Compact PLC Series CPM2C

General

The CPM2C Micro PLC is suitable as a controller for simple stand-alone machines, as well as a simple networked controller. One innovation is the new synchronisation instruction, which makes it possible to generate output pulse trains as a function of an input pulse frequency, e.g. to emulate the synchronisation of 2 axes through a variable gear ratio. Furthermore, PID control and pulse width modulation can also be realised easily by preconfigured instructions.

PLC programs from the CPM1/CPM1A and the CPM2A can be used with the CPM2C. Programming is carried out using the CX-Programming software.

Features of the CPM2C series:

- Small size, space-saving narrow design
- Removable terminal block or connector
- Real-time clock and backup battery (dependent on type)
- One 20 kHz counter and two 10 kHz pulse outputs
- Peripheral and RS-232C ports in one connector
- Active RS-232C port (RXD/TXD instruction)
- Synchronisation, PID control, and pulse width modulation instructions

The very small size and DIN rack mounting allow the CPM2C to be installed in small control cabinets, which can be integrated directly into machines and therefore save a great deal of space.

Performance Data (Max. Values)

		CPM2C–10_	CPM2C–S1_	CPM2C–20_	CPM2C–32_
Built–in I/O	**Inputs** **Outputs**	6 4	6 4	12 8	16 16
With expansion	**Inputs** **Outputs**	86 84	54 52	92 88	96 96
Execution time (bit instruction)		0.64 µs	0.64 µs	0.64 µs	0.64 µs
Program memory		4 kwords	4 kwords	4 kwords	4 kwords
Data memory		2 kwords	2 kwords	2 kwords	2 kwords
Input interrupts		2	2	4	4
Time–controlled interrupts		1	1	1	1

Networks and Communication

Ethernet (open network)	–	–	–	–
Controller Link (PLC network)	–	–	–	–
Host Link, SYSMAC WAY (serial network)	Yes	Yes	Yes	Yes
DeviceNet (open fieldbus)	–	Yes (slave)	–	–
CompoBus/S (fieldbus)	Yes (slave)	Yes (master/slave)	Yes (slave)	Yes (slave)
AS–Interface (open fieldbus)	–	–	–	–
PROFIBUS–DP (open fieldbus)	–	–	–	–

System Configuration

Configuration

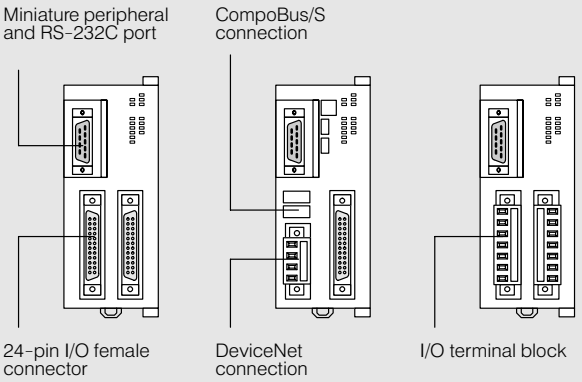
The individual Units of the CPM2C system are plugged in to one another and secured using 2 locking sliders. The system must be mounted on DIN rail.

Communication interfaces

The CPM2C has one peripheral and one RS-232C interface on a miniature peripheral socket. They can both be accessed via the CPM2C-CN111 adapter cable.

For other adapter cables, see page 61.

Both ports can be used simultaneously.



Expansion of the CPM2C

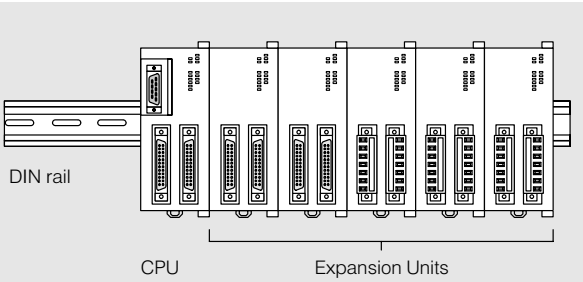
Up to five Expansion Units can be connected to CPM2C CPU Units, and up to three Expansion Units to CPM2C-S100C/S110C Units. Only a total of four of the CPM2C-MAD11 and CPM2C-TS_ Expansion Units can be connected.

Interrupt input

Two or four of the normal transistor inputs can also be configured as interrupt inputs. Various interrupt modes are available.

Pulse outputs

Only CPM2C CPU Units with transistor outputs provide a pulse output function. These pulse outputs are to be subtracted from the number of available standard outputs.

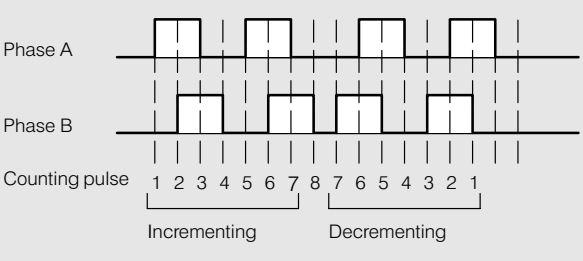


High–speed counter inputs

If the high-speed counter function is required, three of the normal transistor inputs are occupied. The high-speed counter input can be used to connect an encoder with phases A, B and Z, for example.

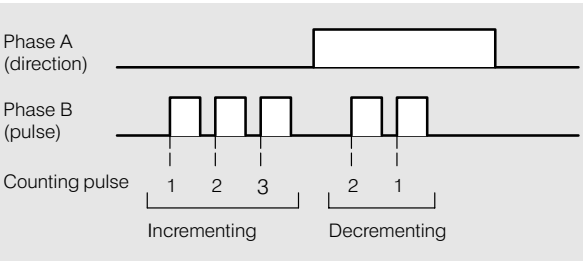
– Differential phase mode

The maximum input frequency is 5 kHz.
Each upward and each downward edge is counted, i.e. at 5 kHz, 20,000 pulses per second are counted.
The Z phase can be used as a reset signal.



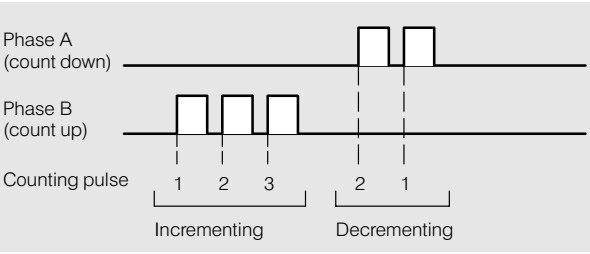
– Pulse/direction mode

The maximum counting frequency is 20 kHz.



