BUILD YOUR OWN CONTROL AND DATA PROCESSING SYSTEM

CPU

- Choose from 11 CPU models
- Separate CPU and power supply

CPU and Expansion Backplanes

- CPU and power supply mount on a dedicated CPU backplanes
- Local expansion may be done with the new space-saving C200Hα expansion backplanes or current C200H backplanes
- Connect up to 5 remote I/O backplanes

Special I/O

- Take full advantage of the C200Hα's power with any combination of 20 Special I/O Modules

Communications

- All CPUs include a multifunctional peripheral port to communicate to programming peripherals
- Standard Host Link port is built into selected CPUs
- One of six communications boards can also be installed in the CPU. When used with the protocol macro function, these boards provide a simple way to connect with a SYSMAC Link or SYSMAC Net Link module, to communicate with a Modem, operator interface, bar code reader, Process Controller or any kind of RS-232C, RS-422 or RS-485 device.

Software Support

- Supported by both SYSMAC Support Software Version 1.2 or greater and SYSWIN version 3.0 or greater

CPU RACK

p.19

CPU BACKPLANE

C200HW-BC031	C200HW-BC051
C200HW-BC081	C200HW-BC101

p.17

EEPROM MEMORY CASSETTES

4K words	C200HW-ME04K
8K words	C200HW-ME08K
16K words	C200HW-ME16K
32K words	C200HW-ME32K

EPROM MEMORY CASSETTES

16/32K words	C200HS-MP16K

p.9

CPUs

C200HE-CPU11-E

C200HE-CPU32-E	C200HE-CPU42-E
C200HG-CPU33-E	C200HX-CPU34-E
C200HG-CPU43-E	C200HX-CPU44-E
C200HG-CPU53-E	C200HX-CPU54-E
C200HG-CPU63-E	C200HX-CPU64-E

p.18

POWER SUPPLY MODULE
C200HW-PA204
C200HW-PA204S
C200HW-PD024

EXPANSION I/O RACK

p.21

I/O CONNECTING CABLE
C200H-CN□□1
(30cm,70cm,2m,5m,10m)

p.18

POWER SUPPLY MODULE
C200HW-PA204
C200HW-PA204S
C200HW-PD024

p.19

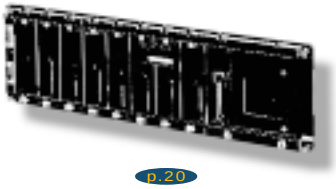
EXPANSION 1/O BACKPLANE
C200HW-BI031
C200HW-BI051
C200HW-BI081
C200HW-BI101

SLAVE RACKS

p.84

REMOTE I/O SLAVE MODULE

Fiber-optic, 100/200 VAC	C200H-RT001-P
Fiber-optic, 24 VDC	C200H-RT002-P
Wired, 100/200 VAC	C200H-RT201
Wired, 24 VDC	C200H-RT202



p.20

SLAVE I/O BACKPLANE
C200H-BC031-V2
C200H-BC051-V2
C200H-BC081-V2
C200H-BC101-V2

COMMUNICATIONS BOARDS (cannot be mounted to the CPUHE-CPU11-E)


p.14
C200HW-COM01


p.14
C200HW-COM02


p.14
C200HW-COM03


p.14
C200HW-COM04-E


p.14
C200HW-COM05-E


p.14
C200HW-COM06-E

COMMUNICATIONS MODULES


p.81
DEVICENET SCANNER
C200HW-DRM21


p.85
HOST LINK
RS422 C200H-LK202-V1
Fiber-optic C200H-LK101-PV1
RS232 C200H-RM201-V1


p.87
PC LINK
C200H-LK401


p.72
PC CARD*
C200HW-PCU01
Ethernet Set*
C200HW-PCS01-E


p.83
REMOTE I/O MASTER
Fiber-optic
C200H-RM001-V1
Wired
C200H-RM201-V1


p.78
SYSMAC LINK*
Coaxial
C200HW-SLK23/24
Fiber-optic
C200HW-SLK13/14


p.75
SYSMAC NET LINK*
C200HS-SNT32

*Use these modules together with communications boards (C200H-COM01/04-E) in the CPU Rack.

SPECIAL I/O MODULES


p.40
ANALOG INPUT
C200H-AD001
C200H-AD002


p.41
ANALOG OUTPUT
C200H-DA001
C200H-DA002


p.62
ASCII/BASIC
C200H-ASC02


p.60
CAM POSITIONER
C200H-CP114


p.51
FUZZY LOGIC
C200H-FZ001


p.58
HIGH-SPEED COUNTER
C200H-CT□□□


p.66
RFID SENSOR
C200H-IDS□□


p.53
DUAL-AXIS MOTION CONTROL
C200H-MC221


p.48
PID CONTROL
C200H-PID0□


p.56
POSITION CONTROL
C200H-NC211
C200H-NC112


p.42
TEMPERATURE SENSOR
C200H-TS□□□


p.44,46
TEMPERATURE CONTROL
C200H-TC□□□
C200H-TV□□□


p.64
VOICE
C200H-OV001


p.26
B7A INTERFACE
16 points
C200H-B7A□1


p.26
B7A INTERFACE
32 points/64 points
C200H-B7A□□
(cannot be used on Slave rack)


p.29,34
HIGH DENSITY INPUT
C200H-ID□□□
Group 2 C200H-ID21□


p.30,36
HIGH DENSITY OUTPUT
C200H-OD□□□
Group 2 C200H-OD21□


p.31
ANALOG TIMER
C200H-TM001


p.38
MIXED I/O
16 inputs/16 outputs
C200H-MD□□□


p.32
INTERRUPT INPUT
C200HS-INT01
(CPU Backplane ONLY)

DISCRETE I/O MODULES


p.22
8 POINT INPUT
C200H-I□□□□


p.22
16/32 POINT INPUT
C200H-I□□□□

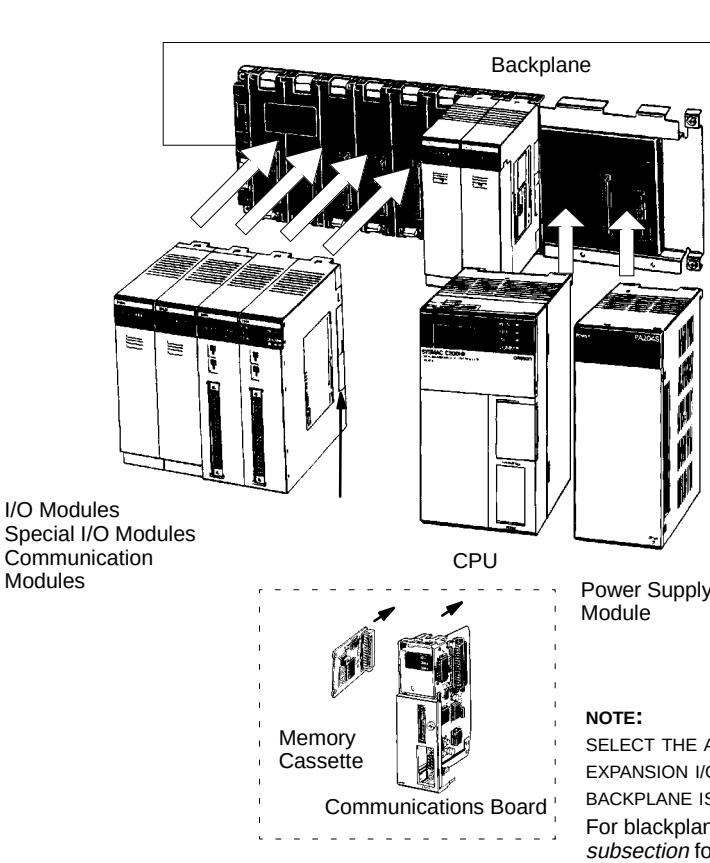

p.22
5/8/16 POINT OUTPUT
C200H-O□□□□


p.22
12/32 POINT OUTPUT
C200H-O□□□□

SYSTEM OVERVIEW

BASIC CONFIGURATION – C200HX/HG/HE

CPU Rack



NOTE:

SELECT THE APPROPRIATE BACKPLANE FOR THE CPU RACK, EXPANSION I/O RACK, AND SLAVE RACK. EACH TYPE OF BACKPLANE IS A DIFFERENT MODEL.

For blackplane dimensions, refer to the *Backplanes subsection* found later in this section.

To order, refer to the specific information provided separately in the *Standard Parts section* of this catalog.

CPU Rack

The CPU Rack is the master controller rack for the control systems and contains the system communications ports. It may be expanded using Expansion Racks and Slave Racks.

A fully configured C200Hα CPU Rack includes a CPU, Backplane, Power Supply Module, I/O Modules, Special I/O Modules and Communication Modules, as appropriate for the application.

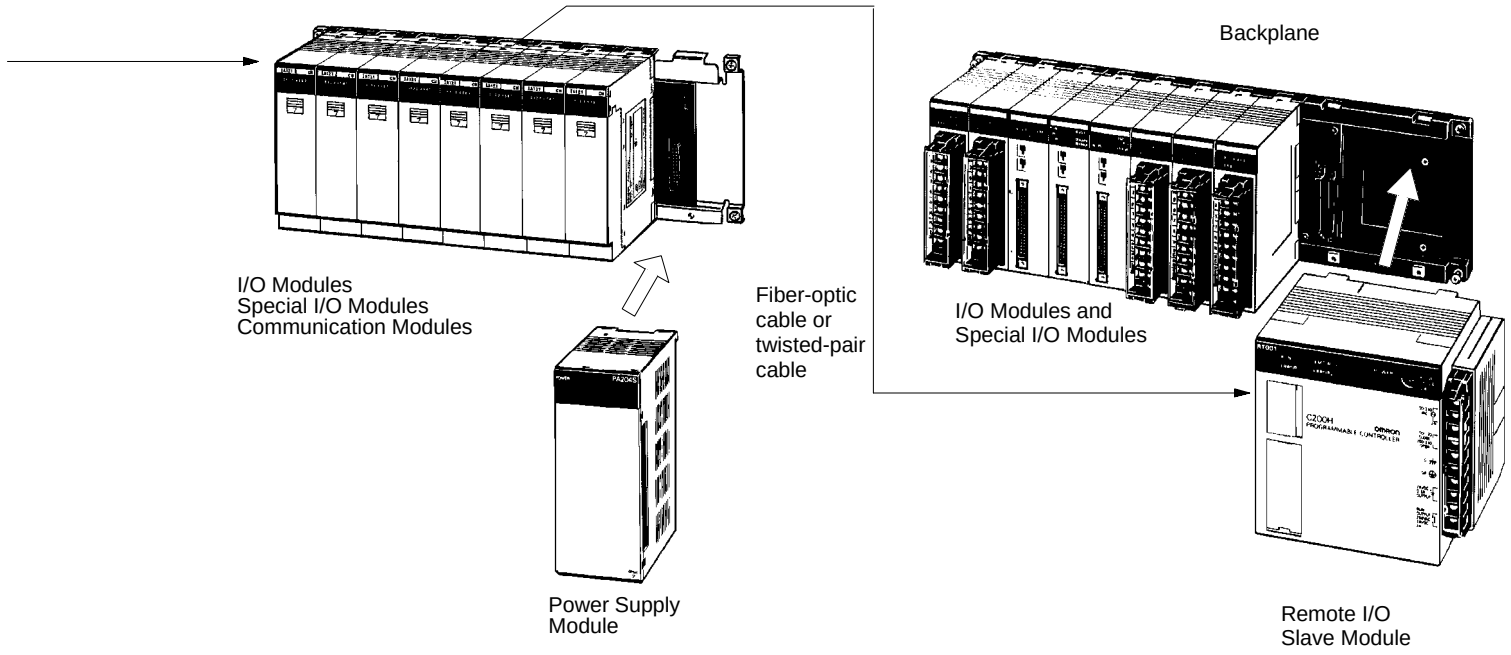
A complete system may also include connecting cables and programming software or hardware.

A total of two SYSMAC LINK or SYSMAC NET Link Modules can be mounted to the CPU if the C200HW-COM01 or C200HW-COM04-E Communications Board is connected to the CPU.

Only two C200HS-INT01 Interrupt Input Modules can be mounted on a CPU Rack.

Expansion I/O Racks

Slave Racks



Local Expansion Racks

The configuration of an Expansion I/O Rack includes a Power Supply Module, an Expansion Backplane, and appropriate I/O Modules, Special I/O Modules, and Communication Modules.

The number of allowable Expansion Racks varies with CPU model.

Up to three Expansion I/O Racks can be connected to the C200HX-CPU54-E, C200HX-CPU64-E, C200HG-CPU53-E, or C200HG-CPU63-E.

Up to two Expansion I/O Racks can be connected to any other CPU for the C200HX, C200HG, and C200HE.

Different types of Backplanes are necessary for the CPU, Expansion I/O Rack, and the Slave Rack.

Slave Racks

To expand a system and minimize wiring costs, you may connect a maximum of five Slave Racks per system.

The Configuration of a Slave Rack includes a Remote I/O Slave Module, a Backplane (for the C200HX/HG/HE Slave Rack), I/O Modules, and Special I/O Modules.

To mount a High-density I/O Module to a Slave Rack, use a C200H-RM001-PV1/RM201.

Note: C200H-RM001-P Master Modules cannot be used.

Group-2 High-density I/O Modules, Communications I/O Modules, and Interrupt Input Modules cannot be mounted in Slave Racks.

You can connect a Maximum of two Expansion I/O Racks to Slave Racks using I/O Connecting Cable.

Always count the Expansion I/O Racks (connected in this way) against the maximum of five Slave Racks that can be connected.

SYSTEM OVERVIEW

C200HX/HG/HE SPECIFICATIONS

C200Hα PLC – System Specifications

ITEM	SPECIFICATIONS
Supply voltage	AC power supply: 100 to 120/200 to 240 VAC selectable 50/60 Hz DC power supply: 24 VDC
Operating voltage range	AC power supply: 85 to 132/170 to 264 VAC DC power supply: 19.2 to 28.8 VDC
Power consumption	AC power supply: 120 VA max. DC power supply: 50 W max.
Surge current	30 A max.
Output capacity	4.6 A, 5 VDC; 0.6 A, 26 VDC; 0.8 A, 24 $VDC^{+10\%}/_{-20\%}$ (C200HW-PA204S only)
Insulation resistance	20 MΩ between AC terminals and the GR terminal at 500 VDC (see note 1)
Dielectric strength	2,300 VAC at 50/60 Hz for 1 minute between AC terminals and housing; 1,000 VAC at 50/60 Hz for 1 minute between DC terminals and housing. Leakage current: 10 mA max. (see note 1)
Noise immunity	1,500 Vp-p, pulse width: 100 ns to 1 μs, rise time: 1 ns pulse (by noise simulator)
Vibration	10 to 57 Hz; 0.075 mm amplitude, 57 to 150 Hz; acceleration: 1 G, in X, Y, and Z directions, for 80 minutes each (sweep time 8 min x 10 sweeps = 80 min); (When mounted on DIN track, 2 to 55 Hz, 0.3 G, in X, Y, and Z directions for 20 minutes each)
Shock	15G (147 m/s^2) in X, Y, and Z directions, 3 times each
Ambient temperature	Operating: 0 to 55°C (32°to 131.0°F) Storage: −20 to 75°C (-4.0 to 167.0°F) without battery
Humidity	10% to 90% (without condensation)
Atmosphere	Must be free of corrosive gases
Grounding	Less than 100 Ω
Enclosure rating	IEC IP30 (mounted in a panel)
Weight	6 kg max. (CPU: 315 g max., Power Supply Module: 510 g max., Backplane: 445 g to 1040 g)

Note: Be sure to disconnect the LG and GR terminals when conducting insulation resistance tests or dielectric strength tests. Internal components might be damaged if insulation resistance tests are repeated many times with the LG and GR terminals connected.

