
(CPM2C-10CDR-D, CPM2C-10C1DR-D
CPM2C-20CDR-D, CPM2C-20C1DR-D)



CPU with Transistor Outputs and Fujitsu Connectors
(CPM2C-10/20/32CDTC-D, CPM2C-10/20/32C1DTC-D,
CPM2C-10/20CDT1C-D, CPM2C-10/20C1DT1C-D)



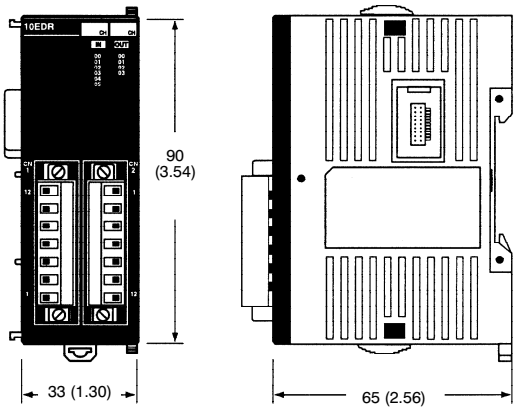
CPU with Transistor Outputs and MIL Connectors
(CPM2C-10/20/32CDTM-D, CPM2C-10/20C1DTM-D,
CPM2C-10/20/32CDT1M-D, CPM2C-10/20C1DT1M-D)



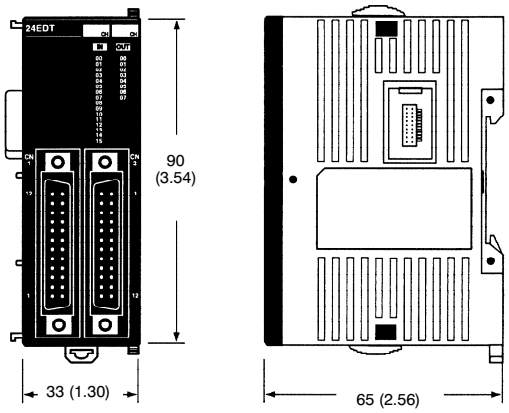
■ EXPANSION I/O MODULES

Unit: mm (inch)

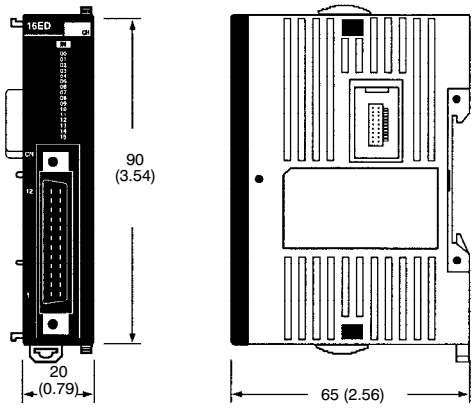
Modules with Relay Outputs (CPM2C-8ER, CPM2C-10EDR)



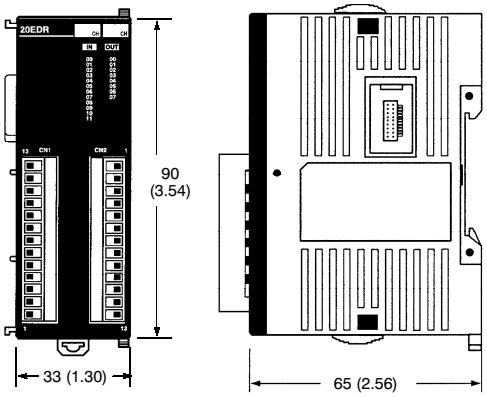
Modules with Transistor Outputs (CPM2C-24/32EDTC, CPM2C-24/32EDT1C)



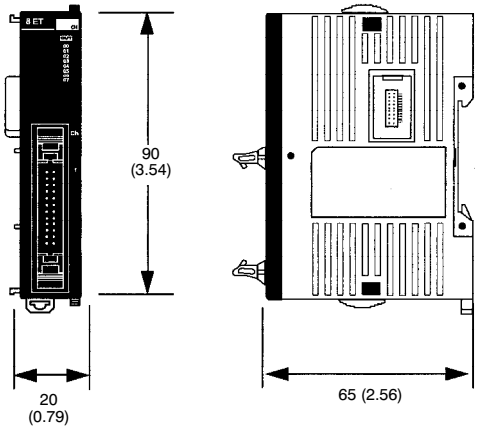
Modules with Transistor Outputs Only and Modules with Inputs Only (CPM2C-8EDC, CPM2C-8ETC, CPM2C-8ET1C, CPM2C-16EDC, CPM2C-16ETC, CPM2C-16ET1C)



