

# CS1 Unit Descriptions

Current Consumption

Category	Name	Model	Consumption (A)	
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	
C200H Output Units	B7A Interface Units	C200H-B7A01	0.10	
		C200H-B7A02	0.10	
	Triac Output Units	C200H-OA223	0.18	
		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	
C200H I/O Units	B7A Interface Units	C200H-B7A21	0.10	
		C200H-B7A22	0.10	
	Analog Timer Unit	C200H-TM001	0.06	
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 Input/TTL Output Unit	CS1W-MD561	0.27	

## Special I/O Units

Category	Name	Model	Consumption (A)
C200H High-density I/O Units (Special I/O Units)	DC Input Unit	C200H-ID215	0.13
	TTL Input Unit	C200H-ID501	0.13
	Transistor Output Unit	C200H-OD215	0.22
	TTL Output Unit	C200H-OD501	0.22
	TTL I/O Unit	C200H-MD501	0.18
	DC Input Transistor Output Unit	C200H-MD215	0.18
		C200H-MD115	0.18
C200H Special I/O Units	Temperature Control Units	C200H-TC001	0.33
		C200H-TC002	0.33
		C200H-TC003	0.33
		C200H-TC101	0.33
		C200H-TC102	0.33
		C200H-TC103	0.33

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Category	Name	Model	Consumption (A)
C200H Special I/O Units	Heat/Cool Temperature Control Units	C200H-TV001	0.33
		C200H-TV002	0.33
		C200H-TV003	0.33
		C200H-TV101	0.33
		C200H-TV102	0.33
		C200H-TV103	0.33
	Temperature Sensor Units	C200H-TS001	0.45
		C200H-TS002	0.45
		C200H-TS101	0.45
		C200H-TS102	0.45
	PID Control Units	C200H-PID01	0.33
		C200H-PID02	0.33
		C200H-PID03	0.33
	Cam Positioner Unit	C200H-CP114	0.30
	ASCII Units	C200H-ASC02	0.20
	ASCII Units	C200H-ASC11	0.25
		C200H-ASC21	0.30
		C200H-ASC31	0.30
	Analog Input Units	C200H-AD001	0.55
		C200H-AD002	0.45
		C200H-AD003	0.10
	Analog Output Units	C200H-DA001	0.65
		C200H-DA002	0.60
		C200H-DA003	0.10
		C200H-DA004	0.10
	Analog I/O Units	C200H-MAD01	0.10
	High-speed Counter Units	C200H-CT001-V1	0.30
		C200H-CT002	0.30
		C200H-CT021	0.45
	Motion Control Unit	C200H-MC221	0.65 (w/ Teaching Box: 0.85 )
	Position Control Units	C200HW- NC113	0.30
		C200HW-NC213	0.30
		C200HW-NC413	0.50
	ID Sensor Units	C200H-IDS01-V1	0.25
		C200H-IDS21	0.25
	Fuzzy Logic Unit	C200H-FZ001	0.30
	Voice Unit	C200H-OV001	0.30
	DeviceNet Master Unit	C200HW-DRM21-V1	0.25
	DeviceNet I/O Link Unit	C200HW-DRT21	0.25
	CompoBus/S Master Unit	C200HW-SRM21-V1	0.15
PC Link Unit	C200H-LK401	0.35	

Category	Name	Model	Consumption (A)	
CS1 Special I/O Unit	Analog Input Unit	CS1W-AD□□□-V1	0.13	
	Analog Output Unit	CS1W-DA□□□	0.13	
	Analog I/O Unit	CS1W-MAD44	0.20	
		Isolated Thermocouple Input Unit	CS1W-PTS01-V1	0.15
			CS1W-PTS11	0.12
			CS1W-PTS51	0.25
		Isolated Temperature-resistance Thermometer Input Unit	CS1W-PTS55	0.18
			CS1W-PTS02	0.15
	CS1W-PTS12		0.12	
	Isolated Temperature-resistance Thermometer Input Unit (Ni508.4 Ω)	CS1W-PTS52	0.25	
		CS1W-PTS56	0.18	
		CS1W-PTS03	0.15	
	Isolated Two-wire Transmission Device Input Unit	CS1W-PTW01		
	Isolated DC Input Unit	CS1W-PDC01	0.15	
		CS1W-PDC11	0.12	
		CS1W-PDC55	0.18	
	Isolated Pulse Input Unit	CS1W-PPS01	0.20	
	Isolated Control Output Unit	CS1W-PMV01	0.15	
		CS1W-PMV02	0.12	
	Power Transducer Input Unit	CS1W-PTR01	0.15	
	100-mV DC Input Unit	CS1W-PTR02		
	Motion Control Units	CS1W-MC221	0.60 (w/ Teaching Box: 0.80 A)	
		CS1W-MC421	0.70 (w/ Teaching Box: 1.00 A)	
	Position Control Units	CS1W-NC113/ 133	0.25	
		CS1W-NC213/ 233		
		CS1W-NC413/ 433	0.36	
High-speed Counter Units	CS1W-CT021			
	CS1W-CT041	0.45		
Customizable Counter Units	CS1W-HCP22-V1	0.80		
	CS1W-HCA12-V1	0.75		
	CS1W-HCA22-V1			
	CS1W-HIO01-V1	0.60		
GP-IB Interface Unit	CS1W-GPI01	0.33		
ID Sensor Units	CS1W-V600C11	0.26		
	CS1W-V600C12	0.32		

**Note:** Depends on the Memory Card being used and can be calculated as follows: 0.7 mA max. at +5 VDC (Unit alone) + PC card output current ( $I_{card}$ )  
 $I_{5V}$  (one slot)  $\leq$  0.5 A,  $I_{12V}$  (one slot)  $\leq$  0.1 A  
 And,  
 $I_{card} = I_{5V}$  (two slots) +  $3.4 \times I_{12V}$  (two slots)  $\leq$  1.0 A

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# CS1 Unit Descriptions

Current Consumption

## CS1 CPU Bus Units

Category	Name	Model	Consumption (A)
CS1 CPU Bus Units	Motion Control Unit	CS1W-MCH71	0.8
	Loop Control Unit	CS1W-LC001	0.36
	Controller Link Units	CS1W-CLK52-V1	0.65
		CS1W-CLK21-V1	0.33
		CS1W-CLK21-V1	0.33
		CS1W-CLK12-V1	0.52
	SYSMAC LINK Unit	CS1W-SLK21	0.48
		CS1W-SLK11	0.47
	Serial Communications Unit	CS1W-SCU21-V1	0.29 (See Note.)
	Ethernet Unit	CS1W-ETN21	0.40
		CS1W-ETN21D	
		CS1W-ETN01/11	
	DeviceNet Unit	CS1W-DRM21-V1	0.29
	FL-net Unit	CS1W-FLN22	0.38
CS1W-FLN12		0.40	
CS1W-FLN02			

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

## 26-V Current Consumption

Category	Name	Model	Consumption (A)
C200H Output Units	Relay Output Units	C200H-OC221	0.075 for 8 points ON at the same time
		C200H-OC222	
		C200H-OC223	
		C200H-OC224	
		C200H-OC225	
	Transistor Output Units	C200H-OC222N	0.09 for 8 points ON at the same time
		C200H-OC226N	
		C200H-OC224N	
		C200H-OD216	
C200H-OD217			
CS1 Output Units	Relay Output Units	CS1W-OC201	0.006 for each point ON at the same time
		CS1W-OC211	
C200H Special I/O Units	Analog Input Unit	C200H-AD003	0.10
	Analog Output Units	C200H-DA003	0.20
		C200H-DA004	0.25
	Analog I/O Unit	C200H-MAD01	0.20
	ID Sensor Units	C200H-IDS01-V1	0.12
C200H-IDS21		0.12	

Category	Name	Model	Consumption (A)	
CS1 Special I/O Units	Analog Input Unit	CS1W-AD□□□-V1	0.10	
	Analog Output Units	CS1W-DA041	0.18	
		CS1W-DA08V	0.18	
		CS1W-DA08C	0.25	
	Analog I/O Unit	CS1W-MAD44	0.20	
	Isolated Thermocouple Input Unit	CS1W-PTS01-V1	0.15	
		CS1W-PTS11	0.08	
		CS1W-PTS55	0.06	
	Isolated Temperature-resistance Thermometer Input Unit	CS1W-PTS02	0.15	
		CS1W-PTS12	0.07	
	Isolated Temperature-resistance Thermometer Input Unit (Ni508.4 Ω)	CS1W-PTS56	0.06	
		CS1W-PTS03	0.15	
	Isolated Two-wire Transmission Device Input Unit	CS1W-PTW01	0.16	
		Isolated DC Input Unit		CS1W-PDC01
		CS1W-PDC11		0.12
	Isolated Pulse Input Unit	CS1W-PDC55	0.06	
		CS1W-PPS01	0.16	
	Isolated Control Output Unit	CS1W-PMV01	0.12	
		CS1W-PMV02		
	Power Transducer Input Unit	CS1W-PTR01	0.08	
100-mV DC Input Unit		CS1W-PTR02		
Customizable Counter Units	CS1W-HCA22	0.15		
	CS1W-HCA12-V1			
	CS1W-HCA22-V1			
ID Sensor Unit	CS1W-V600C11	0.12		

# Instructions

## ■ Sequence Input Instructions

Name	Mnemonic	Function code	Function
<b>LOAD</b>	LD	---	Indicates a logical start and creates an ON/OFF execution condition based on the ON/OFF status of the specified operand bit.
<b>LOAD NOT</b>	LD NOT	---	Indicates a logical start and creates an ON/OFF execution condition based on the reverse of the ON/OFF status of the specified operand bit.
<b>AND</b>	AND	---	Takes a logical AND of the status of the specified operand bit and the current execution condition.
<b>AND NOT</b>	AND NOT	---	Reverses the status of the specified operand bit and takes a logical AND with the current execution condition.
<b>OR</b>	OR	---	Takes a logical OR of the ON/OFF status of the specified operand bit and the current execution condition.
<b>OR NOT</b>	OR NOT	---	Reverses the status of the specified bit and takes a logical OR with the current execution condition.
<b>AND LOAD</b>	AND LD	---	Takes a logical AND between logic blocks.
<b>OR LOAD</b>	OR LD	---	Takes a logical OR between logic blocks.
<b>NOT</b>	NOT	520	Reverses the execution condition.
<b>CONDITION ON</b>	UP	521	UP(521) turns ON the execution condition for one cycle when the execution condition goes from OFF to ON.
<b>CONDITION OFF</b>	DOWN	522	DOWN(522) turns ON the execution condition for one cycle when the execution condition goes from ON to OFF.
<b>BIT TEST</b>	LD TST	350	LD TST(350), AND TST(350), and OR TST(350) are used in the program like LD, AND, and OR; the execution condition is ON when the specified bit in the specified word is ON and OFF when the bit is OFF.
<b>BIT TEST NOT</b>	LD TSTN	351	LD TSTN(351), AND TSTN(351), and OR TSTN(351) are used in the program like LD NOT, AND NOT, and OR NOT; the execution condition is OFF when the specified bit in the specified word is ON and ON when the bit is OFF.
<b>BIT TEST</b>	AND TST	350	LD TST(350), AND TST(350), and OR TST(350) are used in the program like LD, AND, and OR; the execution condition is ON when the specified bit in the specified word is ON and OFF when the bit is OFF.
<b>BIT TEST NOT</b>	AND TSTN	351	LD TSTN(351), AND TSTN(351), and OR TSTN(351) are used in the program like LD NOT, AND NOT, and OR NOT; the execution condition is OFF when the specified bit in the specified word is ON and ON when the bit is OFF.
<b>BIT TEST</b>	OR TST	350	LD TST(350), AND TST(350), and OR TST(350) are used in the program like LD, AND, and OR; the execution condition is ON when the specified bit in the specified word is ON and OFF when the bit is OFF.
<b>BIT TEST NOT</b>	OR TSTN	351	LD TSTN(351), AND TSTN(351), and OR TSTN(351) are used in the program like LD NOT, AND NOT, and OR NOT; the execution condition is OFF when the specified bit in the specified word is ON and ON when the bit is OFF.

## ■ Sequence Output Instructions

Name	Mnemonic	Function code	Function
<b>OUTPUT</b>	OUT	---	Outputs the result (execution condition) of the logical processing to the specified bit.
<b>OUTPUT NOT</b>	OUT NOT	---	Reverses the result (execution condition) of the logical processing, and outputs it to the specified bit.
<b>KEEP</b>	KEEP	011	Operates as a latching relay.
<b>DIFFERENTIATE UP</b>	DIFU	013	DIFU(013) turns the designated bit ON for one cycle when the execution condition goes from OFF to ON (rising edge).
<b>DIFFERENTIATE DOWN</b>	DIFD	014	DIFD(014) turns the designated bit ON for one cycle when the execution condition goes from ON to OFF (falling edge).
<b>SET</b>	SET	---	SET turns the operand bit ON when the execution condition is ON.
<b>RESET</b>	RSET	---	RSET turns the operand bit OFF when the execution condition is ON.
<b>MULTIPLE BIT SET</b>	SETA	530	SETA(530) turns ON the specified number of consecutive bits.