CPU

YOUR INTRODUCTION TO THE C200HX/HG/HE CPU

Features

Select from Eleven C200Hα CPUs within Alpha's Three Basic Model Types

Each model has different program capacities, processing speeds, I/O capabilities, communications connections and features. (The *C200Hα CPU Selection Table* is provided later in this section.)

Optional Back-up Memory Cassettes

For program back-up or rewrite option, each CPU has a special Memory Cassette compartment.

Multifunctional Peripheral Port

Directly connect to programming peripherals or communicate to Omron's Operator Interface Terminals and other third party devices using an optional CIF Convertor Cable.

Built-in RS-232C Port

Direct Host Link communications to the CPU or interface with other devices through serial communications. Available on selected models only.

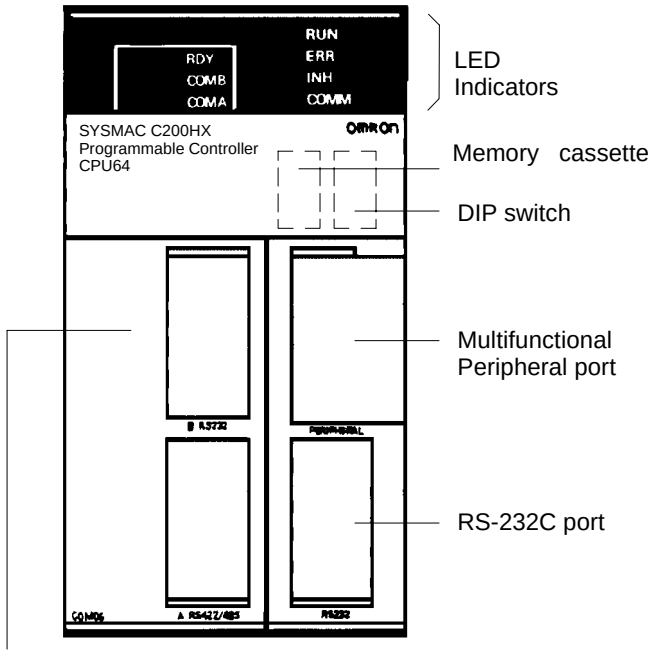
Versatile Communications

Install one of six C200Hα Communications Boards to have additional communications ports. The boards fit into the communications slot in the CPU and enable communication with SYSMAC LINK or SYSMAC NET modules, a PC card module or a variety of serial devices – including Operator Interfaces. Order the Communications Board and Memory Cassette separately (not provided with the CPU).

Protocol Macro

Three C200Hα Communications Boards offer the Protocol Macro Instruction that controls data transfer with various communications devices and components equipped with RS-232C or RS-422/-485 ports. With the Protocol Macro Function built into the C200HW-COM04, C200HW-COM05-E and C200HW-COM06-E Communications Boards, communications sequences (data transfer procedures) may be modified with Omron's Protocol Support Software.

Although seven Omron Communications sequences are built-in, you can use the Protocol Support Software to create other communications sequences. For more details, refer to the *Communication Board section* that follows.



Communications Board (C200HW-COM06-E shown here)

Indicators

INDICATOR ON THE CPU	FUNCTION
RUN (green)	Lit when the PLC is operating normally.
ERR (red)	Flashes if the PLC in operation detects any non-fatal error. (The PLC will continue operating.) Lit if the PLC in operation detects any fatal error. (The PLC will stop operating.) After the PLC stops operating, the RUN indicator will be off, and all output signals of the Output Modules will be interrupted.
INH (orange)	Lit when the Load OFF flag (AR bit) is ON. (All output signals of the Output Modules will be interrupted.)
COMM (orange)	Flashes when the CPU is communicating with the device connected to the peripheral port or RS-232C port.

CPU

C200HX/HG/HE CPU SELECTION GUIDE

Consider these Application Needs when Selecting the C200Hα CPU

1. What is the required program capacity?
2. Determine total standard I/O (with expansion rack) and Special I/O requirements.
3. What communications interfaces are required?

C200Hα CPU Selection Table

PROGRAM CAPACITY (WORDS)	DM (WORDS)	EM (WORDS)	BASIC INSTRUCTION PROCESSING TIME	NO. I/O PTS.	MAX. NO. EXPANSION I/O RACKS)	MAX. NO. HIGH-DENSITY I/O MODULES (GROUP 2) *NO. BELOW = TOTAL NO. OF MODULES*	MAX. NO. OF SPECIAL I/O MODULES (GROUP 1) *NO. = TOTAL NO. OF MODULES*	RS-232C	CLOCK FUNCTION	COMMUNICA-TIONS BOARD AVAILABLE	PART NUMBER
3.2K	4K	None	0.3 µs min.	640	2	Unavailable	10	No	No	No	**C200HE-CPU11-E**
7.2K	6K			880		10			Yes	Yes	**C200HE-CPU32-E**
								Yes			**C200HE-CPU42-E**
15.2K	6K	6K	0.15 µs min.	880	2	10	10	No	Yes	Yes	**C200HG-CPU33-E**
								Yes			**C200HG-CPU43-E**
				1,184	3	16 (10) *See Note*	16 (10) *See Note*	No			**C200HG-CPU53-E**
								Yes			**C200HG-CPU63-E**
31.2K	6K	6K x 3 (18K)	0.1 µs min.	880	2	10	10	No	Yes	Yes	**C200HX-CPU34-E**
								Yes			**C200HX-CPU44-E**
				1,184	3	16 (10) *See Note*	16 (10) *See Note*	No			**C200HX-CPU54-E**
								Yes			**C200HX-CPU64-E**

Note: When the table indicates a selection total of 16 High-density I/O Modules or Special I/O Modules – the total of 16 is applicable only if you select from the Modules in this list:

- High-density I/O Modules: C200H-ID216 (32 inputs) and C200H-OD218 (32 outputs).
- Special I/O Modules: C200H-AD002, C200H-DA002, C200H-NC211, and C200H-CT021

If your selections are not in the list above: you may be limited to only 10 modules – as indicated in the table.
An exception: A total of only 8 can be used if you select C200H-OD219, C200H-ID217, or C200H-ID111 High-density I/O Modules.

C200Hα CPU Characteristics

ITEM	SPECIFICATIONS
Control method	Stored program
I/O control method	Cyclic scan with direct output and immediate interrupt processing are both possible.
Programming method	Ladder diagram
Instruction length	1 address/instruction, 1 to 4 words/instruction
Number of instructions	14 basic instructions, 231 special instructions
Execution time	Basic instructions: e.g., LD C200HE-CPU□□-E:0.3 μs C200HG-CPU□□-E:0.15 μs C200HX-CPU□□-E:0.1 μs Special instructions: e.g., MOV(21) C200HE-CPU□□-E:1.2 μs C200HG-CPU□□-E:0.6 μs C200HX-CPU□□-E:0.4 μs
Program capacity	C200HE-CPU11-E: 3.2K words max. C200HE-CPU32-E/CPU42-E: 7.2K words max. C200HG-CPU□□-E: 15.2K words max. C200HX-CPU□□-E: 31.2K words max.
I/O bits	640 (00000 to 02915, 30000 to 30915)
IR bits	6,464 (03000 to 23115, 31000 to 51115)
SR bits	1,080 (23200 to 25507, 25600 to 29915)
TR bits	8 (TR 0 to 7)
HR bits	1,600 (HR 0000 to 9915)
AR bits	448 (AR 0000 to 2715)
LR bits	1,024 (LR 0000 to 6315)
Timers/Counters	512 (TIM/CNT 000 to 511)
DM words	Read/Write: 6,144 (DM 0000 to 6143) Read-only: 512 (DM 6144 to 6655) Expansion: Up to 3,000 words max. (DM 7000 to 9999)
EM words	Read/Write: C200HE-CPU□□-E: None C200HG-CPU□□-E: 6,144 (EM 0000 to EM 6143) C200HX-CPU□□-E: 6,144 × 3 banks (EM 0000 to EM 6143)
Power failure backup function	Holds HR, AR, CNT, DM, and EM and clock (RTC) contents.
Memory backup time	The battery service life is five years at 25°C (77°F). The service life will be shortened if the battery is used at higher temperatures. Replace the battery within one week after the battery alarm indicator starts flashing. When replacing the battery, install the new battery within five minutes after removing the old one.
Self-diagnostic function	CPU errors (watchdog timer), I/O verification errors, host link errors, memory errors, battery errors, I/O bus errors, remote I/O errors, etc.
Program check function	Checks the program from the time the program starts running and checks the omission of the END instruction or any other improper instruction. This function allows three-level checking of programs through the Programming Console.

CPU

SPECIFICATIONS, CHARACTERISTICS

Comparing C200Hα CPU Specifications

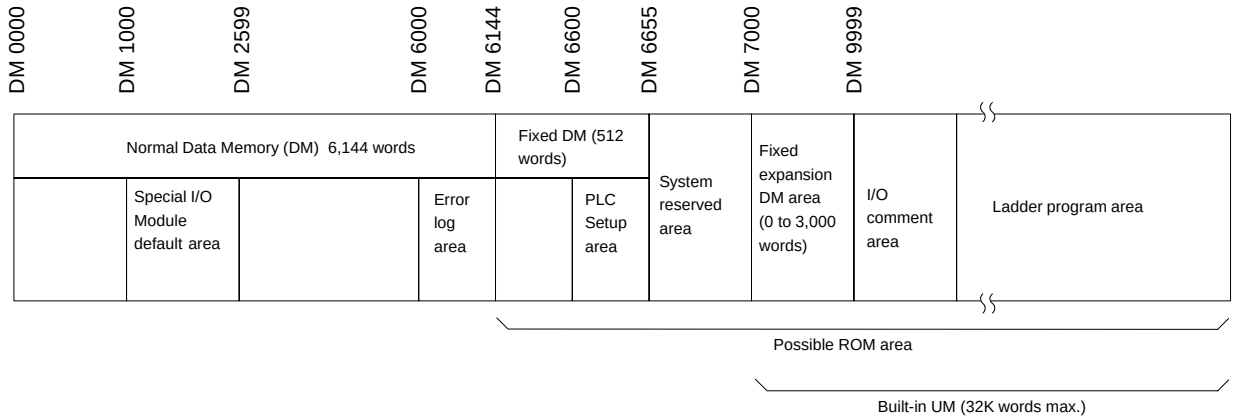
Use the following table to compare the functions of the C200HX, C200HG, and C200HE with those of the C200HS and C200H.

FUNCTION		C200HX/HG/HE	C200HS	C200H
Memory	User Memory (UM)	3.2K words (C200HE-CPU11-E) 7.2K words (C200HE-CPU□2-E) 15.2K words (C200HG-CPU□3-E) 31.2K words (C200HX-CPU□4-E)	15.2K words	3.2K words/7.2K words
	Normal Data Memory (DM)	C200HX/G: 6,144 words (DM 0000 to DM 6143) (DM 4000 to DM 5999 do not exist in the C200HE-CPU11-E) C200HE-CPU16: 4000 words (DM0000-3999)	6,144 words (DM 0000 to DM 6143)	1,000 words (DM 0000 to DM 0999)
	Fixed Data Memory	512 words (DM 6144 to DM 6655)	512 words (DM 6144 to DM 6655)	1,000 words (DM 1000 to DM 1999)
	Fixed Expansion Data Memory	0 to 3,000 words (DM 7000 to DM 9999)	0 to 3,000 words (DM 7000 to DM 9999)	None
	Extended Data Memory (EM)	C200HE: No EM C200HG: 6,144 words x 1 bank C200HX: 6,144 words x 3 banks	None	None
I/O	Expansion Racks	3 max. (2 max. for C200HE-CPU□□-E and C200HG/HX-CPU-3□-E/4□-E)	2 max.	2 max.
	Group-2 High-density I/O Modules	0 to 9 and A to F Modules per PLC C200HE-CPU11-E: No Group-2 Modules connected C200HE-CPU□2-E, C200HG/HX-CPU-3□-E/CPU4□-E: 0 to 9 Units per PLC	0 to 9 Modules per PLC	0 to 9 Modules per PLC
	Special I/O Modules	0 to 9 and A to F Modules per PLC C200HE-CPU□□-E, C200HG/HX-CPU-3□-E/CPU4□-E: 0 to 9 Modules per PLC	0 to 9 Modules per PLC	0 to 9 Modules per PLC
Execution time	Basic instructions (LD)	0.1 μs (C200HX) 0.15 μs (C200HG) 0.3 μs (C200HE)	0.375 μs	0.75 μs
	Special instructions (MOV)	0.4 μs (C200HX) 0.6 μs (C200HG) 1.2 μs (C200HE)	19 μs	88 μs
	Other special instructions	C200HX and C200HG: Approx. 1/3 to 2/3 of the time required by the C200HS. C200HE: Approx. 3/4 to 4/5 of the time required by the C200HS.	---	---
	END processing time	0.7 ms (C200HX/HE-CPU□2-E) 2.1 ms (C200HE-CPU11-E)	0.7 ms	2.8 to 3.5 ms
CPU	RS-232C port	C200HX/HG/HE-CPU2□-E/4□-E/6□-E	C200HS-CPU2□-E/3□-E	None
	Clock function	All models except the C200HE-CPU11-E.	All models	Incorporated by the Memory Module
	SYSMAC LINK Module and SYSMAC NET Link Module connection	C200HW-COM01 and C200HW-COM04-E Communications Boards available for connection except the C200HE-CPU11-E.	C200HS-CPU3□-E	C200H-CPU11-E/31-E
Communications Board		The Communications Board can be mounted to all CPUs except the C200HE-CPU11-E. The following are possible with the Communications Board: Use of the SYSMAC LINK Module and SYSMAC NET Link Module expansion of up to 2 communications ports, and use of a protocol macro function	None	None
Interrupts	Interrupt Input Modules	2 (16 points)	1 (8 points)	None
	Interruption with Communications Board	Possible	---	---
	Response time	Same as the C200HS. 1 ms if the C200HW-SLK□□ is used.	C200H-compatible mode: 10 ms C200H mode: 1 ms The C200HS in any mode connected to the SYSMAC LINK Module or SYSMAC NET Link Module 10 ms	---
SYSMAC LINK	Service time	3.5 ms max. (1 system)	10.8 ms max. (1 system)	11.5 ms max. (1 system)
	Remote programming	Via the peripheral port, RS-232C port, and Communications Board	Via the peripheral port only	---
	Influence on interrupt response performance	None	10 ms is required by the C200HS in any mode.	---

User Memory Area

The C200HX, C200HG, and C200HE have a User Memory (UM) area allocation function. This function allows the use of the ladder program area of the UM as a fixed expansion DM area and I/O comment area. The function is enabled with the SYSMAC Support Software (SSS), SYSWIN, or the Programming Console. Only SSS can be used to designate any part of the ladder program area as an I/O comment area (i.e., the Programming Console cannot be used to designate any part of the ladder program area as an I/O comment area.

