CPM1A Series Micro PLCs

The Cost Effective, Compact and Versatile Small-Scale Control Solution

OMRON®

Giving you every advantage.

CPM1A

CPM1A Features

- Micro size
- New transistor outputs CPUs that can handle pulse outputs. This feature allows the CPM1A to control one axis of motion at a time
- Built in 5kHz high-speed counter supports increment mode or phase differential inputs at 2.5kHz
- 4 different CPU modules with I/O density options 10, 20, 30 and 40. The 30 and 40 I/O blocks are expandable up to 3 modules each
- Peripheral ports that are easily converted to RS232 ports for communications with operator interface terminals or PCs

CPM1

Meet global safety standards and save space at the same time. The CPM1 is a cost-effective, benefit-laden solution for small-scale control applications with several innovative features:

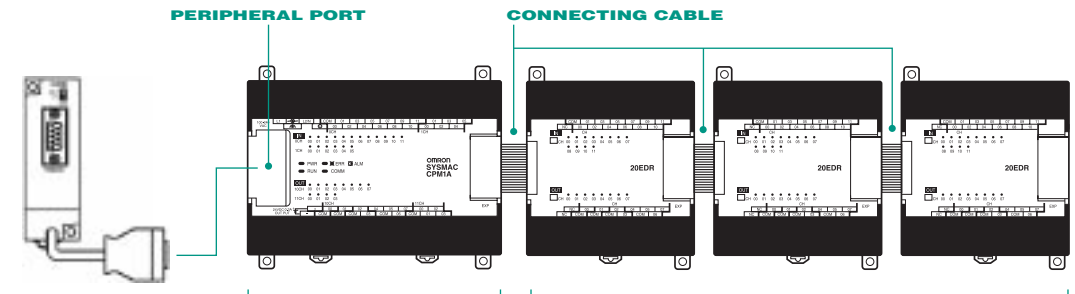
- Micro size
- Meets global safety standards: UL, CSA, CE (EMC and Low Voltage directives)
- I/O density options include 10, 20 and the new 30 CDR that is expandable up to 3 modules for a total of 90 I/O
- User set input delay for more reliable inputs

CPM1A-MAD01

Introducing the new CPM1A-MAD01 Mixed Analog Digital I/O module. Compatible with the CPM1A and the CPM1, this module is designed to facilitate the integration of analog signals into your small-scale control systems.

- 2 analog inputs/1 analog output with eight bit resolution
- Conversion time of 10 ms
- I/O signal range can be set individually for each input
- Constant monitoring for "broken wire" and for +/- voltage

CPM1A SYSTEM CONFIGURATION

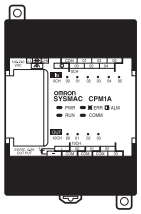


Up to 3 Expansion Modules can be used with the 30 point or 40 point CPUs. Expansion modules can not be used with the 10 point or 20 point CPUs.

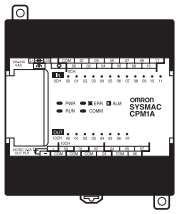
CPM1A COMPLETE PRODUCT LINE

AC

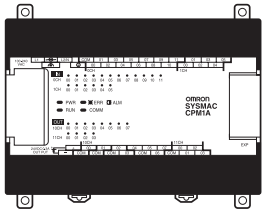
CPU
w/ AC power supply
DC input
Relay output



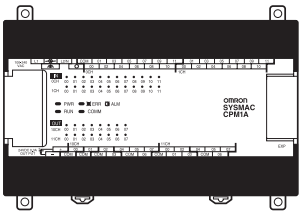
10 I/O Points
CPM1A-10CD□-A
(expansion module not available)



20 I/O Points
CPM1A-20CD□-A
(expansion module not available)



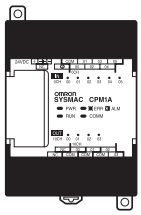
30 I/O Points
CPM1A-30CD□-A



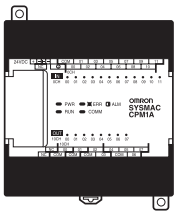
40 I/O Points
CPM1A-40CD□-A

DC

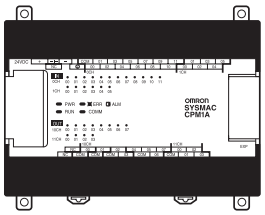
CPU
w/ DC power supply
DC input
Relay output