# Instructions

Name	Mnemonic	Function code	Function
<b>MULTIPLE BIT RESET</b>	RSTA	531	RSTA(531) turns OFF the specified number of consecutive bits.
<b>SINGLE BIT SET</b>	SETB	532	Turns ON the specified bit in the specified word when the execution condition is ON.
<b>SINGLE BIT RESET</b>	RSTB	533	Turns OFF the specified bit in the specified word when the execution condition is ON.
<b>SINGLE BIT OUTPUT</b>	OUTB	534	Outputs the result (execution condition) of the logical processing to the specified bit.

## ■ Sequence Control Instructions

Name	Mnemonic	Function code	Function
<b>END</b>	END	001	Indicates the end of a program. END(001) completes the execution of a program for that cycle. No instructions written after END(001) will be executed. Execution proceeds to the program with the next task number. When the program being executed has the highest task number in the program, END(001) marks the end of the overall main program.
<b>NO OPERATION</b>	NOP	000	This instruction has no function. (No processing is performed for NOP(000).)
<b>INTERLOCK</b>	IL	002	Interlocks all outputs between IL(002) and ILC(003) when the execution condition for IL(002) is OFF. IL(002) and ILC(003) are normally used in pairs.
<b>INTERLOCK CLEAR</b>	ILC	003	Interlocks all outputs between IL(002) and ILC(003) when the execution condition for IL(002) is OFF. IL(002) and ILC(003) are normally used in pairs.
<b>MULTI-INTERLOCK DIFFERENTIATION HOLD (Unit Ver. 2.0 or later only)</b>	MILH	517	When the execution condition for MILH(517) is OFF, the outputs for all instructions between that MILH(517) instruction and the next MILC(519) instruction are interlocked. MILH(517) and MILC(519) are used as a pair. MILH(517)/MILC(519) interlocks can be nested (e.g., MILH(517)—MILH(517)—MILC(519)—MILC(519)). If there is a differentiated instruction (DIFU, DIFD, or instruction with a @ or % prefix) between MILH(517) and the corresponding MILC(519), that instruction will be executed after the interlock is cleared if the differentiation condition of the instruction was established.
<b>MULTI-INTERLOCK DIFFERENTIATION RELEASE (Unit Ver. 2.0 or later only)</b>	MILR	518	When the execution condition for MILR(518) is OFF, the outputs for all instructions between that MILR(518) instruction and the next MILC(519) instruction are interlocked. MILR(518) and MILC(519) are used as a pair. MILR(518)/MILC(519) interlocks can be nested (e.g., MILR(518)—MILR(518)—MILC(519)—MILC(519)). If there is a differentiated instruction (DIFU, DIFD, or instruction with a @ or % prefix) between MILR(518) and the corresponding MILC(519), that instruction will not be executed after the interlock is cleared even if the differentiation condition of the instruction was established.
<b>MULTI-INTERLOCK CLEAR (Unit Ver. 2.0 or later only)</b>	MILC	519	Clears an interlock started by an MILH(517) or MILR(518) with the same interlock number.
<b>JUMP</b>	JMP	004	When the execution condition for JMP(004) is OFF, program execution jumps directly to the first JME(005) in the program with the same jump number. When the execution condition is ON, all instructions are executed normally.
<b>JUMP END</b>	JME	005	JME(005) indicates the destination of jumps made for JMP(004), CJP(510), and CJPN(511).
<b>CONDITIONAL JUMP</b>	CJP	510	The operation of CJP(510) is the basically the opposite of JMP(004). When the execution condition for CJP(510) is ON, program execution jumps directly to the first JME(005) in the program with the same jump number. When the execution condition is OFF, all instructions are executed normally.
<b>CONDITIONAL JUMP</b>	CJPN	511	The operation of CJPN(511) is almost identical to JMP(004). When the execution condition for CJP(004) is OFF, program execution jumps directly to the first JME(005) in the program with the same jump number. When the execution condition is ON, all instructions are executed normally.
<b>MULTIPLE JUMP</b>	JMP0	515	When the execution condition for JMP0(515) is OFF, all instructions from JMP0(515) to the next JME0(516) in the program are processed as NOP(000). When the execution condition is ON, all instructions are executed normally. Use JMP0(515) and JME0(516) in pairs. There is no limit on the number of pairs that can be used in the program.
<b>MULTIPLE JUMP END</b>	JME0	516	JME0(516) indicates the destination of jumps made for JMP0(515).

# Instructions

Name	Mnemonic	Function code	Function
<b>START FOR-NEXT LOOP</b>	FOR	512	The instructions between FOR(512) and NEXT(513) are repeated a specified number of times. FOR(512) and NEXT(513) are used in pairs.
<b>BREAK LOOP</b>	BREAK	514	Programmed in a FOR-NEXT loop to cancel the execution of the loop for a given execution condition. The remaining instructions in the loop are processed as NOP(000) instructions.
<b>END FOR-NEXT LOOP</b>	NEXT	513	The instructions between FOR(512) and NEXT(513) are repeated a specified number of times. FOR(512) and NEXT(513) are used in pairs.

## ■ Timer and Counter Instructions

Name	Mnemonic	Function code	Function
<b>BCD TIMER</b>	TIM	---	TIM operates a decremting timer with units of 0.1-s.
<b>BINARY TIMER</b>	TIMX	550	Setting range for Set Value (SV):BCD: 0 to 999.9 s Binary: 0 to 6,553.5 s
<b>BCD COUNTER</b>	CNT	---	CNT operates a decremting counter.
<b>BINARY COUNTER</b>	CNTX	546	Setting range for Set Value (SV):BCD: 0 to 9,999 counts Binary: 0 to 65,535 counts
<b>BCD HIGH-SPEED TIMER</b>	TIMH	015	TIMH(015) operates a decremting timer with units of 10-ms.
<b>BINARY HIGH-SPEED TIMER</b>	TIMHX	551	Setting range for Set Value (SV):BCD: 0 to 99.99 s Binary: 0 to 655.35 s
<b>BCD ONE-MS TIMER</b>	TMHH	540	TMHH(540) operates a decremting timer with units of 1-ms.
<b>BINARY ONE-MS TIMER</b>	TMHHX	552	Setting range for Set Value (SV):BCD: 0 to 9.999 s Binary: 0 to 65.535 s
<b>BCD ACCUMULATIVE TIMER</b>	TTIM	087	TTIM(087) operates an incrementing timer with units of 0.1-s.
<b>BINARY ACCUMULATIVE TIMER</b>	TTIMX	555	Setting range for Set Value (SV):BCD: 0 to 999.9 s Binary: 0 to 6,553.5 s
<b>BCD LONG TIMER</b>	TIML	542	TIML(542) operates a decremting timer with units of 0.1-s.
<b>BINARY LONG TIMER</b>	TIMLX	553	Setting range for Set Value (SV):BCD: 115 days Binary: 49,710 days
<b>BCD MULTI-OUTPUT TIMER</b>	MTIM	543	MTIM(543) operates a 0.1-s incrementing timer with eight independent SVs and Completion Flags.
<b>BINARY MULTI-OUTPUT TIMER</b>	MTIMX	554	Setting range for Set Value (SV):BCD: 0 to 999.9 s Binary: 0 to 6,553.5 s
<b>BCD REVERSIBLE COUNTER</b>	CNTR	012	CNTR(012) operates a reversible counter.
<b>BINARY REVERSIBLE COUNTER</b>	CNTRX	548	
<b>BCD RESET TIMER/COUNTER</b>	CNR	545	Resets the timers or counters within the specified range of timer or counter numbers. Sets the set value (SV) to the maximum of 9,999 for BCD instructions and FFFF for binary instructions.
<b>BINARY RESET TIMER/COUNTER</b>	CNRX	547	

## ■ Symbol Comparison Instructions

Name	Mnemonic	Function code	Function
<b>Symbol Comparison (Unsigned)</b>	LD, AND, OR + =, <>, <, <=, >, >=	300 (=) 305 (<>) 310 (<) 315 (<=) 320 (>) 325(>=)	Symbol comparison instructions (unsigned) compare two values (constants and/or the contents of specified words) in 16-bit binary data and create an ON execution condition when the comparison condition is true. There are three types of symbol comparison instructions, LD (LOAD), AND, and OR.
<b>Symbol Comparison (Double-word, unsigned)</b>	LD, AND, OR + =, <>, <, <=, >, >= + L	301 (=) 306 (<>) 311 (<) 316 (<=) 321 (>) 326 (>=)	Symbol comparison instructions (double-word, unsigned) compare two values (constants and/or the contents of specified double-word data) in unsigned 32-bit binary data and create an ON execution condition when the comparison condition is true. There are three types of symbol comparison instructions, LD (LOAD), AND, and OR.
<b>Symbol Comparison (Signed)</b>	LD, AND, OR + =, <>, <, <=, >, >= +S	302 (=) 307 (<>) 312 (<) 317 (<=) 322 (>) 327 (>=)	Symbol comparison instructions (signed) compare two values (constants and/or the contents of specified words) in signed 16-bit binary (4-digit hexadecimal) and create an ON execution condition when the comparison condition is true. There are three types of symbol comparison instructions, LD (LOAD), AND, and OR.



# Instructions

Name	Mnemonic	Function code	Function
<b>Symbol Comparison (Double-word, signed)</b>	LD, AND, OR + =, <>, <, <=, >, >= +SL	303 (=) 308 (<>) 313 (<) 318 (<=) 323 (>) 328 (>=)	Symbol comparison instructions (double-word, signed) compare two values (constants and/or the contents of specified double-word data) in signed 32-bit binary (8-digit hexadecimal) and create an ON execution condition when the comparison condition is true. There are three types of symbol comparison instructions, LD (LOAD), AND, and OR.
<b>Time comparison (Unit Ver. 2.0 or later only)</b>	LD, AND, OR + = DT <> DT < DT, <= DT > DT >= DT	341 (= DT) 342 (<> DT) 343 (< DT) 344 (<= DT) 345 (> DT) 346 (>= DT)	Time comparison instructions compare two BCD time values and create an ON execution condition when the comparison condition is true. There are three types of time comparison instructions, LD (LOAD), AND, and OR. Time values (year, month, day, hour, minute, and second) can be masked/unmasked in the comparison so it is easy to create calendar timer functions.
<b>COMPARE</b>	CMP	020	Compares two unsigned binary values (constants and/or the contents of specified words) and outputs the result to the Arithmetic Flags in the Auxiliary Area.
<b>DOUBLE COMPARE</b>	CMPL	060	Compares two double unsigned binary values (constants and/or the contents of specified words) and outputs the result to the Arithmetic Flags in the Auxiliary Area.
<b>SIGNED BINARY COMPARE</b>	CPS	114	Compares two signed binary values (constants and/or the contents of specified words) and outputs the result to the Arithmetic Flags in the Auxiliary Area.
<b>DOUBLE SIGNED BINARY COMPARE</b>	CPSL	115	Compares two double signed binary values (constants and/or the contents of specified words) and outputs the result to the Arithmetic Flags in the Auxiliary Area.
<b>TABLE COMPARE</b>	TCMP	085	Compares the source data to the contents of 16 consecutive words and turns ON the corresponding bit in the result word when the contents of the words are equal.
<b>MULTIPLE COMPARE</b>	MCMP	019	Compares 16 consecutive words with another 16 consecutive words and turns ON the corresponding bit in the result word where the contents of the words <b>are not</b> equal.
<b>BLOCK COMPARE</b>	BCMP	068	Compares the source data to 16 ranges (defined by 16 lower limits and 16 upper limits) and turns ON the corresponding bit in the result word when the source data is within the range.
<b>EXPANDED BLOCK COMPARE (CJ1G/H CPU Unit Ver. 2.0 or later only)</b>	BCMP2	502	Compares the source data to up to 256 ranges (defined by upper and lower limits) and turns ON the corresponding bit in the result word when the source data is within a range.
<b>AREA RANGE COMPARE</b>	ZCP	088	Compares the 16-bit unsigned binary value in CD (word contents or constant) to the range defined by LL and UL and outputs the results to the Arithmetic Flags in the Auxiliary Area.
<b>DOUBLE AREA RANGE COMPARE</b>	ZCPL	116	Compares the 32-bit unsigned binary value in CD and CD+1 (word contents or constant) to the range defined by LL and UL and outputs the results to the Arithmetic Flags in the Auxiliary Area.

## ■ Data Movement Instructions

Name	Mnemonic	Function code	Function
<b>MOVE</b>	MOV	021	Transfers a word of data to the specified word.
<b>DOUBLE MOVE</b>	MOVL	498	Transfers two words of data to the specified words.
<b>MOVE NOT</b>	MVN	022	Transfers the complement of a word of data to the specified word.
<b>DOUBLE MOVE NOT</b>	MVNL	499	Transfers the complement of two words of data to the specified words.
<b>MOVE BIT</b>	MOV B	082	Transfers the specified bit.
<b>MOVE DIGIT</b>	MOVD	083	Transfers the specified digit or digits. (Each digit is made up of 4 bits.)
<b>MULTIPLE BIT TRANSFER</b>	XFRB	062	Transfers the specified number of consecutive bits.
<b>BLOCK TRANSFER</b>	XFER	070	Transfers the specified number of consecutive words.
<b>BLOCK SET</b>	BSET	071	Copies the same word to a range of consecutive words.
<b>DATA EXCHANGE</b>	XCHG	073	Exchanges the contents of the two specified words.
<b>DOUBLE DATA EXCHANGE</b>	XCGL	562	Exchanges the contents of a pair of consecutive words with another pair of consecutive words.
<b>SINGLE WORD DISTRIBUTE</b>	DIST	080	Transfers the source word to a destination word calculated by adding an offset value to the base address.

