CPU Units

	**CPM2A CPU Unit** – 12 transistor inputs – 8 relay outputs – Max. 3 Expansion Units	Supply voltage	100..240 VAC 24 VDC, output 0.3 A	**CPM2A–20CDR–A**
			24 VDC	**CPM2A–20CDR–D**
	**CPM2A CPU Unit** – 18 transistor inputs – 12 relay outputs – Max. 3 Expansion Units	Supply voltage	100..240 VAC 24 VDC, output 0.3 A	**CPM2A–30CDR–A**
			24 VDC	**CPM2A–30CDR–D**
	**CPM2A CPU Unit** – 24 transistor inputs – 16 relay outputs – Max. 3 Expansion Units	Supply voltage	100..240 VAC 24 VDC, output 0.3 A	**CPM2A–40CDR–A**
			24 VDC	**CPM2A–40CDR–D**
	**CPM2A CPU Unit** – 36 transistor inputs – 24 relay outputs – Max. 3 Expansion Units	Supply voltage	100..240 VAC 24 VDC, output 0.3 A	**CPM2A–60CDR–A**
			24 VDC	**CPM2A–60CDR–D**
	**CPM2A CPU Unit** – 12 transistor inputs – 8 transistor outputs – Pulse output – Max. 3 Expansion Units	Supply voltage 24 VDC	PNP output	**CPM2A–20CDT1–D**
			NPN output	**CPM2A–20CDT–D**
	**CPM2A CPU Unit** – 18 transistor inputs – 12 transistor outputs – Pulse output – Max. 3 Expansion Units	Supply voltage 24 VDC	PNP output	**CPM2A–30CDT1–D**
			NPN output	**CPM2A–30CDT–D**
	**CPM2A CPU Unit** – 24 transistor inputs – 16 transistor outputs – Pulse output – Max. 3 Expansion Units	Supply voltage 24 VDC	PNP output	**CPM2A–40CDT1–D**
			NPN output	**CPM2A–40CDT–D**
	**CPM2A CPU Unit** – 36 transistor inputs – 24 transistor outputs – Pulse output – Max. 3 Expansion Units	Supply voltage 24 VDC	PNP output	**CPM2A–60CDT1–D**
			NPN output	**CPM2A–60CDT–D**

Specifications (CPU Units)

		CPM2A–20CDR	CPM2A–30CDR	CPM2A–40CDR	CPM2A–60CDR
CPU integrated	Inputs	12 DC inputs 1 circuit, 12 inp.	18 DC inputs 1 circuit, 18 inp.	24 DC inputs 1 circuit, 24 inp.	36 DC inputs 1 circuit, 36 inp.
	Outputs	8 relay outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 1 circuit, 4 outp. 4 A per circuit	12 relay outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 2 circuit, 4 outp. 4 A per circuit	16 relay outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 3 circuit, 4 outp. 4 A per circuit	24 relay outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 5 circuit, 4 outp. 4 A per circuit
Max. local	Inputs	48	54	60	72
	Outputs	32	36	40	48

		CPM2A–20CDT(1)	CPM2A–30CDT(1)	CPM2A–40CDT(1)	CPM2A–60CDT(1)
CPU integrated	Inputs	12 DC inputs 1 circuit, 12 inp.	18 DC inputs 1 circuit, 18 inp.	24 DC inputs 1 circuit, 24 inp.	36 DC inputs 1 circuit, 36 inp.
	Outputs	8 transistor outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 1 circuit, 4 outp. 0.8 A per circuit	12 transistor outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 2 circuit, 4 outp. 0.8 A per circuit	16 transistor outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 3 circuit, 4 outp. 0.8 A per circuit	24 transistor outputs 2 circuits, 1 outp. each 1 circuit, 2 outp. 5 circuit, 4 outp. 0.8 A per circuit
Max. local	Inputs	48	54	60	72
	Outputs	32	36	40	48