– Up/down count mode

The maximum counting frequency is 20 kHz.



CPU Units

CPM2C–CPU Unit
- DIN rail mounting
- LED status display
- Max. 5 Expansion Units
- Removable terminal blocks
- Voltage supply 24 VDC

Model code	CPM2C–10CDR–D
Inputs	6 DC inputs
Outputs	4, relay
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–10C1DR–D**
Inputs	6 DC inputs
Outputs	4, relay
Data backup	Battery
Real-time clock	Yes

Model code	CPM2C–20CDR–D
Inputs	12 DC inputs
Outputs	8, relay
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–20C1DR–D**
Inputs	12 DC inputs
Outputs	8, relay
Data backup	Battery
Real-time clock	Yes

CPM2C–CPU Unit
- DIN rail mounting
- LED status display
- Max. 5 Expansion Units
- 24-pin front connector*
- Voltage supply 24 VDC
- Pulse output
- FUJITSU connector

Model code	CPM2C–10CDT1C–D
Inputs	6 DC inputs
Outputs	4, transistor, PNP
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–10CDTC–D**
Inputs	6 DC inputs
Outputs	4, transistor, NPN
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–10C1DT1C–D**
Inputs	6 DC inputs
Outputs	4, transistor, PNP
Data backup	Battery
Real-time clock	Yes
Model code	**CPM2C–10C1DTC–D**
Inputs	6 DC inputs
Outputs	4, transistor, NPN
Data backup	Battery
Real-time clock	Yes

* Front connector or terminal block and cable are not included in delivery package, see page 465.

CPU Units (Continued)

CPM2C–CPU Unit
- DIN rail mounting
- LED status display
- Max. 5 Expansion Units
- 24-pin front connector*
- Voltage supply 24 VDC
- Pulse output
- MIL connector

Model code	**CPM2C–10CDT1M–D**
Inputs	6 DC inputs
Outputs	4, transistor, PNP
Data backup	Capacitor
Real-time clock	–

Model code	**CPM2C–10CDTM–D**
Inputs	6 DC inputs
Outputs	4, transistor, NPN
Data backup	Capacitor
Real-time clock	–

Model code	**CPM2C–10C1DT1M–D**
Inputs	6 DC inputs
Outputs	4, transistor, PNP
Data backup	Battery
Real-time clock	Yes

Model code	**CPM2C–10C1DTM–D**
Inputs	6 DC inputs
Outputs	4, transistor, NPN
Data backup	Battery
Real-time clock	Yes

* Front connector or terminal block and cable are not included in delivery package, see page 465.

CPU Units (Continued)

CPM2C–CPU Unit
- DIN rail mounting
- LED status display
- Max. 5 Expansion Units
- 24-pin front connector*
- Voltage supply 24 VDC
- Pulse output
- FUJITSU connector

Model code	**CPM2C–20CDT1C–D**
Inputs	12 DC inputs
Outputs	8, transistor, PNP
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–20CDTC–D**
Inputs	12 DC inputs
Outputs	8, transistor, NPN
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–20C1DT1C–D**
Inputs	12 DC inputs
Outputs	8, transistor, PNP
Data backup	Battery
Real-time clock	Yes
Model code	**CPM2C–20C1DTC–D**
Inputs	12 DC inputs
Outputs	8, transistor, NPN
Data backup	Battery
Real-time clock	Yes

Model code	**CPM2C–32CDT1C–D**
Inputs	16 DC inputs
Outputs	16, transistor, PNP
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–32CDTC–D**
Inputs	16 DC inputs
Outputs	16, transistor, NPN
Data backup	Capacitor
Real-time clock	–

* Front connector or terminal block and cable are not included in delivery package, see page 465.

CPU Units (Continued)

CPM2C–CPU Unit
- DIN rail mounting
- LED status display
- Max. 5 Expansion Units
- 24-pin front connector*
- Voltage supply 24 VDC
- Pulse output
- MIL connector

Model code	**CPM2C–20CDT1M–D**
Inputs	12 DC inputs
Outputs	8, transistor, PNP
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–20CDTM–D**
Inputs	12 DC inputs
Outputs	8, transistor, NPN
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–20C1DT1M–D**
Inputs	12 DC inputs
Outputs	8, transistor, PNP
Data backup	Battery
Real-time clock	Yes
Model code	**CPM2C–20C1DTM–D**
Inputs	12 DC inputs
Outputs	8, transistor, NPN
Data backup	Battery
Real-time clock	Yes

Model code	**CPM2C–32CDT1M–D**
Inputs	16 DC inputs
Outputs	16, transistor, PNP
Data backup	Capacitor
Real-time clock	–
Model code	**CPM2C–32CDTM–D**
Inputs	16 DC inputs
Outputs	16, transistor, NPN
Data backup	Capacitor
Real-time clock	–

CPM2C–CPU Unit
- DIN rail mounting
- LED status display
- Max. 3 Expansion Units
- 24-pin front connector*
- Voltage supply 24 VDC
- Pulse output
- FUJITSU connector

Model code	**CPM2C–S110C**
Inputs	6 DC inputs
Outputs	4, transistor, PNP
CompoBus/S Master	Up to 128 remote input points + 128 remote output points
Data backup	Battery
Real-time clock	Yes
Model code	**CPM2C–S100C**
Inputs	6 DC inputs
Outputs	4, transistor, NPN
CompoBus/S Master	Up to 128 remote input points + 128 remote output points
Data backup	Battery
Real-time clock	Yes

* Front connector or terminal block and cable are not included in delivery package, see page 465.