C200HX/HG/HE Memory Area Structure

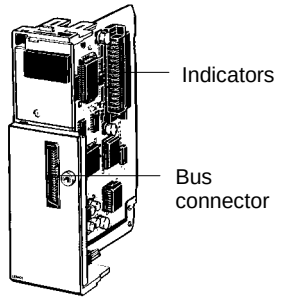


Ladder program area	A user program is stored in the ladder program area. If part of the UM is used as a fixed expansion DM area or I/O comment area, the capacity of the ladder program area storing the user program will be reduced accordingly.
I/O comment area	I/O comments are stored in the I/O comment area. The I/O comments can be stored with a program. The I/O comments can be monitored *without* loading the comment, just as with conventional comments.
Fixed expansion DM area	The default values of the Special I/O Module, Programmable Terminal, the character string of the Programmable Terminal, and operation data are stored in the fixed expansion DM area. By changing the I/O monitor present value of the Programming Console or using the DM edit transfer operation of the Ladder Support Software, the default values can be written to DM 7000 to DM 9999.
System reserved area	The system reserved area is used by the system only.
PLC Setup area	The settings required for the operation of the PLC are stored in the PLC Setup area.
Normal DM area	The user can freely use the normal DM as a data area for arithmetic operations. If the Special I/O Module is used, DM 1000 to DM 2599 will be a Special I/O Module default area.

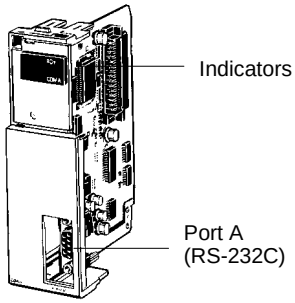
- DM 1000 to DM 2599 can be used as a normal DM if DM 7000 to DM 8599 are set as a Special I/O Module default area with the PLC Setup. DM 6000 to DM 6030 are used exclusively as an error log area.
- Unlike the normal DM area, nothing can be written to the fixed expansion DM area using ladder programming.
- The capacity of a ladder program will decrease if the size of the fixed expansion DM area and the total capacity of the I/O comments increase.
- The C200HX, C200HG, and C200HE do not have a fixed expansion DM area or I/O comment area before shipping. The user must allocate these areas in the UM according to the application.

COMMUNICATIONS BOARDS

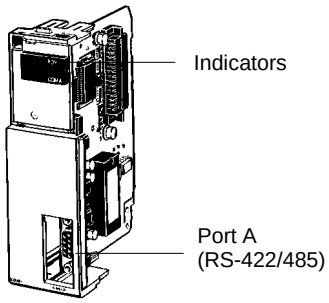
SPECIFICATIONS, SELECTION GUIDE



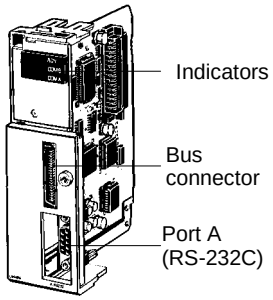
C200HW-COM01



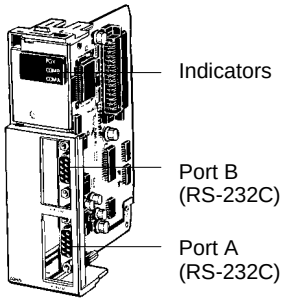
C200HW-COM02



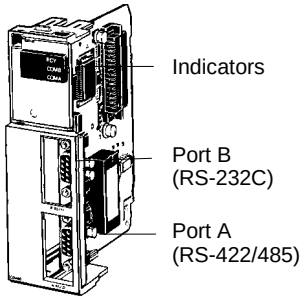
C200HW-COM03



C200HW-COM04-E

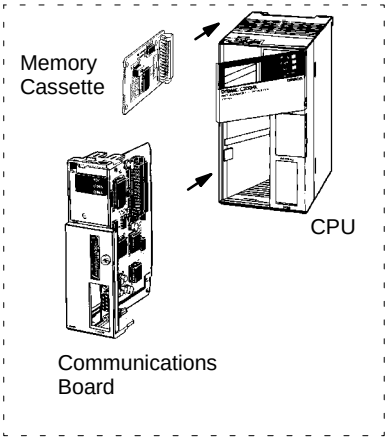


C200HW-COM05-E



C200HW-COM06-E

Note: Order the Communications Board and Memory Cassette separately (not provided with the CPU).



The C200Hα offers the industry's most versatile PLC communications options. With six Communications Board options, you can select just the right communications for your application. The boards fit into the communications slot in the CPU and let you expand the PLC functionality by connecting to other PLCs or computers with Omron's SYSMAC LINK, SYSMAC NET or, a PC Card Module. A variety of serial ports let you connect to Operator Interfaces, PCs, or other serial communication devices.

Specifications

PART NUMBER	DESCRIPTION
C200HW-COM01	CPU connection when using SYSMAC LINK or SYSMAC NET Link Communications Modules
C200HW-COM02	One RS-232C port
C200HW-COM03	One RS-422/485 port
C200HW-COM04-E	CPU connection for the SYSMAC LINK Module or SYSMAC NET Link Module, and an RS-232C port, with a protocol macro function
C200HW-COM05-E	Two RS-232C ports with a protocol macro function
C200HW-COM06-E	One RS-422/485 port, and one RS-232C port, with a protocol macro function

Communications Board Indicators

INDICATOR	COLOR	STATUS	MEANING	FUNCTION
RDY	Green	Not lit	Board not ready for use	Hardware error
		Flashes	Setting error	System setting or protocol data error
		Lit	Board ready for use	Normal operation
COMB	Orange	Flashes	Communicating	Port B is in use for communication
COMA				Port A is in use for communication

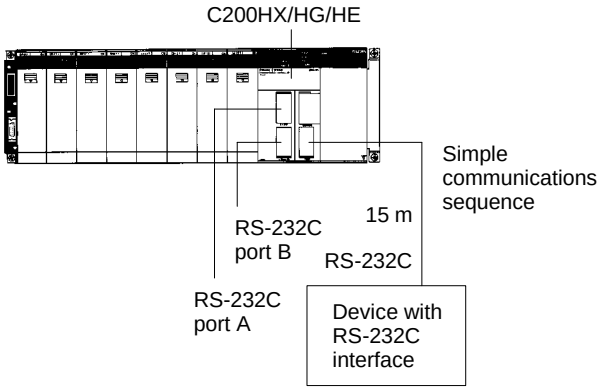
COMMUNICATION BOARDS

PROTOCOL MACRO

System Configuration Examples

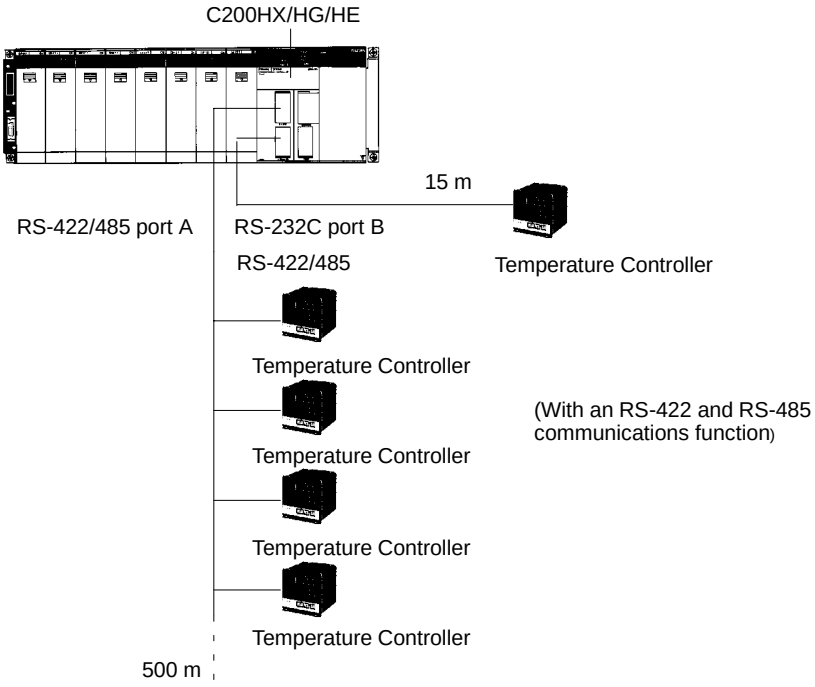
RS-232C (C200HW-COM05-E)

An RS-232C line connects the C200HW-COM05-E and a device, allowing the RS-232C line to be a maximum of 15 m.



RS-422/485 (C200HW-COM06-E)

The C200HW-COM06-E connects to one or more devices through the RS-422 and RS-485 port provided the RS-422 or RS-485 line between the C200HW-COM06-E and the farthest device is a maximum of 500 m.



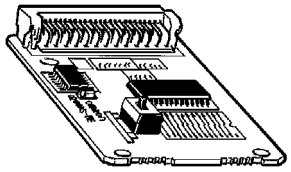
EEPROM or EPROM Memory Cassettes

Each C200Hα CPU can accept a Memory Cassette to provide back-up or downloading of programs and data. EEPROM models allow the program to be downloaded to and from the CPU memory. EPROM models allow the user to write to an EPROM and insert it into the memory cassette.

EEPROM Memory Cassette – No Back-up Power Supply Required

The EEPROM Memory Cassette can be installed in the C200HX, C200HG, and C200HE CPUs to write and read programs and I/O data to the CPU.

Because the EEPROM Memory Cassette does not require any backup power supply, it will retain its data even after it is disconnected from the CPU.



EEPROM Memory Cassette

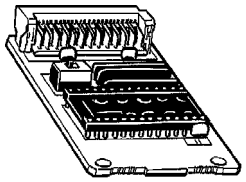
EEPROM Memory Cassette Capacity

CAPACITY	PART NUMBER
4K words	C200HW-ME04K
8K words	C200HW-ME08K
16K words	C200HW-ME16K
32K words	C200HW-ME32K

EPROM Memory Cassette – Use a Standard PROM Writer to Write a Program

Connect an EPROM to the EPROM Memory Cassette before installing the EPROM Memory Cassette into the CPU.

An EPROM Memory Cassette will lose its data if it is disconnected from the CPU.



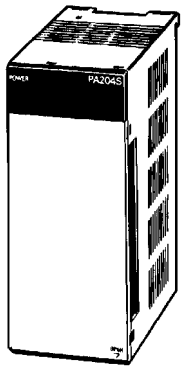
EPROM Memory Cassette

EPROM Memory Cassette Capacity

DESCRIPTION	CAPACITY	PART NUMBER
Cassette	16K words/32K words	C200HS-MP16K
EPROM (Order ROM Separately)	Equivalent to 27256	ROM-JD-B
	Equivalent to 27512	ROM-KD-B

POWER SUPPLY MODULES

CAPACITIES AND SPECIFICATIONS



C200HW-P□□□

All CPU Racks and Expansion Racks feature separate Power Supplies that may be replaced individually to meet system requirements without having to replace the other components. The Power Supply provides power for the CPU and Modules on the Rack. Choose an AC or DC version. Model C200HW-PA204S comes with built-in 24 VDC Power Supply that may be used to power Special I/O Modules, Sensors, or other devices, eliminating the need for a separate Power Supply.

Power Supply Modules Available

SUPPLY VOLTAGE	COMMENTS	PART NUMBER
100 to 120 VAC 200 to 240 VAC	---	C200HW-PA204
	With 24-VDC service power supply	C200HW-PA204S
24 VDC	---	C200HW-PD024

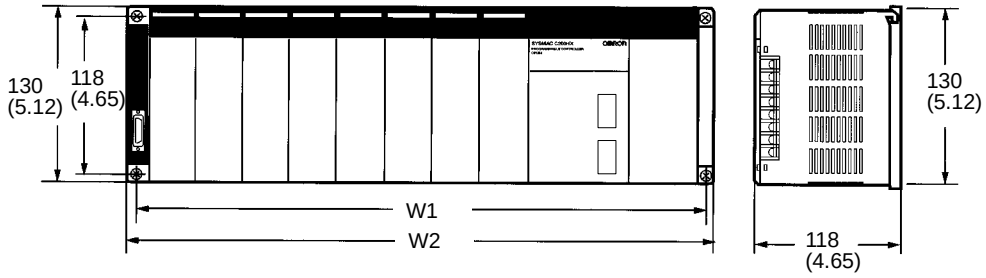
Select the Appropriate Backplane for the CPU with its I/O Modules

When selecting Backplanes for the CPU, the Expansion I/O, and the Slave Rack(s), each type of Backplane is a different model number. To order, refer to the specific information provided separately in the *Standard Parts section* of this catalog.