# Instructions

Name	Mnemonic	Function code	Function
DATA COLLECT	COLL	081	Transfers the source word (calculated by adding an offset value to the base address) to the destination word.
MOVE TO REGISTER	MOVR	560	Sets the PLC memory address of the specified word, bit, or timer/counter Completion Flag in the specified Index Register. (Use MOVW(561) to set the PLC memory address of a timer/counter PV in an Index Register.)
MOVE TIMER/COUNTER PV TO REGISTER	MOVRW	561	Sets the PLC memory address of the specified timer or counter's PV in the specified Index Register. (Use MOVR(560) to set the PLC memory address of a word, bit, or timer/counter Completion Flag in an Index Register.)

## ■ Data Shift Instructions

Name	Mnemonic	Function code	Function
SHIFT REGISTER	SFT	010	Operates a shift register.
REVERSIBLE SHIFT REGISTER	SFTR	084	Creates a shift register that shifts data to either the right or the left.
ASYNCHRONOUS SHIFT REGISTER	ASFT	017	Shifts all non-zero word data within the specified word range either towards St or toward E, replacing 0000Hex word data.
WORD SHIFT	WSFT	016	Shifts data between St and E in word units.
ARITHMETIC SHIFT LEFT	ASL	025	Shifts the contents of Wd one bit to the left.
DOUBLE SHIFT LEFT	ASLL	570	Shifts the contents of Wd and Wd + 1 one bit to the left.
ARITHMETIC SHIFT RIGHT	ASR	026	Shifts the contents of Wd one bit to the right.
DOUBLE SHIFT RIGHT	ASRL	571	Shifts the contents of Wd and Wd + 1 one bit to the right.
ROTATE LEFT	ROL	027	Shifts all Wd bits one bit to the left including the Carry Flag (CY).
DOUBLE ROTATE LEFT	ROLL	572	Shifts all Wd and Wd + 1 bits one bit to the left including the Carry Flag (CY).
ROTATE LEFT WITHOUT CARRY	RLNC	574	Shifts all Wd bits one bit to the left not including the Carry Flag (CY).
DOUBLE ROTATE LEFT WITHOUT CARRY	RLNL	576	Shifts all Wd and Wd + 1 bits one bit to the left not including the Carry Flag (CY).
ROTATE RIGHT	ROR	028	Shifts all Wd bits one bit to the right including the Carry Flag (CY).
DOUBLE ROTATE RIGHT	RORL	573	Shifts all Wd and Wd + 1 bits one bit to the right including the Carry Flag (CY).
ROTATE RIGHT WITHOUT CARRY	RRNC	575	Shifts all Wd bits one bit to the right not including the Carry Flag (CY). The contents of the rightmost bit of Wd shifts to the leftmost bit and to the Carry Flag (CY).
DOUBLE ROTATE RIGHT WITHOUT CARRY	RRNL	577	Shifts all Wd and Wd + 1 bits one bit to the right not including the Carry Flag (CY). The contents of the rightmost bit of Wd + 1 is shifted to the leftmost bit of Wd, and to the Carry Flag (CY).
ONE DIGIT SHIFT LEFT	SLD	074	Shifts data by one digit (4 bits) to the left.
ONE DIGIT SHIFT RIGHT	SRD	075	Shifts data by one digit (4 bits) to the right.
SHIFT N-BIT DATA LEFT	NSFL	578	Shifts the specified number of bits to the left.
SHIFT N-BIT DATA RIGHT	NSFR	579	Shifts the specified number of bits to the right.
SHIFT N-BITS LEFT	NASL	580	Shifts the specified 16 bits of word data to the left by the specified number of bits.
DOUBLE SHIFT N-BITS LEFT	NSLL	582	Shifts the specified 32 bits of word data to the left by the specified number of bits.
SHIFT N-BITS RIGHT	NASR	581	Shifts the specified 16 bits of word data to the right by the specified number of bits.
DOUBLE SHIFT N-BITS RIGHT	NSRL	583	Shifts the specified 32 bits of word data to the right by the specified number of bits.

## ■ Increment/Decrement Instructions

Name	Mnemonic	Function code	Function
INCREMENT BINARY	++	590	Increments the 4-digit hexadecimal content of the specified word by 1.
DOUBLE INCREMENT BINARY	++L	591	Increments the 8-digit hexadecimal content of the specified words by 1.
DECREMENT BINARY	---	592	Decrements the 4-digit hexadecimal content of the specified word by 1.
DOUBLE DECREMENT BINARY	---L	593	Decrements the 8-digit hexadecimal content of the specified words by 1.
INCREMENT BCD	++B	594	Increments the 4-digit BCD content of the specified word by 1.
DOUBLE INCREMENT BCD	++BL	595	Increments the 8-digit BCD content of the specified words by 1.
DECREMENT BCD	---B	596	Decrements the 4-digit BCD content of the specified word by 1.
DOUBLE DECREMENT BCD	---BL	597	Decrements the 8-digit BCD content of the specified words by 1.



# Instructions

## ■ Symbol Math Instructions

Name	Mnemonic	Function code	Function
<b>SIGNED BINARY ADD WITHOUT CARRY</b>	+	400	Adds 4-digit (single-word) hexadecimal data and/or constants.
<b>DOUBLE SIGNED BINARY ADD WITHOUT CARRY</b>	+L	401	Adds 8-digit (double-word) hexadecimal data and/or constants.
<b>SIGNED BINARY ADD WITH CARRY</b>	+C	402	Adds 4-digit (single-word) hexadecimal data and/or constants with the Carry Flag (CY).
<b>DOUBLE SIGNED BINARY ADD WITH CARRY</b>	+CL	403	Adds 8-digit (double-word) hexadecimal data and/or constants with the Carry Flag (CY).
<b>BCD ADD WITHOUT CARRY</b>	+B	404	Adds 4-digit (single-word) BCD data and/or constants.
<b>DOUBLE BCD ADD WITHOUT CARRY</b>	+BL	405	Adds 8-digit (double-word) BCD data and/or constants.
<b>BCD ADD WITH CARRY</b>	+BC	406	Adds 4-digit (single-word) BCD data and/or constants with the Carry Flag (CY).
<b>DOUBLE BCD ADD WITH CARRY</b>	+BCL	407	Adds 8-digit (double-word) BCD data and/or constants with the Carry Flag (CY).
<b>SIGNED BINARY SUBTRACT WITHOUT CARRY</b>	-	410	Subtracts 4-digit (single-word) hexadecimal data and/or constants.
<b>DOUBLE SIGNED BINARY SUBTRACT WITHOUT CARRY</b>	-L	411	Subtracts 8-digit (double-word) hexadecimal data and/or constants.
<b>SIGNED BINARY SUBTRACT WITH CARRY</b>	-C	412	Subtracts 4-digit (single-word) hexadecimal data and/or constants with the Carry Flag (CY).
<b>DOUBLE SIGNED BINARY SUBTRACT WITH CARRY</b>	-CL	413	Subtracts 8-digit (double-word) hexadecimal data and/or constants with the Carry Flag (CY).
<b>BCD SUBTRACT WITHOUT CARRY</b>	-B	414	Subtracts 4-digit (single-word) BCD data and/or constants.
<b>DOUBLE BCD SUBTRACT WITHOUT CARRY</b>	-BL	415	Subtracts 8-digit (double-word) BCD data and/or constants.
<b>BCD SUBTRACT WITH CARRY</b>	-BC	416	Subtracts 4-digit (single-word) BCD data and/or constants with the Carry Flag (CY).
<b>DOUBLE BCD SUBTRACT WITH CARRY</b>	-BCL	417	Subtracts 8-digit (double-word) BCD data and/or constants with the Carry Flag (CY).
<b>SIGNED BINARY MULTIPLY</b>	*	420	Multiplies 4-digit signed hexadecimal data and/or constants.
<b>SIGNED BINARY MULTIPLY</b>	*L	421	Multiplies 8-digit signed hexadecimal data and/or constants.
<b>UNSIGNED BINARY MULTIPLY</b>	*U	422	Multiplies 4-digit unsigned hexadecimal data and/or constants.
<b>DOUBLE UNSIGNED BINARY MULTIPLY</b>	*UL	423	Multiplies 8-digit unsigned hexadecimal data and/or constants.
<b>BCD MULTIPLY</b>	*B	424	Multiplies 4-digit (single-word) BCD data and/or constants.
<b>DOUBLE BCD MULTIPLY</b>	*BL	425	Multiplies 8-digit (double-word) BCD data and/or constants.
<b>SIGNED BINARY DIVIDE</b>	/	430	Divides 4-digit (single-word) signed hexadecimal data and/or constants.
<b>DOUBLE SIGNED BINARY DIVIDE</b>	/L	431	Divides 8-digit (double-word) signed hexadecimal data and/or constants.
<b>UNSIGNED BINARY DIVIDE</b>	/U	432	Divides 4-digit (single-word) unsigned hexadecimal data and/or constants.
<b>DOUBLE UNSIGNED BINARY DIVIDE</b>	/UL	433	Divides 8-digit (double-word) unsigned hexadecimal data and/or constants.
<b>BCD DIVIDE</b>	/B	434	Divides 4-digit (single-word) BCD data and/or constants.
<b>DOUBLE BCD DIVIDE</b>	/BL	435	Divides 8-digit (double-word) BCD data and/or constants.

## ■ Conversion Instructions

Name	Mnemonic	Function code	Function
<b>BCD-TO BINARY</b>	BIN	023	Converts BCD data to binary data.
<b>DOUBLE BCD-TO-DOUBLE BINARY</b>	BINL	058	Converts 8-digit BCD data to 8-digit hexadecimal (32-bit binary) data.
<b>BINARY-TO-BCD</b>	BCD	024	Converts a word of binary data to a word of BCD data.
<b>DOUBLE BINARY-TO-DOUBLE BCD</b>	BCDL	059	Converts 8-digit hexadecimal (32-bit binary) data to 8-digit BCD data.
<b>2'S COMPLEMENT</b>	NEG	160	Calculates the 2's complement of a word of hexadecimal data.
<b>DOUBLE 2'S COMPLEMENT</b>	NEGL	161	Calculates the 2's complement of two words of hexadecimal data.

# Instructions

Name	Mnemonic	Function code	Function
<b>16-BIT TO 32-BIT SIGNED BINARY</b>	SIGN	600	Expands a 16-bit signed binary value to its 32-bit equivalent.
<b>DATA DECODER</b>	MLPX	076	Reads the numerical value in the specified digit (or byte) in the source word, turns ON the corresponding bit in the result word (or 16-word range), and turns OFF all other bits in the result word (or 16-word range). 4-to-16 bit conversion
<b>DATA ENCODER</b>	DMPX	077	Finds the location of the first or last ON bit within the source word (or 16-word range), and writes that value to the specified digit (or byte) in the result word. 16-to-4 bit conversion
<b>ASCII CONVERT</b>	ASC	086	Converts 4-bit hexadecimal digits in the source word into their 8-bit ASCII equivalents.
<b>ASCII TO HEX</b>	HEX	162	Converts up to 4 bytes of ASCII data in the source word to their hexadecimal equivalents and writes these digits in the specified destination word.
<b>COLUMN TO LINE</b>	LINE	063	Converts a column of bits from a 16-word range (the same bit number in 16 consecutive words) to the 16 bits of the destination word.
<b>LINE TO COLUMN</b>	COLM	064	Converts the 16 bits of the source word to a column of bits in a 16-word range of destination words (the same bit number in 16 consecutive words).
<b>SIGNED BCD-TO-BINARY</b>	BINS	470	Converts one word of signed BCD data to one word of signed binary data.
<b>DOUBLE SIGNED BCD-TO-BINARY</b>	BISL	472	Converts double signed BCD data to double signed binary data.
<b>SIGNED BINARY-TO-BCD</b>	BCDS	471	Converts one word of signed binary data to one word of signed BCD data.
<b>DOUBLE SIGNED BINARY-TO-BCD</b>	BDSL	473	Converts double signed binary data to double signed BCD data.
<b>GRAY CODE CONVERT</b> (Unit Ver. 2.0 or later only)	GRY	474	Converts the gray binary code data in the specified word to standard binary, BCD, or angle (°) data at the specified resolution.

## ■ Logic Instructions

Name	Mnemonic	Function code	Function
<b>LOGICAL AND</b>	ANDW	034	Takes the logical AND of corresponding bits in single words of word data and/or constants.
<b>DOUBLE LOGICAL AND</b>	ANDL	610	Takes the logical AND of corresponding bits in double words of word data and/or constants.
<b>LOGICAL OR</b>	ORW	035	Takes the logical OR of corresponding bits in single words of word data and/or constants.
<b>DOUBLE LOGICAL OR</b>	ORWL	611	Takes the logical OR of corresponding bits in double words of word data and/or constants.
<b>EXCLUSIVE OR</b>	XORW	036	Takes the logical exclusive OR of corresponding bits in single words of word data and/or constants.
<b>DOUBLE EXCLUSIVE OR</b>	XORL	612	Takes the logical exclusive OR of corresponding bits in double words of word data and/or constants.
<b>EXCLUSIVE NOR</b>	XNRW	037	Takes the logical exclusive NOR of corresponding single words of word data and/or constants.
<b>DOUBLE EXCLUSIVE NOR</b>	XNRL	613	Takes the logical exclusive NOR of corresponding bits in double words of word data and/or constants.
<b>COMPLEMENT</b>	COM	029	Turns OFF all ON bits and turns ON all OFF bits in Wd.
<b>DOUBLE COMPLEMENT</b>	COML	614	Turns OFF all ON bits and turns ON all OFF bits in Wd and Wd+1.

