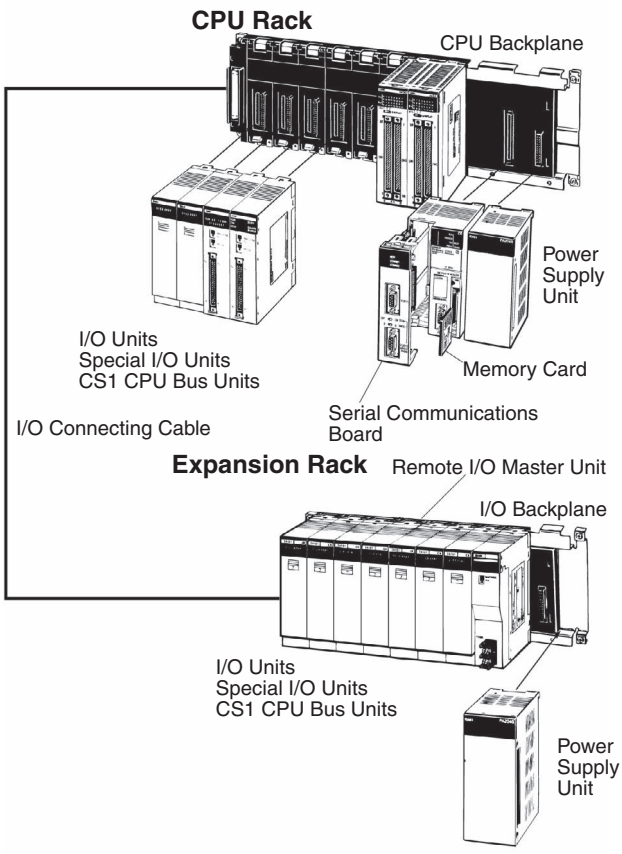
Basic System Configuration



CPU Rack

A CPU Rack consists of a CPU Unit, Power Supply Unit, CPU Backplane, Basic I/O Units, Special I/O Units, and CPU Bus Units. The Serial Communications Board and Memory Cards are optional.

Note: The Backplane depends on the type of CPU Rack, Expansion I/O Racks, and Slave Racks that are used.

Expansion Racks

Both C200H and CS1 Expansion Racks can be used.

- C200H Expansion I/O Racks can be connected to CPU Racks, CS1 Expansion Racks, or other C200H Expansion I/O Racks.
- CS1 Expansion Racks can be connected to CPU Racks or other CS1 Expansion Racks.

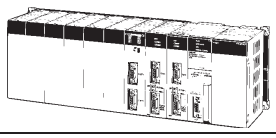
An Expansion Rack consists of a Power Supply Unit, a CS1 or C200H Expansion I/O Backplane, Basic I/O Units, Special I/O Units, and a CS1 CPU Bus Units.

Long-distance Expansion Racks

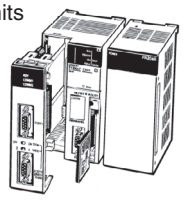
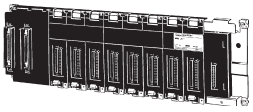
An I/O Control Unit and I/O Interface Units can be used to extend the normal limit of 12 m to 50 m for each of two series of CS1 Expansion Racks. The following Units can be mounted to Long-distance Expansion Racks: CS1 Basic I/O Units, CS1 Special I/O Units, and CS1 CPU Bus Units. (C200H Units cannot be mounted to Long-distance Expansion Racks.)

CPU Rack

Configuration

Name	Configuration	Remarks
CPU Rack 	CPU Backplane	One of each Unit required for every CPU Rack. Refer to the following table for model number.
	CPU Unit	
	Power Supply Unit	
	Memory Card	Install as required. Refer to the following table for model number.
	Serial Communications Board	

Products Used in CPU Racks

Name	Model	Specifications	
CPU Units 	CS1H-CPU67H	I/O bits: 5,120, Program capacity: 250 kSteps Data Memory: 448 kWords (DM: 32 kWords, EM: 32 kWords x 13 banks)	
	CS1H-CPU66H	I/O bits: 5,120, Program capacity: 120 kSteps Data Memory: 256 kWords (DM: 32 kWords, EM: 32 kWords x 7 banks)	
	CS1H-CPU65H	I/O bits: 5,120, Program capacity: 60 kSteps Data Memory: 128 kWords (DM: 32 kWords, EM: 32 kWords x 3 banks)	
	CS1H-CPU64H	I/O bits: 5,120, Program capacity: 30 kSteps Data Memory: 64 kWords (DM: 32 kWords, EM: 32 kWords x 1 bank)	
	CS1H-CPU63H	I/O bits: 5,120, Program capacity: 20 kSteps Data Memory: 32 kWords (DM: 32 kWords, EM: 32 kWords x 1 bank)	
	CS1G-CPU45H	I/O bits: 5,120, Program capacity: 60 kSteps Data Memory: 128 kWords (DM: 32 kWords, EM: 32 kWords x 3 banks)	
	CS1G-CPU44H	I/O bits: 1,280, Program capacity: 30 kSteps Data Memory: 64 kWords (DM: 32 kWords, EM: 32 kWords x 1 banks)	
	CS1G-CPU43H	I/O bits: 960, Program capacity: 20 kSteps Data Memory: 64 kWords (DM: 32 kWords, EM: 32 kWords x 1 bank)	
	CS1G-CPU42H	I/O bits: 960, Program capacity: 10 kSteps Data Memory: 64 kWords (DM: 32 kWords, EM: 32 kWords x 1 bank)	
CPU Backplanes 	CS1W-BC022	2 slots (Connection to Expansion Backplane is not possible.)	These Backplanes are for CS1 Units only. Use CS1W-BC□□3 Backplanes if C200H Units are to be installed.
	CS1W-BC032	3 slots	
	CS1W-BC052	5 slots	
	CS1W-BC082	8 slots	
	CS1W-BC102	10 slots	

Name	Model	Specifications
Power Supply Units 	C200HW-PA204	100 to 120 V AC or 200 to 240 V AC, Output capacity: 4.6 A, 5 V DC
	C200HW-PA204S	100 to 120 V AC or 200 to 240 V AC (0.8 A 24 V DC service power) Output capacity: 4.6 A, 5 V DC
	C200HW-PA204R	100 to 120 V AC or 200 to 240 V AC (with RUN output) Output capacity: 4.6 A, 5 V DC
	C200HW-PD024	24 V DC, Output capacity: 4.6 A, 5 V DC
	C200HW-PA209R	100 to 120 V AC or 200 to 240 V AC (with RUN output) Output capacity: 9 A, 5 V DC
I/O Control Unit	CS1W-IC102	Connects to CS1 Expansion Racks (two Terminating Resistors included). Must be used together with I/O Interface Units to connect Long-distance Expansion Racks (50 m max.). Not required to connect CS1 Expansion Racks within 12 m.
Memory Cards 	HMC-EF372	Flash memory, 30 MB
	HMC-EF672	Flash memory, 64 MB
	HMC-AP001	Memory Card adapter
Serial Communications Boards	CS1W-SCB21-V1	2 x RS-232C ports, protocol macro function
	CS1W-SCB41-V1	1 x RS-232C port + 1 x RS-422/485 port, protocol macro function
Programming Consoles	CQM1-PRO01-E	An English Keyboard Sheet (CS1W-KS001-E) is required.
	C200H-PRO27-E	
Programming Console Connection Cables	CS1W-CN114	Connects the CQM1-PRO01-E Programming Console. (Length: 0.05 m)
	CS1W-CN224	Connects the C200H-PRO27-E Programming Console. (Length: 2.0 m)
	CS1W-CN624	Connects the C200H-PRO27-E Programming Console. (Length: 6.0 m)
CX-One	CX-ONE-AL##C-E*1	Omron's integrated software for programming and configuration of all control system components, including PLCs, HMI, drives, temperature controllers and advanced sensors.
Programming Device Connecting Cables (for peripheral port)	CS1W-CN118	Connects DOS computer, D-Sub 9-pin receptacle (Length: 0.1 m)
	CS1W-CN226	Connects DOS computer, D-Sub 9-pin (Length: 2.0 m)
	CS1W-CN626	Connects DOS computer, D-Sub 9-pin (Length: 6.0 m)
	XW2Z-200S-CV	Connects DOS computer, D-Sub 9-pin (Length: 2.0 m)
	XW2Z-500S-CV	Connects DOS computer, D-Sub 9-pin (Length: 5.0 m)
Programming Device Connecting Cable (for RS-232C port)	XW2Z-200S-V	Connects DOS computer, D-Sub 9-pin (Length: 2.0 m) (For Host Link connection)
	XW2Z-500S-V	Connects DOS computer, D-Sub 9-pin (Length: 5.0 m) (For Host Link connection)
Battery Set	CS1W-BAT01	For CS1 Series only. Note: Use a replacement battery that is no more than 2 years old from the date of manufacture.