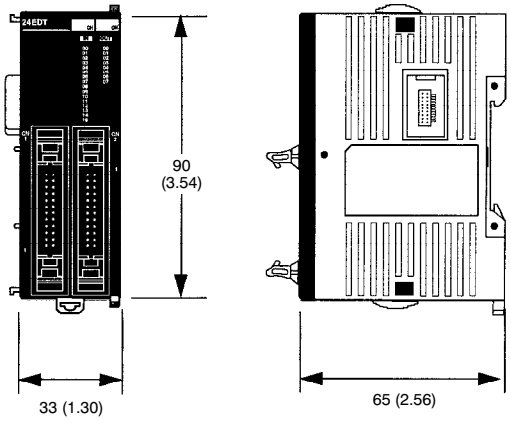
Modules with 20 Relay I/O (CPM2C-20EDR-D)



Modules with Inputs or Outputs Only (CPM2C-8EDM, CPM2C-8ETM, CPM2C-8ET1M, CPM2C-16EDM, CPM2C-16ETM, CPM2C-16ET1M)

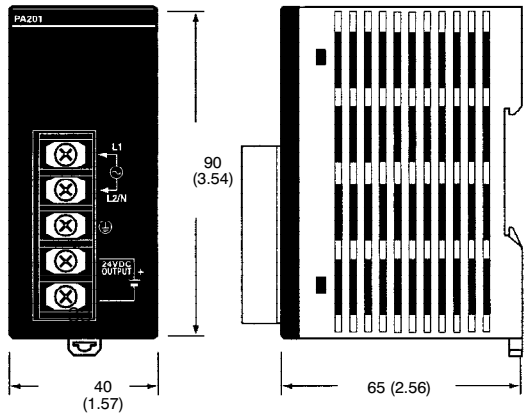


Modules with Transistor Outputs and MIL Connectors (CPM2C-24/32EDTM, CPM2C-24/32EDT1M)

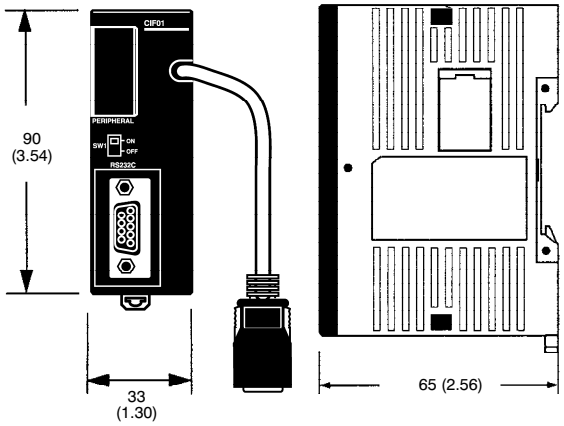


Unit: mm (inch)

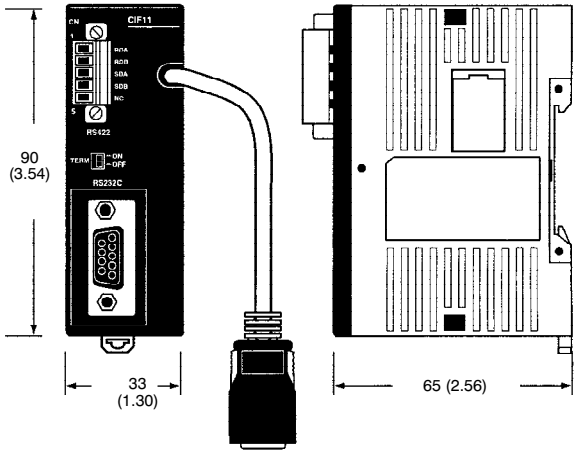
AC Power Supply (CPM2C-PA201)



Mini-peripheral/RS-232C Adapter Module (CPM2C-CIF01-V1)



RS-232C and RS-422/RS-485 Adapter Module (CPM2C-CIF11)



CompoWay/F Serial Interface Module (CPM2C-CIF21)