CPU Units (Continued)

CPM2C–CPU Unit – DIN rail mounting – LED status display – Max. 3 Expansion Units – 24-pin front connector* – Voltage supply 24 VDC – Pulse output 2 – FUJITSU connector	Model code	CPM2C–S110C–DRT
	Inputs	6 DC inputs 1 circuit, 6 inputs
	Outputs	4 transistor, PNP 1 circuit, 4 outputs
	DeviceNet I/O Link	Configurable up to 64 byte in + 64 byte out
	CompoBus/S Master	Up to 128 remote input points + 128 remote output points
	Data backup	Battery
	Real-time clock	Yes

CPM2C–CPU Unit – DIN rail mounting – LED status display – Max. 3 Expansion Units – 24-pin front connector* – Voltage supply 24 VDC – Pulse output	Model code	CPM2C–S100C–DRT
	Inputs	6 DC inputs 1 circuit, 6 inputs
	Outputs	4, transistor, NPN 1 circuit, 4 outputs
	DeviceNet I/O Link	Configurable, up to 64 byte in + 64 byte out
	CompoBus/S Master	Up to 128 remote input points + 128 remote output points
	Data backup	Battery
	Real-time clock	Yes

* Front connector or terminal block and cable are not included in delivery package, see page 465.

Specifications

Relay output **CPM2C**	**–10CDR–D**	**–10C1DR–D**	**–**	**–**
Transistor outp. PNP	**–**	**–**	**–10CDT1C/M–D**	**–10C1DT1C/M–D**
Transistor outp. NPN	**–**	**–**	**–10CDTC/M–D**	**–10C1DTC/M–D**
CPU built-in inputs	6 DC inp. 1 circuit, 6 inp.	6 DC inp. 1 circuit, 6 inp.	6 DC inp. 1 circuit, 6 inp.	6 DC inp. 1 circuit, 6 inp.
CPU built-in outputs	4 relay outp. 2 circuits, 1 outp. each 1 circuit, 2 outp. 4 A per circuit	4 relay outp. 2 circuits, 1 outp. each 1 circuit, 2 outp. 4 A per circuit	4 transistor outp. 1 circuit, 4 outp. 1 circuit, 2 outp. 1.2 A per circuit	4 transistor outp. 1 circuit, 4 outp. 1 circuit, 2 outp. 1.2 A per circuit
Max. local Inputs Outputs	86 84	86 84	86 84	86 84
Real-time clock	–	Yes	–	Yes
Number of Expansion Units	5	5	5	5
Data backup	Capacitor, 10 days	Battery, 2 years	Capacitor, 10 days	Battery, 2 years
Pulse output 10 Hz..10 kHz	–	–	2	2
Input interrupts 300 µs call subroutine	2	2	2	2
Counter interrupts 2 kHz counting frequency	2	2	2	2
Pulse storage min. 50 µs pulse width	2	2	2	2

Specifications (Continued)

Relay output	CPM2C	–20CDR–D	–20C1DR–D	–	–
Transistor outp. PNP		–	–	–20CDT1C/M–D	–20C1DT1C/M–D
Transistor outp. NPN		–	–	–20CDTC/M–D	–20C1DTC/M–D
CPU built-in inputs		12 DC inp. 1 circuit, 12 inp.	12 DC inp. 1 circuit, 12 inp.	12 DC inp. 1 circuit, 8 inp. 1 circuit, 4 inp.	12 DC inp. 1 circuit, 8 inp. 1 circuit, 4 inp.
CPU built-in outputs		8 relay outp. 4 circuits, 2 outp. each 4 A per circuit	8 relay outp. 4 circuits, 2 outp. each 4 A per circuit	8 transistor outp. 1 circuits, 8 outp. 2.4 A per circuit	8 transistor outp. 1 circuits, 8 outp. 2.4 A per circuit
Max. local	Inputs Outputs	92 88	92 88	92 88	92 88
Real-time clock		-	Yes	-	Yes
Number of Expansion Units		5	5	5	5
Data backup		Capacitor, 10 days	Battery, 2 years	Capacitor, 10 days	Battery, 2 years
Pulse output 10 Hz..10 kHz		-	-	2	2
Input interrupts 300 μs call subroutine		4	4	4	4
Counter interrupts 2 kHz counting frequency		4	4	4	4
Pulse storage min. 50 μs pulse width		4	4	4	4

Relay output	CPM2C	–	–	–
Transistor outp. PNP		–32CDT1C/M–D	–S110C	–S110C–DRT
Transistor outp. NPN		–32CDTC/M–D	–S100C	–S100C–DRT
CPU built-in inputs		16 DC inp. 2 circuit, 8 inp.	6 DC inp. 1 circuit, 4 inp. 1 circuit, 2 inp.	6 DC inp. 1 circuit, 4 inp. 1 circuit, 2 inp.
CPU built-in outputs		16 transistor outp. 2 circuits, 8 outp. each* 3.2 A per circuit	4 transistor outp. 1 circuit, 4 outp. 1.2 A per circuit	4 transistor outp. 1 circuit, 4 outp. 1.2 A per circuit
Max. local	Inputs Outputs	96 96	54 52	54 52
CompoBus/S max. remote	Inputs Outputs	- -	128 128	128 128
DeviceNet max. Link	Inputs Outputs	- -	- -	64 bytes 64 bytes
Real-time clock		-	Yes	Yes
Number of Expansion Units		5	3	3
Data backup		Capacitor, 10 days	Battery, 2 years	Battery, 2 years
Pulse output 10 Hz..10 kHz		2	2	2
Input interrupts 300 μs call subroutine		4	2	2
Counter interrupts 2 kHz counting frequency		4	2	2
Pulse storage min. 50 μs pulse width		4	2	2

* Output switching capacity differs depending on the circuit

Specifications (Continued)