*1 ## = Number of licences; 01, 03, 10

Expansion Racks

Expansion Rack Configuration

Rack	Configuration	Remarks
CS1 Expansion Rack	CS1 Expansion I/O Backplane	One of each Unit is required.
	Power Supply Unit	
	For connection to a CPU Backplane or CS1 Expansion I/O Backplane: CS1 I/O Connecting Cable	
	For connection to a C200H Expansion I/O Backplane: CS1 to C200H I/O Connecting Cable	
C200H Expansion I/O Rack	C200H Expansion I/O Backplane	One of each Unit is required. A CS1 Expansion Rack cannot be connected after a C200H Expansion I/O Rack.
	Power Supply Unit	
	For connection to a CPU Backplane or CS1 Expansion I/O Backplane: CS1 to C200H I/O Connecting Cable	
	For connection to a C200H Expansion I/O Backplane: C200H I/O Connecting Cable	

Products Used in Expansion Racks

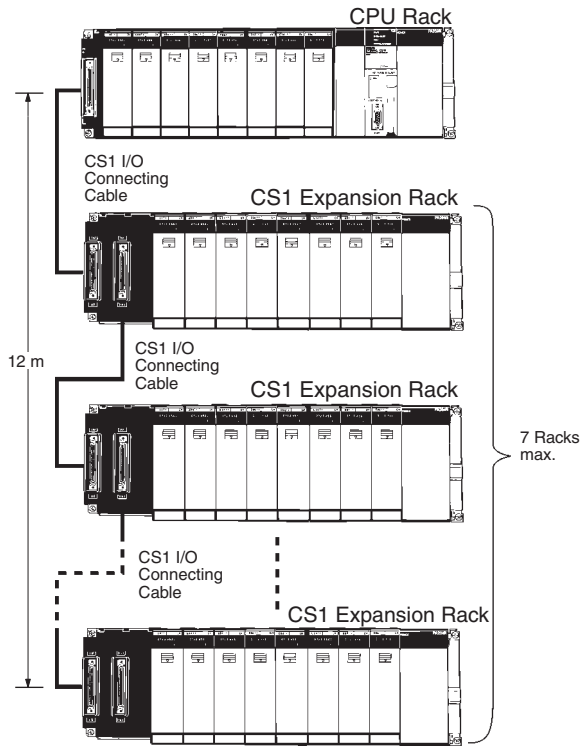
Name	Model	Specifications		Cable Length
CS1 Expansion I/O Backplanes	CS1W-BI032	3 slots	These Backplanes are for CS1 Units only. Use CS1W-BI□□3 Backplanes if C200H Units are to be installed.	---
	CS1W-BI052	5 slots		
	CS1W-BI082	8 slots		
	CS1W-BI102	10 slots		
C200H Expansion I/O Backplanes	C200HW-BI031	3 slots		
	C200HW-BI051	5 slots		
	C200HW-BI081-V1	8 slots		
	C200HW-BI101-V1	10 slots		
Power Supply Units	C200HW-PA204	100 to 120 V AC or 200 to 240 V AC Output capacity: 4.6 A, 5 V DC		
	C200HW-PA204S	100 to 120 V AC or 200 to 240 V AC (with power output terminal: 0.8 A, 24 V DC) Output capacity: 4.6 A, 5 V DC		
	C200HW-PA204R	100 to 120 V AC or 200 to 240 V AC (with RUN output) Output capacity: 4.6 A, 5 V DC		
	C200HW-PA209R	100 to 120 V AC or 200 to 240 V AC (with RUN output) Output capacity: 9 A, 5 V DC		
	C200HW-PD024	24 V DC		

Name	Model	Specifications	Cable Length
I/O Interface Unit	CS1W-II102	Connects CS1 Expansion Racks. Must be used together with I/O Control Unit to connect Long-distance Expansion Racks (50 m max.). Not required to connect CS1 Expansion Racks within 12 m.	---
CS1 I/O Connecting Cables	CS1W-CN313	Connects CS1 Expansion I/O Backplanes to CPU Backplanes or other CS1 Expansion I/O Backplanes. When using a CS1W-CN313 or CS1W-CN713 I/O Connecting Cable with a CS1□-CPU□□H CPU Unit, use only Cables produced on or after September 20, 2001 (production number 2091). Cables with no production number, a 6-digit production number, or produced before September 20, 2001, cannot be used. **Reading the production number** □□□□ Year (e.g., 1997=7) Month (1 to 9, X (10), Y (11), Z (12)) Day (01 to 31)	0.3 m
	CS1W-CN713		0.7 m
	CS1W-CN223		2 m
	CS1W-CN323		3 m
	CS1W-CN523		5 m
	CS1W-CN133		10 m
	CS1W-CN133-B2		12 m
Long-distance Connecting Cables	CV500-CN312	For Long-distance Expansion Racks Connects the I/O Control Unit to I/O Interface Units or connects one I/O Interface Unit to the next I/O Interface Unit.	0.3 m
	CV500-CN612		0.6 m
	CV500-CN122		1 m
	CV500-CN222		2 m
	CV500-CN322		3 m
	CV500-CN522		5 m
	CV500-CN132		10 m
	CV500-CN232		20 m
	CV500-CN332		30 m
	CV500-CN432		40 m
	CV500-CN532		50 m
CS1-C200H I/O Connecting Cables	CS1W-CN311	Connects C200H Expansion I/O Backplanes to CPU Backplanes or CS1 Expansion I/O Backplanes.	0.3 m
	CS1W-CN711		0.7 m
	CS1W-CN221		2 m
	CS1W-CN321		3 m
	CS1W-CN521		5 m
	CS1W-CN131		10 m
	CS1W-CN131-B2		12 m
C200H I/O Connecting Cables	C200H-CN311	Connects C200H Expansion I/O Backplanes to other C200H Expansion I/O Backplanes.	0.3 m
	C200H-CN711		0.7 m
	C200H-CN221		2 m
	C200H-CN521		5 m
	C200H-CN131		10 m

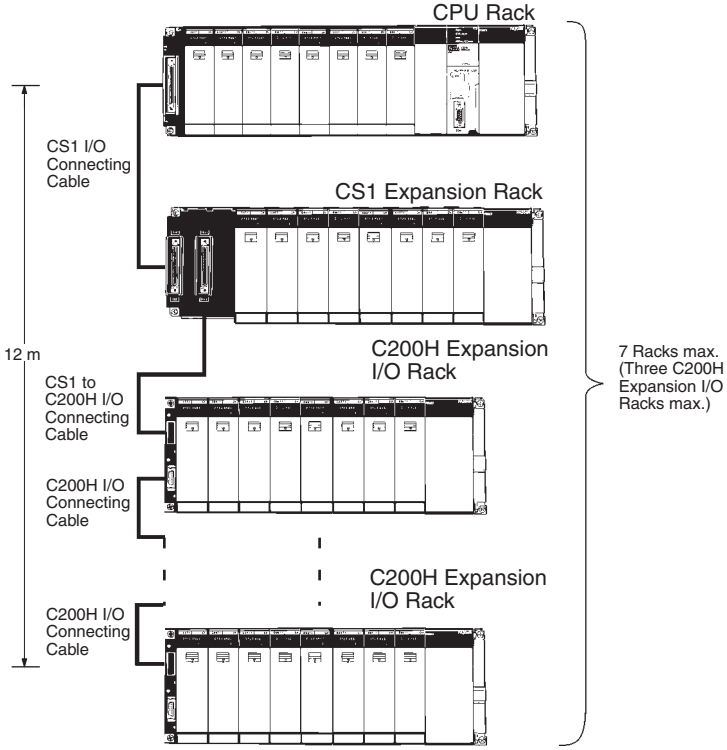
Expansion Rack Patterns

The following diagrams show the 5 possible patterns of Expansion Racks.