Execution time (basic instructions)	µs	0.64
Real-time clock		Yes
Number of Expansion Units		3
Program memory	kwords	4
Data words	kwords	2
Work area	bits (words)	928 (58)
Holding relay	bits (words)	320 (20)
Timer/Counter		256
CPU ports		– One peripheral port, RS-232C/RS-422 via port adapter – One RS-232C port
I/O processing		Combination of cyclic scan with direct output and immediate refresh processing methods
Number of instructions		14 basic instructions, 185 special instructions all with level- or edge-triggered execution
Special instructions		– Synchronisation – PID control – Pulse width modulation – Pulse output – Macro – 7 segment decoder – Subroutine – ASCII/HEX – Tabular processing – Arithmetic – Indirect addressing
Data backup		Built-in battery (5 years, at 25°C)
Program backup		Flash EEPROM
Program protection		Password
Pulse output		On CPM2A CPUs with transistor outputs (CPM2A-_CDT_-D) up to 2 outputs can be used to generate pulse trains from 10 Hz..10 kHz
Pulse counter		1x20 kHz single-phase or 5 kHz differential mode (A, B or Z phase encoder)
Input interrupts		4 inputs with 300 µs Interrupt response time (call up interrupt subroutine)
Counter interrupts		4 inputs for up to 2 kHz counting frequency
Quick-response inputs Pulse width		4 points Min. 50 µs pulse width
Time-controlled interrupts*		1x adjustable from 0.5 ms..5 min (periodic or one-shot mode)
Analogue setting potentiometer Range (BCD)		2 controls, accessible via peripheral port cover 0..200

* For further explanation of the interrupt functions, see the application examples.
Data words, Holding relays, Auxiliary relays and counter values are backed up by a built-in battery for up to 5 years.

Specifications (CPU Units, Continued)

Power supply	AC DC	100..240 VAC, 50/60 Hz 24 VDC
Operating voltage limits	AC DC	85..264 VAC 20.4..26.4 VDC
Power consumption	AC DC	60 VA 20 W
Auxiliary voltage output		24 VAC, 300 mA, AC models only
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		1500 Vss with a pulse width of 0.1..1 µs, and with a rise time of 1 ns.
Fast transiets		Conforms to IEC 61000-4-4.2 kV (power lines)
Vibration resistance		10..57 Hz; 0.075 mm amplitude; 57..150 Hz with an acceleration of 1 G in X, Y and Z directions each 10 sweeps of 8 minutes
Shock resistance		147 m/s^2 (15 G) 3 times each in X, Y and Z directions
Temperature	Operation Storage	0 °C..55 °C -20 °C..75 °C
Ambient humidity		10%..90% (without condensation)
Atmosphere		Control must not be exposed to the following conditions: - Corrosive gases - Severe temperature fluctuations - Air with extreme dust or salt content - Metal filings or metallic dust - Splash water - Other chemicals
Degree of protection		IEC IP30 (Control cabinet mounting)
Grounding		According to EN60204
Terminal screws (dimension)		M3
Approvals		CE, UL, CSA

DC inputs of CPU Units

The inputs IN0000..IN0002 are the fast counter inputs (A, B and Z; e.g. for encoder) and IN00002..IN00006 can be used as interrupt- or fast-response inputs

Input voltage	ON level OFF level	24 VDC (20.4..26.4 VDC) Min. 14.4 VDC (except IN0000..IN00001; 17 VDC) Max. 5.0 VDC
Input impedance		IN00000..IN00001: 2.7 kΩ IN00002..IN00006: 3.9 kΩ IN00007 and up: 4.7 kΩ
Input current		IN00000..IN00001: 8 mA IN00002..IN00006: 6 mA IN00007 and up: 5 mA
ON delay		10 ms (selectable in 8 steps from 1..80 ms)

Relay outputs of CPU Units

Type of output		Relay (Omron G6R-1A)
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), OUT01000..OUT01001: 0.2 A OUT01002 and up: 0.3 A
Leakage current		Max. 0.1 mA
Residual voltage		Max. 1.5 V
- ON delay - OFF delay		OUT01000..OUT01001: 20 µs max. OUT01002 and up: 0.1 ms max. OUT01000..OUT01001: 40 µs max. at 100 mA OUT01002 and up: 1 ms max.