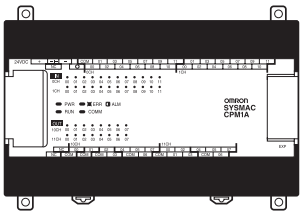
10 I/O Points
CPM1A-10CD□-D
(expansion module not available)



20 I/O Points
CPM1A-20CD□-D
(expansion module not available)

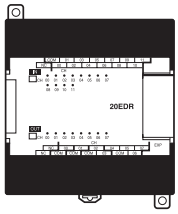


30 I/O Points
CPM1A-30CD□-D

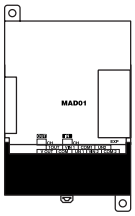


40 I/O Points
CPM1A-40CD□-D

DC input
Relay output

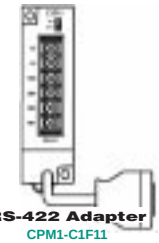


EXPANSION I/O MODULE
CPM1A-20ED□
(for use only with 30 and 40 I/O Point CPUs)
Available in:
- Relay
- Transistor PNP Type
- Transistor NPN Type



ANALOG MODULE
CPM1A-MAD01

RS-232 Adapter
CPM1-C1F01



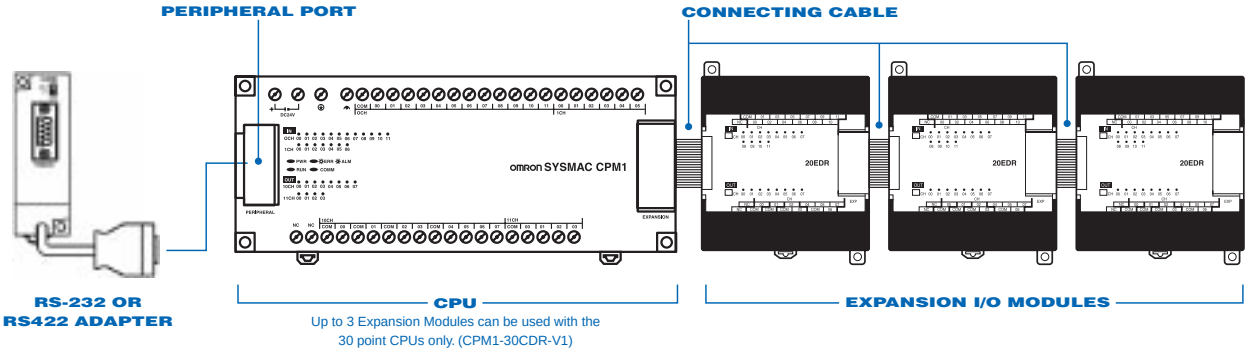
RS-422 Adapter
CPM1-C1F11

MULTIPLE EXPANSION OPTIONS

CPM1A

maximize dollars and space

CPM1 SYSTEM CONFIGURATION

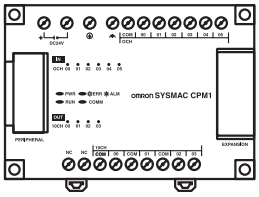


Up to 3 Expansion Modules can be used with the 30 point CPUs only. (CPM1-30CDR-V1)

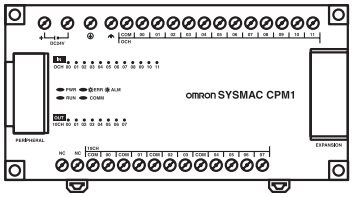
CPM1 COMPLETE PRODUCT LINE

AC

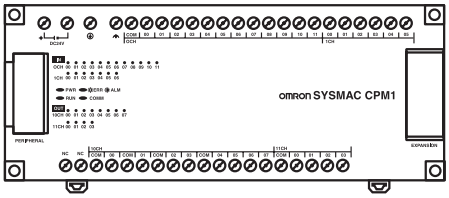
CPU
w/ AC power supply
DC input
Relay output



10 I/O Points
CPM1-10CDR-A
(only one expansion module)



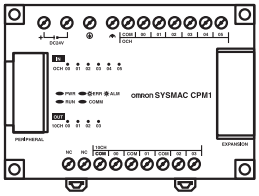
20 I/O Points
CPM1-20CDR-A
(only one expansion module)