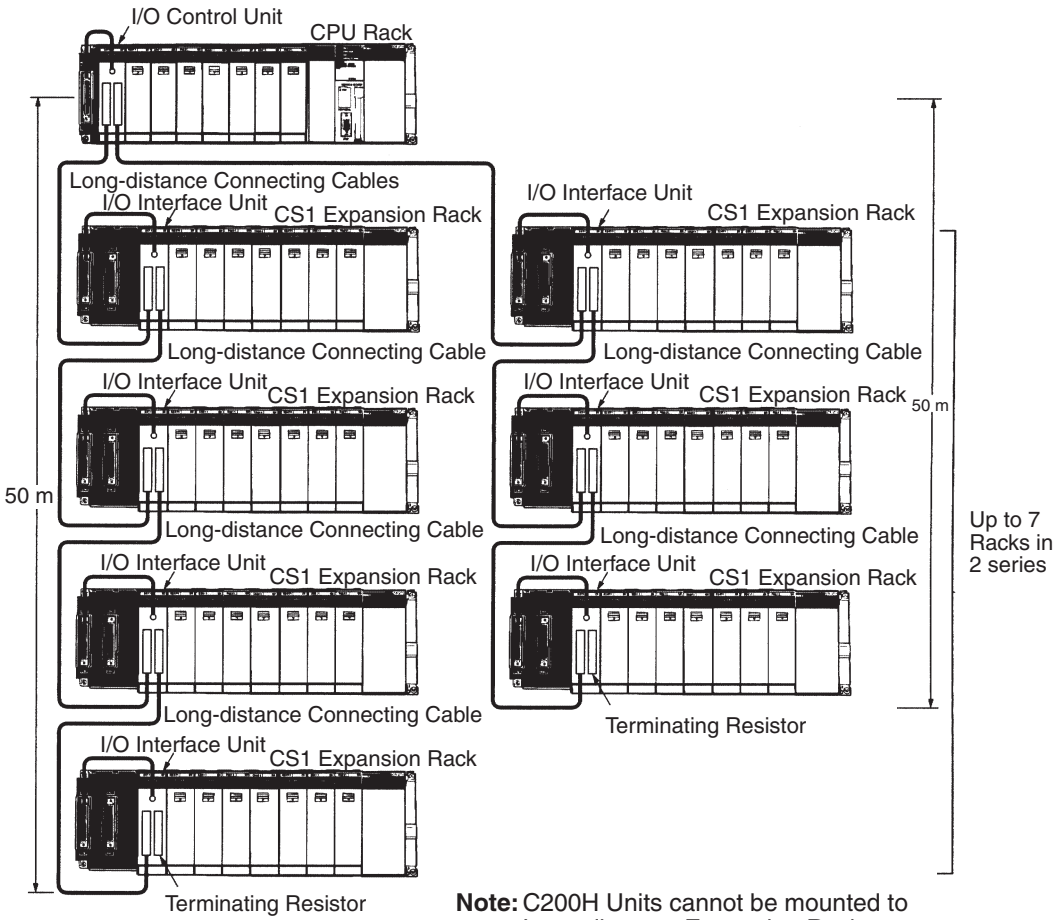
CPU Rack with CS1 Expansion Racks



CPU Rack with CS1 Expansion Racks and C200H Expansion I/O Racks

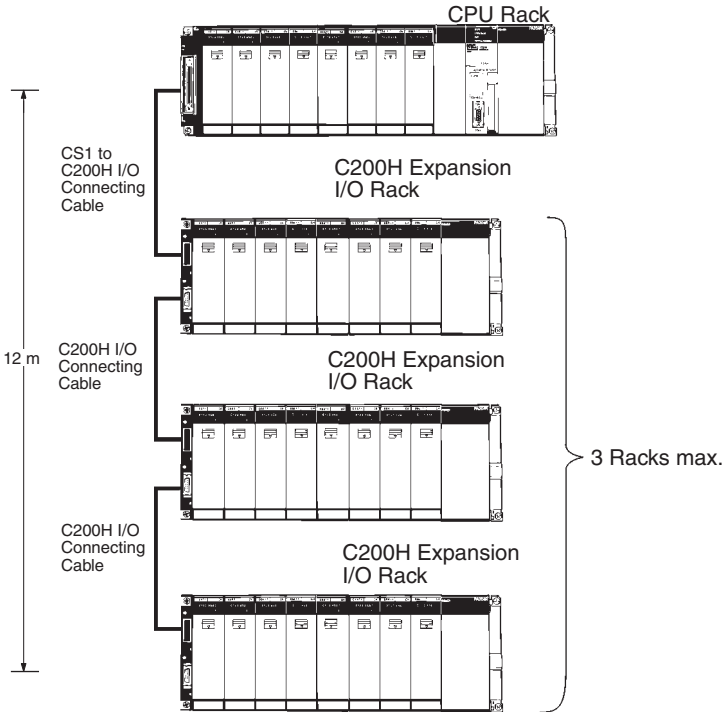


CPU Rack with CS1 Long-Distance Expansion Racks

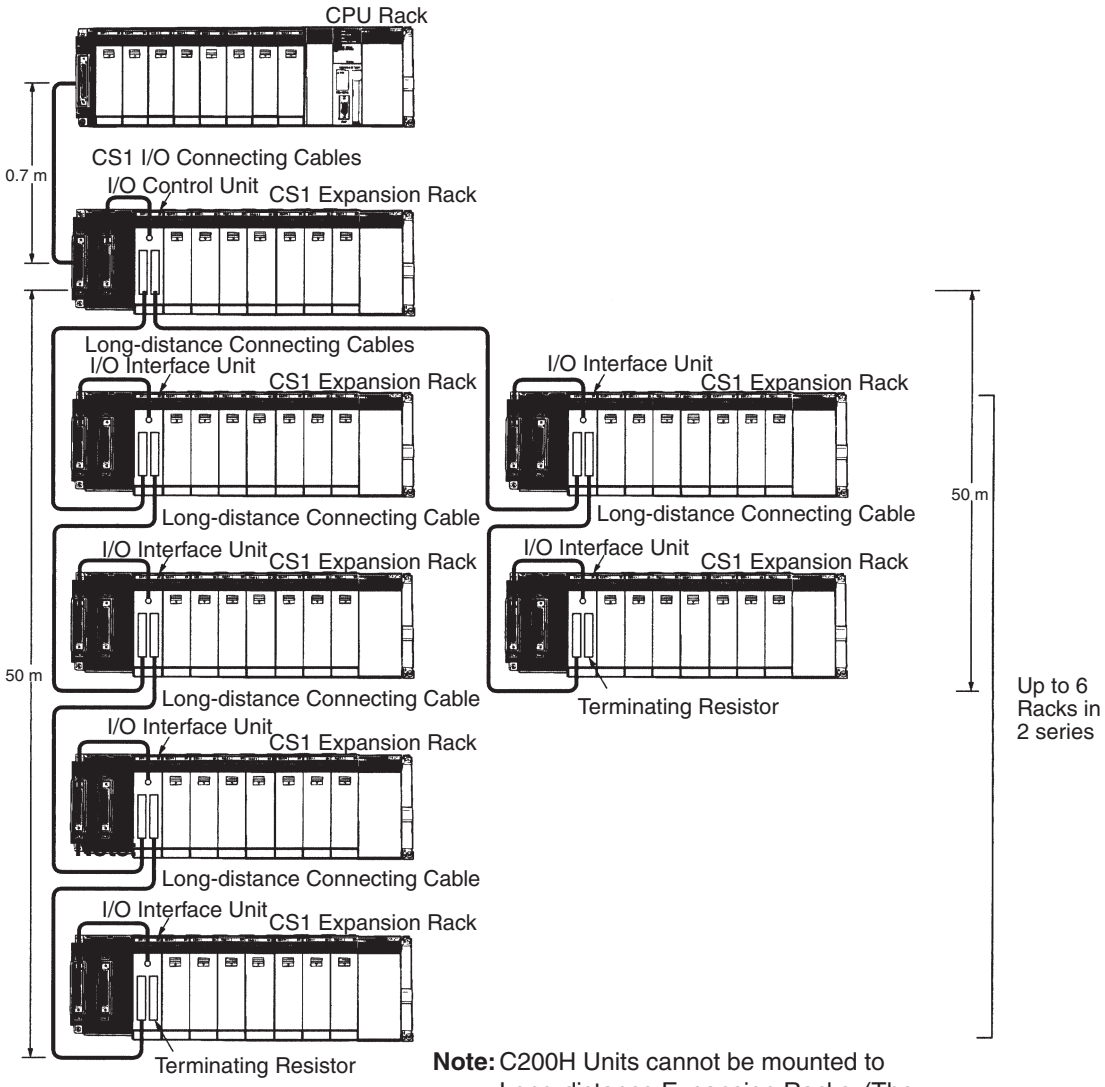


Note: C200H Units cannot be mounted to Long-distance Expansion Racks.

CPU Rack with C200H Expansion I/O Racks



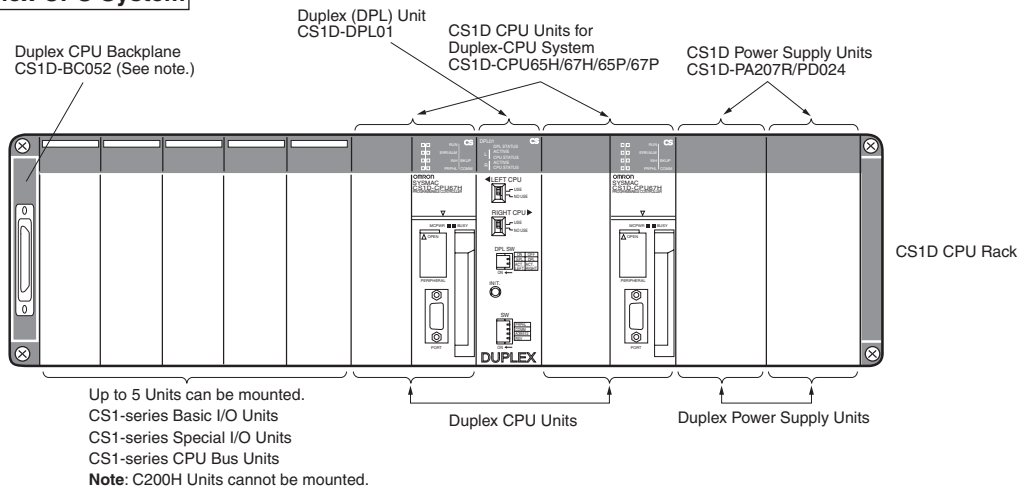
CPU Rack with CS1 Expansion Rack and CS1 Long-Distance Expansion Racks



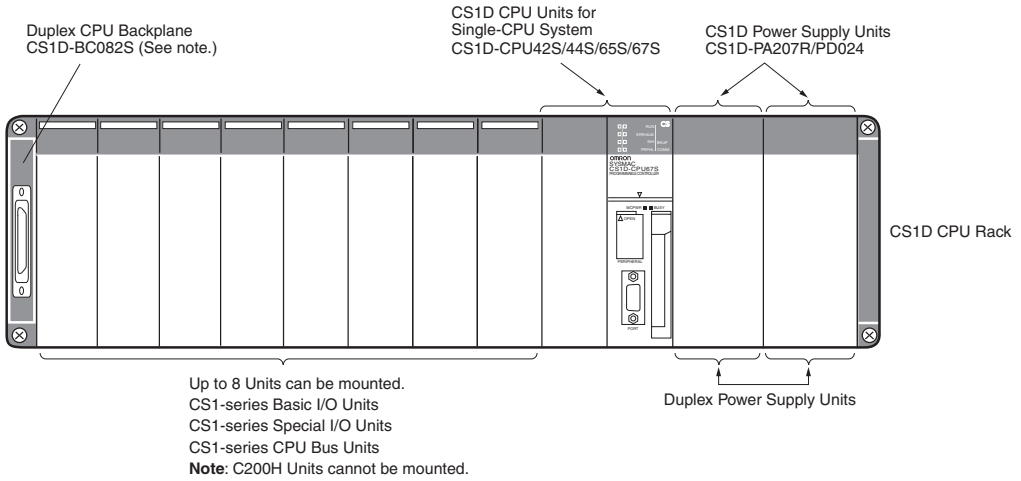
Note: C200H Units cannot be mounted to Long-distance Expansion Racks. (They can be mounted to the CS1 Expansion Rack with the I/O Control Unit mounted.)