Dimensions

CPU I/O Backplane
C200HW-BC□□□

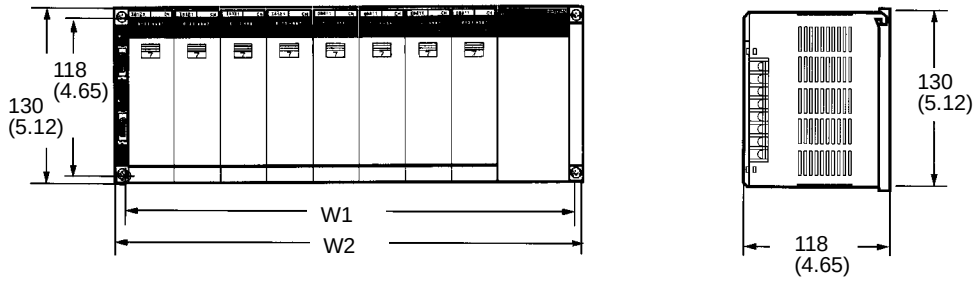
Unit: mm (inch)



NO. OF SLOTS	W1	W2	PART NUMBER
3 slots	246 (9.69)	260 (10.24)	C200HW-BC031
5 slots	316 (12.44)	330 (12.99)	C200HW-BC051
8 slots	421 (16.57)	435 (17.13)	C200HW-BC081
10 slots	491 (19.33)	505 (19.88)	C200HW-BC101

Expansion I/O Backplane
C200HW-BI□□□

Unit: mm (inch)



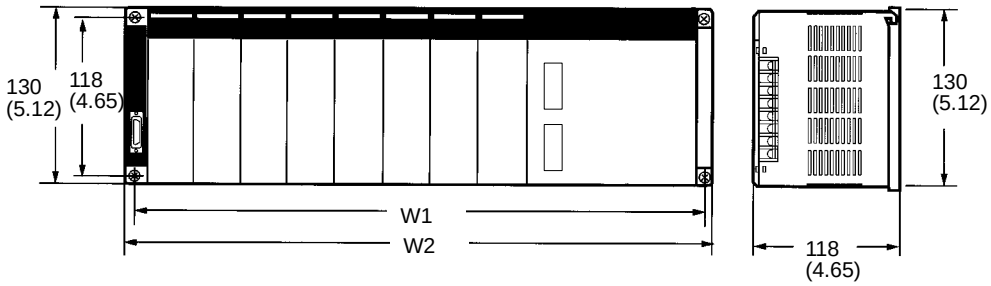
NO. OF SLOTS	W1	W2	PART NUMBER
3 slots	175 (6.89)	189 (7.44)	C200HW-BI031
5 slots	245 (9.65)	259 (10.20)	C200HW-BI051
8 slots	350 (13.78)	364 (14.33)	C200HW-BI081
10 slots	420 (16.54)	434 (17.09)	C200HW-BI101

BACKPLANES

SPECIFICATIONS

Slave Rack Backplane
C200H-BC□□□-V2

Unit: mm (inch)



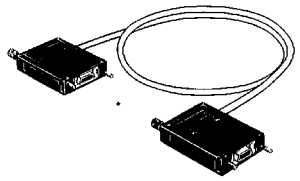
NO. OF SLOTS	W1	W2	PART NUMBER
3 slots	246 (9.69)	260 (10.24)	C200H-BC031-V2
5 slots	316 (12.44)	330 (12.99)	C200H-BC051-V2
8 slots	421 (16.57)	435 (17.13)	C200H-BC081-V2
10 slots	491 (19.33)	505 (19.88)	C200H-BC101-V2

CONNECTING I/O CABLES

FEATURES, CAPACITIES AND SPECIFICATIONS

I/O Connecting Cables connect a CPU Rack to an Expansion I/O Rack or an Expansion I/O Rack to another Expansion I/O Rack. The following five types of I/O Connecting Cables are available. The total length of the I/O Connecting Cables used in a configuration must be 12 m maximum.

Note: Count the Expansion I/O Racks (connected in this way) against the maximum of five Slave Racks that can be connected.



I/O Connecting Cables

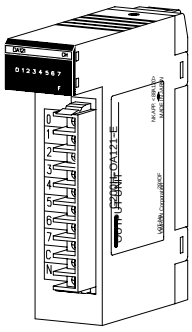
Select from Five I/O Connecting Cables

CABLE LENGTH (CM)	PART NUMBER
30	C200H-CN311
70	C200H-CN711
200	C200H-CN221
500	C200H-CN521
1,000	C200H-CN131

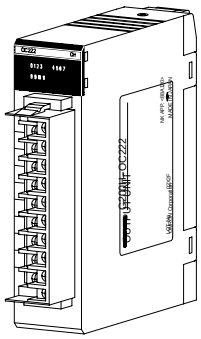
Note: The total length of the I/O Connecting Cables used in a network must not exceed 12 m.

DISCRETE I/O MODULES

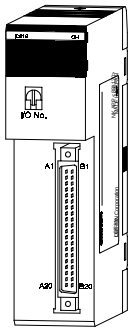
OVERVIEW



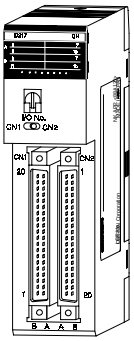
Connector
Style A



Connector
Style B



Connector
Style C



Connector
Style D

Connector
Style E

Discrete I/O Modules – Varying Connector Types

Discrete I/O modules are available in a number of voltages, densities, terminal block, and connector types. Connector-style high-density I/O modules with 32 or 64 discrete I/O points per module have solder connectors included with the module. Optional wiring methods are available using Omron's I/O blocks, screw terminal, crimp and ribbon connectors, and pre-terminated cables. These versatile high-density configuration options minimize rack space and wiring time. The Omron I/O Blocks provide single-point isolation and up to 5 A current capacity per point. Replaceable relays and solid-state plug-in modules allow easy maintenance. There are five styles of discrete I/O modules in the C200H family. The profiles of each are shown here. Each module in the following pages is cross-referenced to the module style. Modules include the appropriate connectors.

Features

- Versatile high-density configuration options minimize rack space and wiring time
- Replaceable relays and solid-state plug-in modules mean easy maintenance

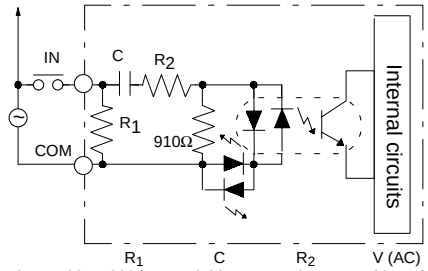
Input Module Specifications

TYPE	NO. OF INPUTS	INPUTS PER COMMON	INPUT VOLTAGE	INPUT CURRENT	OPERATING VOLTAGE		INPUT RESPONSE TIME		MODULE-STYLE	PART NUMBER
					ON	OFF	ON	OFF		
AC Input	8 pts	8 pts.	100 to 120 VAC +10%/–15%	10 mA, 100 VAC	60 VAC min.	20 VAC max.	35 ms max.	55 ms max.	A	C200H-IA121
	16 pts.	16 pts.							B	C200H-IA122
	8 pts.	8 pts.	200 to 240 VAC +10%/–15%	10 mA, 200 VAC	120 VAC min.	40 VAC max.			A	C200H-IA221
	16 pts.	16 pts.							B	C200H-IA222
DC Input	8 pts.	8 pts.	12 to 24 VDC +10%/–15%	10 mA, 24 VDC	10.2 VDC min.	3.0 VDC max.	1.5 ms max.	1.5 ms max.	A	C200H-ID211
	16 pts.	16 pts.	24 VDC +10%/–15%	7 mA, 24 VDC	14.4 VDC min.	5.0 VDC max.			B	C200H-ID212
AC/DC Input	8 pts.	8 pts.	12 to 24 VAC/DC +10%/–15%	10 mA, 24 VDC	10.2 VDC min.	3.0 VDC max.	15 ms max.	15 ms max.	A	C200H-IM211
	16 pts.	16 pts.	24 VAC/DC +10%/–15%	7 mA, 24 VAC/DC	14.4 VDC min.	5.0 VDC max.			B	C200H-IM212

Note: 1. All models feature photocoupler isolation and LED indicator.
2. Each Discrete I/O Module has a removable terminal block. See the above *STYLE* column for a reference to the module style/connector type and refer to the accompanying drawing and chart for specific connector details.

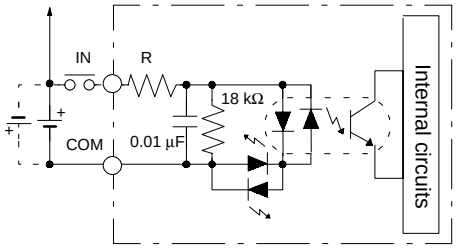
Input Module Circuit Configuration

AC Input: IA121, IA122, IA221, IA222



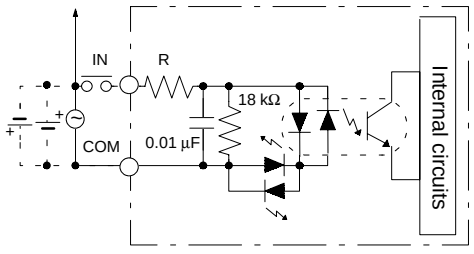
	R_1	C	R_2	V (AC)
IA121, IA122:	330 kΩ	0.33 µF	470 Ω	100 to 120
IA221:	680 kΩ	0.15 µF	820 Ω	200 to 240
IA222:	680 kΩ	0.15 µF	680 Ω	200 to 240

DC Input: ID211, ID212



	R	V (DC)
ID211:	2 kΩ	12 to 24
ID212:	3 kΩ	24

AC/DC Input: IM211, IM212



	R	V
IM211:	2 kΩ	12 to 24 VAC/DC
IM212:	3 kΩ	24 VAC/DC

DISCRETE I/O MODULES

OUTPUT MODULE SPECIFICATIONS

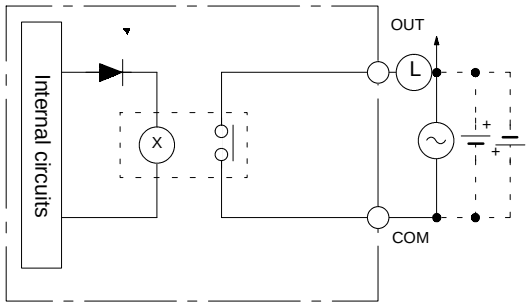
Output Module Specifications

No. of outputs	Rated load voltage	Max. load current	Min. switching capacity	Output response times		Leakage current	Outputs/ per common	Fuse	External power supply	Internal power consumption (VDC)	Part number
				ON	OFF						
Relay Output											Relay Output
8 pts.	250 VAC (cos ϕ = 1)/ 250 VAC (cos ϕ = 0.4)/ 24 VDC max.	2 A/pt. 8 A/8 pts.	10 mA, 5 VDC	10 ms max.	10 ms max.	---	8 pts.	---	---	10 mA max.	C200H-OC221
12 pts.		2 A/pt. 8 A/ 12 pts.					12 pts.				C200H-OC222 (see note)
16 pts.		2 A/pt. 8 A/ 16 pts.					16 pts.			50 mA max.	C200H-OC225 (see note)
5 pts.		2 A/pt. 10 A/5 pts.					1 pt.			10 mA max.	C200H-OC223
8 pts.		2 A pts. 16 A/8 pts.									C200H-OC224
Triac Output											Triac Output
8 pts.	120 VAC	1 A/pt. 4 A/8 pts.	Resistive load: 10 mA; inductive load: 40 mA (10 VAC)	1 ms max.	1/2 of load frequency max.	3 mA max., 100 VAC; 6 mA max., 200 VAC	8 pts.	5 A		140 mA max.	C200H-OA121-E
12 pts.	250 VAC, 50/60 Hz	0.3 A/pt. 2 A/12 pts.		1/2 of load frequency max.			12 pts.	3 A		200 mA max.	C200H-OA222V
8 pts.		1.2 A/pt. 4 A/8 pts.	Resistive load: 100 mA; inductive load: 50 mA (10 VAC)	1 ms max.			8 pts.	5 A		180 mA max.	C200H-OA223
12 pts.		0.5 A/pt. 2 A/12 pts.	100 mA, 10 VAC; 50 mA, 24 VAC; 100 mA, 100 VAC		1/2 + 1 ms of load frequency max.	1.5 mA max., 120 VAC; 3 mA max., 240 VAC	12 pts.	3.15 A		270 mA max.	C200H-OA224
Transistor Output											Transistor Output
8 pts.	12 to 48 VDC +10%/–15%	1 A/pt. 3 A/8 pts.	Residual voltage: 1.4 V max.	0.2 ms max.	0.3 ms max.	0.1 mA max.	8 pts.	5 A	30 mA, 12 to 48 VDC min.	140 mA max.	C200H-OD411
	24 VDC +10%/–15%	2.1 A/pt. 5.2 A/8 pts.						8 A	30 mA, 24 VDC min.		C200H-OD213
		0.8 A/pt. 2.4 A/8 pts.	Residual voltage: 1.5 V max.	1 ms max.	1 ms max.	1 mA max.		None	150 mA, 24 VDC min.		C200H-OD214
	5 to 24 VDC	0.3 A/pt.	10 mA, 5 VDC	1.5 ms max.	2 ms max.	0.1 mA max.			5 to 24 VDC	10 mA max.	C200H-OD216
12 pts.	24 VDC +10%/–15%	0.3 A/pt. 2A/12 pts.	Residual voltage: 1.4 V max.	0.2 ms max.	0.3 ms max.		12 pts.	5 A	25 mA, 24 VDC min.	160 mA max.	C200H-OD211
16 pts.		0.3 A/pt. 4.8 A/12 pts					16 pts.	8 A	35 mA, 24 VDC min.	180 mA max.	C200H-OD212
12 pts.	5 to 24 VDC	0.3 A/pt.	10 mA, 5 VDC	1.5 ms max.	2 ms max.		12 pts.	None	5 to 24 VDC	10 mA max.	C200H-OD217
16 pts.	24 VDC +10%/–15%	1 A/pt. 4 A/16 pts.	Residual voltage: 0.8 V max.	0.1 ms max.	0.3 ms max.		16 pts.		35 mA, 24 VDC min.	160 mA max.	C200H-OD21A

Note: Do not exceed the load current of 8 A per common. No more than 8 outputs can be turned ON simultaneously.