Time-controlled interrupts 0.5 ms..5 min		1
Execution time	µs	0.64
Program memory	kwords	4
Data memory	kwords	2
Work relay	bits (words)	928 (58)
Holding relay	bits (words)	320 (20)
Timer/Counter		256 (1 ms, 10 ms, 100 ms, $^1/_{10}$ s, timer, counter)
CPU ports		1 miniature peripheral port, comprising – 1 RS-232C port – 1 RS-232C port/programming console (switchable)
Number of instructions		14 basic instructions, 106 special instructions, all with edge- or level-triggered execution
Special instructions		– Synchronisation – Pulse output – Subroutine – Arithmetic – PID – Macro – ASCII/HEX – Indirect addressing – Pulse width modulation – 7 segment decoder – Tabular processing
Program backup		Flash EEPROM
Program protection		Password
Pulse counter		1x 20 kHz single-phase or 5 kHz differential mode (encoder phases A, B and Z)
Supply voltage		24 VDC
Operating voltage limits		20.4..26.4 VDC
Power consumption		3..4 W, + 1..2 W per Expansion Unit (except CPM2C-MAD11: 3.5 W)
Insulation resistance		Min. 20 MΩ at 500 VDC, measured between AC and PE terminal
Dielectric strength		2300 VAC at 50/60 Hz for one minute with a leakage current of max. 10 mA between AC and PE terminals.
Noise immunity		2 kV on power lines, conforms to IEC 61000-4-4
Vibration resistance		10..57 Hz with 0.075 mm amplitude; 57..0.150 Hz with an acceleration of 1 G in X, Y and Z directions, 10 sweeps of 8 minutes each.
Shock resistance		147 m/s^2 (15 G) in X, Y and Z directions 3 times each.
Temperature	Operation Storage	0..55 °C -20..75 °C
Ambient humidity		10..90% (without condensation)
Atmosphere		System must not be exposed to the following conditions: – Corrosive gases – Severe temperature fluctuations – Air with an extreme dust or salt content – Metal filings or metallic dust – Splash water or other chemicals
Degree of protection		IEC IP30 (Control cabinet mounting)
Grounding		According to EN60204
Approvals		CE, UL, CSA

Data words, Holding relays, Auxiliary relays and counter values are backed up by a built-in battery for up to 5 years. In models without built-in battery this data is backed up by a built-in capacitor for up to 10 days.

Specifications (Continued)

DC inputs of CPU Units

The inputs IN0000..IN0001 are the fast counter inputs (e.g. encoder phase A and B).

Input voltage	ON level OFF level	24 VDC (20.4..26.4 VDC) Min. 14.4 VDC Max. 5.0 VDC
Input impedance		3.9..4.7 kΩ (IN0000..IN0001: 2.7 kΩ)
Input current		5..6 mA (IN0000..IN0001: 8 mA)
ON/OFF delay		10 ms (selectable in 8 steps from 1..80 ms)

Relay outputs of CPU Units

Type of output		Relay
Max. switching capacity		250 VAC, 2 A (cosφ=1); 24 VDC, 2 A
Min. switching capacity		5 VDC, 10 mA
Relay life	electrical mechanical	150,000 operations at R load, 100,000 operations at L load 20,000,000 operations
ON/OFF delay		Max. 15 ms

Transistor outputs of CPU Units

Type of output	Transistor
Switching capacity	24 V (20.4..26.4 V), 0.3 A for first set of 8 24 V (20.4..26.4 V), 0.1 A for second set of 8
Leakage current	Max. 0.1 mA
Residual voltage	Max. 0.8 V
ON delay OFF delay	Max. 0.1 ms (pulse outputs 20 μs) Max. 1 ms (pulse outputs 40 μs at >10mA)

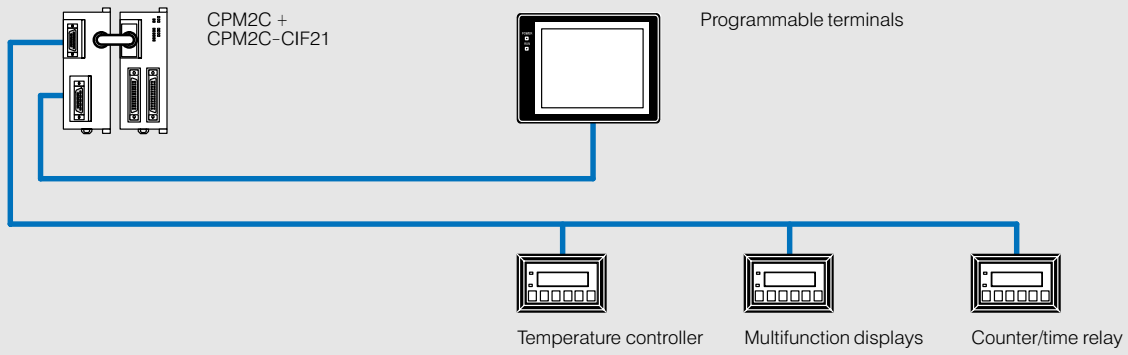
Power Supplies

Power supply unit	Model code	CPM2C–PA201
– Power supply for CPM2A and CPM2C series	Input voltage	100..240 VAC
	Output voltage	24 VDC, 600 mA (14.4W)

Port Adapters

	Description	Cable length	Model code
RS–232C port adapter	Adapter unit for connection to the peripheral port of the CPM2C-CPU – 1x peripheral port (RS-232C possible via CS1W-CN226) – 1x RS-232C	7 cm	**CPM2C–CIF01–V1**
RS–232C and RS–422/485 port adapter	Adapter unit for connection to the peripheral port of the CPM2C-CPU – 1x RS-422/485 – 1x RS-232C	7 cm	**CPM2C–CIF11**
RS–232C and RS–422/485 communication adapter For device connection overview, see page 61	Adapter unit for connection to the peripheral port of the CPM2C-CPU – 1x RS-422/485 – 1x RS-232C – Communication protocol for CompoWay/F, SYSWAY, NT-Link – Communication programs for OMRON timers, counters, controllers and multi-function displays	7 cm	**CPM2C–CIF21**

Connection and Adapter Cables



Device connection overview for CPM2C with CIF21

	Type	SYSWAY	CompoWay/F
Temperature controller	E5AN, E5CN, E5EN, E5GN	Yes	Yes
	E5ZN	No	Yes
	E5AK, E5CK, E5EK	Yes	No
	E5AK-T, E5CK-T, E5EK-T	No	No
	E5AJ, E5EJ	Yes	No
	E5AF	Yes	No
Timer	H8GN	No	Yes
Multifunction displays	K3GN	No	Yes
	K3NX	Yes	Limited
	K3NV	Yes	Limited
	K3NR	Yes	Limited
	K3NP	Yes	Limited
	K3NC	Yes	Limited
	K3NH	Yes	Limited
	K3TS	Yes	No

Programming, Accessories and Documentation

Programming

Description		Cable length	Model code
CX-Programmer. PLC programming software. For WINDOWS 95/98/ME/2000/NT4.0-SP5/XP - see page 434		-	**WS02-CXPC1-_**
Programming cable, peripheral port <-> PC		2 m	**CS1W-CN226**
		6 m	**CS1W-CN626**
Programming consoles	Programming console with cable for peripheral port	2 m	**CQM1H-PRO01-E**
	Programming console without cable for installation in control cabinet door	-	**C200H-PRO27-E**
	Cable for PRO27 to CPU	2 m	**CS1W-CN224**
	Cable for PRO27 to CPU	6 m	**CS1W-CN624**

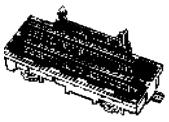
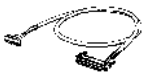
Programming, Accessories and Documentation (Continued)

Program copy device	Writing of the user program, the PLC configuration, the expanded instruction set and the data words from DM6144 to DM6655 on EEPROM, as well as down-loading of EEPROM data in the PLC. For PLC systems: CPM and CQM1H Supported EEPROMs: Atmel AT28C256 NEC μPD28C256 *** CPM2C–CN111 or –CN114 adapter cables must be used**	20 cm	**CPM1–EMU01–V1***

Accessories, cables etc.