## ■ Special Math Instructions

Name	Mnemonic	Function code	Function
<b>BINARY ROOT</b>	ROTB	620	Computes the square root of the 32-bit binary content of the specified words and outputs the integer portion of the result to the specified result word.
<b>BCD SQUARE ROOT</b>	ROOT	072	Computes the square root of an 8-digit BCD number and outputs the integer portion of the result to the specified result word.

# Instructions

Name	Mnemonic	Function code	Function
<b>ARITHMETIC PROCESS</b>	APR	069	Calculates the sine or cosine of the source angle data between 0° and 90° and outputs the result as a 4-digit BCD value below the decimal. The linear extrapolation function allows any relationship between X and Y to be approximated with line segments. The input data can be unsigned 16-bit BCD data, unsigned 16-bit binary data, signed 16-bit binary data, signed 32-bit binary data, or single-precision floating-point decimal data.
<b>FLOATING POINT DIVIDE (BCD)</b>	FDIV	079	Divides a 7-digit floating-point number (mantissa) by a 1-digit floating-point number (exponent).
<b>BIT COUNTER</b>	BCNT	067	Counts the total number of ON bits in the specified word(s).

## ■ Floating-point Math Instructions

Name	Mnemonic	Function code	Function
<b>FLOATING TO 16-BIT</b>	FIX	450	Converts a 32-bit floating-point value to 16-bit signed binary data and places the result in the specified result word.
<b>FLOATING TO 32-BIT</b>	FIXL	451	Converts a 32-bit floating-point value to 32-bit signed binary data and places the result in the specified result words.
<b>16-BIT TO FLOATING</b>	FLT	452	Converts a 16-bit signed binary value to 32-bit floating-point data and places the result in the specified result words.
<b>32-BIT TO FLOATING</b>	FLTL	453	Converts a 32-bit signed binary value to 32-bit floating-point data and places the result in the specified result words.
<b>FLOATING POINT ADD</b>	+F	454	Adds two 32-bit floating-point numbers and places the result in the specified result words.
<b>FLOATING POINT SUBTRACT</b>	-F	455	Subtracts one 32-bit floating-point number from another and places the result in the specified result words.
<b>FLOATING- POINT DIVIDE</b>	/F	457	Divides one 32-bit floating-point number by another and places the result in the specified result words.
<b>FLOATING- POINT MULTIPLY</b>	*F	456	Multiplies two 32-bit floating-point numbers and places the result in the specified result words.
<b>DEGREES TO RADIANS</b>	RAD	458	Converts a 32-bit floating-point number from degrees to radians and places the result in the specified result words.
<b>RADIANS TO DEGREES</b>	DEG	459	Converts a 32-bit floating-point number from radians to degrees and places the result in the specified result words.
<b>SINE</b>	SIN	460	Calculates the sine of a 32-bit floating-point number (in radians) and places the result in the specified result words.
<b>COSINE</b>	COS	461	Calculates the cosine of a 32-bit floating-point number (in radians) and places the result in the specified result words.
<b>TANGENT</b>	TAN	462	Calculates the tangent of a 32-bit floating-point number (in radians) and places the result in the specified result words.
<b>ARC SINE</b>	ASIN	463	Calculates the arc sine of a 32-bit floating-point number and places the result in the specified result words. (The arc sine function is the inverse of the sine function; it returns the angle that produces a given sine value between -1 and 1.)
<b>ARC COSINE</b>	ACOS	464	Calculates the arc cosine of a 32-bit floating-point number and places the result in the specified result words. (The arc cosine function is the inverse of the cosine function; it returns the angle that produces a given cosine value between -1 and 1.)
<b>ARC TANGENT</b>	ATAN	465	Calculates the arc tangent of a 32-bit floating-point number and places the result in the specified result words. (The arc tangent function is the inverse of the tangent function; it returns the angle that produces a given tangent value.)
<b>SQUARE ROOT</b>	SQRT	466	Calculates the square root of a 32-bit floating-point number and places the result in the specified result words.
<b>EXPONENT</b>	EXP	467	Calculates the natural (base e) exponential of a 32-bit floating-point number and places the result in the specified result words.
<b>LOGARITHM</b>	LOG	468	Calculates the natural (base e) logarithm of a 32-bit floating-point number and places the result in the specified result words.
<b>EXPONENTIAL POWER</b>	PWR	840	Raises a 32-bit floating-point number to the power of another 32-bit floating-point number.

# Instructions

Name	Mnemonic	Function code	Function
<b>FLOATING SYMBOL COMPARISON</b>	LD, AND, OR + =F, <>F, <F, <=F, >F, >=F	329 (=F) 330 (<>F) 331 (<F) 332 (<=F) 333 (>F) 334 (>=F)	Compares the specified single-precision data (32 bits) or constants and creates an ON execution condition if the comparison result is true. Three kinds of symbols can be used with the floating-point symbol comparison instructions: LD (Load), AND, and OR.
<b>FLOATING-POINT TO ASCII</b>	FSTR	448	Converts the specified single-precision floating-point data (32-bit decimal-point or exponential format) to text string data (ASCII) and outputs the result to the destination word.
<b>ASCII TO FLOATING-POINT</b>	FVAL	449	Converts the specified text string (ASCII) representation of single-precision floating-point data (decimal-point or exponential format) to 32-bit single-precision floating-point data and outputs the result to the destination words.

## ■ Double-precision Floating-point Instructions

Name	Mnemonic	Function code	Function
<b>DOUBLE FLOATING TO 16-BIT BINARY</b>	FIXD	841	Converts the specified double-precision floating-point data (64 bits) to 16-bit signed binary data and outputs the result to the destination word.
<b>DOUBLE FLOATING TO 32-BIT BINARY</b>	FIXLD	842	Converts the specified double-precision floating-point data (64 bits) to 32-bit signed binary data and outputs the result to the destination words.
<b>16-BIT BINARY TO DOUBLE FLOATING</b>	DBL	843	Converts the specified 16-bit signed binary data to double-precision floating-point data (64 bits) and outputs the result to the destination words.
<b>32-BIT BINARY TO DOUBLE FLOATING</b>	DBLL	844	Converts the specified 32-bit signed binary data to double-precision floating-point data (64 bits) and outputs the result to the destination words.
<b>DOUBLE FLOATING-POINT ADD</b>	+D	845	Adds the specified double-precision floating-point values (64 bits each) and outputs the result to the result words.
<b>DOUBLE FLOATING-POINT SUBTRACT</b>	-D	846	Subtracts the specified double-precision floating-point values (64 bits each) and outputs the result to the result words.
<b>DOUBLE FLOATING-POINT MULTIPLY</b>	*D	847	Multiplies the specified double-precision floating-point values (64 bits each) and outputs the result to the result words.
<b>DOUBLE FLOATING-POINT DIVIDE</b>	/D	848	Divides the specified double-precision floating-point values (64 bits each) and outputs the result to the result words.
<b>DOUBLE DEGREES TO RADIAN</b>	RADD	849	Converts the specified double-precision floating-point data (64 bits) from degrees to radians and outputs the result to the result words.
<b>DOUBLE RADIAN TO DEGREES</b>	DEGD	850	Converts the specified double-precision floating-point data (64 bits) from radians to degrees and outputs the result to the result words.
<b>DOUBLE SINE</b>	SIND	851	Calculates the sine of the angle (radians) in the specified double-precision floating-point data (64 bits) and outputs the result to the result words.
<b>DOUBLE COSINE</b>	COSD	852	Calculates the cosine of the angle (radians) in the specified double-precision floating-point data (64 bits) and outputs the result to the result words.
<b>DOUBLE TANGENT</b>	TAND	853	Calculates the tangent of the angle (radians) in the specified double-precision floating-point data (64 bits) and outputs the result to the result words.
<b>DOUBLE ARC SINE</b>	ASIND	854	Calculates the angle (in radians) from the sine value in the specified double-precision floating-point data (64 bits) and outputs the result to the result words. (The arc sine function is the inverse of the sine function; it returns the angle that produces a given sine value between -1 and 1.)
<b>DOUBLE ARC COSINE</b>	ACOSD	855	Calculates the angle (in radians) from the cosine value in the specified double-precision floating-point data (64 bits) and outputs the result to the result words. (The arc cosine function is the inverse of the cosine function; it returns the angle that produces a given cosine value between -1 and 1.)
<b>DOUBLE ARC TANGENT</b>	ATAND	856	Calculates the angle (in radians) from the tangent value in the specified double-precision floating-point data (64 bits) and outputs the result to the result words.
<b>DOUBLE SQUARE ROOT</b>	SQRTD	857	Calculates the square root of the specified double-precision floating-point data (64 bits) and outputs the result to the result words.
<b>DOUBLE EXPONENTIAL</b>	EXPD	858	Calculates the natural (base e) exponential of the specified double-precision floating-point data (64 bits) and outputs the result to the result words.

# Instructions

Name	Mnemonic	Function code	Function
<b>DOUBLE LOGARITHM</b>	LOGD	859	Calculates the natural (base e) logarithm of the specified double-precision floating-point data (64 bits) and outputs the result to the result words.
<b>DOUBLE EXPONENTIAL POWER</b>	PWRD	860	Raises a double-precision floating-point number (64 bits) to the power of another double-precision floating-point number and outputs the result to the result words.
<b>DOUBLE SYMBOL COMPARISON</b>	LD, AND, OR + =D, <>D, <D, <=D, >D, >=D	335 (=D) 336 (<>D) 337 (<D) 338 (<=D) 339 (>D) 340 (>=D)	Compares the specified double-precision data (64 bits) and creates an ON execution condition if the comparison result is true. Three kinds of symbols can be used with the floating-point symbol comparison instructions: LD (Load), AND, and OR.

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# Instructions

## ■ Table Data Processing Instructions

Name	Mnemonic	Function code	Function
SET STACK	SSET	630	Defines a stack of the specified length beginning at the specified word and initializes the words in the data region to all zeroes.
PUSH ONTO STACK	PUSH	632	Writes one word of data to the specified stack.
FIRST IN FIRST OUT	FIFO	633	Reads the first word of data written to the specified stack (the oldest data in the stack).
LAST IN FIRST OUT	LIFO	634	Reads the last word of data written to the specified stack (the newest data in the stack).
DIMENSION RECORD TABLE	DIM	631	Defines a record table by declaring the length of each record and the number of records. Up to 16 record tables can be defined.
SET RECORD LOCATION	SETR	635	Writes the location of the specified record (the PLC memory address of the beginning of the record) in the specified Index Register.
GET RECORD NUMBER	GETR	636	Returns the record number of the record at the PLC memory address contained in the specified Index Register.
DATA SEARCH	SRCH	181	Searches for a word of data within a range of words.
SWAP BYTES	SWAP	637	Switches the leftmost and rightmost bytes in all of the words in the range.
FIND MAXIMUM	MAX	182	Finds the maximum value in the range.
FIND MINIMUM	MIN	183	Finds the minimum value in the range.
SUM	SUM	184	Adds the bytes or words in the range and outputs the result to two words.
FRAME CHECK-SUM	FCS	180	Calculates the ASCII FCS value for the specified range.
STACK SIZE READ	SNUM	638	Counts the amount of stack data (number of words) in the specified stack.
STACK DATA READ	SREAD	639	Reads the data from the specified data element in the stack. The offset value indicates the location of the desired data element (how many data elements before the current pointer position).
STACK DATA OVERWRITE	SWRIT	640	Writes the source data to the specified data element in the stack (overwriting the existing data). The offset value indicates the location of the desired data element (how many data elements before the current pointer position).
STACK DATA INSERT	SINS	641	Inserts the source data at the specified location in the stack and shifts the rest of the data in the stack downward. The offset value indicates the location of the insertion point (how many data elements before the current pointer position).
STACK DATA DELETE	SDEL	642	Deletes the data element at the specified location in the stack and shifts the rest of the data in the stack upward. The offset value indicates the location of the deletion point (how many data elements before the current pointer position).

## ■ Data Control Instructions

Name	Mnemonic	Function code	Function
PID CONTROL	PID	190	Executes PID control according to the specified parameters.
PID CONTROL WITH AUTO TUNING	PIDAT	191	Executes PID control according to the specified parameters. The PID constants can be auto-tuned.
LIMIT CONTROL	LMT	680	Controls output data according to whether or not input data is within upper and lower limits.
DEAD BAND CONTROL	BAND	681	Controls output data according to whether or not input data is within the dead band range.
DEAD ZONE CONTROL	ZONE	682	Adds the specified bias to input data and outputs the result.
TIME-PROPORTIONAL OUTPUT (Unit Ver. 2.0 or later only)	TPO	685	Inputs the duty ratio or manipulated variable from the specified word, converts the duty ratio to a time-proportional output based on the specified parameters, and outputs the result from the specified output.
SCALING	SCL	194	Converts unsigned binary data into unsigned BCD data according to the specified linear function.
SCALING 2	SCL2	486	Converts signed binary data into signed BCD data according to the specified linear function. An offset can be input in defining the linear function.
SCALING 3	SCL3	487	Converts signed BCD data into signed binary data according to the specified linear function. An offset can be input in defining the linear function.
AVERAGE	AVG	195	Calculates the average value of an input word for the specified number of cycles.