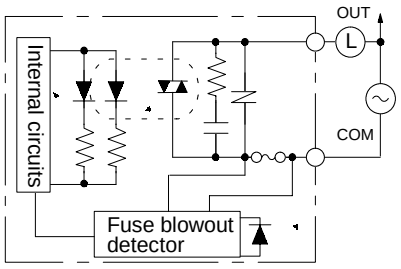
Output Module Circuit Configuration

Relay Output:
OC221, OC222, OC223, OC224, OC225



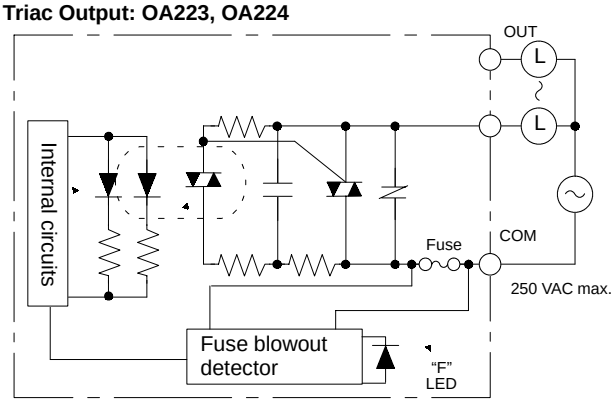
Use either + or – VDC

Triac Output: OA222V, OA121-E



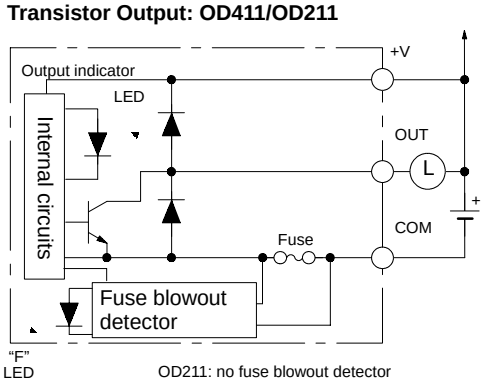
OA222V: no fuse blowout detector

Triac Output: OA223, OA224



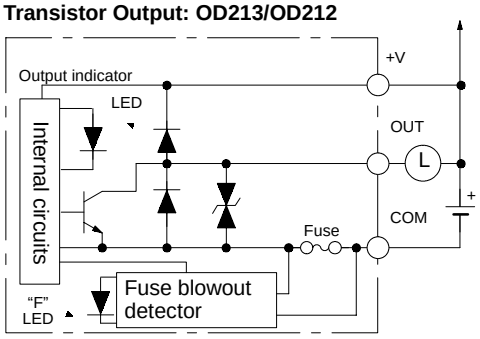
OA224: no fuse blowout detector

Transistor Output: OD411/OD211



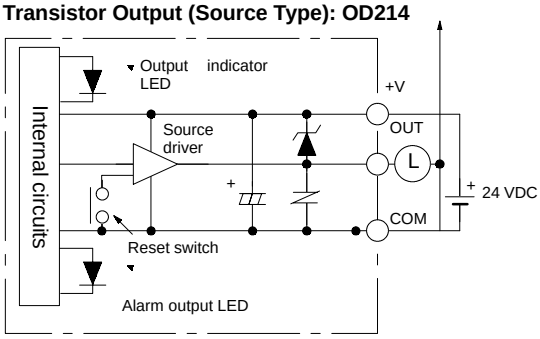
OD211: no fuse blowout detector

Transistor Output: OD213/OD212

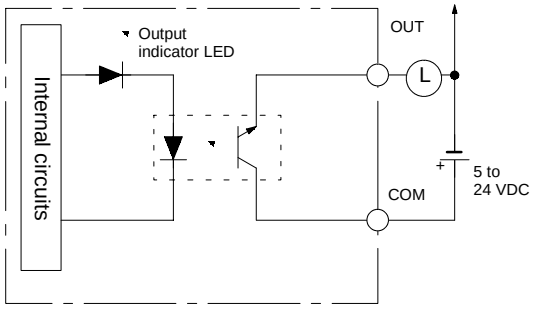


OD212: No fuse blowout detector

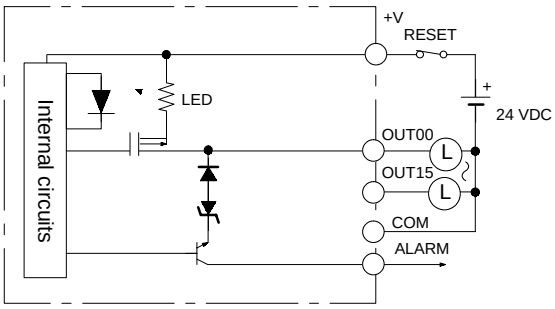
Transistor Output (Source Type): OD214



Transistor Output (Protective Circuit for Load Short-circuit): OD216/OD217



Transistor Output (Source Type with Protective Circuit for Load Short-circuit): OD21A

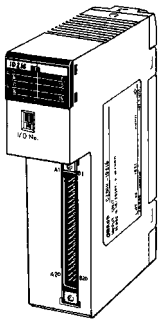


Note: Fuse blowout detection circuit: The F indicator is lit and the 08 bit turns ON. The 08 to 15 bits cannot be used as ordinary IR bits.

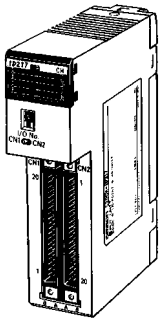
SPECIAL I/O MODULES

HIGH-DENSITY INPUT MODULE SPECIFICATIONS (GROUP-2)

The High-density Input Modules let you pack more input points into a single I/O slot for greater space savings. These modules do not use standard I/O points. Thus, they increase the overall I/O capacity. They provide 32 or 64 discrete input points. The modules can be used with Omron's Terminal Blocks, reducing wiring between control panels, as well as within control panels.



C200H-ID216
(32 DC input pts.)



C200H-ID217
(64 DC input pts.)

Features

- Easy cable connection to Omron's XW2B-□ Terminal Blocks using XW2Z-□ Connecting Cable. Refer to the *Standard Parts* section for detailed ordering information.
- Up to ten 64-point modules or 32-point modules per PLC

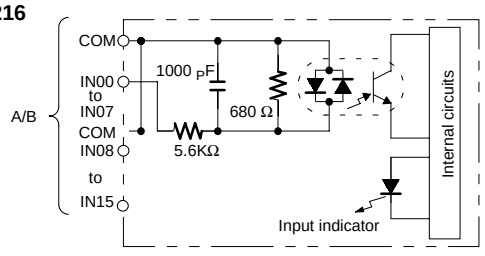
Note: The ambient temperature affects the number of points that can be ON simultaneously.

Specifications

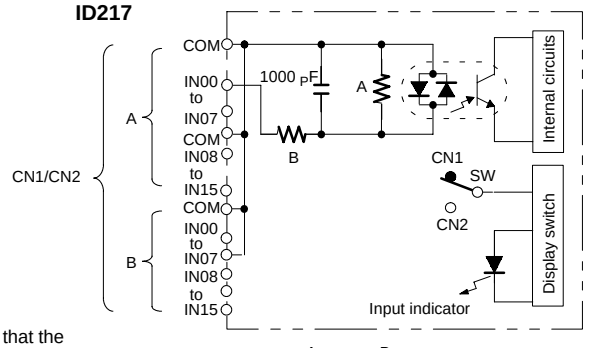
PART NUMBER	C200H-ID216	C200H-ID217
Number of inputs	32 points	64 points
Rated input voltage	24 VDC $^{+10\%}/_{-15\%}$	
Input current	4.1 mA typical at 24 VDC	
Input impedance	5.6 kΩ	
ON voltage	14.4 VDC min.	
OFF voltage	5.0 VDC max.	
Input ON delay	1.0 ms max.	
Input OFF delay	1.0 ms max.	
Isolation	Photocoupler	
Input indicator	LED	
External connections	Connector	
Number of circuits (see note)	32 points with one common	64 points with two commons
Internal power consumption	100 mA max. at 5 VDC	120 mA max. at 5 VDC
Weight	180 g max.	250 g max.
Manual	W302	

Circuit Configuration

ID216



ID217

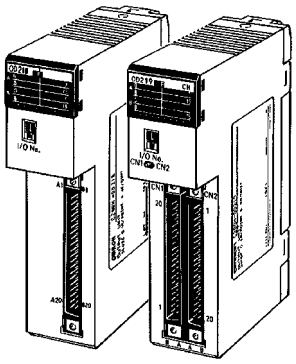


	A	B
ID111:	820 Ω	2.7 kΩ
ID217:	680 Ω	5.6 kΩ

Note:
1. The polarity of the input power supply source can be positive or negative provided that the polarity of each common is the same.
2. Although each COM is internally connected, wire them all.
3. The mountable number of High-density I/O Modules varies with the CPU. No High-density I/O Module can be mounted to the Slave Rack.

SPECIAL I/O MODULES

HIGH-DENSITY OUTPUT MODULE SPECIFICATIONS (GROUP-2)



C200H-OD218
(32 DC output pts.)

C200H-OD219
(64 DC output pts.)

Using the High-density Output Modules, you pack more output points into a single I/O slot for greater space savings. These modules increase the overall I/O capacity, while not using standard I/O points. They provide 32 or 64 discrete output points. The modules can be used with Omron's Terminal Blocks and Cables, reducing wring between control panels, as well as within control panels.

Features

- Easy cable connection to Omron's XW2B-□ Terminal Blocks using XW2Z-□ Connecting Cable. Refer to the *Standard Parts* section for detailed ordering information.
- Up to ten 64-point modules or 32-point modules per PLC

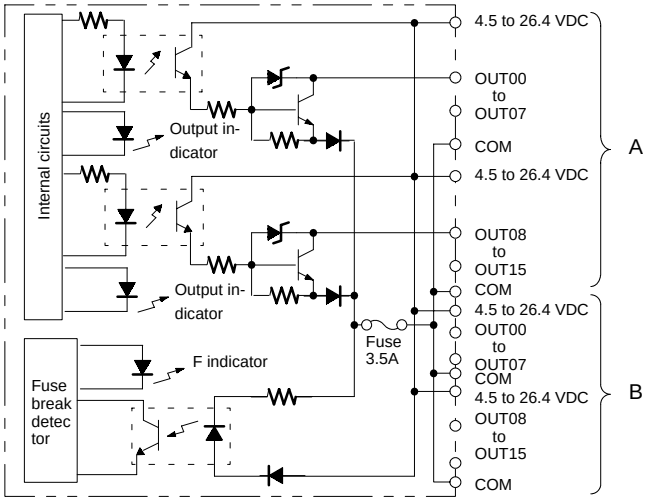
Specifications

PART NUMBER	C200H-OD218	C200H-OD219
Number of outputs	32 points	64 points
Max. switching capacity	16 mA at 4.5 V to 100 mA at 26.4 V	
Leakage current	0.1 mA max.	
Residual voltage	0.8 V max.	
Input ON delay	0.1 ms max.	
Input OFF delay	0.4 ms max.	
Output indicator	LED	
External connections	Connector	
Number of circuits	32 points with one common	64 points with two commons
Fuse (see note)	3.5 A (one/common)	
External power supply	110 mA (3.4 mA per ON pt) min. at 5 to 24 VDC ±10%	220 mA (3.4 mA per ON pt) min. at 5 to 24 VDC ±10%
Internal power consumption	180 mA max. at 5 VDC	260 mA max. at 5 VDC
Manual	W302	

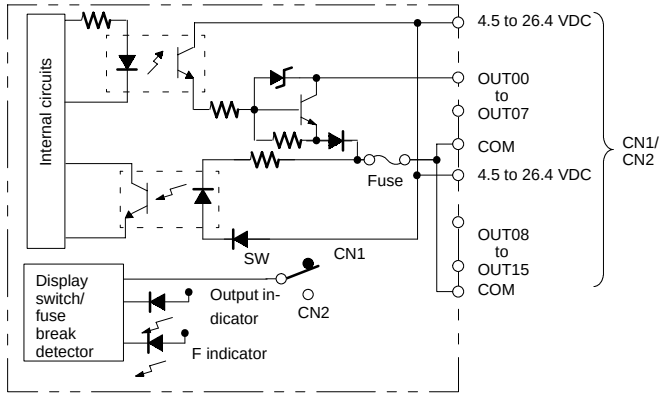
Note: The fuse is not user replaceable.

Circuit Configuration

OD218



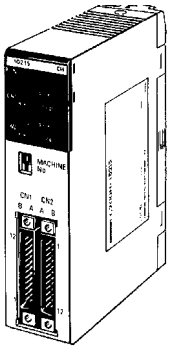
OD219



Note: The number of Group-2 High-density Output Modules is limited by the CPU model. They cannot be used with the Slave Rack.

SPECIAL I/O MODULES

HIGH-DENSITY INPUT MODULE



C200H-ID215 (DC input)
C200H-ID501 (TTL input)

The High-density Input Modules let you pack more input points into a single I/O slot for greater space savings. Functioning as as Special I/O modules, they do not use standard I/O points. Thus, they increase the overall I/O capacity. They provide 32 discrete input points with selectable response times of 2.5 ms or 15 ms. For even shorter signals, 8 inputs can be designated as quick-response inputs, to receive selectable 1 ms or 4 ms signals. The modules can also be used with Omron's Terminal Blocks, reducing wiring between control panels as well as within control panels.

Features

- 8 quick-response inputs available to receive short signals
- Easy cable connection to Omron's XW2B-□ Terminal Blocks using XW2Z-□ Connecting Cable. Refer to the *Standard Parts* section for detailed ordering information.
- Selectable input response time
- LED indicator
- Provides a photocoupler for isolation

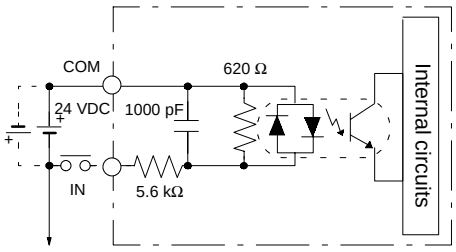
Specifications

PART NUMBER	C200H-ID215	C200H-ID501
MODULE NAME	DC INPUT MODULE	TTL INPUT MODULE
No. of inputs	32	
Input voltage and input current	24 VDC ±10%/–15% 4.1 mA, 24 VDC	5 VDC ±10%; 3.5 mA, 5 VDC
Operating voltages	ON: 14.4 VDC min. OFF: 5.0 VDC max.	ON: 3.0 VDC min. OFF: 1.0 VDC max.
Output response times	ON: 2.5/1.5 ms (selectable) OFF: 2.5/15 ms (selectable)	
Inputs per common	8 pts (4 circuits)	
Internal current consumption	130 mA max. (5VDC)	
Manual	W302	

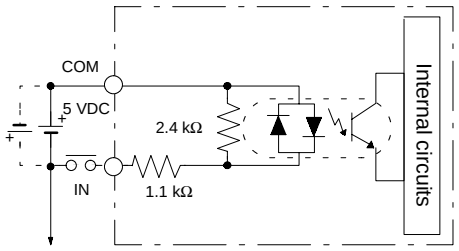
Note: High-density Modules are equipped with quick-response functions and have Special I/O functions. When mounting these models to a SYSMAC BUS Slave, the Remote I/O Master must be the C200H-RM001-PV1 or C200H-RM201.

Circuit Configuration

DC Input: ID215



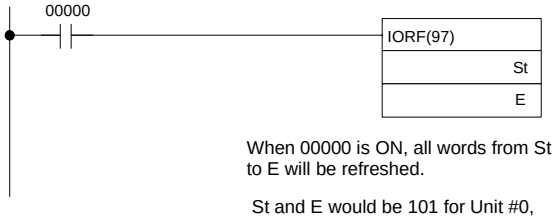
TTL Input: ID501



Connect to either + or – terminal on DC power supply.

I/O Refresh Instruction

The I/O Refresh instruction, IORF(97), can be used with the quick-response input function to read the input status held in the quick-response input buffer whenever needed in a program.



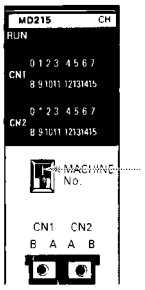
When 00000 is ON, all words from St to E will be refreshed.

St and E would be 101 for Unit #0, making bits IR 10108 to IR 10115 quick-response input bits.

Machine Number Setting and Input Bit No.

When set to machine No.: n (0 to 9), words [100+10n+1] can be used as input bits. Input bits 08 to 15 of word 1n1 can be used as quick-response inputs.