System Configuration (Duplex Systems)

Duplex-CPU System



Single-CPU System



CPU Rack

A CPU Rack consists of a Duplex CPU Backplane to which CPU Units, Power Supply Units, a Duplex Unit, CS1-series Basic I/O Units, CS1-series Special I/O Units, and CS1-series CPU Bus Units are mounted.

Memory Cards and Inner Boards to mount in the CPU Units are optional. (Inner Board cannot be mounted to the CS1D-CPU□□H/P)

The CPU Units, Power Supply Units, Duplex CPU Backplane, and Duplex Unit are all designed specifically for CS1D PLCs.

Note: Different Backplanes are used for the CPU Rack and Expansion Racks. Be sure to use the correct Backplane.

Expansion Racks

An Expansion Rack consists of an Expansion Backplane to which Power Supply Units, CS1-series Basic I/O Units, CS1-series Special I/O Units, and CS1-series CPU Bus Units are mounted.

The Power Supply Units and Expansion Backplane are designed specifically for CS1D PLCs.

CS1-series Expansion Backplanes and C200H Backplanes cannot be connected.

Long-distance Expansion Racks

A Long-distance Expansion Rack consists of an Expansion Backplane to which an I/O Interface Unit, CS1-series Basic I/O Units, CS1-series Special I/O Units, and CS1-series CPU Bus Units are mounted. An I/O Control Unit is used to connect to the Long-distance Expansion Racks.

Using Long-distance Expansion Rack increases the normal limit of 12 m for the Rack to 50 m.

CS1D PLCs

With a CS1D Duplex-CPU System, two CPU Units can be mounted to the CPU Rack for Duplex Mode operation (Duplex Mode), or just one CPU Unit can be mounted for Simplex Mode operation. In either case, a Duplex Unit is required.

With a CS1D Single-CPU System, just one CPU Unit is mounted and a Duplex Unit is not required.

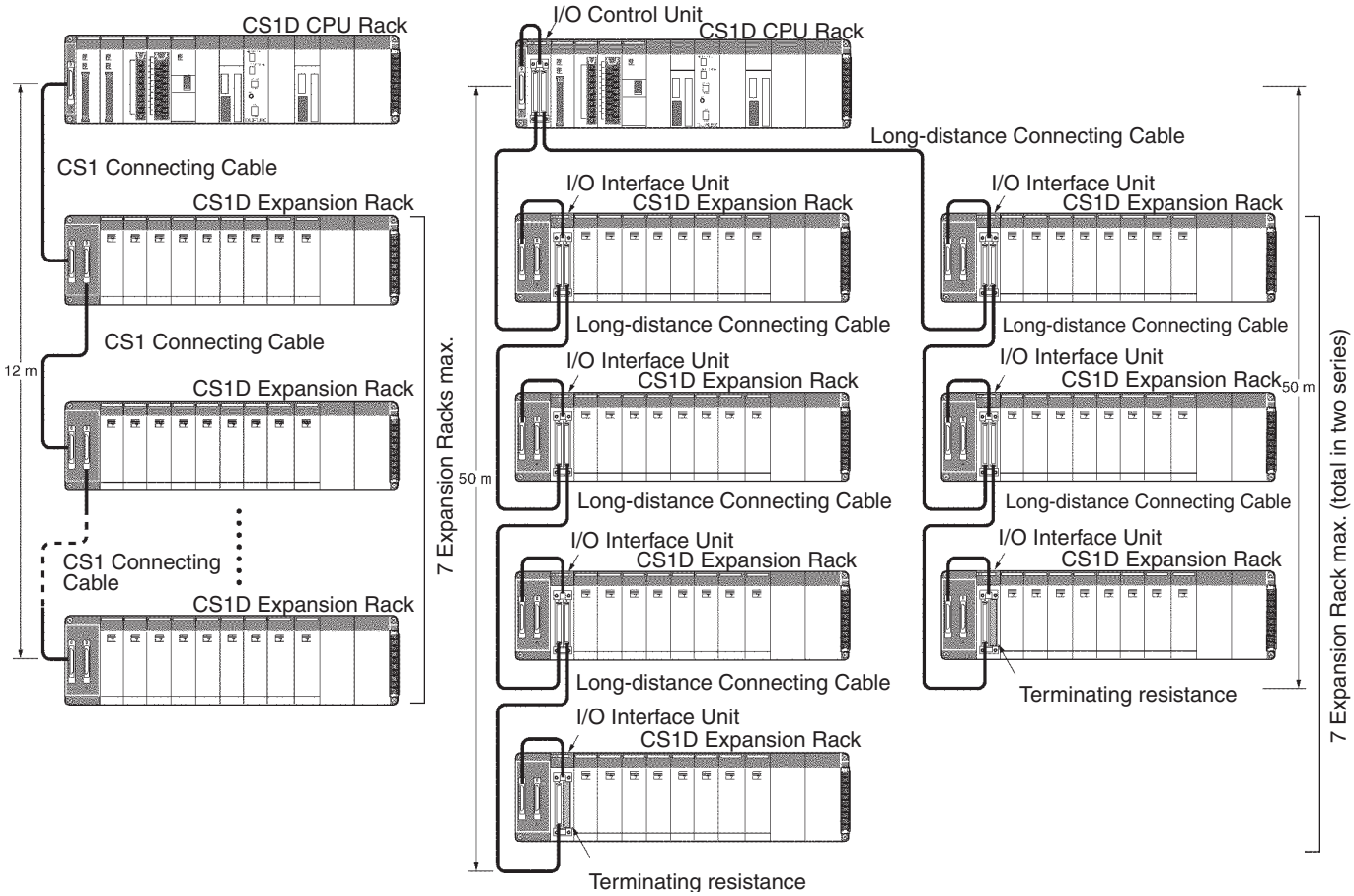
Also, two Power Supply Units can be mounted to any Rack to increase redundancy. (Racks can also be operated with only one Power Supply Unit.) With any of these combinations, there are no further restrictions if the system configuration, e.g., the same number of Expansion Racks can be used as with the other CS1-series PLCs.

Note: C200H Basic I/O Units, C200H Special I/O Units, and C200H CPU Bus Units cannot be mounted on any Rack.