# Instructions

## ■ Subroutines Instructions

Name	Mnemonic	Function code	Function
<b>SUBROUTINE CALL</b>	SBS	091	Calls the subroutine with the specified subroutine number and executes that program.
<b>SUBROUTINE ENTRY</b>	SBN	092	Indicates the beginning of the subroutine program with the specified subroutine number.
<b>SUBROUTINE RETURN</b>	RET	093	Indicates the end of a subroutine program.
<b>MACRO</b>	MCRO	099	Calls the subroutine with the specified subroutine number and executes that program using the input parameters in S to S+3 and the output parameters in D to D+3.
<b>GLOBAL SUB-ROUTINE ENTRY</b>	GSBN	751	Indicates the beginning of a global subroutine program with the specified subroutine number.
<b>GLOBAL SUB-ROUTINE RETURN</b>	GRET	752	Indicates the end of a global subroutine program.
<b>GLOBAL SUB-ROUTINE CALL</b>	GSBS	750	Calls the global subroutine with the specified subroutine number and executes that program.

## ■ Interrupt Control Instructions

Name	Mnemonic	Function code	Function
<b>SET INTERRUPT MASK</b>	MSKS	690	Sets up interrupt processing for scheduled interrupts. Scheduled interrupt tasks are masked (disabled) when the PLC is first turned on. MSKS(690) can be used to set the time intervals for scheduled interrupts.
<b>READ INTERRUPT MASK</b>	MSKR	692	Reads the current interrupt processing settings that were set with MSKS(690).
<b>CLEAR INTERRUPT</b>	CLI	691	Sets the time to the first scheduled interrupt.
<b>DISABLE INTERRUPTS</b>	DI	693	Disables execution of all interrupt tasks except the power OFF interrupt.
<b>ENABLE INTERRUPTS</b>	EI	694	Enables execution of all interrupt tasks that were disabled with DI(693).

## ■ Step Instructions

Name	Mnemonic	Function code	Function
<b>STEP DEFINE</b>	STEP	008	Functions in following two ways, depending on its position and whether or not a control bit has been specified. (1) Starts a specific step. (2) Ends the step programming area (i.e., step execution). The step programming area is from the first STEP(008) instruction (which always takes a control bit) to the last STEP(008) instruction (which never takes a control bit).
<b>STEP START</b>	SNXT	009	Used in the following three ways, depending on its position: (1) To start step programming execution. (2) To proceed to the next step control bit. (3) To end step programming execution.

## ■ Basic I/O Unit Instructions

Name	Mnemonic	Function code	Function
<b>I/O REFRESH</b>	IORF	097	Refreshes the specified I/O words between the starting word and end word, inclusively. IORF(097) is used to refresh words allocated to Basic I/O Units or Special I/O Units mounted on the CPU Rack or Expansion Racks.
<b>7-SEGMENT DECODER</b>	SDEC	078	Converts the contents (0 to F) of the 4 bits for the designated digit(s) of word data into 8-bit, 7-segment display code and places it into the upper or lower 8-bits of the specified destination words.
<b>DIGITAL INPUT SWITCH (Unit Ver. 2.0 or later only)</b>	DSW	210	Reads the value set on an external digital switch (or thumbwheel switch) connected to an Input Unit or Output Unit and stores the 4-digit or 8-digit BCD data in the specified words.
<b>TEN KEY INPUT (Unit Ver. 2.0 or later only)</b>	TKY	211	Reads numeric data from a ten-key keypad connected to an Input Unit and stores up to 8 digits of BCD data in the specified words.

# Instructions

Name	Mnemonic	Function code	Function
<b>HEXADECIMAL KEY INPUT</b> (Unit Ver. 2.0 or later only)	HKY	212	Reads numeric data from a hexadecimal keypad connected to an Input Unit or Output Unit and stores up to 8 digits of hexadecimal data in the specified words.
<b>MATRIX INPUT</b> (Unit Ver. 2.0 or later only)	MTR	213	Inputs up to 64 signals from an 8 × 8 matrix connected to an Input Unit or Output Unit (using 8 input points and 8 output points) and stores that 64-bit data in the 4 destination words (64 bits).
<b>7-SEGMENT DISPLAY OUTPUT</b> (Unit Ver. 2.0 or later only)	7SEG	214	Converts the source data (either 4-digit or 8-digit BCD) to 7-segment display data, and outputs that data to the specified output word.
<b>INTELLIGENT I/O READ</b>	IORD	222	Reads the contents of the I/O Unit's memory area.
<b>INTELLIGENT I/O WRITE</b>	IOWR	223	Outputs the contents of the CPU Unit's I/O memory area to the Special I/O Unit.
<b>CPU BUS UNIT I/O REFRESH</b>	DLNK	226	Immediately refreshes the I/O in the CPU Bus Unit with the specified unit number.

## Serial Communications Instructions

Name	Mnemonic	Function code	Function
<b>PROTOCOL MACRO</b>	PMCR	260	Calls and executes a communications sequence (protocol data) registered in a Serial Communications Unit.
<b>TRANSMIT</b> (Unit Ver. 3.0 or later only)	TXD	236	Converts the specified number of bytes of data into ASCII and sends it from the RS-232C port built into the CPU Unit (no-protocol mode) according to the start code and end code specified for no-protocol mode in the PLC Setup.
<b>RECEIVE</b> (Unit Ver. 3.0 or later only)	RXD	235	Outputs the specified number of bytes of data sent from the RS-232C port built into the CPU Unit (no-protocol mode) according to the start code and end code specified for no-protocol mode in the PLC Setup.
<b>TRANSMIT VIA SERIAL COMMUNICATIONS UNIT</b> (Unit Ver 3.0 or later)	TXDU	256	Outputs the specified number of bytes of data without conversion from the serial port of a Serial Communications Unit (Ver. 1.2 or later). The data is output in no-protocol mode with the start code and end code (if any) specified in the allocated DM Setup Area.
<b>RECEIVE VIA SERIAL COMMUNICATIONS UNIT</b> (Unit Ver. 3.0 or later)	RXDU	255	Reads the specified number of bytes of data starting with the specified start word from the serial port of a Serial Communications Unit (Ver. 1.2 or later). The data is read in no-protocol mode with the start code and end code (if any) specified in the allocated DM Setup Area.
<b>CHANGE SERIAL PORT SETUP</b> (Unit Ver. 3.0 or later only)	STUP	237	Changes the communications parameters of a serial port (including peripheral ports) on the CPU Unit, Serial Communications Unit, or Serial Communications Board.

## Network Instructions

Name	Mnemonic	Function code	Function
<b>NETWORK SEND</b>	SEND	090	Transmits data to a node in the network.
<b>NETWORK RECEIVE</b>	RECV	098	Requests data to be transmitted from a node in the network and receives the data.
<b>DELIVER COMMAND</b>	CMND	490	Sends FINS commands and receives the response.
<b>EXPLICIT MESSAGE SEND</b> (Unit Ver. 2.0 or later only)	EXPLT	720	Sends an explicit message with any Service Code.
<b>EXPLICIT GET ATTRIBUTE</b> (Unit Ver. 2.0 or later only)	EGATR	721	Reads status information with an explicit message (Get Attribute Single, Service Code: 0E hex).

# Instructions

Name	Mnemonic	Function code	Function
<b>EXPLICIT SET ATTRIBUTE</b> (Unit Ver. 2.0 or later only)	ESATR	722	Writes status information with an explicit message (Set Attribute Single, Service Code: 0E hex).
<b>EXPLICIT WORD READ</b> (Unit Ver. 2.0 or later only)	ECHRD	723	Reads data to the local CPU Unit from a remote CPU Unit in the network. (The remote CPU Unit must support explicit messages.)
<b>EXPLICIT WORD WRITE</b> (Unit Ver. 2.0 or later only)	ECHWR	724	Writes data from the local CPU Unit to a remote CPU Unit in the network. (The remote CPU Unit must support explicit messages.)

## ■ File Memory Instructions

Name	Mnemonic	Function code	Function
<b>READ DATA FILE</b>	FREAD	700	Reads the specified data or amount of data from the specified data file (I/O memory file) in file memory to the specified I/O memory data area in the CPU Unit.
<b>WRITE DATA FILE</b>	FWRIT	701	Writes to the specified data file (I/O memory file) with the specified data from the specified I/O memory area.

## ■ Display Instructions

Name	Mnemonic	Function code	Function
<b>DISPLAY MESSAGE</b>	MSG	046	Reads the specified sixteen words of extended ASCII and displays the message on a Programming Device such as a Programming Console.

## ■ Clock Instructions

Name	Mnemonic	Function code	Function
<b>CALENDAR ADD</b>	CADD	730	Adds time to the calendar data in the specified words.
<b>CALENDAR SUBTRACT</b>	CSUB	731	Subtracts time from the calendar data in the specified words.
<b>HOURS TO SECONDS</b>	SEC	065	Converts time data in hours/minutes/seconds format to an equivalent time in seconds only.
<b>SECONDS TO HOURS</b>	HMS	066	Converts seconds data to an equivalent time in hours/minutes/seconds format.
<b>CLOCK ADJUSTMENT</b>	DATE	735	Changes the internal clock setting to the setting in the specified source words.

## ■ Debugging Instructions

Name	Mnemonic	Function code	Function
<b>TRACE MEMORY SAMPLING</b>	TRSM	045	When TRSM(045) is executed, the status of a preselected bit or word is sampled and stored in Trace Memory. TRSM(045) can be used anywhere in the program, any number of times.

## ■ Failure Diagnosis Instructions

Name	Mnemonic	Function code	Function
<b>FAILURE ALARM</b>	FAL	006	Generates or clears user-defined non-fatal errors. Non-fatal errors do not stop PLC operation. Can also be used to simulate non-fatal system errors with the CJ-series CPU Units.
<b>SEVERE FAILURE ALARM</b>	FALS	007	Generates user-defined fatal errors. Fatal errors stop PLC operation. Can also be used to simulate fatal system errors with the CJ-series CPU Units.
<b>FAILURE POINT DETECTION</b>	FPD	269	Diagnoses a failure in an instruction block by monitoring the time between execution of FPD(269) and execution of a diagnostic output and finding which input is preventing an output from being turned ON.

# Instructions

## Other Instructions

Name	Mnemonic	Function code	Function
SET CARRY	STC	040	Sets the Carry Flag (CY).
CLEAR CARRY	CLC	041	Turns OFF the Carry Flag (CY).
SELECT EM BANK	EMBC	281	Changes the current EM bank.
EXTEND MAXIMUM CYCLE TIME	WDT	094	Extends the maximum cycle time, but only for the cycle in which this instruction is executed.
SAVE CONDITION FLAGS	CCS	282	Saves the status of the condition flags.
LOAD CONDITION FLAGS	CCL	283	Reads the status of the condition flags that was saved.
CONVERT ADDRESS FROM CV	FRMCV	284	Converts a CV-series PC memory address to its equivalent CS-series PC memory address.
CONVERT ADDRESS TO CV	TOCV	285	Converts a CS-series PC memory address to its equivalent CV-series PC memory address.
DISABLE PERIPHERAL SERVICING	IOSP	287	Disables peripheral servicing during program execution in Parallel Processing Mode or Peripheral Servicing Priority Mode.
ENABLE PERIPHERAL SERVICING	IORS	288	Enables peripheral servicing that was disabled by IOSP(287) for program execution in Parallel Processing Mode or Peripheral Servicing Priority Mode.

## Block Programming Instructions

Name	Mnemonic	Function code	Function
BLOCK PROGRAM BEGIN	BPRG	096	Define a block programming area. For every BPRG(096) there must be a corresponding BEND(801).
BLOCK PROGRAM END	BEND	801	Define a block programming area. For every BPRG(096) there must be a corresponding BEND(801).
BLOCK PROGRAM PAUSE	BPPS	811	Pause and restart the specified block program from another block program.
BLOCK PROGRAM RESTART	BPRS	812	Pause and restart the specified block program from another block program.
CONDITIONAL BLOCK EXIT	<i>input_condition</i> EXIT	806	EXIT(806) without an operand bit exits the program if the execution condition is ON.
CONDITIONAL BLOCK EXIT	EXIT <i>bit_address</i>	806	EXIT(806) without an operand bit exits the program if the execution condition is ON.
CONDITIONAL BLOCK EXIT (NOT)	EXIT NOT <i>bit_address</i>	806	EXIT(806) without an operand bit exits the program if the execution condition is ON.
CONDITIONAL BLOCK BRANCHING	<i>input_condition</i> IF	802	If the execution condition is ON, the instructions between IF(802) and ELSE(803) will be executed and if the execution condition is OFF, the instructions between ELSE(803) and IEND(804) will be executed.
CONDITIONAL BLOCK BRANCHING	IF <i>bit_address</i>	802	If the operand bit is ON, the instructions between IF(802) and ELSE(803) will be executed. If the operand bit is OFF, the instructions between ELSE(803) and IEND(804) will be executed.
CONDITIONAL BLOCK BRANCHING (NOT)	IF NOT <i>bit_address</i>	802	The instructions between IF(802) and ELSE(803) will be executed and if the operand bit is ON, the instructions between ELSE(803) and IEND(804) will be executed if the operand bit is OFF.
CONDITIONAL BLOCK BRANCHING (ELSE)	ELSE	803	If the ELSE(803) instruction is omitted and the operand bit is ON, the instructions between IF(802) and IEND(804) will be executed.
CONDITIONAL BLOCK BRANCHING END	IEND	804	If the operand bit is OFF, only the instructions after IEND(804) will be executed.
ONE CYCLE AND WAIT	<i>input_condition</i> WAIT	805	If the execution condition is ON for WAIT(805), the rest of the instruction in the block program will be skipped.
ONE CYCLE AND WAIT	WAIT <i>bit_address</i>	805	If the operand bit is OFF (ON for WAIT NOT(805)), the rest of the instructions in the block program will be skipped. In the next cycle, none of the block program will be executed except for the execution condition for WAIT(805) or WAIT(805) NOT. When the execution condition goes ON (OFF for WAIT(805) NOT), the instruction from WAIT(805) or WAIT(805) NOT to the end of the program will be executed.
ONE CYCLE AND WAIT (NOT)	WAIT NOT <i>bit_address</i>	805	If the operand bit is OFF (ON for WAIT NOT(805)), the rest of the instructions in the block program will be skipped. In the next cycle, none of the block program will be executed except for the execution condition for WAIT(805) or WAIT(805) NOT. When the execution condition goes ON (OFF for WAIT(805) NOT), the instruction from WAIT(805) or WAIT(805) NOT to the end of the program will be executed.