Example: When set to 8, input bits 18108 to 18115 become quick-response inputs.



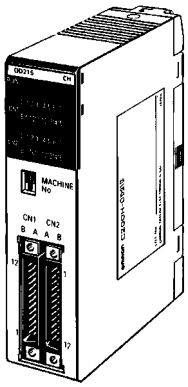
Machine No. setting switch

Quick-response Input Operation and Timing

With quick-response input function these High-density I/O Modules can read short-pulse input signals, such as those from photomicrosensors.
With standard I/O Modules, an input must be ON during the I/O refresh period for it to be read into the PLC. Input signals shorter than the cycle time can be missed, unless they happen to occur during the I/O refresh.
The quick-response input buffer (on our High-density and Mixed I/O Module) is used to hold input signals as short as 1 ms or 4 ms (selectable) allowing them to be read into the IR area during the next I/O refresh. (Any pulse that is equal to or longer than the minimum time setting affects the program during the *next* program execution.)
The quick-response input function is available on input points number 08 to 15 on CN2.

SPECIAL I/O MODULES

HIGH-DENSITY OUTPUT MODULE



C200H-OD215
(32 transistor output pts.)

C200H-OD501
(32 TTL output pts.)

The High-density Output Modules let you pack more output points into a single I/O slot for greater space savings. Treated as Special I/O modules, they do not use standard I/O points. Thus, they increase the overall I/O capacity. In static high-density mode, they provide 32 discrete output points. In this mode, the modules can also be used with Omron's Terminal Blocks, reducing wiring between control panels as well as within control panels. In dynamic multiplex mode, the modules provide 128 dynamic output points. In this mode they can be used with numeric displays, etc.

Features

- Provide 32 outputs per module in static mode
- Easy cable connection to Omron's XW2B-□ Terminal Blocks using XW2Z-□ Connecting Cable. Refer to the *Standard Parts* section for detailed ordering information.
- Provide interface to numeric displays, etc. in dynamic mode

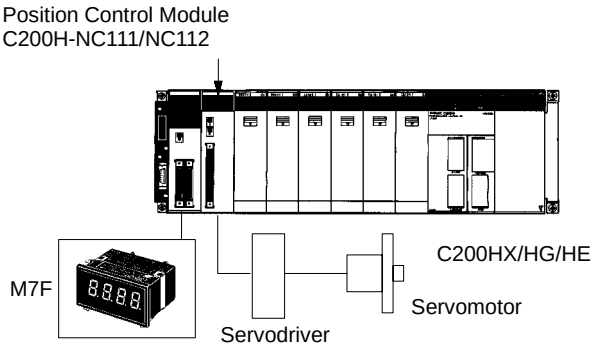
Specifications

PART NUMBER	C200H-OD215	C200H-OD501
MODULE NAME	TRANSISTOR OUTPUT	TTL OUTPUT
No. of outputs	32	
Rated load voltage	5 to 24 VDC +10%/–15%	5 VDC ±10%;
Max. load current	16 mA at 4.5 V to 100 mA at 26.4 V/pt. 800 mA/8 pts. 3.2 A/32 pts.	35 mA/pt. 280 mA/8 pts. 1.12 A/32 pts.
Outputs per common	8 pts	
Output response times	ON: 0.2 ms max. OFF: 0.6 ms max.	ON: 0.2 ms max. OFF: 0.3 ms max.
External connection	connector	
Residual voltage	0.7 V max.	0.4 V max.
Leakage current	0.1 mA max	
External power supply	90 mA, 5 to 24 VDC min.	39 mA, 5 VDC min.
Internal power consumption	220 mA max.	
Manual	W302	

Note: When mounting these models to a Slave Rack, the Remote I/I Master must be the C200H-RM001-PV1 or C200H-RM201.

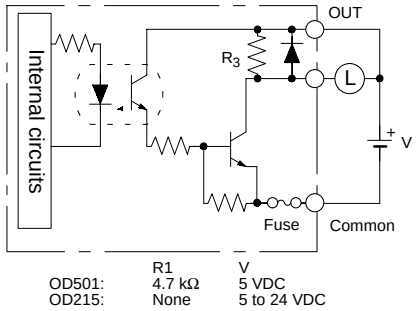
Dynamic Output Mode for Digital Displays

With dynamic outputs, data signals DATA0 to DATA15 are combined with strobe signals STB0 to STB15 to reduce wiring and greatly increase output capacity. The output device must be able to receive dynamic signals.



Circuit Configuration

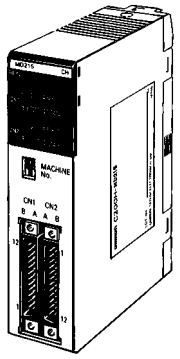
Transistor Output: OD215/TTL Output: OD501



	R1	V
OD501:	4.7 kΩ	5 VDC
OD215:	None	5 to 24 VDC

SPECIAL I/O MODULES

MIXED I/O MODULE



C200H-MD215/MD115
(16 DC input/16 transistor output pts.)

C200H-MD501
(16 TTL input/16 TTL output pts.)

The high-density/multiplex mixed Input/Output modules let you pack more I/O points into a single I/O slot for greater space savings. Treated as Special I/O modules, they do not use standard I/O points. Thus, they increase the overall I/O capacity.

In static high-density mode, they provide 16 discrete input points and 16 discrete output points with selectable input response times of 2.5 ms or 15 ms. For even shorter input signals, 8 inputs can be designated as quick-response inputs, to receive selectable 1 ms or 4 ms signals. In this mode, the modules can also be used with Omron's Terminal Blocks, reducing wiring between control panels as well as within control panels.

In dynamic multiplex input mode, the modules provide 128 dynamic input points. In this mode they can be used with keyboards, thumbwheel switches, etc.

Features

- Provide 16 inputs and 16 outputs per module in static mode; 128 inputs in dynamic mode
- Easy cable connection to Omron's XW2B-□ Terminal Blocks using XW2Z-□ Connecting Cable. Refer to the *Standard Parts* section for detailed ordering information.
- Selectable input response time
- Up to 10 Special I/O modules per PLC
- Provide interface to keyboards, thumbwheel switches, etc. in dynamic mode

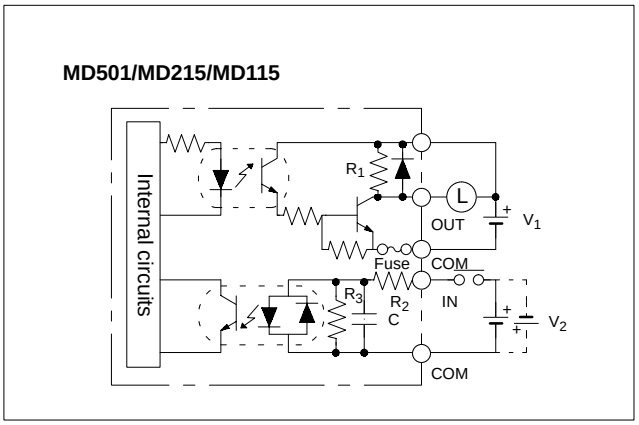
Specifications

MODULE NAME		TTL INPUT/OUTPUT MODULE	DC INPUT/TRANSISTOR OUTPUT MODULE	
PART NUMBER		C200H-MD501	C200H-MD215	C200H-MD115
Inputs	No. of inputs	16 pts		
	Input voltage and current	5 VDC ±10%, 3.5 mA (5 VDC)	24 VDC +10%−15%, 4.1 mA (24 VDC)	12 VDC +10%−15%, 4.1 mA typical (12 VDC)
	Operating voltages	ON: 3.0 V min., OFF: 1.0 V max.	ON: 14.4 V min., OFF: 5.0 V max.	ON: 8.0 V min., OFF: 3.0 V max.
	Input response times	ON/OFF: 2.5 ms/15 ms (selectable)		
	Isolations	Photocoupler		
	Inputs per common	8 pts		
Outputs	No. of outputs	16 pts		
	Rated load voltage	5 VDC	5 to 24 VDC	12 VDC
	Max. load current	35 mA/pt, 280 mA/8 pts	100 mA/pt, 800 mA/8 pts	100 mA/pt, 800 mA/8 pts
	Residual voltage	0.4 V max.	0.7 V max.	
	Output response times	ON: 0.2 ms max., OFF: 0.3 ms max.	ON: 0.2 ms max., OFF: 0.6 ms max.	
	Leakage current	0.1 mA max.		
	Outputs per common	8 pts		
	Fuse	Present (replacement not possible)		
External connection		Connector		
Internal current consumption (5 VDC)		180 mA max.		
Manual		W302		

Note: When mounting any of the above models to a Slave Rack, the Remote I/O Master must be the C200H-RM001-PV1 or C200H-RM201.

Circuit Configuration

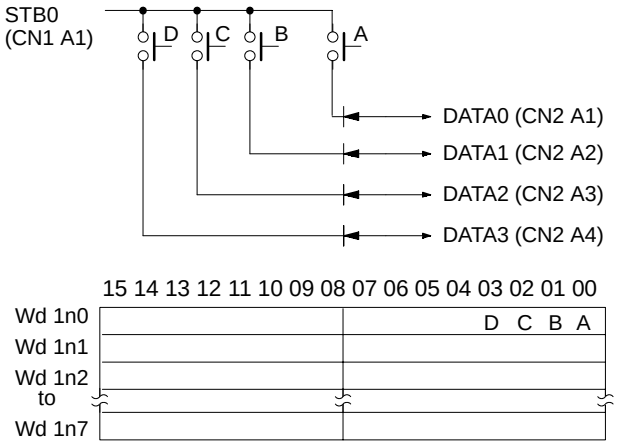
MD501/MD215/MD115



Dynamic Input Mode Operation and Timing

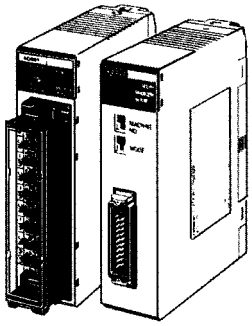
With dynamic inputs, data signals DATA0 to DATA15 are combined with strobe signals STB0 to STB15 to reduce wiring and greatly increase input capacity. For example, when STB0 is ON, as shown to the right, data would be read from DATA0 to DATA3, and the status of switches A through D would be reflected in bits 00 through 03 of word 1n0, where n is the Special I/O Module's unit number.

	R_1	R_2	R_3	C	V_1	V_2
MD501	4.7 kΩ	1.1 kΩ	2.4 kΩ	None	5 VDC	5 VDC
MD215	None	5.6 kΩ	620 Ω	1000 pF	5 to 24 VDC	24 VDC
MD115	None	2.7 kΩ	620 Ω	1000 pF	5 to 24 VDC	12 VDC



SPECIAL I/O MODULES

ANALOG INPUT MODULES



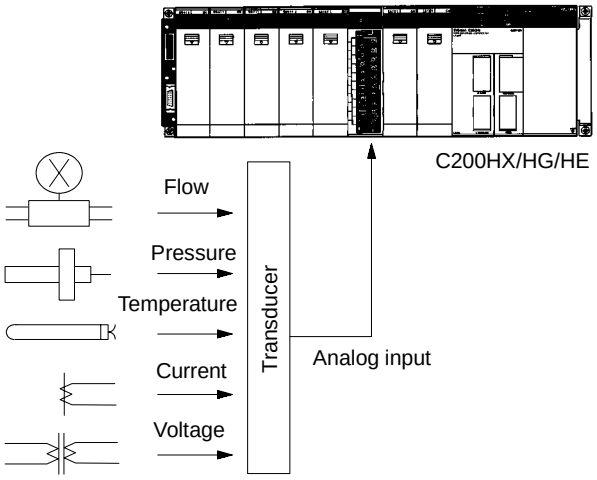
C200H-AD001
C200H-AD002

Analog Input Modules accept a variety of analog signals from external devices, including both voltage and current ranges. Both Modules provide 12-bit resolutions and fast access to the PLC.

Features

- Cost-effective single-slot modules available with 4 or 8 analog inputs
- 12-bit resolution
- Selectable ranges include 1 to 5 V, 0 to 10 V, and 4 to 20 mA

System Configuration



Analog signals, such as voltages and currents, are received from various sensors through the maximum of 8 inputs (AD002) and converted into 12-bit binary data.

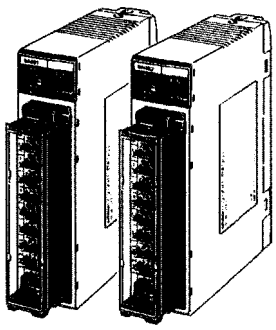
External input signal range can be freely set to cope with diverse needs.

Built-in functions included: the scaling function, mean function, peak hold function, square-root extraction function, and more.

Specifications

PART NUMBER		C200H-AD001	C200H-AD002
Input points		4	8
Voltage input		1 to 5V or 0 to 10 V	1 to 5 V, 0 to 10 V, or −10 to 10 V
	Current input	4 to 20 mA	
External input impedance	Voltage input	1 MΩ min.	
	Current input	250 Ω	
Resolution	Voltage	1/4,000 FS	
	Current		
Total precision	25°C 77.0°F	±0.5% FS	Voltage: ±0.25% FS Current: ±0.4% FS
	0° to 55°C (32° to 131°F)	±1.0% FS	Voltage: ±0.6% FS Current: ±0.8% FS
Conversion speed		2.5 ms max./pt	
Converted data		12-bit binary	12-bit binary or 4-digit BCD code (selectable)
Maximum input signals	Voltage input	±15 V max.	
	Current input	±30 mA max.	
I/O words required		10 (Special I/O area)	
External connections		Terminal block	Connector
Current consumption		550 mA max., 5 VDC	450 mA max., 5 VDC
Weight		450 g max.	290 g max.
Manual		W127	W229

Analog Output Module provides an interface to a variety of external analog devices that accept voltage and current ranges, including servo controllers, recorders, and analog gauges.