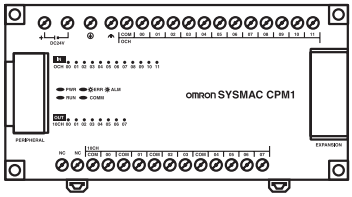
30 I/O Points
CPM1-30CDR-A

DC

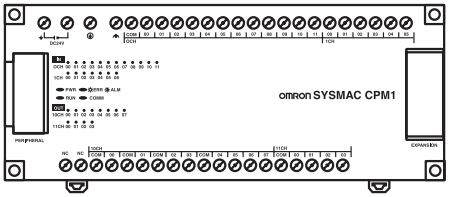
CPU
w/ DC power supply
DC input
Relay output



10 I/O Points
CPM1-10CDR-D
(only one expansion module)

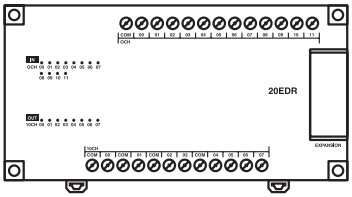


20 I/O Points
CPM1-20CDR-D
(only one expansion module)

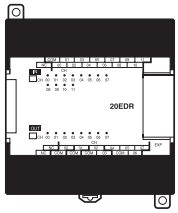


30 I/O Points
CPM1-30CDR-D

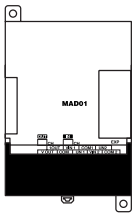
DC input
Relay output



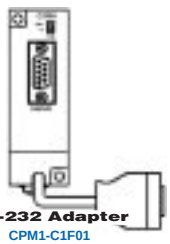
20 I/O Points
CPM1-20EDR



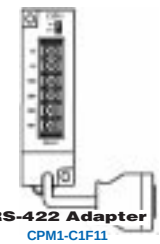
EXPANSION I/O MODULE
CPM1A-20ED☐
Available in:
- Relay
- Transistor PNP Type
- Transistor NPN Type



ANALOG MODULE
CPM1A-MAD01



RS-232 Adapter
CPM1-C1F01



RS-422 Adapter
CPM1-C1F11

30 CDR is expandable up to 3 modules

solutions for small-scale control applications

CPM1A

STANDARD MODELS

ITEM	MODEL	SPECIFICATIONS
CPU	**CPM1A-10CD□-A**	6 input points 4 output points, AC power supply
	CPM1A-10CD□-D	6 input points 4 output points DC power supply
	CPM1A-20CD□-A	12 input points 8 output points AC power supply
	CPM1A-20CD□-D	12 input points 8 output points DC power supply
	CPM1A-30CD□-A	18 input points 12 output points AC power supply
	CPM1A-30CD□-D	18 input points 12 output points DC power supply
	CPM1A-40CD□-A	24 input points 16 output points AC power supply
	CPM1A-40CD□-D	24 input points 16 output points DC power supply
Expansion I/O Module	**CPM1A-20ED□**	12 input points, 8 output points
RS-232C Adapter	**CPM1-CIF01**	---
RS-422 Adapter	**CPM1-CIF11**	---

For '□' use: R - Relay out, T - NPN Trans out, T1 - PNP Trans out

DIMENSIONS

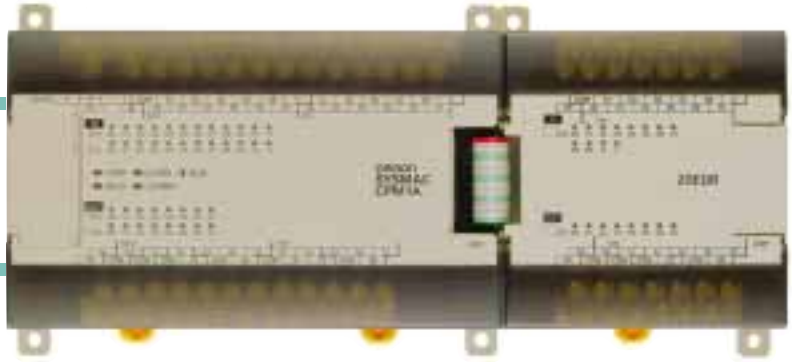
		CPM1A-10CDR-□	CPM1A-20CDR-□	CPM1A-30CDR-□
Width		2.60in (66mm)	3.39in (86mm)	5.12in (130mm)
Depth	AC	3.35in (85mm)		
	DC	1.97in (50mm)		
Height		3.54in (90mm)		