# Instructions

Name	Mnemonic	Function code	Function
<b>BCD TIMER WAIT</b>	TIMW	813	Delays execution of the rest of the block program until the specified time has elapsed. Execution will be continued from the next instruction after TIMW(813) when the timer times out. Setting range for Set Value (SV):BCD: 0 to 999.9 s Binary: 0 to 6,553.5 s
<b>BINARY TIMER WAIT</b>	TIMWX	816	
<b>BCD COUNTER WAIT</b>	CNTW	814	Delays execution of the rest of the block program until the specified count has been achieved. Execution will be continued from the next instruction after CNTW(814) when the counter counts out. Setting range for Set Value (SV):BCD: 0 to 9999 counts Binary: 0 to 65,535 counts
<b>BINARY COUNTER WAIT</b>	CNTWX	817	
<b>BCD HIGH-SPEED TIMER WAIT</b>	TMHW	815	Delays execution of the rest of the block program until the specified time has elapsed. Execution will be continued from the next instruction after TMHW(815) when the timer times out. Setting range for Set Value (SV):BCD: 0 to 99.99 s Binary: 0 to 655.35 s
<b>BINARY HIGH-SPEED TIMER WAIT</b>	TMHWX	818	
<b>LOOP</b>	LOOP	809	LOOP(809) designates the beginning of the loop program.
<b>LEND</b>	<i>input_condition</i> LEND	810	LEND(810) or LEND(810) NOT specifies the end of the loop. When LEND(810) or LEND(810) NOT is reached, program execution will loop back to the next previous LOOP(809) until the operand bit for LEND(810) or LEND(810) NOT turns ON or OFF (respectively) or until the execution condition for LEND(810) turns ON.
<b>LEND</b>	LEND <i>bit_address</i>	810	If the operand bit is OFF for LEND(810) (or ON for LEND(810) NOT), execution of the loop is repeated starting with the next instruction after LOOP(809). If the operand bit is ON for LEND(810) (or OFF for LEND(810) NOT), the loop is ended and execution continues to the next instruction after LEND(810) or LEND(810) NOT.
<b>LEND NOT</b>	LEND NOT <i>bit_address</i>	810	LEND(810) or LEND(810) NOT specifies the end of the loop. When LEND(810) or LEND(810) NOT is reached, program execution will loop back to the next previous LOOP(809) until the operand bit for LEND(810) or LEND(810) NOT turns ON or OFF (respectively) or until the execution condition for LEND(810) turns ON.

## ■ Text String Processing Instructions

Name	Mnemonic	Function code	Function
<b>MOV STRING</b>	MOV\$	664	Transfers a text string.
<b>CONCATENATE STRING</b>	+\$	656	Links one text string to another text string.
<b>GET STRING LEFT</b>	LEFT\$	652	Fetches a designated number of characters from the left (beginning) of a text string.
<b>GET STRING RIGHT</b>	RGHT\$	653	Reads a designated number of characters from the right (end) of a text string.
<b>GET STRING MIDDLE</b>	MID\$	654	Reads a designated number of characters from any position in the middle of a text string.
<b>FIND IN STRING</b>	FIND\$	660	Finds a designated text string from within a text string.
<b>STRING LENGTH</b>	LEN\$	650	Calculates the length of a text string.
<b>REPLACE IN STRING</b>	RPLC\$	661	Replaces a text string with a designated text string from a designated position.
<b>DELETE STRING</b>	DEL\$	658	Deletes a designated text string from the middle of a text string.
<b>EXCHANGE STRING</b>	XCHG\$	665	Replaces a designated text string with another designated text string.
<b>CLEAR STRING</b>	CLR\$	666	Clears an entire text string with NUL (00 hex).
<b>INSERT INTO STRING</b>	INS\$	657	Deletes a designated text string from the middle of a text string.
<b>String Comparison</b>	LD, AND, OR + =\$, <>\$, <\$, <=\$, >\$, >=\$	670 (=)\$ 671 (<>)\$ 672 (<)\$ 673 (<=\$) 674 (>)\$ 675 (>=\$)	String comparison instructions (=, <>, <, <=, >, >=) compare two text strings from the beginning, in terms of value of the ASCII codes. If the result of the comparison is true, an ON execution condition is created for a LOAD, AND, or OR.

## ■ Task Control Instruction

Name	Mnemonic	Function code	Function
<b>TASK ON</b>	TKON	820	Makes the specified task executable.
<b>TASK OFF</b>	TKOF	821	Puts the specified task into standby status.

## Model Conversion Instructions

Name	Mnemonic	Function code	Function
<b>BLOCK TRANSFER</b> (Unit Ver.3.0 or later only)	XFERC	565	Transfers the specified number of consecutive words.
<b>SINGLE WORD DISTRIBUTE</b> (Unit Ver.3.0 or later only)	DISTC	566	Transfers the source word to a destination word calculated by adding an offset value to the base address.
<b>DATA COLLECT</b> (Unit Ver.3.0 or later only)	COLLC	567	Transfers the source word (calculated by adding an offset value to the base address) to the destination word.
<b>MOVE BIT</b> (Unit Ver.3.0 or later only)	MOVBC	568	Transfers the specified bit.
<b>BIT COUNTER</b> (Unit Ver.3.0 or later only)	BCNTC	621	Counts the total number of ON bits in the specified word(s).

## Special Function Block Instructions

Name	Mnemonic	Function code	Function
<b>GET VARIABLE ID</b> (Unit Ver.3.0 or later only)	GETID	286	Outputs the FINS command variable type (data area) code and word address for the specified variable or address. This instruction is generally used to get the assigned address of a variable in a function block.

# Replacing C200H I/O Units

## ■ Replacing C200H I/O Units with CS1 I/O Units

This section shows the corresponding CS1 I/O models and notes for replacing C200H I/O Units.

### 16-point DC Input Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-ID212 ➡	CS1W-ID211
Description	16-point DC Input Units with terminal blocks	
Notes	The terminal arrangement must be changed. The impedance increases (from 3 kΩ to 3.3 kΩ). Check that correct operation is possible in cases where increased impedance may influence operation. The internal 5-V current consumption increases (from 10 mA to 100 mA). Check that the increased current is within the range of the power supply.	

### 64-point DC Input Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-ID219 ➡	CS1W-ID261
Description	64-point DC Input Units with connectors. The connectors, the pin arrangement, and the input specifications are the same.	
Notes	There are 4 commons instead of 2. Connect where necessary. The internal 5-V current consumption increases (from 120 mA to 150 mA). Check that the increased current is within the range of the power supply.	

### 32-point DC Input Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-ID218 ➡	CS1W-ID231
Description	32-point DC Input Units with connectors. The connectors, the pin arrangement, and the input specifications are the same.	
Notes	There are 2 commons instead of 1. Connect where necessary. The internal 5-V current consumption increases (from 100 mA to 150 mA). Check that the increased current is within the range of the power supply.	

### 64-point DC Input Units (cntd.)

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-ID217 ➡	CS1W-ID261
Description	64-point DC Input Units with connectors. The connectors and the pin arrangement are the same. The input current increases, allowing use with a wider range of devices.	
Notes	There are 4 commons instead of 2. Connect where necessary. The input specifications change (e.g., the impedance decreases and the input current increases from 4.1 mA to 6 mA.) Check that correct operation is possible in cases where changes in input specifications may influence operation. The internal 5-V current consumption increases (from 100 mA to 150 mA). Check that the increased current is within the range of the power supply.	

### 32-point DC Input Units (cntd.)

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-ID216 ➡	CS1W-ID231
Description	32-point DC Input Units with connectors. The connectors and the pin arrangement are the same. The input current increases, allowing use with a wider range of devices.	
Notes	There are 2 commons instead of 1. Connect where necessary. The input specifications change (e.g., the impedance decreases and the input current increases from 4.1 mA to 6 mA.) Check that correct operation is possible in cases where changes in input specifications may influence operation. The internal 5-V current consumption increases (from 100 mA to 150 mA). Check that the increased current is within the range of the power supply.	

### 16-point Sinking Transistor Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OD212 ➡	CS1W-OD211
Description	16-point Transistor Output (sinking) Units with terminal blocks. The output current capacity increases (from 0.3 A per point and 4.8 A per Unit to 0.5 A per point and 8 A per Unit). The rated voltage range also increases (from 24 V to any voltage in the range 12 to 24 V.)	
Notes	The terminal arrangement must be changed. The output specifications change. Check that correct operation is possible in cases where changes in output specifications may influence operation. (Residual voltage increases from 0.8 V to 1.5 V, ON response time increases from 0.1 ms to 0.5 ms, OFF response time increases from 0.3 ms to 1 ms.)	

# Replacing C200H I/O Units

## 16-point Sourcing Transistor Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OD21A ➡	CS1W-OD212
Description	16-point Transistor Output (sourcing) Units with terminal blocks.	
Notes	The terminal arrangement must be changed.	
	The output capacity changes (from 1 A per point and 4 A per Unit to 0.5 A per point and 5 A per Unit). Check that correct operation is possible in cases where changes in output capacity may influence operation.	
	The output specifications change. Check that correct operation is possible in cases where changes in output specifications may influence operation. (Residual voltage increases from 0.8 V to 1.5 V, ON response time increases from 0.1 ms to 0.5 ms, OFF response time increases from 0.3 ms to 1 ms.)	
	The internal 5-V current consumption increases (from 160 mA to 170 mA). The external 24-V power supply current also increases (from 35 mA to 40 mA). Check that the increased current is within the range of the power supply.	
	There are no alarm output contacts. Use the alarm bits in the Auxiliary Area.	

## 32-point Sinking Transistor Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OD218 ➡	CS1W-OD231
Description	32-point Transistor Output (sinking) Units with connectors. The connectors and the pin arrangement are the same. The output current capacity increases (from 100 mA to 0.5 A per point, 2.5 A per common, and 5 A per Unit). The load voltage range changes from 4.5 to 26.4 V to 10.2 to 26.4 V.	
Notes	There are 2 commons instead of 1. Connect where necessary.	
	The output specifications change. Check that correct operation is possible in cases where changes in output specifications may influence operation. (Residual voltage increases from 0.8 V to 1.5 V, ON response time increases from 0.1 ms to 0.5 ms, OFF response time increases from 0.4 ms to 1 ms.)	
	Replacement is not possible for applications with an output load range of 4.5 to 10.2 V.	
	The internal 5-V current consumption increases (from 180 mA to 270 mA). Check that the increased current is within the range of the power supply.	

## 32-point Sourcing Transistor Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OD21B ➡	CS1W-OD232
Description	32-point Transistor Output (sourcing) Units with connectors. The connectors and the pin arrangement are the same.	
Notes	There are 2 commons instead of 1. Connect where necessary.	
	The output specifications change. Check that correct operation is possible in cases where changes in output specifications may influence operation. (Residual voltage increases from 0.8 V to 1.5 V, ON response time increases from 0.1 ms to 0.5 ms, OFF response time increases from 0.3 ms to 1 ms.)	
	The internal 5-V current consumption increases (from 180 mA to 270 mA). Check that the increased current is within the range of the power supply.	

## 64-point Sinking Transistor Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OD219 ➡	CS1W-OD261
Description	64-point Transistor Output (sinking) Units with connectors. The connectors and the pin arrangement are the same. The output current capacity increases (from 100 mA to 0.3 A per point, 1.6 A per common, and 6.4 A per Unit). The load voltage range changes from 4.5 to 26.4 V to 10.2 to 26.4 V.	
Notes	There are 4 commons instead of 2. Connect where necessary.	
	The output specifications change. Check that correct operation is possible in cases where changes in output specifications may influence operation. (Residual voltage increases from 0.8 V to 1.5 V, ON response time increases from 0.1 ms to 0.5 ms, OFF response time increases from 0.4 ms to 1 ms.)	
	Replacement is not possible for applications with an output load range of 4.5 to 10.2 V.	
	The internal 5-V current consumption increases (from 270 mA to 390 mA). Check that the increased current is within the range of the power supply.	