C200H-DA001

C200H-DA002

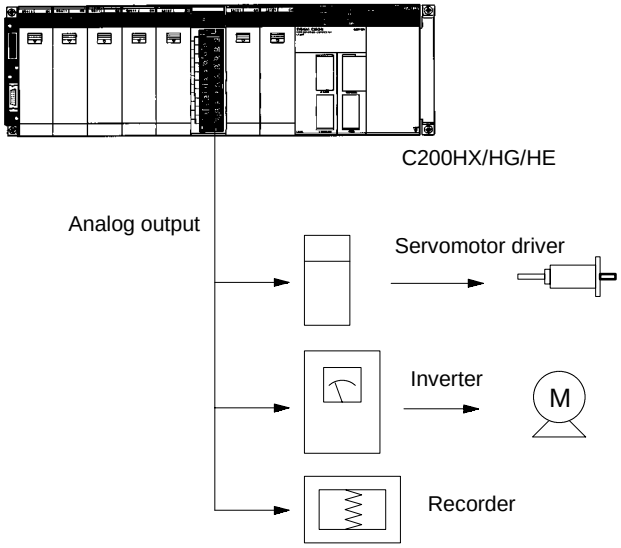
Features

- Cost-effective single-slot module offers two or four analog outputs
- 12-bit resolution
- Selectable ranges include 1 to 5 V, 0 to 10 V, -10 to +10 V, and 4 to 20 mA

Specifications

PART NUMBER		C200H-DA001	C200H-DA002
Output points		2	4
Voltage output		1 to 5V or 0 to 10 V	–10 to 10 V
	Current output	4 to 20 mA	
Resolution	Voltage	1/4,095 FS	1/8,190 FS
	Current	1/4,095 FS	
Total precision	25°C 77.0°F	±0.5% FS	Voltage: ±0.3% FS Current: ±0.5% FS
	0° to 55°C (32° to 131°F)	±1.0% FS	Voltage: ±0.5% FS Current: ±1.0% FS
Conversion speed		2.5 ms max./pt	
External output impedance		0.5 Ω min.	
Maximum external output current	Voltage output	15 mA	10 mA
	Current output	---	
Allowable load resistance of external output	Voltage output	---	
	Current output	400 Ω	350 Ω
Converted data		12-bit binary	Voltage code bit + 12-bit binary Current code bit + 12-bit binary
I/O words required		10 (Special I/O area)	
External connections		Terminal block	Connector
Current consumption		650 mA max., 5 VDC	600 mA max., 5 VDC
Weight		450 g max.	320 g max.
Manual		W127	W260

System Configuration



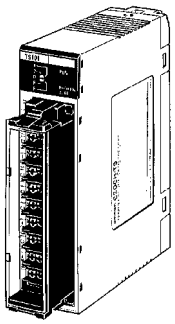
Converts 12-bit binary data into analog signals (voltage or current) for output to external devices.

Output signal range can be freely set to cope with diverse needs.

Built-in functions such as the output limit, upper- and lower-limit alarm, and pulse output functions make the C200HX/HG/HE even more powerful.

SPECIAL I/O MODULES

TEMPERATURE SENSOR MODULES



C200H-TS001
C200H-TS101

Monitor up to 4 temperature sensor inputs directly from the PLC rack. Choose thermocouple inputs (types J and K), or platinum RTD inputs. Each module offers multiple ranges and a choice of Fahrenheit or Celsius scaling.

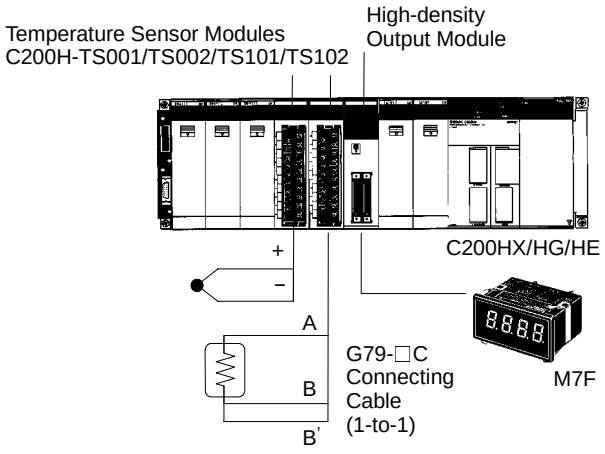
Features

- Available for thermocouple types J and K, or platinum RTD temperature sensors
- Selectable number of inputs
- Wide range of temperature settings

Specifications

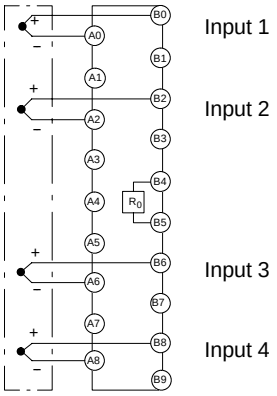
PART NUMBER	C200H-TS001	C200H-TS101
TYPE	THERMOCOUPLE	PLATINUM RESISTANCE THERMOMETER
Temperature sensor	Thermocouples: K (CA), J (IC) (selectable)	RTD (JPt 100 Ω)
Input points	4 points/Unit max. (1, 2, or 4 points can be selected)	
Converted data	±(1% FS + 1°C) max.	
Total precision	4.8 s max. when 4 points/Unit is set 2.4 s max. when 2 points/Unit is set 1.2 s max. when 1 points/Unit is set	
PLC fetch time	Conversion cycle + PLC1 cycle time (5 s max.)	
Insulation	Between points: Uninsulated Between input terminal and PLC signal: Insulated with a photocoupler	
I/O words required	10 (Special I/O area)	
Current consumption	450 mA max., 5 VDC	
Weight	400 g max.	
Manual	W124	

System Configuration

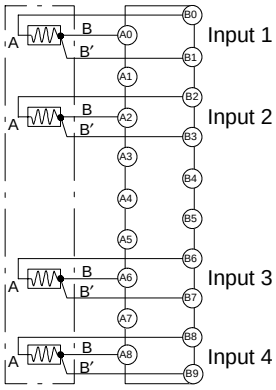


External Connections

C200H-TS001/TS002
Thermocouple Input



C200H-TS101/TS102
Platinum Resistance Thermometer Input



Note: A cold junction compensating circuit, whose precision is adjusted together with the Module, is provided between the B4 and B5 terminals of the C200H-TS001 (for thermocouple).

Temperature Ranges

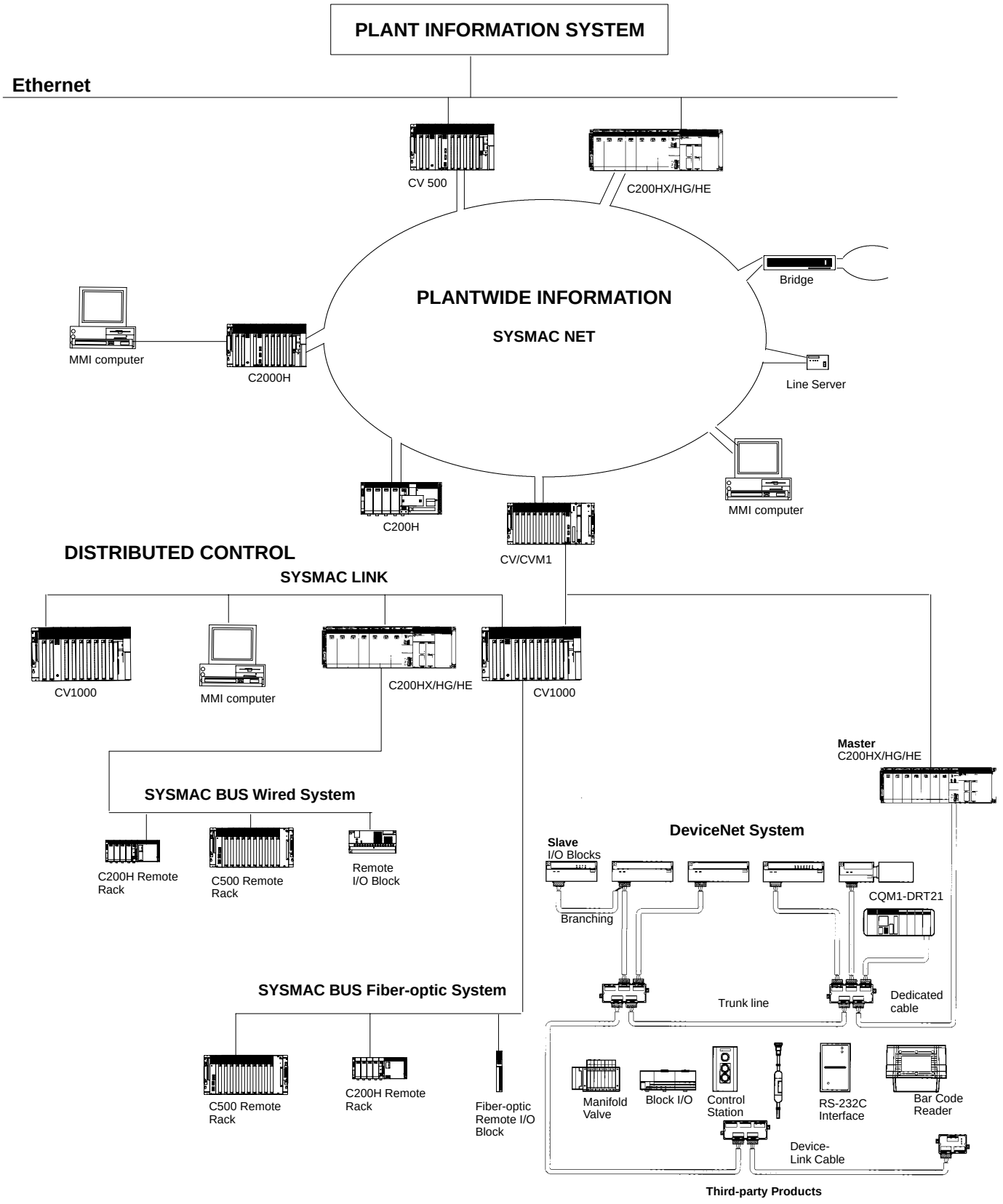
C200H-TS001

Measuring element	Thermocouple		
	K (CA) Chromel/Alumel		J (IC) Iron/Constantan
Unit	°C	°F	°C
Measurement ranges	1,600 1,000 800 600 500 400 300 200 150 100 80 50 0		
Temp, spec code (2-digit BCD)	00 01 02 05 06 07 08	03 04 09 10	11 12 13 14

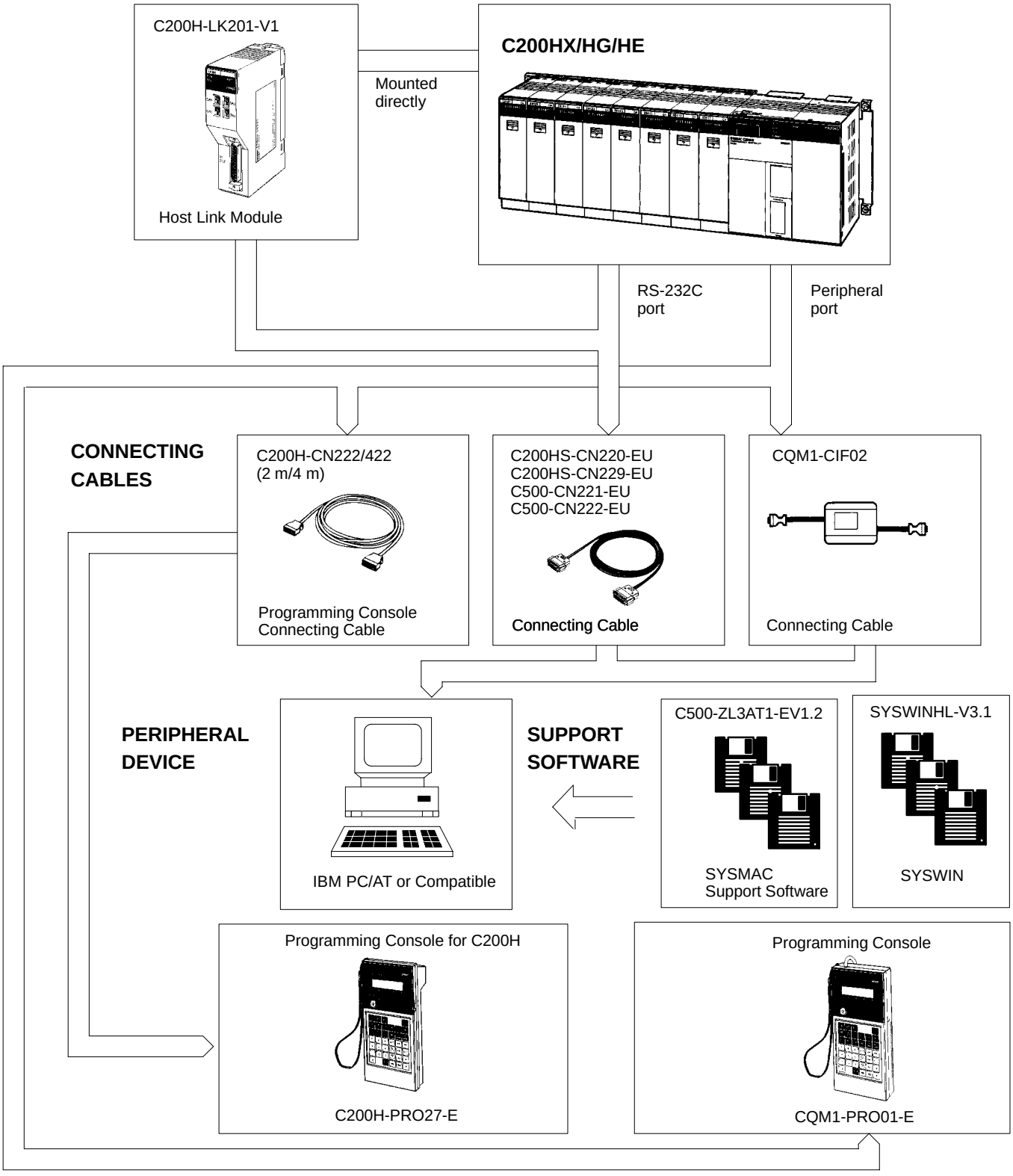
C200H-TS101

Measuring element	Platinum Resistance thermometer	
	Pt 100 Ω	
Unit	°C	°F
Measurement ranges	500 400 300 200 150 100 80 50 0 −20 −50	
Temp, spec code (2-digit BCD)	15 16 17 18 21 22 23	19 20 24 25

Note: Use the IR bit for setting the temperature range. (Common settings for 4 inputs.)


PLANT INFORMATION SYSTEM
Ethernet
CV 500
C200HX/HG/HE
Bridge
PLANTWIDE INFORMATION
SYSMAC NET
MMI computer
C2000H
Line Server
C200H
CV/CVM1
MMI computer
DISTRIBUTED CONTROL
SYSMAC LINK
CV1000
MMI computer
C200HX/HG/HE
CV1000
Master
C200HX/HG/HE
SYSMAC BUS Wired System
C200H Remote Rack
C500 Remote Rack
Remote I/O Block
DeviceNet System
Slave
I/O Blocks
Branching
CQM1-DRT21
Trunk line
Dedicated cable
SYSMAC BUS Fiber-optic System
C500 Remote Rack
C200H Remote Rack
Fiber-optic Remote I/O Block
Manifold Valve
Block I/O
Control Station
RS-232C Interface
Bar Code Reader
Device-Link Cable
Third-party Products

These are the devices available for programming and diagnostics.