Expansion Patterns for CS1D PLCs

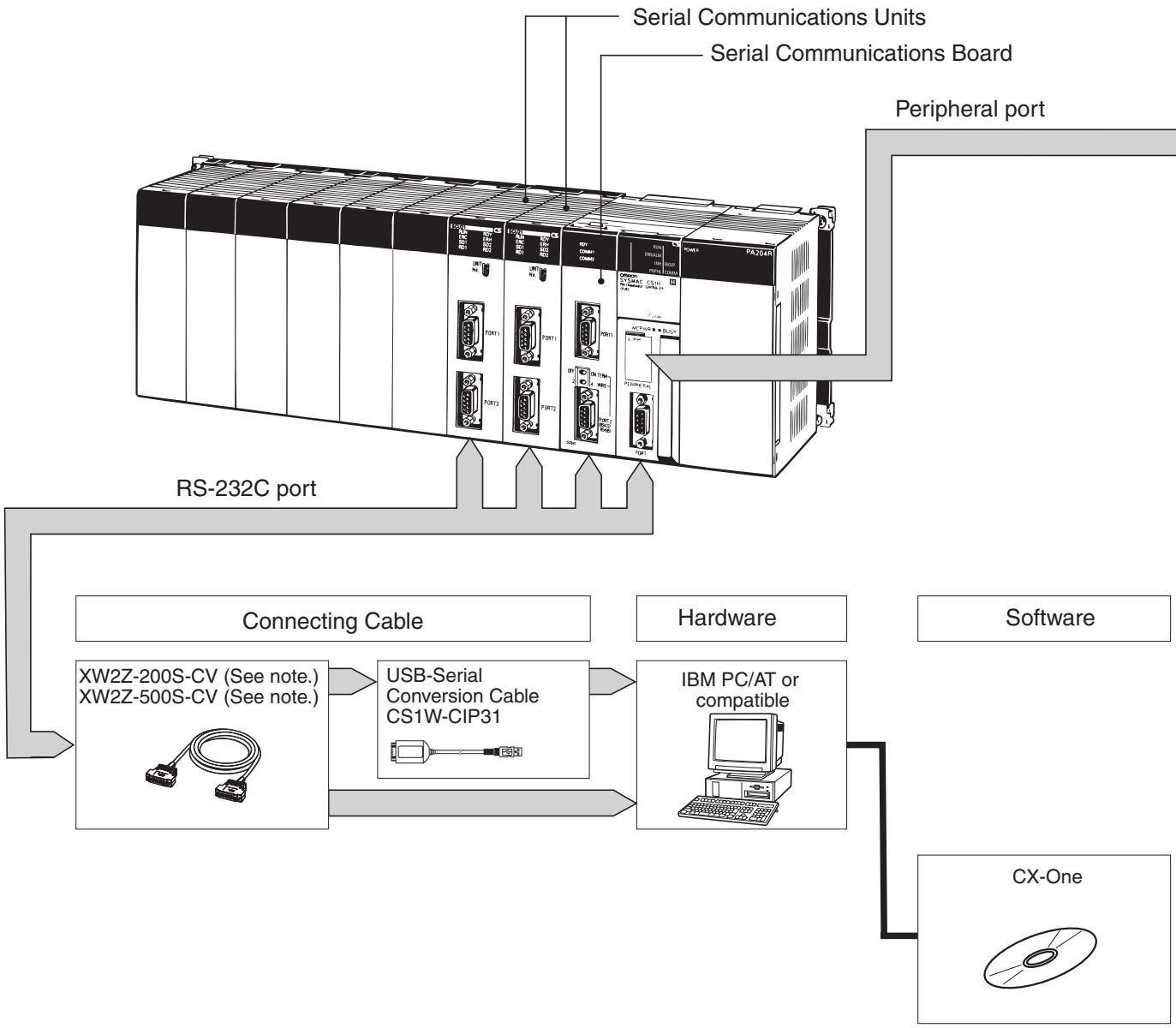
CS1D CPU Rack + CS1D Expansion Rack

CS1D CPU Rack + CS1D Long-distance Expansion Racks

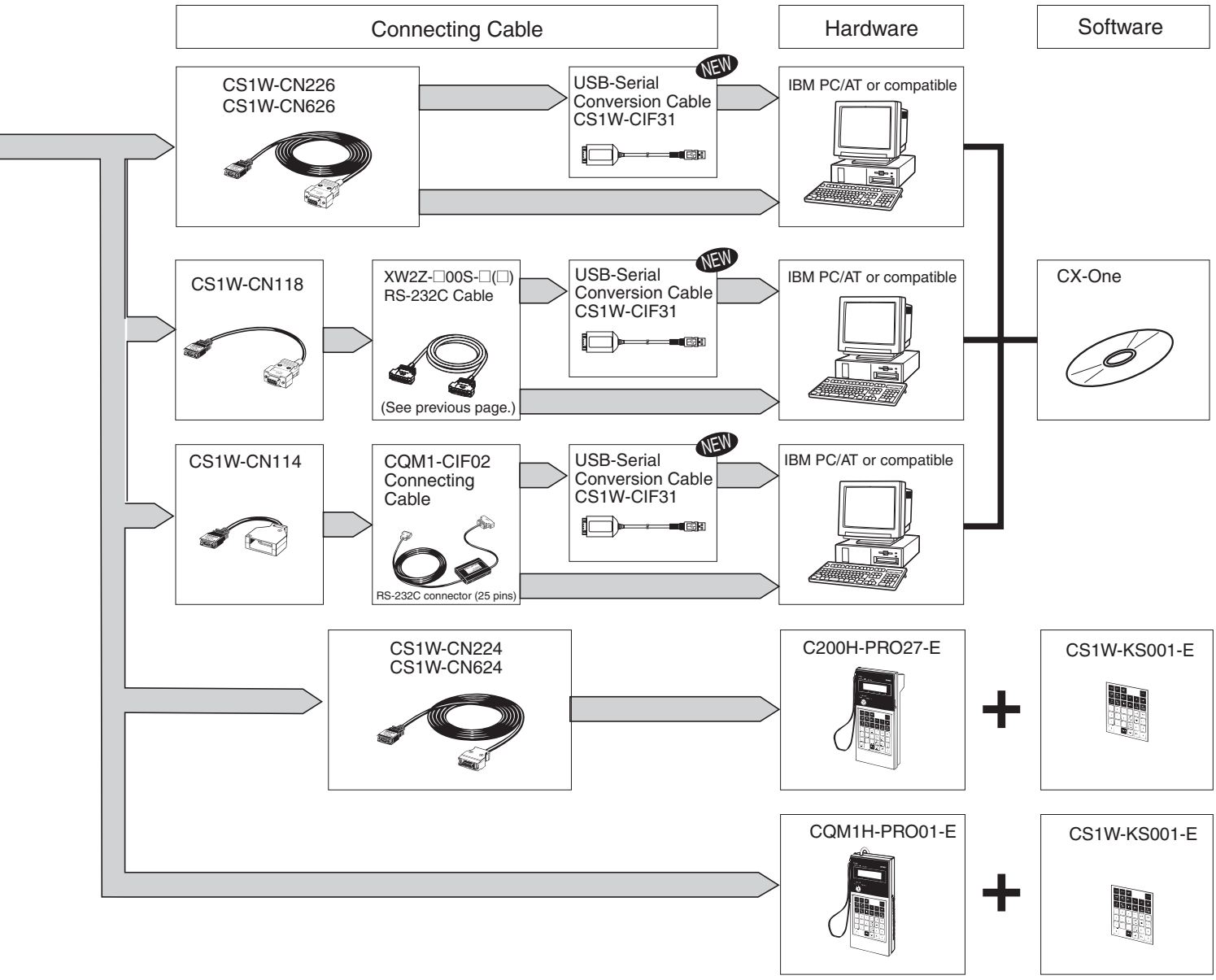


Name	Model	Specifications	Cable Length
Long-distance Connecting Cables	CV500-CN312	For Long-distance Expansion Racks Connects the I/O Control Unit to I/O Interface Units or connects one I/O Interface Unit to the next I/O Interface Unit.	0.3 m
	CV500-CN612		0.6 m
	CV500-CN122		1 m
	CV500-CN222		2 m
	CV500-CN322		3 m
	CV500-CN522		5 m
	CV500-CN132		10 m
	CV500-CN232		20 m
	CV500-CN332		30 m
	CV500-CN432		40 m
	CV500-CN532		50 m
CS1-C200H I/O Connecting Cables	CS1W-CN311	Connects C200H Expansion I/O Backplanes to CPU Backplanes or CS1 Expansion I/O Backplanes.	0.3 m
	CS1W-CN711		0.7 m
	CS1W-CN221		2 m
	CS1W-CN321		3 m
	CS1W-CN521		5 m
	CS1W-CN131		10 m
	CS1W-CN131-B2		12 m
C200H I/O Connecting Cables	C200H-CN311	Connects C200H Expansion I/O Backplanes to other C200H Expansion I/O Backplanes.	0.3 m
	C200H-CN711		0.7 m
	C200H-CN221		2 m
	C200H-CN521		5 m
	C200H-CN131		10 m

Connections to Programming Devices

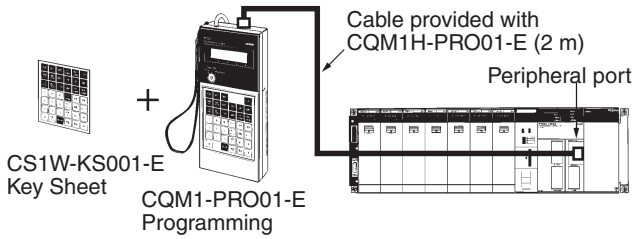


Note: Refer to the next page for details of cables for connecting to computers. Choose the appropriate cable for the communications mode.


Connecting Cable
Hardware
Software
CS1W-CN226
CS1W-CN626
USB-Serial Conversion Cable CS1W-CIF31
NEW
IBM PC/AT or compatible
CS1W-CN118
XW2Z-□00S-□(□) RS-232C Cable
(See previous page.)
USB-Serial Conversion Cable CS1W-CIF31
NEW
IBM PC/AT or compatible
CX-One
CS1W-CN114
CQM1-CIF02 Connecting Cable
RS-232C connector (25 pins)
USB-Serial Conversion Cable CS1W-CIF31
NEW
IBM PC/AT or compatible
CS1W-CN224
CS1W-CN624
C200H-PRO27-E
CS1W-KS001-E
CQM1H-PRO01-E
CS1W-KS001-E

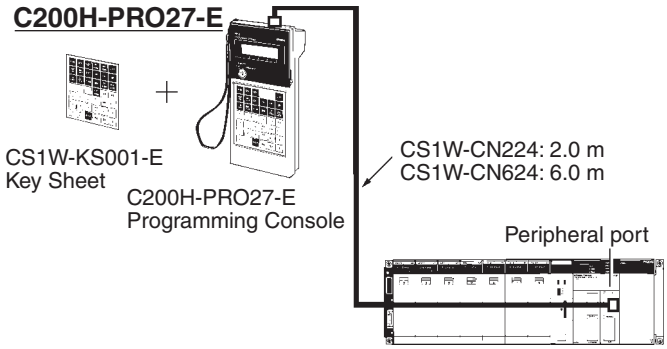
Programming Consoles

CQM1H-PRO01-E



Model	Cable	Cable length
CQM1H-PRO01-E	Not required.	---

C200H-PRO27-E

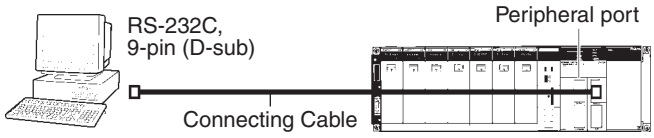


Model	Cable	Cable length
C200H-PR027-E	CS1W-CN224	2.0 m
	CS1W-CN624	6.0 m

Windows-based Programming Software: CX-Programmer

Name	Model		Specifications
CX-Programmer	WS02-CXPC1-EV□□	For 1 license	OS: Windows 95/98 or Windows NT/Me/ 2000/XP
	WS02-CXPC1-EL03-V□□	For 3 licenses	
	WS02-CXPC1-EL10-V□□	For 10 licenses	

Connecting to the Peripheral Port



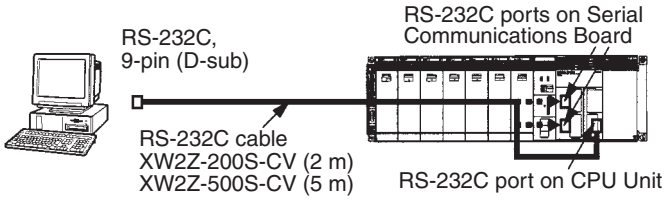
Peripheral Port Connecting Cables

Cable	Length	Computer connector
CS1W-CN226	2.0 m	D-sub, 9-pin, male
CS1W-CN626	6.0 m	

The following cables can be used for an RS-232C connection from the computer to the peripheral port.

