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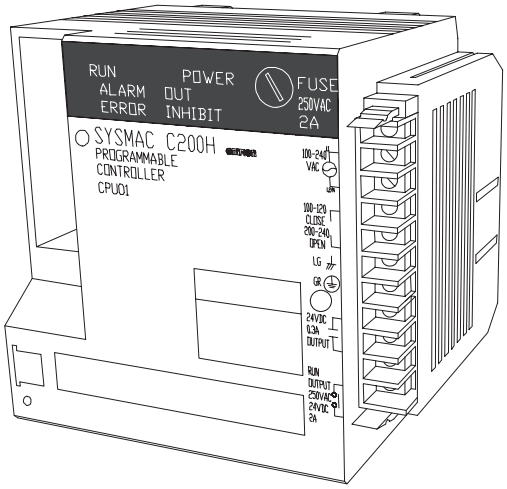
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Find the *OMRON C200H-CPU01* at our website: ***Click HERE***

CPUs

General Information

The CPUs provide a wide variety of features and capabilities for applications requiring simplified configuration and ease of use, maximum reliability and maintainability, and the ability to meet the need for future change and system expansion. A variety of CPUs are available with various memory and I/O configurations allowing selection based on application requirements.



C200H-CPU01-E/CPU03-E CPUs

High Spec, Small Rack Style, OEM Version

The C200H-CPU01-E and C200H-CPU03-E controllers offer big machine functions in a system designed ideally for basic OEM systems from 50 to 480 I/O. A wide variety of plug-in style I/O modules are available, including intelligent modules.

Basic Configuration

- Built-in 120 VAC (CPU01) or 24 VDC (CPU03) power supply
- Rack-style PLC with 3-, 5-, 8-, 10-slot racks
- Accepts two local expansion racks
- Accepts remote I/O racks

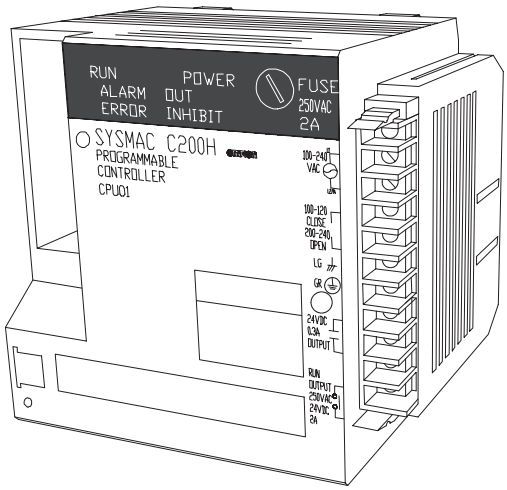
CPU Features

- 4K or 7K word program memory
- Expanded system memory (6,000 internal bits; 2,000 registers)
- 145 instructions
- Fast execution time (0.75-2.25 μs per basic instruction)

Special Features

- Many intelligent I/O modules
- Versatile communications (Host Link, PLC-to-PLC, Remote I/O)
- ASCII/BASIC module for co-processing/communications

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C200H-CPU21-E/CPU23-E CPUs

High Spec, Small Rack Style

The C200H-CPU21-E and C200H-CPU23-E controllers offer increased I/O capacity and the same basic functionality as the OEM versions. In addition, these controllers offer an extended instruction set, clock/calendar option and larger power supplies. With new high-density I/O modules, these CPUs can be expanded to 720 local I/O.

Basic Configuration

Same as CPU01, CPU03 plus the following:

- Built-in 120 VAC (CPU21) or 24 VDC (CPU23) power supply
- Same configuration and I/O as CPU01/CPU03

CPU Features

Same as CPU01, CPU03 plus the following:

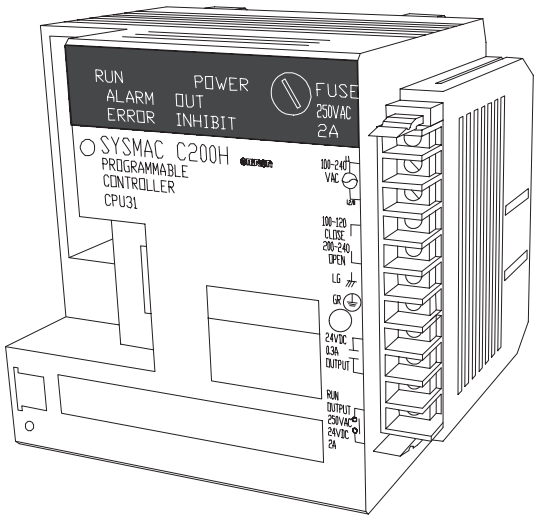
- Real-time clock/calendar option available
- Larger power supply (CPU21 only) for I/O modules
- Enhanced instruction set (168), including sine/cosine