		CPM1A-40CDR-□	CPM1A 20EDR
Width		5.91in (150mm)	3.39in (86mm)
Depth	AC	3.35in (85mm)	
	DC	1.97in (50mm)	
Height		3.54in (90mm)	

GENERAL SPECIFICATIONS

ITEM		10-POINT I/O	20-POINT I/O	30-POINT I/O
Supply voltage	AC type	100 to 240 VAC, 50/60 Hz		
	DC type	24 VDC		
Operating voltage range	AC type	85 to 264 VAC		
	DC type	20.4 to 26.4 VDC		
Power consumption	AC type	30 VAC max.		60 VAC max.
	DC type	6 W max.		20 W max.
Inrush current		30 A max.		60A max.
External power supply (AC type only)	Supply voltage	24 VDC		
	Output capacity	200 mA		300 mA
Control method		Stored program method		
I/O control method		Cyclic scan with direct output; immediate refresh processing		
Programming language		Ladder diagram		
Instruction length		1 step per instruction, 1 to 5 words per instruction		
Types of instructions		Basic instructions: 14 Special instructions: 77 types		
Execution time		Basic instructions: 0.72 to 16.2 ms Special instructions: MOV = 16.3 ms		
Program capacity		2,048 words		
Maximum I/O points	CPU only	10 points (6 input/ 4 output points)	20 points (12 input/ 8 output points)	30 points (18 input/ 12 output points)
	With Expansion I/O Module	---	---	90 points (54 input/ 36 output points)
Input bits		00000 to 00915 (Bits not used as input bits can be used as work bits.)		
Output bits		01000 to 01915 (Bits not used as output bits can be used as work bits.)		
Work bits (IR area)		512 bits: 20000 to 23115 (Words IR 200 to IR 231)		
Special bits (SR area)		384 bits: 23200 to 25515 (Words SR 232 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)		256 bits: AR 0000 to AR 1515 (Words AR 00 to AR 15)		
Link bits (LR area)		256 bits: LR 0000 to LR 1515 (Words LR 00 to LR 15)		
Timers/Counters		128 timers/counters (TIM/CNT 000 to TIM/CNT 127) 100-ms timers:TIM 000 to TIM 127 10-ms timers: TIM 000 to TIM 003 Decrementing counters and reversible counters		
Data memory		Read/Write: 1,024 words (DM 0000 to DM 1023) Read-only: 512 words (DM 6144 to 6655)		
Interrupt processing		External interrupts: 2 (Response time: 0.3 ms max.)	External interrupts: 4 (Response time: 0.3 ms max.)	
Memory Backup		Flash memory: The memory and read-only DM area are backed up without battery Capacitor backup: The read/write DM area, HR area, AR area, and counter values are backed up by a capacitor for 20 days at 77 F (25 C)		
Memory protection		HR, AR, and DM area contents; and counter values maintained during power interruptions.		
Self-diagnostic functions		CPU failure (watchdog timer), I/O bus error, and memory failure		
Program checks		No END instruction, programming errors (continuously checked during operation)		
High-speed counter		One high-speed counter: 5 kHz single-phase or 2.5 kHz two-phase (linear count method) Increment mode: 0 to 65,535 (16 bits) Up/Down mode: -32,767 to 32,767 (16 bits)		
Quick-response inputs		External interrupts: 2 Min. input pulse width: 0.2 ms	External interrupts: 4 Min. input pulse width: 0.2 ms	
Input time constant		Can be set to 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, or 128 ms.		
Analog adjustment settings		2 controls (0 to 200 BCD)		
Certification		UL / CSA / CE (no CE for relay output units)		

Combine any of the CPM1 or CPM1A expansion modules (relay, transistor and analog) with the new CPM1 CPU units and solve almost any micro PLC application.