24-pin connector for the CPM2C Units with plug connection (solder terminal)	–	**C500–CE241**
24-pin connector for the CPM2C Units with plug connection (spring clip for ribbon cable)	–	**C500–CE243**
Spare battery for CPM2C	–	**CPM2C–BAT01**
Spare cable for 24 VDC power supply for CPM2C	0.1 m	**Power cable CPM2C**

Terminal blocks and connecting cable for connector types, CPU and Expansion Units

PLC/Unit	Connecting cables		Cable length	Terminal block		Description
Fujitsu connector						
CPM2C-20C_ CPM2C-24E_ CPM2C-32C CPM2C-32E		**XW2Z–050A**	0.5 m		**XW2B–20G4**	– 20 inputs or outputs – Screw terminals M3
		XW2Z–100A	1.0 m			
		XW2Z–200A	2.0 m		**XW2B–20G5**	– 20 inputs or outputs – Screw terminals M3.5
		XW2Z–500A	5.0 m			
MIL connector						
CPM2C-20C_M CPM2C-24E_M CPM2C-32CM CPM2C-32EM		**G79–O25C**	0.25 m		**XW2B–20G4**	– 20 inputs or outputs – Screw terminals M3
		G79–O50C	0.50 m			

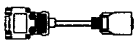
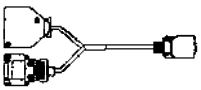
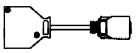
For terminal block terminal assignment, see page 465.

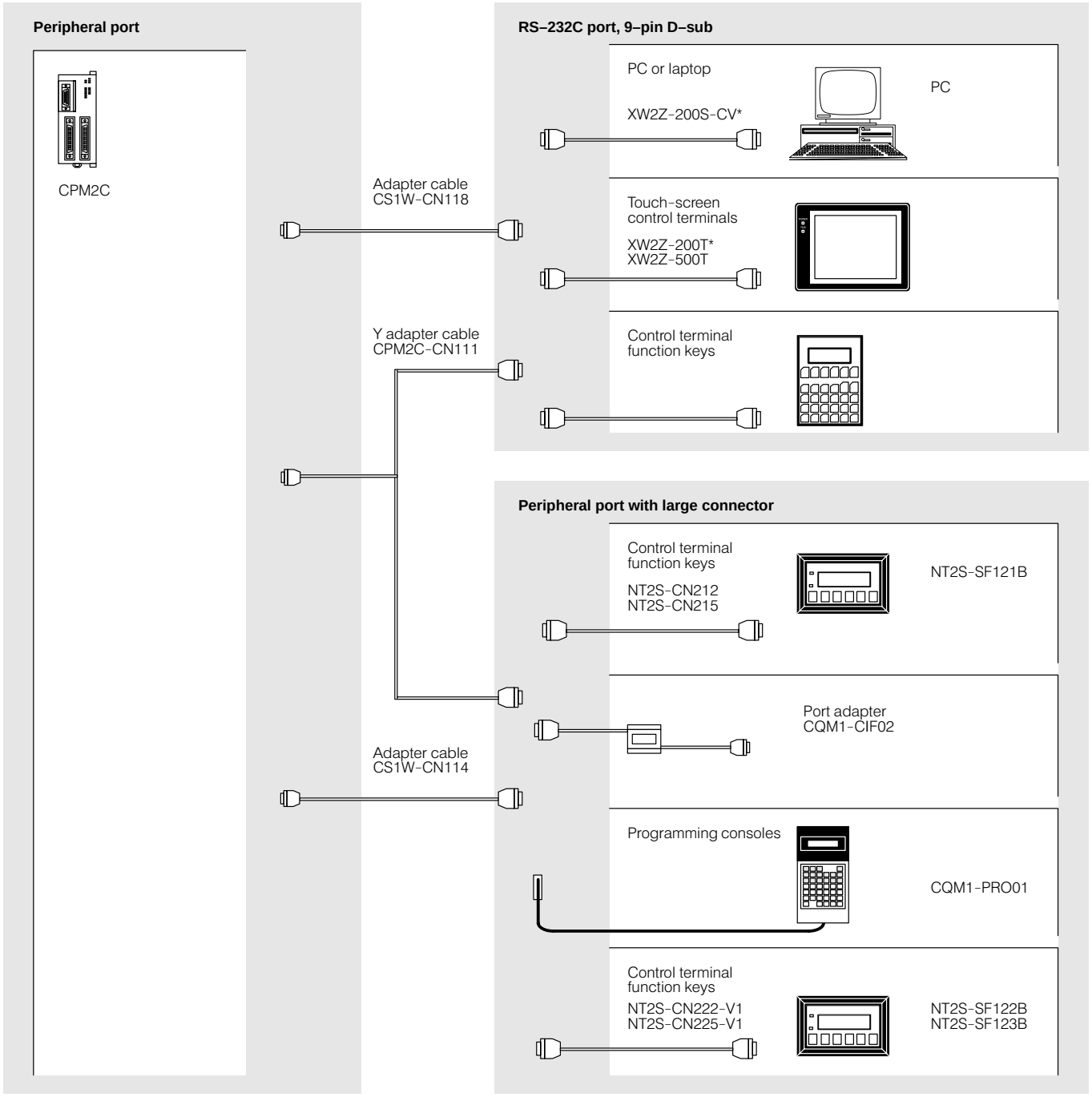
Technical Documentation

English documentation	Product	Title	Model code
	CPM2C	Operation Manual	**W356–E1**
	CPM1/CPM1A/CPM2A/ CPM2C/SRM1(-V2)	Programming Manual	**W353–E1**
	CPM2C-S_	Operation Manual	**W377–E1**