Special Features

- 32- and 64-pt Group 2 High-density I/O modules

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CPUs



C200H-CPU31-E CPU

High-Performance CIM Version

The C200H-CPU31-E controller offers a high-performance CPU especially designed for computer integrated manufacturing environments. The C200H-CPU31-E has all the capabilities of C200H CPU21/CPU23, with clock/calendar as a standard feature. This CPU is used in either SYSMAC NET and/or SYSMAC LINK communication systems.

Basic Configuration

Same as CPU21, CPU23 plus the following:

- Built-in 120 VAC power supply

CPU Features

Same as CPU21, CPU23 plus the following:

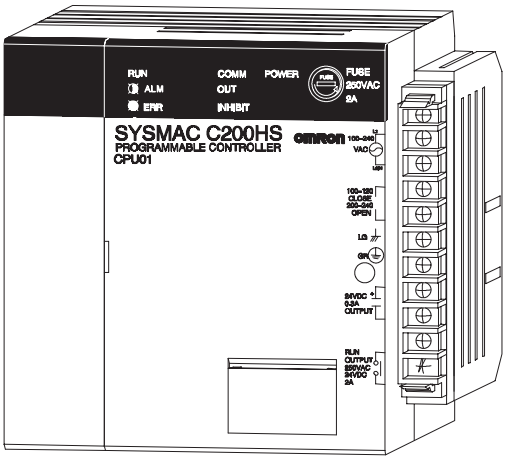
- Real-time clock/calendar

Special Features

Same as CPU21, CPU23 plus the following:

- SYSMAC LINK and SYSMAC NET capabilities. (Requires bus connector from module to PLC communications bus port.)

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C200HS-CPU01-E/CPU03-E CPUs

High Performance, Small Rack Style

The C200HS-CPU01-E and C200HS-CPU03-E controllers offer some of the same basic functionality as models C200H-CPU21-E/CPU23-E. These controllers have added capabilities ideally suited for high speed machine control, which includes larger memory, larger instruction set, and increased speed.

Basic Configuration

- Built-in 120 VAC (HS-CPU01) or 24 VDC (HS-CPU03) power supply
- Rack style PLC with 3-, 5-, 8-, 10- slot racks
- Accepts two local expansion racks
- Accepts remote I/O racks

CPU Features

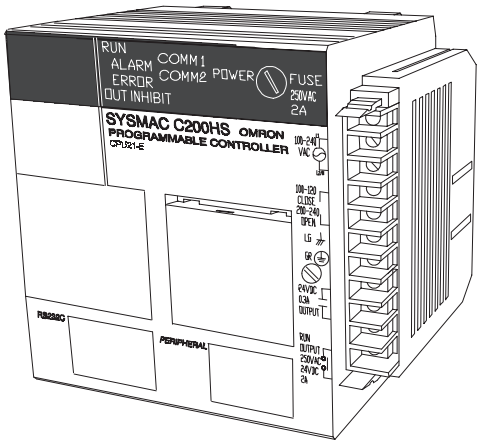
- Built-in 16K ram (including 6144 READ/WRITE data memory bits)
- 0.375-1.313 μs basic instruction execution time
- Built-in clock/calendar
- Enhanced instruction set (239), including PID and Scaling

Special Features

- 8-pt. Interrupt Input Module
- Group 2 High-density Modules

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CPUs



C200HS-CPU21-E/CPU23-E CPUs

High Performance, Small Rack Style, Built-in RS-232C Port

The C200HS-CPU21-E and C200HS-CPU23-E controllers offer some of the same basic functionality as models C200H-CPU01-E/CPU03-E. These controllers have the added built-in RS-232C port. Host link communications are possible using the RS-232C port. By using the TXD and RXD instructions, less time consuming RS-232C communications is possible. NT link allows high-speed communications with a Programmable Terminal (PT).