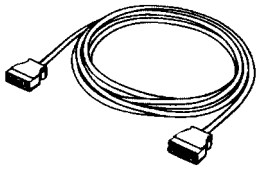


PROGRAMMING PERIPHERALS AND CABLES

OVERVIEW

C200H-PRO27-E Programming Console

CQM1-PRO01-E Programming Console



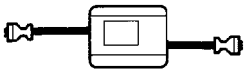
C200H-CN222/422 Programming Console Connecting Cable (2 m/4 m)

Programming Consoles

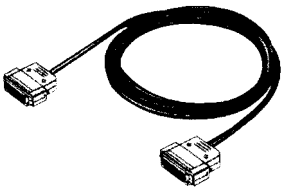
There are two programming consoles that can be used with the C200HX/C200HG/C200HE: The C200H-PRO27-E and the CQM1-PRO01-E. The programming console is a complete on-line and off-line programming and monitoring hand-held console. In addition to programming and monitoring with the programming console, users can verify programs, compare and create I/O tables, monitor multiple I/O, force set/reset bits, and choose from run, monitor, debug or program modes.

The C200H-PRO27-E Programming Console connects to the C200HX/C200HG/C200HE CPU peripheral port with C200H-CN222 or C200H-CN422 Connecting Cable (cable purchased separately).

The CQM1-PRO01-E Programming Console comes with a 2 m connecting cable which connects to the C200HX, C200HG, or C200HE CPU peripheral port.



CQM1-CIF02 Connecting Cable



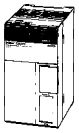
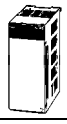
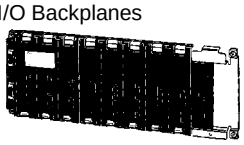
C200HS-CN220-EU C200HS-CN229-EU C500-CN221-EU C500-CN222-EU Connecting Cable

Connecting Cables

There are several cables which allow you to connect a PC to the C200HX/HG/HE for programming and monitoring, using SYSWIN or SSS. The C200HS-CN220-EU (9-pin RS-232C) and the C200HS-CN229-EU (25-pin RS-232C) cables connect a PC to a built-in RS-232C port of the C200HX/HG/HE CPU. The C500-CN221-EU (9-pin RS-232C) and C500-CN222-EU (25-pin RS-232C) cables connect a PC to a rack-mounted C200H-LK201-V1.

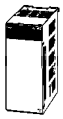
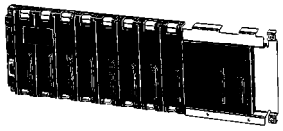
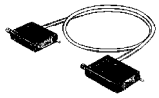
CPU RACK

CPU Rack

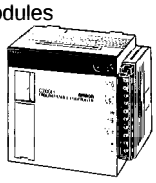
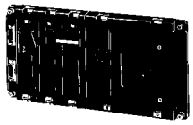
ITEM	DESCRIPTION				PART NUMBER	STANDARDS
CPUs (All models are provided with clock function and slots for communications except CPU11-E.) 	UM	DM	I/O points	RS-232C		U, C, N, CE
	3.2K words	4K words	640	No	**C200HE-CPU11-E**	
	7.2K words	6K words	880	No	**C200HE-CPU32-E**	
		8K words		Yes	**C200HE-CPU42-E**	
	15.2K words	12K words		No	**C200HG-CPU33-E**	
				Yes	**C200HG-CPU43-E**	
			1,184	No	**C200HG-CPU53-E**	
				Yes	**C200HG-CPU63-E**	
	31.2K words	24K words	880	No	**C200HX-CPU34-E**	
				Yes	**C200HX-CPU44-E**	
			1,184	No	**C200HX-CPU54-E**	
				Yes	**C200HX-CPU64-E**	
Power Supply Modules 	100 to 120/200 to 240 VAC				**C200HW-PA204**	
	100 to 120/200 to 240 VAC (with 24-VDC output terminals)				**C200HW-PA204S**	
	24 VDC				**C200HW-PD024**	
CPU I/O Backplanes 	3 slots				**C200HW-BC031**	
	5 slots				**C200HW-BC051**	
	8 slots				**C200HW-BC081**	
	10 slots				**C200HW-BC101**	
Communication Boards 	Communications port for SYSMAC LINK and SYSMAC NET Link Modules				**C200HW-COM01**	
	RS-232C port				**C200HW-COM02**	
	RS-422/485 port				**C200HW-COM03**	
	Communications port for the SYSMAC LINK Module and SYSMAC NET Link Module and a protocol macro function				**C200HW-COM04-E**	
	Two RS-232C ports and a protocol macro function				**C200HW-COM05-E**	
	RS-422/485 port, an RS-232C port, and a protocol macro function				**C200HW-COM06-E**	
Memory Cassettes 	EEPROM	4K words			**C200HW-ME04K**	N, CE
		8K words			**C200HW-ME08K**	
		16K words			**C200HW-ME16K**	N
		32K words			**C200HW-ME32K**	N, CE
	EPROM	16K words/32K words			**C200HS-MP16K**	L, CE
		Equivalent to 27256, 150 ns, 12.5 V			**ROM-JD-B**	CE
		Equivalent to 27512, 150 ns, 12.5 V			**ROM-KD-B**	

U: UL, C: CSA, N: NK, L: LLOYD, CE: EC Directives – See OMRON sales representatives for conditions under which UL, CSA, NK, LLOYD, and CE standards were met.

Expansion Rack

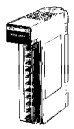
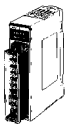
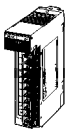
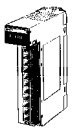
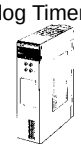
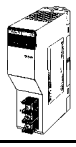
ITEM	DESCRIPTION		PART NUMBER	STANDARDS
Power Supply Modules 	100 to 120/200 to 240 VAC		**C200HW-PA204**	U, C, N, CE
	100 to 120/200 to 240 VAC (with 24-VDC output terminals)		**C200HW-PA204S**	
	24 VDC		**C200HW-PD024**	
Expansion I/O Backplanes 	3 slots		**C200HW-BI031**	
	5 slots		**C200HW-BI051**	
	8 slots		**C200HW-BI081**	
	10 slots		**C200HW-BI0101**	
I/O Connecting Cables 	30 cm	The total length of the I/O Connecting Cables used in a network must be 12 m maximum.	**C200H-CN311**	---
	70 cm		**C200H-CN711**	
	200 cm		**C200H-CN221**	
	500 cm		**C200H-CN521**	
	1,000 cm		**C200H-CN131**	

Slave Rack

Slave Racks	Remote I/O Slave Modules 	100 to 120/200 to 240 VAC (switchable)	APF/ PCF	**C200H-RT001-P**	U, C, N, L
		24 VDC		**C200H-RT002-P**	N, L
		100 to 120/200 to 240 VAC (switchable)	Wired	**C200H-RT201**	U, C, N, L
				C200H-RT201-C	CE
		24 VDC		**C200H-RT202**	N, L, CE
Backplanes		3 slots		**C200H-BC031-V2**	U, C, N, L, CE
		5 slots		**C200H-BC081-V2**	
		8 slots		**C200H-BC051-V2**	
		10 slots		**C200H-BC101-V2**	
I/O Blocks		Input	Specify either 12 or 24 VDC.	**G71-IC16**	U, C, N, L
		Output		**G71-OD16**	
I/O Terminals	AC input	Specify either 100 or 200 VAC.		**G7TC-IA16**	
	DC input	Specify either 12 or 24 VDC.		**G7TC-ID16**	
	Output	Specify either 12 or 24 VDC.		**G7TC-OC16**	
Link Adapter		O/E converter; 1 connector for RS-485, 1 connector each for APF/ PCF		**B500-AL007-P**	

U: UL, C: CSA, N: NK, L: LLOYD, CE: EC Directives – See OMRON sales representatives for conditions under which UL, CSA, NK, LLOYD, and CE standards were met.

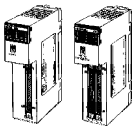
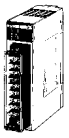
I/O MODULES

ITEM		DESCRIPTION		PART NUMBER	STANDARDS
Input Modules 	AC Input Modules	8 pts	100 to 120 VAC	**C200H-IA121**	U, C, N, L
		16 pts	100 to 120 VAC	**C200H-IA122**	U, C, N, L
		8 pts	200 to 240 VAC	**C200H-IA221**	U, C, N, L
		16 pts	200 to 240 VAC	**C200H-IA222**	
	DC Input Modules	8 pts	12 to 24 VDC	**C200H-ID211**	U, C, N, L, CE
		16 pts	24 VDC	**C200H-ID212**	
	AC/DC Input Modules	8 pts	12 to 24 VAC/DC	**C200H-IM211**	
		16 pts	24 VAC/DC	**C200H-IM212**	
	Interrupt Input Module (see note)	8 pts	12 to 24 VDC	**C200HS-INT01**	U, C
Output Modules 	Relay Output Modules	8 pts	2 A, 250 VAC/24 VDC (for resistive load)	**C200H-OC221**	U, C, N, L
		12 pts	2 A, 250 VAC/24 VDC (for resistive load)	**C200H-OC222**	
		5 pts	2 A, 250 VAC/24 VDC (for resistive load) Independent commons	**C200H-OC223**	
		8 pts	2 A, 250 VAC/24 VDC (for resistive load) Independent commons	**C200H-OC224**	
		16 pts	2 A, 250 VAC/24 VDC (for resistive load) (see note)	**C200H-OC225**	
	Triac Output Modules	8 pts	1 A, 120 VAC	**C200H-OA121-E**	U, C
		8 pts	1 A, 200 VAC	**C200H-OA223**	N, L, CE
		12 pts	0.3 A, 200 VAC	**C200H-OA222V**	CE
	Transistor Output Modules	8 pts	1 A, 12 to 48 VDC	**C200H-OD411**	U, C, N, L, CE
		12 pts	0.3 A, 24 VDC	**C200H-OD211**	
		16 pts	0.3 A, 24 VDC (see note)	**C200H-OD212**	
		8 pts	2.1 A, 24 VDC	**C200H-OD213**	
		8 pts	0.8 A, 24 VDC; source type (PNP); w/load short protection	**C200H-OD214**	U, C, N, L
		8 pts	0.3 A, 5 to 24 VDC; source type (PNP)	**C200H-OD216**	
		12 pts	0.3 A, 5 to 24 VDC; source type (PNP)	**C200H-OD217**	
		16 pts	1 A, 24 VDC; source type (PNP); w/load short protection	**C200H-OD21A**	CE
Analog Timer Module 		4 timers	0.1 to 1 s/1 to 10 s/10 to 60 s/1 min to 10 min (switchable)	**C200H-TM001**	U, C
	Variable Resistor Connector	Connector w/lead wire (2 m) for 1 external resistor		**C4K-CN223**	---
B7A Interface Modules 		15 or 16 input pts	Connects to B7A Link Terminals. Standard transmission delay.	**C200H-B7AI1**	U, C, CE
		16 output pts	Connects to B7A Link Terminals. Standard transmission delay.	**C200H-B7AO1 (see note)**	

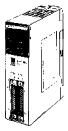
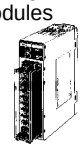
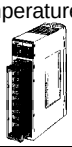
Note: If the Interrupt Input Module is mounted on an Expansion I/O Rack, the interrupt function cannot be used and the Interrupt Input Module will be treated as an ordinary 8-point Input Module. Moreover, Interrupt Input Modules cannot be used on Slave Racks.

U: UL, C: CSA, N: NK, L: LLOYD, CE: EC Directives – See OMRON sales representatives for conditions under which UL, CSA, NK, LLOYD, and CE standards were met.

Group-2 I/O Modules

ITEM		DESCRIPTION		PART NUMBER	STANDARDS
	DC Input Modules	32 pts	24 VDC	**C200H-ID216**	U, C, N, L, CE
		64 pts		**C200H-ID217**	
	Transistor Output Modules	32 pts	16 mA at 4.5 V to 100 mA at 26.4 V	**C200H-OD218**	U, C, N, L
		64 pts		**C200H-OD219**	
B7A Interface Modules (GROUP 2 I/O MODULES) 		32 input pts	Connects to B7A Link Terminals. Standard or high-speed transmission delay.	**C200H-B7A12**	---
		32 output pts		**C200H-B7A02**	
		16 input and 16 output points		**C200H-B7A21**	
		32 input and 32 output points		**C200H-B7A22**	

Special I/O Modules

ITEM		DESCRIPTION		PART NUMBER	STANDARDS
High-density I/O Modules (see note 1)  	DC Input Modules	32 pts	5 VDC (TTL inputs); w/high-speed input	**C200H-ID501**	U, C, N, L, CE
		32 pts	24 VDC; w/high-speed input	**C200H-ID215**	
	Transistor Output Modules	32 pts	0.1 A, 24 VDC (useable as 128-point dynamic output unit)	**C200H-OD215**	
		32 pts	35 mA, 5 VDC (TTL outputs) (useable as 128-point dynamic output unit)	**C200H-OD501**	
	DC Input/Transistor Output Modules	16 input and 16 output pts	24-VDC inputs; w/high-speed input; 0.1-A, 24-VDC outputs (useable as 128-point dynamic input unit)	**C200H-MD215**	
		16 input and 16 output pts	5-VDC TTL inputs; w/high speed input; 35-mA, 5-VDC TTL outputs (useable as 128-point dynamic input unit)	**C200H-MD501**	
		16 input and 16 output pts	12-VDC TTL inputs; w/high speed input; 12-VDC TTL outputs (useable as 128-point dynamic input unit)	**C200H-MD115**	N, L
Analog I/O Modules 	Analog Input Modules	4 to 20 mA, 1 to 5/0 to 10 V (switchable); 4 inputs; 12 bits		**C200H-AD001**	U, C, N, L
		4 to 20 mA, 1 to 5/0 to 10 V/–10 to 10V (switchable); 8 inputs; 12 bits or BCD		**C200H-AD002**	
	Analog Output Modules	4 to 20 mA, 1 to 5/0 to 10 V (switchable); 2 outputs		**C200H-DA001**	
		4 to 20 mA, –10 to 10 V; 4 outputs		**C200H–DA002**	---
Fuzzy Logic Module 		Programmed using the Fuzzy Support Software.		**C200H-FZ001**	N
	Fuzzy Support Software	Available on either 3.5” or 5.25” floppy disks.		**C500-SU981-E**	---
Temperature Sensor Module 		Thermocouple	K(CA) or J(IC), switchable; 4 inputs	**C200H-TS001**	U, C
			K(CA) or L(Fe-CuNi) DIN standards; 4 inputs	**C200H-TS002**	
		Pt resistance thermometer	Pt 100 Ω; 4 inputs	**C200H-TS101**	
			Pt 100 Ω; 4 inputs; DIN and 1989 JIS standards	**C200H-TS102**	

U: UL, C: CSA, N: NK, L: LLOYD, CE: EC Directives – See OMRON sales representatives for conditions under which UL, CSA, NK, LLOYD, and CE standards were met.