Mode	Connecting cables		Length	Computer connector
Peripheral bus or Host Link	XW2Z-200S-CV or XW2Z-500S-CV	CS1W-CN118	2 or 5 m + 0.1 m	D-sub, 9-pin, male
Host Link	XW2Z-200S-V or XW2Z-500S-V			

Connecting to the RS-232C Port



RS-232C Port Connecting Cables

Mode	Cable	Length	Computer connector
Peripheral bus or Host Link	XW2Z-200S-CV	2.0 m	D-sub, 9-pin, male
	XW2Z-500S-CV	5.0 m	

Note: Cables with model numbers ending in “CV” are antistatic.

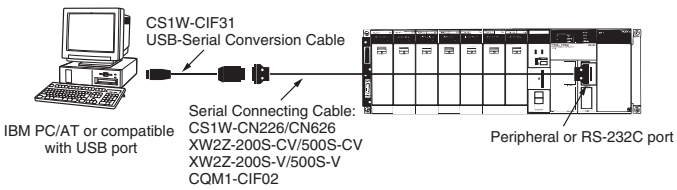
The following cables can be used for an RS-232C connection from the computer to an RS-232C port. (Unlike cables with model numbers ending in “-CV,” however, these cables do not support peripheral bus connection and do not have anti-static specifications.)

Mode	Cable	Length	Computer connector
Host Link	XW2Z-200S-V	2.0 m	D-sub, 9-pin, male
	XW2Z-500S-V	5.0 m	

The following serial communications modes can be used to connect a computer with the CX-Programmer to a CS1 PLC.

Mode	Features
Peripheral bus	The faster mode, peripheral bus is generally used for CX-Programmer connections. Only 1:1 connections are possible. The baud rate is automatically detected with the CS1.
Host Link	A standard protocol for host computers. Slower than peripheral bus, but allows modem or optical adapter connections, or long-distance or 1:N connections via RS422A/485.

Using a USB-Serial Conversion Cable to Connect to a Peripheral or RS-232C Port



General Specifications of USB-Serial Conversion Cable

USB interface standard		Conforms to USB Specification 1.1.
DTE speed		115.2 Kbits/s
Connectors	On computer	USB (A plug connector, male)
	On PLC	RS-232C (D-sub, 9-pin, female)
Power supply		Bus power (supplied from upstream, 5 V DC)
Current consumption		35 mA
Operating environment	Ambient temperature	0 to 55 °C
	Ambient humidity	10% to 90% (with no condensation)
	Ambient atmosphere	No corrosive gases
Weight		50 g

OS with Drivers for USB-Serial Conversion Cable

Windows 98, ME, 2000, or XP

Applicable Software

CX-Programmer, CX-Simulator, CX-Protocol, CX-Motion, CX-Positioner, CS-Process, DeviceNet Configurator, PLC Reporter 32, CX-Designer, and NT Support Software for Windows (NTST) (See note.)

Note: There are restrictions to the COM port numbers that can be used for the NTST.

Applicable Communications Middleware

FinsGateway and CX-Server

Applicable PLCs and PTs

The OMRON PLCs and PTs supported by the applicable software can be used. These are listed below.

PLCs

CS Series, CJ Series, C Series (C200HS, C200HX/HG/HE, C200H, C1000H, C2000H, CQM1, CPM1, CPM1A, SRMT, CQM1H, and CPM2C), CVM1, and CV Series

PTs

NS Series and NT Series

Peripheral Port Connecting Cables

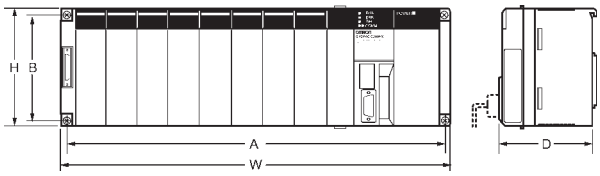
Computer	Serial Communications Node	Connecting Cable model number			Length	Computer connector
IBM PC/AT or compatible	Tool bus or SYSMAC WAY	CS1W-CIF31	CS1W-CN226		0.5 m + 2.0 m	USB (A plug connector)
			CS1W-CN626		0.5 m + 6.0 m	
		CS1W-CIF31	XW2Z-200S-CV/ XW2Z-500S-CV	CS1W-CN118	0.5 m + (2.0 m or 5.0 m) + 0.1 m	
	SYSMAC WAY	CS1W-CIF31	XW2Z-200S-V/ XW2Z-500S-V		0.5 m + (2.0 m or 5.0 m) + 0.1 m	

RS-232C Port Connecting Cables

Computer	Serial Communications Node	Connecting Cable model number		Length	Computer connector
IBM PC/AT or compatible	Tool bus or SYSMAC WAY	CS1W-CIF31	XW2Z-200S-CV	0.5 m + 2.0 m	USB (A plug connector)
			XW2Z-500S-CV	0.5 m + 5.0 m	
	SYSMAC WAY	CS1W-CIF31	XW2Z-200S-V (See note.)	0.5 m + 2.0 m	
			XW2Z-500S-V (See note.)	0.5 m + 5.0 m	

Connection in Tool Bus Mode is not possible. The connector does not have ESD measures.

Dimensions

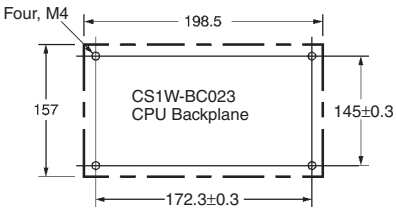


Unit: mm

Backplane	A	B	W	H	D
CS1W-BC022/023 (2 slots)	172.3	145	198.5	157	123
CS1W-BC032/033 (3 slots)	246	118	260	132	
CS1W-BC052/053 (5 slots)	316		330		
CS1W-BC082/083 (8 slots)	421		435		
CS1W-BC102/103 (10 slots)	491		505		
CS1D-BC052/082S (Duplex System)					

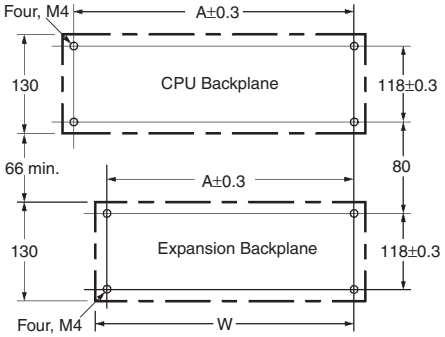
Backplanes

CPU Backplane with 2 Slots



Note: Expansion Backplanes cannot be connected to 2-slot CPU Backplanes.

CPU Backplane with 3, 5, 8, or 10 Slots

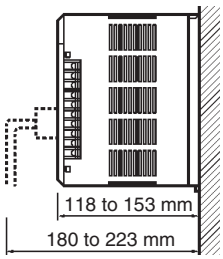


Unit: mm

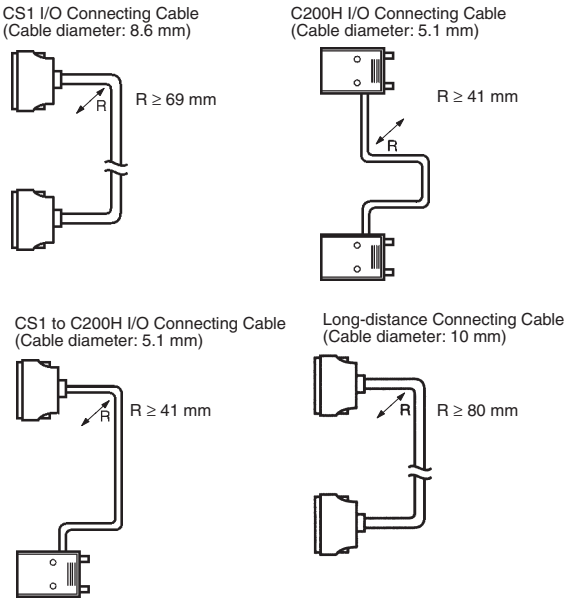
Backplane	Model	A	W
CPU Backplanes	CS1W-BC022/023 (2 slots)	172.3	198.5
	CS1W-BC032/033 (3 slots)	246	260
	CS1W-BC052/053 (5 slots)	316	330
	CS1W-BC082/083 (8 slots)	421	435
	CS1W-BC102/103 (10 slots)	491	505
	CS1D-BC052/082S (Duplex System)		
CS1 Expansion Backplanes	CS1W-BI032/033 (3 slots)	246	260
	CS1W-BI052/053 (5 slots)	316	330
	CS1W-BI082/083 (8 slots)	421	435
	CS1W-BI102/103 (10 slots)	491	505
	CS1D-BI092 (Duplex System)		
C200H Expansion I/O Backplanes	C200HW-BI031 (3 slots)	175	189
	C200HW-BI051 (5 slots)	245	259
	C200HW-BI081-V1 (8 slots)	350	364
	C200HW-BI101-V1 (10 slots)	420	434

Mounting Depth

The depth of all Racks is from 118 to 153 mm depending on the Units that are mounted. Additional depth is required to connect Peripheral Devices and Cables. Be sure to allow sufficient mounting depth.