Terminal Blocks, Connection and Adapter Cables

Adapter cable for communications

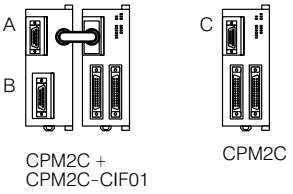
	Adapter cable	Description	Cable length	Model code
		Connection between miniature peripheral port and RS-232C port, D-sub, 9-pin	0.1 m	**CS1W-CN118**
	**Y adapter cable**	Connection between miniature peripheral port and RS-232C port, D-sub, 9-pin **and** peripheral port with large connector	0.2 m	**CPM2C-CN111**
	**Adapter cable**	Connection between miniature peripheral port and peripheral port with large connector	0.1 m	**CS1W-CN114**



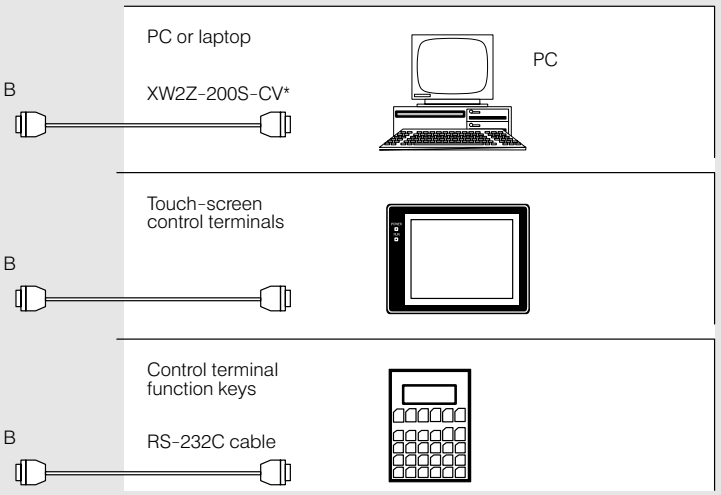
* Please compare these articles with the selection available in your country.

Terminal Blocks, Connection and Adapter Cables (Continued)

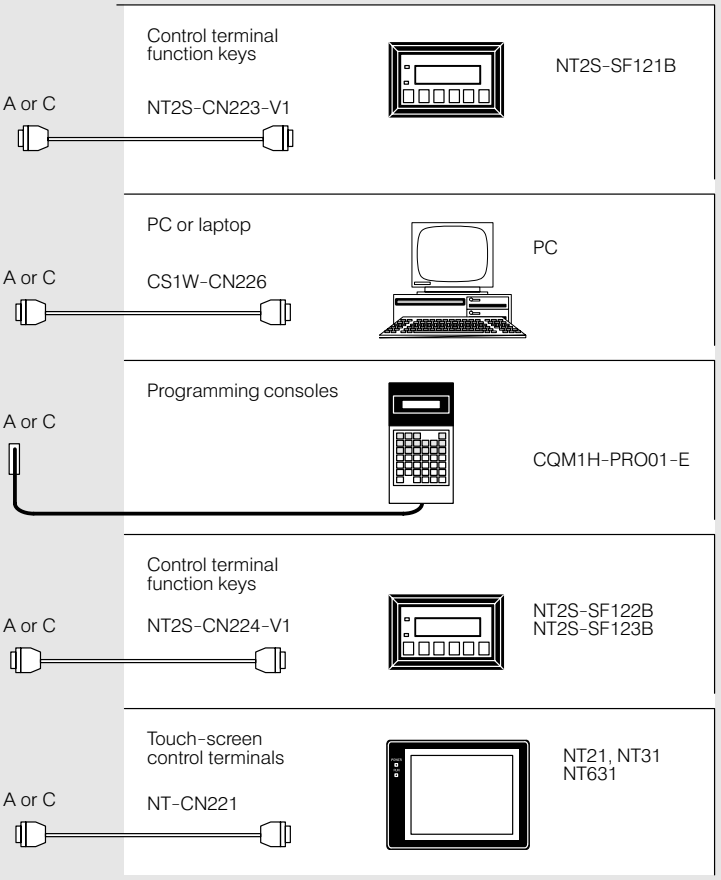
Peripheral port or peripheral port and RS–232C



RS–232C port, 9–pin D–sub



Peripheral port with DDK connector



* Please compare these articles with the selection available in your country.

Dimensions (mm)

CPU

Product	W
CPM2C-10C(1)DR/-20C(1)DR	33
CPM2C-10C(1)DT_/-20C(1)DT_/-32C(1)DT_	33
CPM2C-S1_0C(-DRT)	40

Expansion Unit

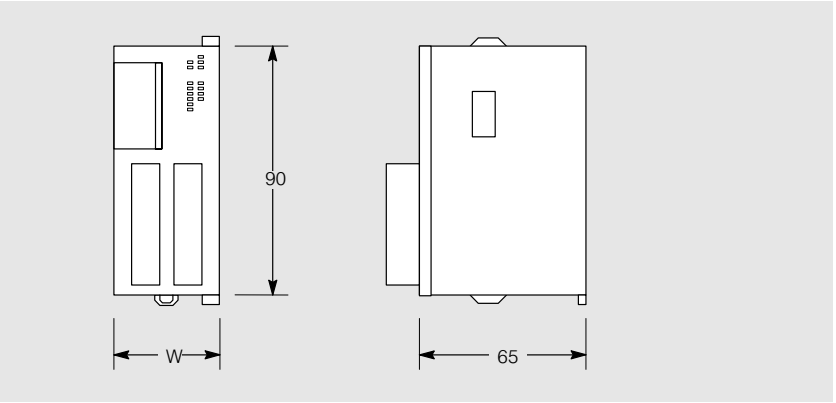
CPM2C-8ER/-10EDR/-20EDR	33
CPM2C-24EDT_/-32EDT_	33
CPM2C-8EDC/-8ET_/-16EDC/-16ET_	20
CPM2C-MAD11	33
CPM2C-TS_	33
CPM2C-SRT	20

Communication adapter

CPM2C-CIF_	33

Power supply

CPM2C-PA201	40



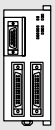
Communication Examples

	CPM2C
SYSMAC WAY (network)	Yes
Active RS–232C	Yes
1:1 CPU Link	Yes
1:1 NT Link	Yes

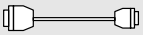
SYSMAC WAY

SYSMAC WAY communicates via RS-232C and RS-422 ports and contains the disclosed and OMRON-specific ASCII protocol called the HostLink. By default, the CPM2C communication port runs in Host Link slave mode and can therefore be easily operated from a PC, a supervisory controller or HMI.