## 16-point 100-VAC Input Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-IA122/122V ➡	CS1W-IA111
Description	16-point 100-VAC Input Units with terminal blocks. 100-VDC input also possible.	
Notes	The terminal arrangement must be changed.	
	The input specifications change. Check that correct operation is possible in cases where changes in input specifications may influence operation. (ON voltage increases from 60 VAC min. to 65 VAC min. and the input impedance (50 Hz) increases from 9.7 kΩ to 10 kΩ.)	
	The internal 5-V current consumption increases (from 10 mA to 110 mA). Check that the increased current is within the range of the power supply.	

# Replacing C200H I/O Units

## 16-point 200VAC Input Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-IA222/ 222V ➔	CS1W-IA211
Description	16-point 200-VAC Input Units with terminal blocks. The input specifications are the same.	
Notes	<p>The terminal arrangement must be changed.</p> <p>The internal 5-V current consumption increases (from 10 mA to 110 mA). Check that the increased current is within the range of the power supply.</p>	

## 8-point Triac Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OA223 ➔	CS1W-OA201
Description	8-point Triac Output Units with terminal blocks. The output current capacity increases (from 4 A per Unit to 4.8 A per Unit).	
Notes	<p>The terminal arrangement must be changed.</p> <p>The maximum inrush current changes. Check that correct operation is possible in cases where changes in maximum inrush current may influence operation. (Changes from 15 A for a pulse width of 100 ms and 30 A for a pulse width of 10 ms to 10 A for a pulse width of 100 ms and 20 A for a pulse width of 10 ms.)</p> <p>The internal 5-V current consumption increases (from 180 mA to 230 mA). Check that the increased current is within the range of the power supply.</p>	

## 16-point Triac Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OA224 ➔	CS1W-OA211
Description	16-point Triac Output Units with terminal blocks. The number of output points increases (from 12 to 16). The output current capacity also increases (from 2 A per Unit to 4 A per Unit).	
Notes	<p>The terminal arrangement must be changed.</p> <p>The output specifications change. Check that correct operation is possible in cases where changes in output specifications may influence operation. (Maximum inrush current decreases from 20 A for a pulse width of 10 ms to 15 A for a pulse width of 10 ms and the residual voltage increases from 1.5 VAC (50 to 500 mA) to 1.6 VAC.)</p> <p>The internal 5-V current consumption increases (from 270 mA to 406 mA). Check that the increased current is within the range of the power supply.</p>	

## 8-point Independent Relay Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OC224/ OC224N ➔	CS1W-OC201
Description	Relay Output Units with 8 independent output points and terminal blocks. 100-VDC input also possible.	
Notes	<p>The terminal arrangement must be changed.</p> <p>The ON/OFF response time changes (C200H-OC224 only). Check that correct operation is possible in cases where an increased ON/OFF response time may influence operation. (Increases from 10 ms to 15 ms)</p> <p>The internal 5-V current consumption increases (from 10 mA to 100 mA). Check that the increased current is within the range of the power supply.</p>	

## 16-point Relay Output Units

Item	C200H I/O Unit	Corresponding CS1 I/O Unit
Model number	C200H-OC225/ OC226N ➔	CS1W-OC211
Description	16-point Relay Output Units with terminal blocks. Restrictions on the number of points per current for simultaneous turning ON of more than 1 contact are removed. 100-VDC input also possible.	
Notes	<p>The terminal arrangement must be changed.</p> <p>The ON/OFF response time changes (C200H-OC225 only). Check that correct operation is possible in cases where an increased ON/OFF response time may influence operation. (Increases from 10 ms to 15 ms)</p> <p>The internal 5-V current consumption increases (from the range 30 to 50 mA to 130 mA at 5 V and from the range 75 to 90 mA to 96 mA at 26 V.) Check that the increased current is within the range of the power supply.</p>	

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## International Standards

- The standards indicated in the “Standards” column are those current for UL, CSA, cULus, NK, and Lloyd standards and EC Directives as of the end of December 2004. The standards are abbreviated as follows: U: UL, U1: UL Class I Division 2 Products for Hazardous Locations, C: CSA, UC: cULus, UC1: cULus Class I Division 2 Products for Hazardous Locations, CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Ask your OMRON representative for the conditions under which the standards were met.

## EC Directives

The EC Directives applicable to PLCs include the EMC Directives and the Low Voltage Directive. OMRON complies with these directives as described below.

### EMC Directives

#### Applicable Standards (See note.)

EMI: EN61000-6-4  
EMS: EN61131-2 and EN61000-6-2

PLCs are electrical devices that are incorporated in machines and manufacturing installations. OMRON PLCs conform to the related EMC standards so that the devices and machines into which they are built can more easily conform to EMC standards. The actual PLCs have been checked for conformity to EMC standards. Whether these standards are satisfied for the actual system, however, must be checked by the customer.

EMC-related performance will vary depending on the configuration, wiring, and other conditions of the equipment or control panel in which the PLC is installed. The customer must, therefore, perform final checks to confirm that the overall machine or device conforms to EMC standards.

**Note:** The applicable EMI and EMS standards depend on the product.

### Low Voltage Directive

#### Applicable Standard





EN61131-2

Devices that operate at voltages from 50 to 1,000 VAC or 75 to 150 VDC must satisfy the appropriate safety requirements. With PLCs, this applies to Power Supply Units and I/O Units that operate in these voltage ranges.



These Units have been designed to conform to EN61131-2, which is the applicable standard for PLCs.

# Ordering Information

## ■ CPU Rack

Name	Specifications			Model	Standards
CPU Units (See note.)  	<b>I/O bits</b>	<b>Program capacity</b>	<b>Data memory capacity</b>	---	---
	5,120 (Expansion Racks: 7)	250K steps	448K words (DM: 32K words, EM: 32K words ×13 banks)	CS1H-CPU67H	UC1, N, L, CE
	5,120 (Expansion Racks: 7)	120K steps	256K words (DM: 32K words, EM: 32K words ×7 banks)	CS1H-CPU66H	
	5,120 (Expansion Racks: 7)	60K steps	128K words (DM: 32K words, EM: 32K words ×3 banks)	CS1H-CPU65H	
	5,120 (Expansion Racks: 7)	30K steps	64K words (DM: 32K words, EM: 32K words ×1 bank)	CS1H-CPU64H	
	5,120 (Expansion Racks: 7)	20K steps	64K words (DM: 32K words, EM: 32K words ×1 bank)	CS1H-CPU63H	
	5,120 (Expansion Racks: 7)	60K steps	128K words (DM: 32K words, EM: 32K words ×3 banks)	CS1G-CPU45H	
	1,280 (Expansion Racks: 3)	30K steps	64K words (DM: 32K words, EM: 32K words ×1 bank)	CS1G-CPU44H	
	960 (Expansion Racks: 2)	20K steps	64K words (DM: 32K words, EM: 32K words ×1 bank)	CS1G-CPU43H	
	960 (Expansion Racks: 2)	10K steps	64K words (DM: 32K words, EM: 32K words ×1 bank)	CS1G-CPU42H	
CPU Units Supporting Online Unit Replacement	5,120 (Expansion Racks: 7)	250K steps	448K words (DM: 32K words, EM: 32K words ×13 banks)	CS1D-CPU67S	
	5,120 (Expansion Racks: 7)	60K steps	128K words (DM: 32K words, EM: 32K words ×3 banks)	CS1D-CPU65S	
	1,280 (Expansion Racks: 3)	30K steps	64K words (DM: 32K words, EM: 32K words ×1 bank)	CS1D-CPU44S	
	960 (Expansion Racks: 2)	10K steps	64K words (DM: 32K words, EM: 32K words ×1 bank)	CS1D-CPU42S	
CPU Backplanes (for CS1 Units only)	2 slots (Does not connect to Expansion Rack.)			CS1W-BC022	U, C, N, L, CE
	3 slots			CS1W-BC032	
	5 slots			CS1W-BC052	
	8 slots			CS1W-BC082	
	10 slots			CS1W-BC102	
CPU Backplanes  	2 slots (Does not connect to Expansion Rack.)			CS1W-BC023	U, C, N, L, CE
	3 slots			CS1W-BC033	
	5 slots			CS1W-BC053	
	8 slots			CS1W-BC083	
	10 slots			CS1W-BC103	
CS1D CPU Backplane Supporting Online Unit Replacement	8 slots (Use together with the CS1D-CPU□□S.)			CS1D-BC082S	UC1, N, L, CE
Power Supply Units  	100 to 120 VAC or 200 to 240 VAC; Output capacity: 4.6 A, 5 VDC			C200HW-PA204	U, C, N, L, CE
	100 to 120 VAC or 200 to 240 VAC (with 0.8 A, 24 VDC service power supply) Output capacity: 4.6 A, 5 VDC			C200HW-PA204S	
	100 to 120 VAC or 200 to 240 VAC (with RUN output) Output capacity: 4.6 A, 5 VDC			C200HW-PA204R	U, C
	100 to 120 VAC or 200 to 240 VAC (with RUN output) Output capacity: 9 A, 5 VDC			C200HW-PA209R	U, C, N, L, CE
	24 VDC, Output capacity: 4.6 A, 5 VDC			C200HW-PD024	UC1, N, L, CE
	100 VDC, Output capacity: 6 A, 5 VDC			C200HW-PD106R	U, C
I/O Control Unit	For Expansion Racks connected over a distance of more than 12 m (2 terminating resistors included. C200H Units cannot be used on Long-distance Expansion Racks.)			CS1W-IC102	U, C, N, L, CE
Memory Cards  	Flash memory, 30 MB			HMC-EF372 (See note.)	L, CE
	Flash memory, 64 MB			HMC-EF672 (See note.)	
	Memory Card Adapter (for computer PCMCIA slot)			HMC-AP001	CE
Serial Communications Boards	2 × RS-232C ports, protocol macro function			CS1W-SCB21-V1	U, C, N, L, CE
	1 × RS-232C port + 1 × RS-422/485 port, protocol macro function			CS1W-SCB41-V1	

# Ordering Information

Name	Specifications		Model	Standards
 Programming Consoles	An English Keyboard Sheet (CS1W-KS001-E) is required. (Connects to peripheral port on CPU Unit only. Cannot be connected to RS-232C port.)		CQM1H-PRO01-E	U, C, CE
			CQM1-PRO01-E	U, C, N, CE
			C200H-PRO27-E	
Programming Console Key Sheet	For CQM1H-PRO01-E, C200H-PRO27-E and CQM1-PRO01-E		CS1W-KS001-E	CE
 Programming Console Connecting Cables	Connects the CQM1-PRO01-E Programming Console. (Length: 0.05 m)		CS1W-CN114	
	Connects the C200H-PRO27-E Programming Console. (Length: 2.0 m)		CS1W-CN224	
	Connects the C200H-PRO27-E Programming Console. (Length: 6.0 m)		CS1W-CN624	
CX-Programmer	For 1 license	Windows-based Support Software for ladder programming on Windows 95, 98, Me, NT 4.0, 2000, or XP (Connects to peripheral port on CPU Unit or RS-232C port on CPU Unit or Serial Communications Unit/Board.)	WS02-CXPC1-E-V5□	---
	For 3 licenses		WS02-CXPC1-EL03-V5□	
	For 10 licenses		WS02-CXPC1-EL10-V5□	
Peripheral Device Connecting Cables (for peripheral port)	Connects DOS computers, D-Sub 9-pin receptacle (Length: 0.1 m) (Conversion cable to connect RS-232C cable to peripheral port)		CS1W-CN118	CE
	Peripheral bus or Host Link	Connects DOS computers, D-Sub 9-pin (Length: 2.0 m)	CS1W-CN226	
		Connects DOS computers, D-Sub 9-pin (Length: 6.0 m)	CS1W-CN626	
Peripheral Device Connecting Cables (for RS-232C port)	Peripheral bus or Host Link, antistatic	Connects DOS computers, D-Sub 9-pin (Length: 2.0 m)	XW2Z-200S-CV	---
		Connects DOS computers, D-Sub 9-pin (Length: 5.0 m)	XW2Z-500S-CV	
	Host Link	Connects DOS computers, D-Sub 9-pin (Length: 2.0 m)	XW2Z-200S-V	
		Connects DOS computers, D-Sub 9-pin (Length: 5.0 m)	XW2Z-500S-V	
USB-Serial Conversion Cable	Includes 0.5-m USB-RS-232C conversion cable, and special PC driver (CD-ROM). Refer to <i>Using the USB-Serial Conversion Cable</i> on page 89 for details.		CS1W-CIF31	
CX-Simulator	Windows-based Support Software for simulating ladder program operation on Windows 95, 98, Me, NT 4.0, 2000, or XP		WS02-SIMC1-E	---
CX-Protocol	Windows-based Protocol Creation Software for Windows 95, 98, Me, NT 4.0, 2000, or XP		WS02-PSTC1-E	---
Battery Set	For CS1 Series only. (Install a replacement battery within 2 years of the production date.)		CS1W-BAT01	L, CE

- Note:** 1. HMC-EF172/EF372/EF672 flash memory cannot be used with CS1G-CPU□□□H, CS1H-CPU□□□H, CJ1G-CPU□□□H, or CJ1H-CPU□□□H Units predating lot number 020108 (i.e., manufactured before January 8, 2002) or with NS-7-series products predating lot number 0852 (i.e., manufactured before May 8, 2002) cannot be used together.
2. A commercially available 25-to-9 pin adapter is required if the RS-232C connector on the computer is a D-Sub 9-pin connector.