Note: I/O Connecting Cables require sufficient space to maintain the min. bending radius.



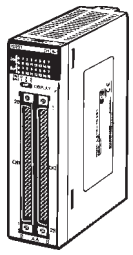
I/O Allocations

I/O Allocations

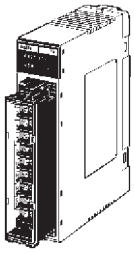
In CS1 PLCs, part of the I/O memory is allocated to each Unit. Units are divided into the following 3 groups for allocations.

- Basic I/O Units
- Special I/O Units
- CS1 CPU Bus Units

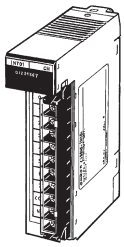
Basic I/O Units



CS1 Basic I/O Units



C200H Basic I/O Units



C200H Group-2 High-density I/O Units
(See Note 2.)

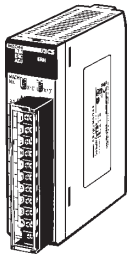
Allocations

CIO Area:
CIO 0000 to CIO 0319 (See Note 1.)
(Memory is allocated in word units in order of mounting position in the Racks.)

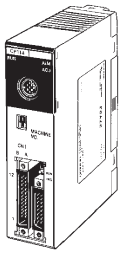
Note 1. The Rack's first word setting can be changed from the default setting (CIO 0000) to any word from CIO 0000 to CIO 9999. The first word setting can be changed only with a Programming Device other than a Programming Console.

2. The unit number setting on the front of C200H Group-2 High-density I/O Units is ignored. Words are allocated to these Units based on their location in the Rack.

Special I/O Units



CS1 Special I/O Units



C200H Special I/O Units
(See Note 2.)

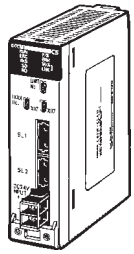
Allocations

Special I/O Unit Area:
CIO 2000 to CIO 2959
(Each Unit is allocated ten words based on its unit number.)

Note 1. Although there are 96 unit number settings, a maximum of 80 Units can actually be mounted to a PLC because that is the maximum number of slots possible.

2. Some Units classified as I/O Units (namely C200H High-density I/O Units) are actually treated as Special I/O Units.

CS1 CPU Bus Units



CS1 CPU Bus Units

Allocations

CS1 CPU Bus Unit Area:
CIO 1500 to CIO 1899
(Each Unit is allocated 25 words based on its unit number.)

Allocations to Basic I/O Unit Groups

Basic I/O Units include CS1 Basic I/O Units, C200H Basic I/O Units, and C200H Group-2 High-density I/O Units.

Allocated words in the CIO Area: CIO 0000 to CIO 0319

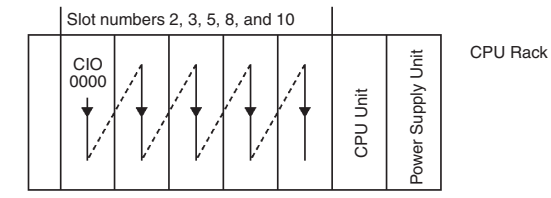
Basic I/O Units can be mounted to the CPU Rack, CS1 Expansion Racks, and C200HX/HG/HE Expansion I/O Racks.

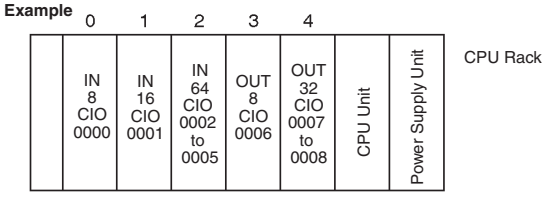
Note: CS1 Basic I/O Units cannot be mounted to C200HX/HG/HE Expansion I/O Racks.

Allocation Methods

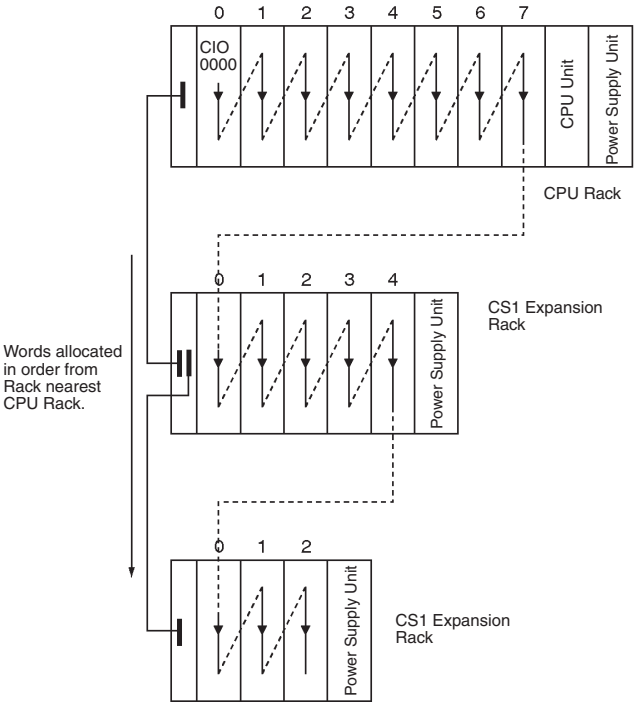
1. CPU Rack

Basic I/O Units on the CPU Rack are allocated words left to right; Units are allocated as many words as required in word units. With CPU Ver. 2.0 and higher it is possible to specify start addresses per rack or per slot.

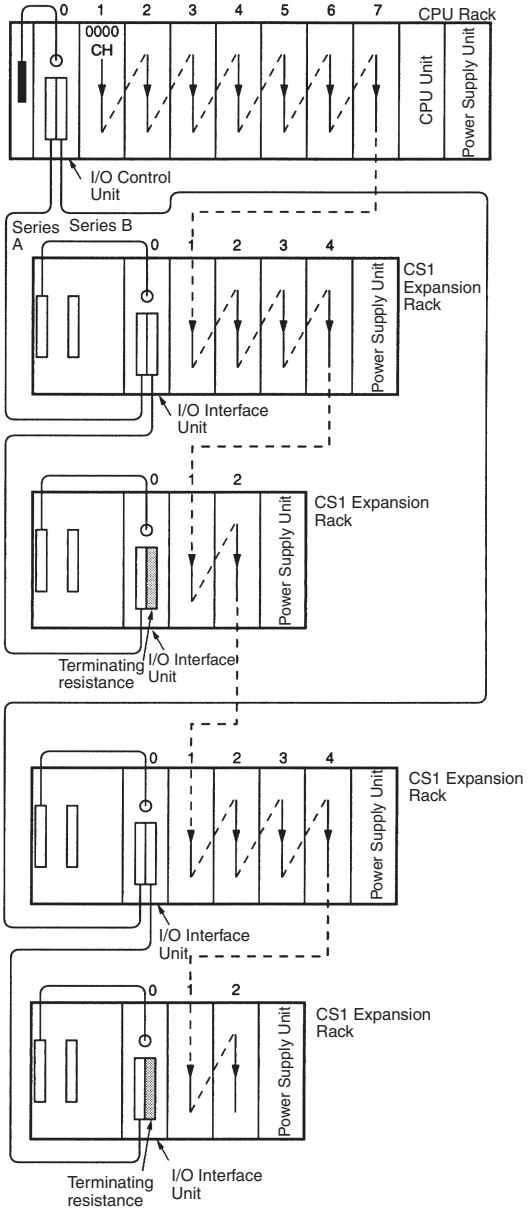




2. Allocations to CS1 Expansion and C200H Expansion I/O Racks
I/O allocations to Basic I/O Units continue from the CPU Rack to the Expansion Racks. Words are allocated from left to right and each Unit is allocated as many words as it requires in word units, just like Units in the CPU Rack.



3. CS1 Long-distance Expansion Racks
Words are allocated to series A and then series B. Otherwise, allocations are the same as for other Racks.



Allocations to Special I/O Units

Special I/O Units include CS1 Special I/O Units and C200H Special I/O Units.

Each of these Units is allocated ten words in the Special I/O Unit Area (CIO 2000 to CIO 2959).

Special /O Units can be mounted to the CPU Rack, CS1 Expansion Racks, and C200H Expansion I/O Racks. (See note.)

Note: CS1 Special I/O Units cannot be mounted to C200H Expansion I/O Racks.

Each Unit is allocated 10 words in the Special I/O Unit Area, as shown in the following table.

Unit number	Words allocated
0	CIO 2000 to CIO 2009
1	CIO 2010 to CIO 2019
2	CIO 2020 to CIO 2029
...	...
15	CIO 2150 to CIO 2159
...	...
95	CIO 2950 to CIO 2959

Note: Special I/O Units are ignored during I/O allocation to Basic I/O Units. Slots containing Special I/O Units are treated as empty slots.

Allocations to CS1 CPU Bus Units

Each CS1 CPU Bus Unit is allocated 25 words in the CS1 CPU Bus Unit Area (CIO 1500 to CIO 1899).