CPM1

STANDARD MODELS

ITEM	MODEL	SPECIFICATIONS
CPU	CPM1-10CDR-A	6 input points, 4 output points, AC power supply
	CPM1-10CDR-D	6 input points, 4 output points, DC power supply
	CPM1-20CDR-A	12 input points, 8 output points, AC power supply
	CPM1-20CDR-D	12 input points, 8 output points, DC power supply
	CPM1-30CDR-A-V1	18 input points, 12 output points, AC power supply
	CPM1-30CDR-D-V1	18 input points, 12 output points, DC power supply
Expansion I/O Module	CPM1-20EDR	12 input points, 8 output points
RS-232C Adapter	CPM1-CIF01	---
RS-422 Adapter	CPM1-CIF11	---

DIMENSIONS

	CPM1-10CDR-□	CPM1-20CDR-□	CPM1-30CDR-□-V1	CPM1-20EDR
Width	5.12in (130mm)	7.09in (180mm)	9.06in (230mm)	7.09in (180mm)
Depth	3.35in (85mm)			
Height	3.54in (90mm)			

GENERAL SPECIFICATIONS

ITEM		10-POINT I/O	20-POINT I/O	30-POINT I/O
Supply voltage	AC type DC type	100 to 240 VAC, 50/60 Hz 24 VDC		
Operating voltage range	AC type DC type	85 to 264 VAC 20.4 to 26.4 VDC		
Power consumption	AC type DC type	60 VA max. 20 W max.		
Inrush current		60 A max.		
External power supply (AC type only)	Supply voltage Output capacity	24 VDC 300 mA		
Control method		Stored program method		
I/O control method		Cyclic scan with direct output; immediate refresh processing		
Programming language		Ladder diagram		
Instruction length		1 step per instruction, 1 to 5 words per instruction		
Types of instructions		Basic instructions: 14 Special instructions: 77 types		
Execution time		Basic instructions: 0.72 to 16.2 ms Special instructions: MOV = 16.3 ms		
Program capacity		2,048 words		
Maximum I/O points	CPU only	10 points (6 input/ 4 output points)	20 points (12 input/ 8 output points)	30 points (18 input/ 12 output points)
	With Expansion I/O Module	30 points (18 input/ 12 output points)	40 points (24 input/ 16 output points)	90 points (54 input/ 36 output points)
Input bits		00000 to 00915 (Bits not used as input bits can be used as work bits.)		
Output bits		01000 to 01915 (Bits not used as output bits can be used as work bits.)		
Work bits		640 bits: 20000 to 23915 (Words IR 200 to IR 239)		
Special bits (SR area)		256 bits: 24000 to 25507 (Words IR 240 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)		256 bits: AR 0000 to AR 1515 (Words AR 00 to AR 15)		
Link bits (LR area)		256 bits: LR 0000 to LR 1515 (Words LR 00 to LR 15)		
Timers/Counters		128 timers/counters (TIM/CNT 000 to TIM/CNT 127) 100-ms timers:TIM 000 to TIM 127 10-ms timers: TIM 000 to TIM 003 Decrementing counters and reversible counters		
Data memory		Read/Write: 1,024 words (DM 0000 to DM 1023) Read-only: 512 words (DM 6144 to 6655)		
Interrupt processing		External interrupts: 2 (Response time: 0.3 ms max.)	External interrupts: 4 (Response time: 0.3 ms max.)	
Memory Backup		Flash memory: The memory and read-only DM area are backed up without battery Capacitor backup: The read/write DM area, HR area, AR area, and counter values are backed up by a capacitor for 20 days at 77 F (25 C)		
Memory protection		HR, AR, and DM area contents; and counter values maintained during power interruptions.		
Self-diagnostic functions		CPU failure (watchdog timer), I/O bus error, and memory failure		
Program checks		No END instruction, programming errors (continuously checked during operation)		
High-speed counter		One high-speed counter: 5 kHz single-phase or 2.5 kHz two-phase (linear count method) Increment mode: 0 to 65,535 (16 bits) Up/Down mode: -32,767 to 32,767 (16 bits)		
Quick-response inputs		External interrupts: 2 Min. input pulse width: 0.2 ms	External interrupts: 4 Min. input pulse width: 0.2 ms	
Input time constant		Can be set to 1 ms, 2 ms, 4 ms, 8 ms, 16 ms, 32 ms, 64 ms, or 128 ms.		
Analog adjustment settings		2 controls (0 to 200 BCD)		
Certification		UL / CSA / CE		