Basic Configuration

Same as HS-CPU01, HS-CPU03 plus the following:

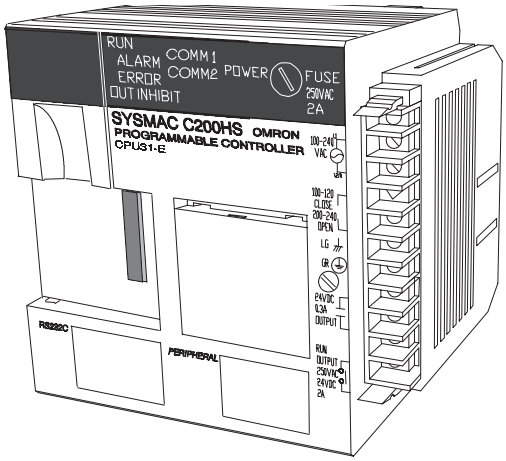
- Built-in 120 VAC (HS-CPU21) or 24 VDC (HS-CPU03) power supply
- Same configuration and I/O as HS-CPU01/HS-CPU03

CPU Features

Same as HS-CPU01, HS-CPU03 plus the following:

- Built-in RS-232C port

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C200HS-CPU31-E/CPU33-E CPUs

High-Performance CIM Version, Built-in RS-232C Port

The C200HS-CPU31-E and C200HS-CPU33-E controller offers the same basic functionality as the C200HS-CPU01-E/CPU03 controllers. This CPU may be used in either SYSMAC NET and/or SYSMAC LINK communication systems. The built-in RS-232C port supports the same communications as the C200HS-CPU21/CPU23.

Basic Configuration

Same as HS-CPU01, HS-CPU03 plus the following:

- Built-in 120 VAC (HS-CPU21) or 24 VDC (HS-CPU03) power supply
- Same configuration and I/O as HS-CPU01/HS-CPU03

CPU Features

Same as HS-CPU01, HS-CPU03 plus the following:

- Built-in RS-232C port

Special Features

Same as HS-CPU01, HS-CPU03 plus the following:

- SYSMAC LINK and SYSMAC NET capabilities. (Requires bus connector from module to PLC communications bus port.

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C200H Comparison Table

Item	C200H				
	CPU01-E	CPU03-E	CPU21-E	CPU23-E	CPU31-E
Group 2 High-density I/O Module compatibility C200H-ID216/ID217/OD218/OD219	No	No	Yes	Yes	Yes
Error history	No	No	Yes	Yes	Yes
Clock/calendar*	No	No	Yes	Yes	Yes
Forced Status Hold Bit (SR 25211)	No	No	Yes	Yes	Yes
TERMINAL mode for Programming Console	No	No	Yes	Yes	Yes
Optional instructions 1 (refer to Instruction Set Section): REVERSIBLE WORD SHIFT - RWS(17) SCAN TIME - SCAN(18) MULTI-WORD COMPARE - MCMP(19) LONG MESSAGE - LMSG(47) TERMINAL MODE - TERM(48) SET SYSTEM - SET(49) DOUBLE COMPARE - CMPL(60) COLUMN-TO-WORD - CTW(63) WORD-TO-COLUMN - WTC(64) HOURS-TO-SECONDS - HTS(65) SECONDS-TO-HOURS - STH(66) VALUE CALCULATE - VCAL(69) MULTIPOINT I/O REFRESH - MPRF(61)	No	No	Yes	Yes	Yes
Optional instructions 2 (refer to Instruction Set Section): PID CONTROL - PID(*) SCALING - SCL(*) TOTALIZING TIMER - TTIM(87) 2's COMPLEMENT - NEG(*) DOUBLE 2's COMPLEMENT - NEGL(*) FIND MINIMUM - MIN(*) FIND MAXIMUM - MAX(*) TENKEY INPUT - TKY(*) MATRIX INPUT - MTR(*) ASCII-to-HEX - HEX(*) AVERAGE - AVG(*) SUM - SUM(*) FAILURE POINT DETECT - FPD(*) **Note** For complete list refer to instruction set section.	No	No	No	No	No
SYSMAC NET, SYSMAC LINK network compatibility and instructions: NETWORK SEND - SEND(90) NETWORK RECEIVE - RECV(98)	No	No	No	No	Yes
Power supply	AC	DC	AC	DC	AC
Internal logic current capacity (for I/O modules)	1.6 A	1.6 A	3.2 A	1.6 A	3.0 A

*A clock is built into the C200H-CPU31-E; the C200H-CPU21-E and C200H-CPU23-E can use the clock built into some of the Memory Packs. (Refer to Standard Parts.)