CS1 CPU Bus Units can be mounted to the CPU Rack or CS1 Expansion Racks.

Each Unit is allocated 25 words in the CPU Bus Unit Area, as shown in the following table.

Unit number	Words allocated
0	CIO 1500 to CIO 1524
1	CIO 1525 to CIO 1549
2	CIO 1550 to CIO 1574
...	...
15	CIO 1875 to CIO 1899

Note: CS1 CPU Bus Units are ignored during I/O allocation to Basic I/O Units. Slots containing CS1 CPU Bus Units are treated as empty slots.

Current Consumption

The amount of current/power that can be supplied to the Units mounted in a Rack is limited by the capacity of the Rack's Power Supply Unit. The system must be designed so that the total current consumption of the Units does not exceed the maximum current for each voltage group and the total power consumption does not exceed the maximum for the Power Supply Unit.

CPU Racks and Expansion Racks

The following table shows the maximum currents and power that can be supplied by Power Supply Units on CPU Racks and Expansion Racks (both CS1 Expansion Racks and C200H Expansion I/O Racks).

Note: 1. When calculating current/power consumption in a CPU Rack, be sure to include the power required by the CPU Backplane and CPU Unit themselves.

2. Likewise, be sure to include the power required by the Expansion Backplane itself when calculating current/power consumption in an Expansion Rack.

Power Supply Unit	Max. Current Consumption			Max. Total Power Consumption
	5-V group	26-V group	24-V group	
C200HW-PA204	4.6 A	0.6 A	None	30 W
C200HW-PA204S	4.6 A	0.6 A	0.8 A	30 W
C200HW-PA204R	4.6 A	0.6 A	None	30 W
C200HW-PD204	4.6 A	0.6 A	None	30 W
C200HW-PA209R	9.0 A	1.3 A	None	45 W
C200HW-PD106R	6.0 A	1.0 A	None	30 W
CS1D-PA207R	7.0 A	1.3 A	None	35 W
CS1D-PD024	4.3 A	0.56 A	None	28 W

Be sure both Condition 1 and Condition 2 are met.

Condition 1: Maximum Current Supply

1. Current required at 5 V DC by all Units (A) ≤Max. Current shown in table
2. Current required at 26 V DC by all Units (B) ≤Max. Current shown in table
3. Current required at 24 V DC by all Units (C) ≤Max. Current shown in table

Condition 2: Maximum Total Current Supply

1. A × 5 V DC + B × 26 V DC + C × 24 V DC ≤Max. Power shown in table

Example Calculations

In this example, the following Units are mounted to a CPU Rack with a C200HW-PA204S Power Supply Unit.

Unit	Model	Quantity	5- V DC	26- V DC	24- V DC
CPU Backplane (8 slots)	CS1W-BC083	1	0.11 A	---	---
CPU Unit	CS1H-CPU67-EV1	1	1.10 A	---	---
Input Units	C200H-ID216	2	0.10 A	---	---
	CS1W-ID291	2	0.20 A	---	---
Output Units	C200H-OC221	2	0.01 A	0.075 A	---
Special I/O Unit	C200H-NC213	1	0.30 A	---	---
CPU Bus Unit	CS1W-CLK21	1	0.50 A	---	---
Service Power Supply Unit (24 V DC)		0.3 A used	---	---	0.3 A
Total current/power consumption 13.15+3.9+7.2 = 24.25 (≤30 W)			2.63 A (≤4.6) x 5 V = 13.15W	0.15 A 〈 ≤0.6A) x 26 V = 3.9 W	0.3 A 〈 ≤0.8A) x 24 V = 7.2 W

Current Consumption Tables

5- V DC Voltage Group

Name	Model	Consumption (A)
CPU Units (These values include current consumption by a Programming Console.)	CS1H-CPU67H CS1D-CPU67H CS1D-CPU67S	0.82 (See note.)
	CS1H-CPU66H	0.82 (See note.)
	CS1H-CPU65H CS1D-CPU65H CS1D-CPU65S	0.82 (See note.)
	CS1H-CPU64H	0.82 (See note.)
	CS1H-CPU63H	0.82 (See note.)
	CS1G-CPU45H	0.78 (See note.)
	CS1G-CPU44H CS1D-CPU44S	0.78 (See note.)
	CS1G-CPU43H	0.78 (See note.)
	CS1G-CPU42H CS1D-CPU42S	0.78 (See note.)
Duplex Process CPU Units	CS1D-CPU67P CS1D-CPU65P	1.04
Loop Control Boards	CS1W-LCB01	0.22 (See note.)
	CS1W-LCB05	0.22 (See note.)
Serial Communication Boards	CS1W-SCB21-V1	0.28 (See note.)
	CS1W-SCB41-V1	0.36 (See note.)
CPU Backplanes (for CS1 Units only)	CS1W-BC022	0.11
	CS1W-BC032	0.11
	CS1W-BC052	0.11
	CS1W-BC082	0.11
	CS1W-BC102	0.11
CPU Backplanes	CS1W-BC023	0.11
	CS1W-BC033	0.11
	CS1W-BC053	0.11
	CS1W-BC083	0.11
	CS1W-BC103	0.11
I/O Control Unit	CS1W-IC102	0.92
CS1 Expansion Backplanes (for CS1 Units only)	CS1W-BI032	0.23
	CS1W-BI052	0.23
	CS1W-BI082	0.23
	CS1W-BI102	0.23
CS1 Expansion Backplanes	CS1W-BI033	0.23
	CS1W-BI053	0.23
	CS1W-BI083	0.23
	CS1W-BI103	0.23
I/O Interface Unit	CS1W-II102	0.23
C200H Expansion I/O Backplanes	C200HW-BI031	0.15
	C200HW-BI051	0.15
	C200HW-BI081-V1	0.15
	C200HW-BI101-V1	0.15
CS1 Duplex Backplane	CS1D-BC052	Total 0.55
CS1 Duplex Unit	CS1D-DPL01	
CS1D Single CPU Backplane	CS1D-BC082S	0.17
CS1D Expansion Backplane	CS1D-BI092	0.28

Note: Add 0.15 A per port when the NT-AL001-E is connected.

Basic I/O Units

Category	Name	Model	Consumption (A)
C200H Input Units	DC Input Units	C200H-ID211	0.01
		C200H-ID212	0.01
	AC Input Units	C200H-IA121	0.01
		C200H-IA122	0.01
		C200H-IA122V	0.01
		C200H-IA221	0.01
		C200H-IA222	0.01
		C200H-IA222V	0.01
C200H Input Units	AC/DC Input Units	C200H-IM211	0.01
		C200H-IM212	0.01
	B7A Interface Units	C200H-B7AI1	0.10
		C200H-B7A12	0.10
	Interrupt Input Unit	C200HS-INT01	0.02
C200H Group-2 High-density Input Units	DC Input Units	C200H-ID216	0.10
		C200H-ID217	0.12
		C200H-ID218	0.10
		C200H-ID219	0.12
		C200H-ID111	0.12
CS1 Input Units	DC Input Units	CS1W-ID211	0.10
		CS1W-ID231	0.15
		CS1W-ID261	0.15
		CS1W-ID291	0.20
	AC Input Units	CS1W-IA111	0.11
		CS1W-IA211	0.11
	Interrupt Input Unit	CS1W-INT01	0.10
	High-speed Input Unit	CS1W-IDP01	0.10
	Safety Relay Unit	CS1W-SF200	0.10
C200H Output Units	Relay Output Units	C200H-OC221	0.01
		C200H-OC222	0.01
		C200H-OC222N	0.008
		C200H-OC225	0.05
		C200H-OC226N	0.03
		C200H-OC223	0.01
		C200H-OC224	0.01
		C200H-OC224N	0.01
	Transistor Output Units	C200H-OD411	0.14
		C200H-OD213	0.14
		C200H-OD214	0.14
		C200H-OD216	0.01
		C200H-OD211	0.16
		C200H-OD217	0.01
		C200H-OD212	0.18
		C200H-OD21A	0.16
	B7A Interface Units	C200H-B7A01	0.10
		C200H-B7A02	0.10
	Triac Output Units	C200H-OA223	0.18
		C200H-OA222V	0.20
		C200H-OA224	0.27
CS1 Output Units	Relay Output Units	CS1W-OC201	0.10
		CS1W-OC211	0.13
	Transistor Output Units	CS1W-OD211	0.17
		CS1W-OD212	0.17
		CS1W-OD231	0.27
		CS1W-OD232	0.27
		CS1W-OD261	0.39
		CS1W-OD262	0.39
		CS1W-OD291	0.48
		CS1W-OD292	0.48
	Triac Output Units	CS1W-OA201	0.23 max. (0.07+0.02× No. of points ON)
		CS1W-OA211	0.406 max. (0.07+0.021× No. of points ON)
C200H Group-2 High-density Output Units	Transistor Output Units	C200H-OD218	0.27
		C200H-OD21B	0.48
		C200H-OD219	0.48
CS1 I/O Units	DC Input/Transistor Output Units	CS1W-MD261	0.27
		CS1W-MD262	0.27
		CS1W-MD291	0.35
		CS1W-MD292	0.35
	TTL I/O Unit	CS1W-MD561	0.27
C200H I/O Units	B7A Interface Units	C200H-B7A21	0.10
		C200H-B7A22	0.10
	Analog Timer Unit	C200H-TM001	0.06

Note: This table may contain Units that are no longer in production