Up to 32 Host Link slaves can be integrated into a SYSMAC WAY network via RS-422 ports.

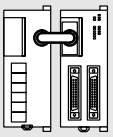


RS–232C port:



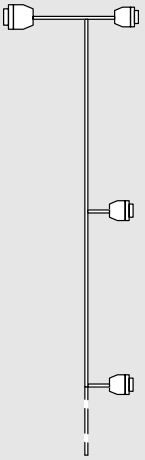
CS1W-CN226

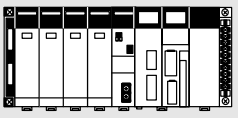
PC



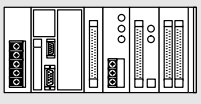
CPM2C +
CPM2C-CIF11

RS-422 cable

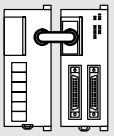




CS1 +
CS1W-SCB41



CJ1H +
CJ1W-SCU41



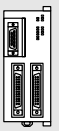
CPM2C +
CPM2C-CIF11

Communication Examples (Continued)

Active RS–232C

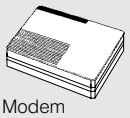
The CPM2C's RS-232C port can be switched to active RS-232C mode by the Host Link slave.

SEND and RECEIVE instructions can be used to send and receive ASCII character strings. Peripherals such as modems, printers or barcode readers can be integrated.

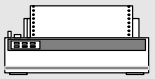


CPM2C

RS-232C cable



Modem



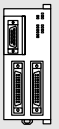
Printer

Bar code reader

Temperature controller

1:1 CPU Link

Via the 1:1 CPU Link, up to 64 words can be continuously exchanged between two PLC CPU Units without any programming effort, by means of a peripheral or RS-232C port.

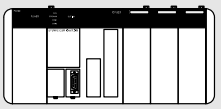


CPM2C

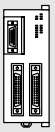
Adapter unit or adapter cable is required

RS–232C port:

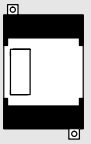
RS-232C cable



CQM1H



CPM2C

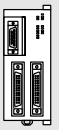


CPM1A

1:1 NT Link

Various control terminals, from function keys to NT/NS-series touch-screen colour terminals, are available to the user as a man/machine interface.

Data is exchanged very quickly between a control terminal and the PLC via the 1:1 NT Link protocol.

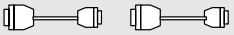


CPM2C

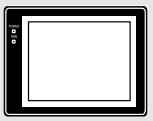
Adapter unit or adapter cable is required

RS–232C port:

CS1W-CN118



NT-CN221



OMRON control terminal

Expansion Units

	I/O type	Description	Connection	Model code	Page
Digital I/O Expansion Units	8 DC inputs	24 VDC	FUJITSU connector	**CPM2C–8EDC**	66
	8 DC inputs	24 VDC	MIL connector	**CPM2C–8EDM**	
	8 relay outputs	250 VAC, 2 A	Terminal connection	**CPM2C–8ER**	66
	8 transistor outputs	PNP, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–8ET1C**	66
	8 transistor outputs	PNP, 24 VDC, 0.3 A	MIL connector	**CPM2C–8ET1M**	
	8 transistor outputs	NPN, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–8ETC**	66
	8 transistor outputs	NPN, 24 VDC, 0.3 A	MIL connector	**CPM2C–8ETM**	
	6 DC inputs and 4 relay outputs	24 VDC 250 VAC, 2 A	Terminal connection	**CPM2C–10EDR**	66
	16 DC inputs	24 VDC	FUJITSU connector	**CPM2C–16EDC**	66
	16 DC inputs	24 VDC	MIL connector	**CPM2C–16EDM**	
	16 transistor outputs	PNP, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–16ET1C**	66
	16 transistor outputs	PNP, 24 VDC, 0.3 A	MIL connector	**CPM2C–16ET1M**	
	16 transistor outputs	NPN, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–16ETC**	66
	16 transistor outputs	NPN, 24 VDC, 0.3 A	MIL connector	**CPM2C–16ETM**	
	12 DC inputs and 8 relay outputs	24 VDC 250 VAC, 2 A	Terminal connection	**CPM2C–20EDR**	66
	16 DC inputs and 8 transistor outputs	24 VDC PNP, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–24EDT1C**	67
	16 DC inputs and 8 transistor outputs	24 VDC PNP, 24 VDC, 0.3 A	MIL connector	**CPM2C–24EDT1M**	
	16 DC inputs and 8 transistor outputs	24 VDC NPN, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–24EDTC**	67
	16 DC inputs and 8 transistor outputs	24 VDC NPN, 24 VDC, 0.3 A	MIL connector	**CPM2C–24EDTM**	
	16 DC inputs and 16 transistor outputs	24 VDC PNP, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–32EDT1C**	67
	16 DC inputs and 16 transistor outputs	24 VDC PNP, 24 VDC, 0.3 A	MIL connector	**CPM2C–32EDT1M**	
	16 DC inputs and 16 transistor outputs	24 VDC NPN, 24 VDC, 0.3 A	FUJITSU connector	**CPM2C–32EDTC**	67
	16 DC inputs and 16 transistor outputs	24 VDC NPN, 24 VDC, 0.3 A	MIL connector	**CPM2C–32EDTM**	
	2 inputs 1 output	0..20 mA, –10..10 V 0..20 mA, –10..10 V	Terminal connection	**CPM2C–MAD11**	68
	2 inputs	Thermocouple	Terminal connection	**CPM2C–TS001**	68
	2 inputs	Pt100	Terminal connection	**CPM2C–TS101**	68
CompoBus/S I/O Link Unit	8 input bits 8 output bits	Fieldbus slave	Terminal connection	**CPM2C–SRT21**	68

Expansion Units (Continued)

Digital I/O Expansion Units
- LED status display
- DIN rail mounting
- 24-pin front connector*