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C200HS Comparison Table

Item	C200HS					
	CPU01-E	CPU03-E	CPU21-E	CPU23-E	CPU31-E	CPU33-E
Group 2 High-density I/O Module compatibility C200H-ID216/ID217/OD218/OD219	Yes	Yes	Yes	Yes	Yes	Yes
Error history	Yes	Yes	Yes	Yes	Yes	Yes
Clock/calendar*	Yes	Yes	Yes	Yes	Yes	Yes
Forced Status Hold Bit (SR 25211)	Yes	Yes	Yes	Yes	Yes	Yes
TERMINAL mode for Programming Console	Yes	Yes	Yes	Yes	Yes	Yes
Optional instructions 1 (refer to Instruction Set Section): REVERSIBLE WORD SHIFT - RWS(17) SCAN TIME - SCAN(18) MULTI-WORD COMPARE - MCMP(19) LONG MESSAGE - LMSG(47) TERMINAL MODE - TERM(48) SET SYSTEM - SET(49) DOUBLE COMPARE - CMPL(60) COLUMN-TO-WORD - CTW(63) WORD-TO-COLUMN - WTC(64) HOURS-TO-SECONDS - HTS(65) SECONDS-TO-HOURS - STH(66) VALUE CALCULATE - VCAL(69) MULTIPOINT I/O REFRESH - MPRF(61)	Yes	Yes	Yes	Yes	Yes	Yes
Optional instructions 2 (refer to Instruction Set Section): PID CONTROL - PID(*) SCALING - SCL(*) TOTALIZING TIMER - TTIM(87) 2's COMPLEMENT - NEG(*) DOUBLE 2's COMPLEMENT - NEGL(*) FIND MINIMUM - MIN(*) FIND MAXIMUM - MAX(*) TENKEY INPUT - TKY(*) MATRIX INPUT - MTR(*) ASCII-to-HEX - HEX(*) AVERAGE - AVG(*) SUM - SUM(*) FAILURE POINT DETECT - FPD(*) **Note** For complete list refer to instruction set section.	Yes	Yes	Yes	Yes	Yes	Yes
SYSMAC NET, SYSMAC LINK network compatibility and instructions: NETWORK SEND - SEND(90) NETWORK RECEIVE - RECV(98)	No	No	No	No	Yes	Yes
Power supply	AC	DC	AC	DC	AC	DC
Internal logic current capacity (for I/O modules)	3.9 A	2.3 A	3.9 A	2.3 A	3.9 A	2.3 A
Built-In RS232C PORT	No	No	Yes	Yes	Yes	Yes

*A clock is built into the C200H-CPU31-E; the C200H-CPU21-E and C200H-CPU23-E can use the clock built into some of the Memory Packs. (Refer to Standard Parts.)

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C200H Specifications

Part number	C200H-CPU01-E/CPU03-E	C200H-CPU21-E/CPU23-E	C200H-CPU31-E
Main Control Element	MPU, CMOS, LS-TTL		
Programming languages	Ladder diagram		
Instruction set	145 (12 basic instructions + 133 special instructions)	168 (12 basic instructions + 156 special instructions)	172 (12 basic instructions + 160 special instructions)
Instruction length	1 to 4 words/instruction, 1 address/instruction		
Execution time	0.75 to 2.25 μs (basic instructions) 34 to 724 μs (function no. instructions)		
I/O control method	Cyclic, programmed, scheduled, and zero-cross refreshing		
Control input signal	START INPUT (in RUN mode, PLC operates when contacts are closed and stops when contacts are opened; 24 VDC, 10 mA)		
Control output signal	RUN OUTPUT; dry contact (contacts are closed while PLC is in RUN mode; maximum switching capacity: 2 A, 250 VAC (resistive load, p.f. = 1), 0.5 A, 250 VAC (inductive load, p.f. = 0.4), 2 A, 24 VDC)		
Memory protection	Status of HR bits, AR bits, preset value of counters (CNT), and contents of data memory (DM) are retained during power failure. RAM Pack, battery back-up: Program (including clock function) and data areas protected. RAM Pack, capacitor back-up: Program and data areas protected. EEPROM Pack (without clock function): Data areas protected. EEPROM Pack (with clock function): Clock function and data areas protected. C200H-CPU31-E: Program and data areas (including clock function) protected.		
Battery life	4 years at 25°C (77°F); shortened at temperatures higher than 25°C. Replace battery with new one within 1 week when ALARM indicator blinks.		
Self-diagnostics	Errors for CPU failure, Battery, Scan time, Memory failure, I/O bus, I/O verify, Remote I/O, Link error, Special I/O Modules, CPU Bus Modules		
Agency approvals	UL listed, file number: E95399 CSA certified, file number: LR51460		

Memory

Memory capacity	6,974 words (with 8K-word memory)	
Internal relay (IR) bits	Standard I/O Modules: 480 (00000 through 02915)	
	I/O Modules mounted to Remote Expansion Racks and Special I/O Modules 3,296 (03000 through 23515)	I/O Modules mounted to Remote Expansion Racks and Special I/O Modules 3,296 (03000 through 23515) Group 2 High-density I/O Modules 320 (03000 through 04915)
Special Relay (SR) bits	312 (23600 through 25507)	
Temporary relay (TR) bits	8 (TR 0 through 7)	
Holding relay (HR) bits	1,600 (HR 0000 through 9915)	
Auxiliary relay (AR) bits	448 (AR 0000 through 2715)	
Latching relay (LR) bits	1,024 (LR 0000 through 6315)	
Timers/Counters	512 (TIM/CNT 000 through 511) TIMs: 0 through 999.9 s TIMHs: 0 through 99.99 s CNT: 0 through 9999 counts	

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C200HS Specifications

Part number	C200HS-CPU01-E/CPU03-E	C200HS-CPU21-E/CPU23-E	C200HS-CPU31-E CPU33-E
Main Control Element	MPU, CMOS, LS-TTL		
Programming languages	Ladder diagram		
Instruction set	239 (14 basic instructions + 225 special instructions)	239 (14 basic instructions + 225 special instructions)	243 (14 basic instructions + 299 special instructions)
Instruction length	1 to 4 words/instruction, 1 address/instruction		
Execution time	0.375-1.313 μs (basic instructions)		
I/O control method	Cyclic, programmed, scheduled, and zero-cross refreshing		
Control input signal	START INPUT (in RUN mode, PLC operates when contacts are closed and stops when contacts are opened; 24 VDC, 10 mA)		
Control output signal	RUN OUTPUT; dry contact (contacts are closed while PLC is in RUN mode; maximum switching capacity: 2 A, 250 VAC (resistive load, p.f. = 1), 0.5 A, 250 VAC (inductive load, p.f. = 0.4), 2 A, 24 VDC)		
Memory protection	Status of HR bits, AR bits, preset value of counters (CNT), and contents of data memory (DM) are retained during power failure. RAM Pack, battery back-up: Program (including clock function) and data areas protected. RAM Pack, capacitor back-up: Program and data areas protected. EEPROM Pack (without clock function): Data areas protected. EEPROM Pack (with clock function): Clock function and data areas protected. C200H-CPU31-E: Program and data areas (including clock function) protected.		
Battery life	4 years at 25°C (77°F); shortened at temperatures higher than 25°C. Replace battery with new one within 1 week when ALARM indicator blinks.		
Self-diagnostics	Errors for CPU failure, Battery, Scan time, Memory failure, I/O bus, I/O verify, Remote I/O, Link error, Special I/O Modules, CPU Bus Modules		
Agency approvals	UL listed, file number: E95399 CSA certified, file number: LR51460		

Memory

Memory capacity	15.2k words (with 16k word memory)
Internal relay (IR) bits	Standard I/O Modules: 480 (00000 through 02915)
	I/O Modules mounted to Remote Expansion Racks and Special I/O Modules 6688 (03000 through 23515, 30000-51115) Group 2 High-density I/O Modules 320 (03000 through 04915)
Special Relay (SR) bits	1016 (23600 through 25507 and 25600 through 29915)
Temporary relay (TR) bits	8 (TR 0 through 7)
Holding relay (HR) bits	1,600 (HR 0000 through 9915)
Auxiliary relay (AR) bits	448 (AR 0000 through 2715)
Latching relay (LR) bits	1,024 (LR 0000 through 6315)
Timers/Counters	512 (TIM/CNT 000 through 511) TIMs: 0 through 999.9 s TIMHs: 0 through 99.99 s CNT: 0 through 9999 counts

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C200H/C200HS Specifications

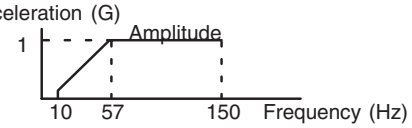
Part number	C200H-CPU01-E/CPU03-E	C200H-CPU21-E/CPU23-E	C200H-CPU31-E	C200HS-CPU01-E/CPU03-E C200HS-CPU21-E/CPU23-E C200HS-CPU31-E/CPU33-E
Data memory (DM) words	Read/write: 1,000 (DM 0000 through 0999) Read only: 1,000 (DM 1000 through 1999) DM area as in Memory Park.			Read/Write: 6144 (DM0000 through 6143) Read only: 512 (6144 through 6655) 3000 Word max. (DM7000 through 9999)
Program check	Program check (executed on start of RUN operation): END missing, Instruction errors, (Program can be checked by Programming Console, GPC, or LSS at three levels.)			