Model code	CPM2C–8EDC CPM2C–8EDM
Inputs	8 DC inputs 1 circuit, 8 inputs

Digital I/O Expansion Units
- LED status display
- DIN rail mounting
- Removable terminal blocks

Model code	CPM2C–8ER
Outputs	8, relays 4 circuits, 1 output each 2 circuits, 2 outputs each
Total switching capacity	4 A per circuit

Digital I/O Expansion Units
- LED status display
- DIN rail mounting
- 24-pin front connector*

Model code	CPM2C–8ET1C CPM2C–8ET1M
Outputs	8, transistor, PNP 1 circuit, 8 outputs
Total switching capacity	2.4 A per circuit
Model code	**CPM2C–8ETC CPM2C–8ETM**
Outputs	8, transistor, NPN 1 circuit, 8 outputs
Total switching capacity	2.4 A per circuit

Digital I/O Expansion Units
- LED status display
- DIN rail mounting
- Removable terminal blocks

Model code	CPM2C–10EDR
Inputs	6 DC inputs 1 circuit, 6 inputs
Outputs	4, relays 1 circuit, 2 outputs
Total switching capacity	4A per circuit

Digital I/O Expansion Units
- LED status display
- DIN rail mounting
- 24-pin front connector*

Model code	CPM2C–16EDC CPM2C–16EDM
Inputs	16 DC inputs 2 circuits, 8 inputs each
Model code	**CPM2C–16ET1C CPM2C–16ET1M**
Outputs	16, transistor, PNP 2 circuits, 8 outputs each
Total switching capacity	3.2 A per circuit
Model code	**CPM2C–16ETC CPM2C–16ETM**
Outputs	16, transistor, NPN 2 circuits, 8 outputs each
Total switching capacity	3.2 A per circuit

Digital I/O Expansion Units
- LED status display
- DIN rail mounting
- Removable terminal blocks

Model code	CPM2C–20EDR
Inputs	12 DC inputs 1 circuit, 12 inputs
Outputs	8, relays 4 circuit, 2 outputs
Total switching capacity	4 A per circuit

* Front connector or terminal block and cable are not included in delivery package, see page 465.

Expansion Units (Continued)

Digital I/O Expansion Units - LED status display - DIN rail mounting - 24-pin front connector*	**Model code**	**CPM2C–24EDT1C** **CPM2C–24EDT1M**
	Inputs	16 DC inputs 2 circuits, 8 inputs each
	Outputs	8, transistor, PNP 1 circuit, 8 outputs
	Total switching capacity	2.4 A per circuit
Digital I/O Expansion Units - LED status display - DIN rail mounting - 24-pin front connector*	**Model code**	**CPM2C–24EDTC** **CPM2C–24EDTM**
	Inputs	16 DC inputs 2 circuits, 8 inputs each
	Outputs**	8, transistor, NPN 1 circuit, 8 outputs
	Total switching capacity	2.4 A per circuit

Digital I/O Expansion Units - LED status display - DIN rail mounting - 24-pin front connector*	**Model code**	**CPM2C–32EDT1C** **CPM2C–32EDT1M**
	Inputs	16 DC inputs 2 circuits, 8 inputs each
	Outputs	16, transistor, PNP 2 circuits, 8 outputs each
	Total switching capacity	3.2 A per circuit
	Model code	**CPM2C–32EDTC** **CPM2C–32EDTM**
	Inputs	16 DC inputs 2 circuits, 8 inputs each
	Outputs**	16, transistor, NPN 2 circuits, 8 outputs each
	Total switching capacity	3.2 A per circuit
Specification for DC inputs	Circuitry	PNP/NPN logic
	Input voltage ON level OFF level	24 VDC (20.4..26.4 VDC) Min. 14.4 VDC Max. 5.0 VDC
	Input impedance	4.7 kΩ
	Input current	5 mA
	ON delay	10 ms (adjustable 1..80 ms)
Specification for relay outputs	Switching capacity minimum	250 VAC, 2A (cosφ=1); 24 VDC, 2 A 5 VDC, 10 mA
	Relay life electrical mechanical	150,000 operations at R load 100,000 operations at L load 20,000,000 operations
	ON/OFF delay	Max. 15 ms
Specification for transistor outputs	Switching capacity 1st circuit 2nd circuit	24 VDC (20.4..26.4 VDC), 0.3 A 24 VDC (20.4..26.4 VDC), 0.1 A
	Leakage current	Max. 0.1 mA
	Residual voltage	Max. 1.5 V
	ON delay OFF delay	Max. 0.2 ms Max. 1 ms

* Front connector or terminal block and cable are not included in delivery package, see page 465.
** Output switching capacity differs depending on the circuit.

Expansion Units (Continued)

Analogue I/O Expansion Unit
- Maximum 4 Units per CPU
- Automatic averaging
- LED status display
- Removable terminal blocks

Model code		CPM2C–MAD11
Number of analogue I/O		2 inputs 1 output
Range per input	Voltage Current	0..5 V, 1..5 V, 0..10 V, -10..10 V 0..20 mA, 4..20 mA
Input resistance	Voltage Current	1 MΩ 250 Ω
Range of outputs	Voltage Current	1..5 V, 0..10 V, -10..10 V 0..20 mA, 4..20 mA
Resolution		1/6000
Accuracy		0.4% of full scale
Conversion time		6 ms overall
Potential isolation		Photocoupler

Temperature sensor Expansion Units
- Maximum 4 Units per CPU
- LED status display
- Removable terminal block

Model code	CPM2C–TS001
Number of inputs	2 inputs, thermocouple
Sensor types	K (Ni/Cr) J (Fe/constantan)
Measuring range - K - J	 -200..1300 °C, 0..500°C -100..850 °C, 0..400°C
Accuracy	±0.5% or 2°C ±1 digit
Conversion time	250 ms (total)

Model code	CPM2C–TS101
Number of inputs	2 inputs, Pt100
Sensor types	Pt100, JPt100
Measuring range	-200..650 °C
Accuracy	±0.5% or 1°C ±1 digit
Conversion time	250 ms (total)

CompoBus/S I/O Link Unit
- LED status display
- Removable terminal block

For further information about CompoBus/S, see page 256.

Model code		CPM2C–SRT21
Number of Link bits	Input Output	8 bits 8 bits