Power Supply Specifications

Part number	C200H-CPU01-E/CPU21-E/CPU31-E, C200HS-CPU01-E, C200HS-CPU21-E, C200HS-CPU31-E, C200H-PS221	C200H-CPU23-E, C200HS-CPU03-E, C200HS-CPU23-E, C200HS-CPU33-E, C200H-PS211
Supply voltage	100 to 120/200 to 240 VAC selectable, 50/60 Hz	24 VDC
Operating voltage range	85 to 132/170 to 264 VAC	20.4 to 26.4 VDC
Power consumption	100 VA max.	50 W max.
Surge current	30 A max.	30 A max.
Output capacity	CPU01-E, 3 A, 5 VDC (1.6 A supplied to I/O Modules) CPU-21-E: 4.6 A, 5 VDC (3.2 A supplied to I/O Modules) CPU-31-E: 4.6 A, 5 VDC (3.0 A supplied to I/O Modules) HS-CPU01-E, HS-CPU21-E, HS-CPU31-E 4.6 A, 5 VDC (3.9 A supplied to I/O Modules) Expansion I/O Rack: 3 A, 5 VDC (2.7 A supplied to I/O Modules)	CPU03-E: 3 A, 5 VDC (1.6 A supplied to I/O Modules) CPU-23-E: 3 A, 5 VDC (1.6 A supplied to I/O Modules) HS-CPU03-E, HS-CPU23-E, HS-CPU33-E: 3 A, 5 VDC (2.3 A supplied to I/O Modules) Expansion I/O Rack: 3 A, 5 VDC (2.7 A supplied to I/O Modules)
Fuse	2 A, 250 V, 5.2 dia. x 20 (MF51NR)	2 A, 125 V, 5.2 dia. x 20 (MF51NR)
Input power supply	0.3 A, 24 VDC $^{+10\%}/_{-20\%}$	—
Insulation resistance*	20 MΩ between AC terminals and the GR terminal at 500 VDC	
Dielectric strength*	2,000 VAC, 50/60 Hz for 1 minute between AC terminals and housing 500 VAC, 50/60 Hz for 1 minute between DC terminals and housing. Leakage current: 10 mA max.	
Noise immunity	1,500 Vp-p, pulse width: 100 ns to 1 ms, rise time: 1 ns (by noise simulator)	
Vibration**	Mechanical durability: 10 to 35 Hz, 1 mm double amplitude (2.5 G) in X, Y, and Z directions, for 2 hours each (When mounted on DIN track, 16.7 Hz, 1 mm double amplitude (0.5 G) in X, Y, and Z directions, for 1 hour each) Malfunction durability: 2 to 55 Hz, 2 G, in X, Y, and Z directions, for 20 minutes each (When mounted on DIN track, 2 to 55 Hz, 0.3 G, in X, Y, and Z directions, for 20 minutes each)	
Shock	10 G in X, Y, and Z directions, 3 times each	
Ambient temperature	Operating: 0° to 55°C (0° to 45°C for Programming Console) Storage: -20° to 65°C	
Humidity	35% to 85% (without condensation)	
Atmosphere	Must be free of the following: Corrosive gases; Abrupt temperature changes; Direct sunlight; Dust, salt, or metal filings; Water, oil, or chemicals	
Grounding	Less than 100 Ω	
Enclosure rating	IEC IP30 (mounted in a panel)	

Note *Disconnect the LG terminal of the Power Supply Module from the GR terminal when performing insulation and dielectric strength tests. If the tests are performed with the LG and GR terminals short-circuited, the internal components will be damaged. Do not conduct a dielectric strength test on the C200H-CPU03-E, C200H-CPU23-E, C200H-PS211, C200H-RT002-P, or C200H-RT202 modules. The power supply input line and internal circuit of the 24 VDC power supply are not isolated from each other. If a dielectric strength test is conducted, the power supply will be damaged.

** Acceleration (G)



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