## ■ SYSMAC CS1D Duplex System

Name	Specifications			Model	Standards
CS1D CPU Units for Duplex-CPU Systems	I/O capacity	Program capacity	Data memory capacity	---	UC1, N, L, CE
	5,120 points (Expansion Racks: 7)	60 Ksteps	128 Kwords (DM: 32 Kwords, EM: 32 Kwords x 3 banks)	CS1D-CPU65H	
		250 Ksteps	448 Kwords (DM: 32 Kwords, EM: 32 Kwords x 13 banks)	CS1D-CPU67H	
CS1D Process-control CPU Units	CPU Unit: CS1D-CPU65H Loop Control Board: CS1D-LCB05D (See note.)			CS1D-CPU65P	UC1, CE
	CPU Unit: CS1D-CPU67H Loop Control Board: CS1D-LCB05D (See note.)			CS1D-CPU67P	
Duplex Unit	---			CS1D-DPL01	UC1, N, L, CE
CS1D Power Supply Units	100 to 120 VAC or 200 to 240 VAC, 50/60 Hz (with RUN output) Output capacity: 7 A, 5 VDC; 1.3 A, 26 VDC, 35 W total max.			CS1D-PA207R	
	24 VDC, Output capacity: 4.3 A, 5 VDC; 0.56 A, 26 VDC, 28 W total max.			CS1D-PD024	
Duplex CPU Backplane	5 slots			CS1D-BC052	
CS1D Expansion Backplane with Online Replacement Capability	9 slots (Used both for CS1D Expansion Racks and CS1D Long-distance Expansion Racks.)			CS1D-BI092	
CPU Backplane for Single-CPU Systems	8 slots			CS1D-BC082S	UC1, N, L, CE

# Ordering Information

Name	Specifications	Model	Standards	
Controller Link Units	Optical ring type with H-PCF cable	CS1W-CLK12-V1	UC1, N, L, CE	
	Optical ring type with GI cable	CS1W-CLK52-V1		
CX-Programmer	Windows-based Support Software for ladder programming on Windows 95, 98, Me, NT 4.0, 2000, or XP	For 1 license	WS02-CXPC1-E-V5□	---
		For 3 licenses	WS02-CXPC1-EL03-V5□	
		For 10 licenses	WS02-CXPC1-EL10-V5□	
Optical Fiber Cable	H-PCF cable for Controller Link Units, cable length: 50 cm	CS1D-CN051		

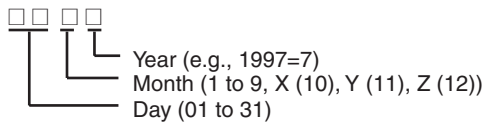
## Expansion Racks

Name	Specifications	Model	Standards	
CS1 Expansion Backplanes (See note.)	3 slots	CS1W-BI032	U, C, N, L, CE	
	5 slots	CS1W-BI052		
	8 slots	CS1W-BI082		
	10 slots	CS1W-BI102		
 CS1 Expansion Backplanes	3 slots	CS1W-BI033	U, C, N, L, CE	
	5 slots	CS1W-BI053		
	8 slots	CS1W-BI083		
	10 slots	CS1W-BI103		
CS1D Expansion Backplane Supporting Online Unit Replacement	9 slots (Use together with the CS1D-CPU□□.)	CS1D-BI092	UC1, N, L, CE	
 C200H Expansion I/O Backplanes (See note.)	3 slots	C200HW-BI031	U, C, N, L, CE	
	5 slots	C200HW-BI051		
	8 slots	C200HW-BI081-V1		
	10 slots	C200HW-BI101-V1		
 Power Supply Units (See note.)	100 to 120 VAC or 200 to 240 VAC, Output capacity: 4.6 A, 5 VDC	C200HW-PA204	U, C	
	100 to 120 VAC or 200 to 240 VAC (with service supply: 0.8 A, 24 VDC) Output capacity: 4.6 A, 5 VDC	C200HW-PA204S		
	100 to 120 VAC or 200 to 240 VAC (with RUN output) Output capacity: 4.6 A, 5 VDC	C200HW-PA204R	U, C, N, L, CE	
	100 to 120 VAC or 200 to 240 VAC (with RUN output) Output capacity: 9 A, 5 VDC	C200HW-PA209R		
	24 VDC Output capacity: 4.6 A, 5 VDC	C200HW-PD024	UC1, N, L, CE	
	100 VDC Output capacity: 6 A, 5 VDC	C200HW-PD106R	UC	
CS1D Power Supply Units Supporting Online Unit Replacement	100 to 120 VAC or 200 to 240 VAC, 50/60 Hz (with RUN output) Output capacity: 7 A, 5 VDC; 1.3 A, 26 VDC; 35 W total	CS1D-PA207R	UC1, N, L, CE	
	24 VDC Output capacity: 4.3 A, 5 VDC; 0.56, 26 VDC; 28 W total	CS1D-PD024	UC1, N, L, CE	
I/O Interface Unit	For Expansion Racks connected over a distance of more than 12 m. (C200H Units cannot be used on Long-distance Expansion Racks.)	CS1W-II102	U, C, N, L, CE	
CS1 I/O Connecting Cables	Connects CS1 Expansion I/O Backplanes to CPU Backplanes or other CS1 Expansion I/O Backplanes. When using a CS1W-CN313/CN713 Cable with a CS1□-CPU□□H CPU Unit, use a Cable with a manufacturing date of 20 September 2001 or later. Do not use Cables without a manufacturing date of Cables manufactured before 20 September 2001.	Length: 0.3 m	CS1W-CN313	N, L, CE
		Length: 0.7 m	CS1W-CN713	
		Length: 2 m	CS1W-CN223	
		Length: 3 m	CS1W-CN323	
		Length: 5 m	CS1W-CN523	
		Length: 10 m	CS1W-CN133	
		Length: 12 m	CS1W-CN133-B2	

# Ordering Information

Name	Specifications	Model	Standards	
Long-distance Expansion Rack Cables	Connect I/O Control Unit to I/O Interface Unit or connects two I/O Interface Units	Length: 0.3 m	CV500-CN312	N, L, CE
		Length: 0.6 m	CV500-CN612	
		Length: 1 m	CV500-CN122	
		Length: 2 m	CV500-CN222	N, CE
		Length: 3 m	CV500-CN322	
		Length: 5 m	CV500-CN522	N, L, CE
		Length: 10 m	CV500-CN132	
		Length: 20 m	CV500-CN232	
		Length: 30 m	CV500-CN332	
		Length: 40 m	CV500-CN432	
		Length: 50 m	CV500-CN532	N, L, CE
CS1 to C200H I/O Connecting Cables (See note.)	Connects C200H Expansion I/O Backplanes to CPU Backplanes or CS1 Expansion I/O Backplanes.	Length: 0.3 m	CS1W-CN311	N, L, CE
		Length: 0.7 m	CS1W-CN711	
		Length: 2 m	CS1W-CN221	
		Length: 3 m	CS1W-CN321	
		Length: 5 m	CS1W-CN521	
		Length: 10 m	CS1W-CN131	
		Length: 12 m	CS1W-CN131-B2	
C200H I/O Connecting Cables (See note.)	Connects C200H Expansion I/O Backplanes to other C200H Expansion I/O Backplanes.	Length: 0.3 m	C200H-CN311	N, L, CE
		Length: 0.7 m	C200H-CN711	
		Length: 2 m	C200H-CN221	
		Length: 5 m	C200H-CN521	L, CE
		Length: 10 m	C200H-CN131	



### Reading the production number



**Note:** Cannot be used with a CS1D CPU Unit.

# Ordering Information

## ■ CS1 Basic I/O Units







Classification	Name	Specifications	Model	Mountable Racks					Bits allocated (CIO 0000 to CIO 0319)	Standards
				CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
CS1 Input Units	DC Input Units	24 VDC, 16 inputs, 7 mA	CS1W-ID211	Yes	No	Yes	Yes	No	1	UC1, N, L, CE
		24 VDC, 32 inputs, 6 mA	CS1W-ID231	Yes	No	Yes	Yes	No	2	
		24 VDC, 64 inputs, 6 mA	CS1W-ID261	Yes	No	Yes	Yes	No	4	
		24 VDC, 96 inputs, approx. 5 mA	CS1W-ID291	Yes	No	Yes	Yes	No	6	
	AC Input Units	100 to 120 VAC, 100 to 120 VDC, 16 inputs	CS1W-IA111	Yes	No	Yes	Yes	No	1	UC1, N, L, CE
		200 to 240 VAC, 16 inputs	CS1W-IA211	Yes	No	Yes	Yes	No	1	UC, N, L, CE
	Interrupt Input Unit	24 VDC, 16 inputs, 7 mA	CS1W-INT01	Yes	No	Yes (See note.)	Yes (See note.)	No	1	UC1, N, L, CE
High-speed Input Unit	24 VDC, 16 inputs, 7 mA	CS1W-IDP01	Yes	No	Yes	Yes	No	1		
Safety Relay Unit	24 VDC, 2 channels with 4 inputs each, 4 pts/common	CS1W-SF200	Yes	No	Yes	Yes	No	1	U, C, CE	
CS1 Output Units	Relay Output Units	250 VAC or 120 VDC, independent contacts, 8 outputs, 2 A	CS1W-OC201	Yes	No	Yes	Yes	No	1	UC1, N, L, CE
		250 VAC or 120 VDC, 16 outputs, 2 A	CS1W-OC211	Yes	No	Yes	Yes	No	1	
	Transistor Output Units 	12 to 24 VDC, 0.5A, 16 sinking outputs	CS1W-OD211	Yes	No	Yes	Yes	No	1	U, C, N, L, CE
		24 VDC, 0.5A, 16 sourcing outputs	CS1W-OD212	Yes	No	Yes	Yes	No	1	
		12 to 24 VDC, 0.5A, 32 sinking outputs	CS1W-OD231	Yes	No	Yes	Yes	No	2	
		24 VDC, 0.5A, 32 sourcing outputs	CS1W-OD232	Yes	No	Yes	Yes	No	2	
		12 to 24 VDC, 0.3A, 64 sinking outputs	CS1W-OD261	Yes	No	Yes	Yes	No	4	
		24 VDC, 0.3A, 64 sourcing outputs	CS1W-OD262	Yes	No	Yes	Yes	No	4	
		12 to 24 VDC, 0.1 A, 96 sinking outputs	CS1W-OD291	Yes	No	Yes	Yes	No	6	
	12 to 24 VDC, 0.1 A, 96 sourcing outputs	CS1W-OD292	Yes	No	Yes	Yes	No	6		
Triac Output Units	250 VAC, 1.2 A, 8 outputs	CS1W-OA201	Yes	No	Yes	Yes	No	1	UC, N, L, CE	
	250 VAC, 0.5 A, 16 outputs	CS1W-OA211	Yes	No	Yes	Yes	No	1		
CS1 I/O Units	DC Input/Transistor Output Units 	24 VDC, 6 mA, 32 inputs, 12 to 24 VDC, 0.3 A, 32 sinking outputs	CS1W-MD261	Yes	No	Yes	Yes	No	Inputs: 2 Outputs: 2	UC1, N, L, CE
		24 VDC, 6 mA, 32 inputs, 24 VDC, 0.3 A, 32 sourcing outputs	CS1W-MD262	Yes	No	Yes	Yes	No	Inputs: 2 Outputs: 2	
		24 VDC, approx. 5 A, 48 inputs, 12 to 24 VDC, 0.1 A, 48 outputs, sinking inputs/outputs	CS1W-MD291	Yes	No	Yes	Yes	No	Inputs: 3 Outputs: 3	
		24 VDC, approx. 5 A, 48 inputs, 12 to 24 VDC, 0.1 A, 48 outputs, sourcing inputs/outputs	CS1W-MD292	Yes	No	Yes	Yes	No	Inputs: 3 Outputs: 3	
	TTL I/O Unit	5 VDC, 32 inputs, 32 outputs	CS1W-MD561	Yes	No	Yes	Yes	No	Inputs: 2 Outputs: 2	UC, N, L, CE

**Note:** Interrupt inputs are not supported on these Racks (i.e., used as normal I/O Unit).



# Ordering Information

## ■ C200H Basic I/O Units

Classification	Name	Specifications	Model	Mountable Racks					Bits allocated (CIO 0000 to CIO 0319)	Standards
				CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
C200H Input Units (See note 1.)	 DC Input Units	12 to 24 VDC, 8 inputs	C200H-ID211	Yes	Yes	Yes	No	Yes	1	U, C, N, L, CE
		24 VDC, 16 inputs	C200H-ID212	Yes	Yes	Yes	No	Yes	1	
	 AC Input Units	100 to 120 VAC, 8 inputs	C200H-IA121	Yes	Yes	Yes	No	Yes	1	U, C, N, L
		100 to 120 VAC, 16 inputs	C200H-IA122	Yes	Yes	Yes	No	Yes	1	
		100 to 120 VAC, 16 inputs	C200H-IA122V	Yes	Yes	Yes	No	Yes	1	CE
		200 to 240 VAC, 8 inputs	C200H-IA221	Yes	Yes	Yes	No	Yes	1	U, C, N, L
		200 to 240 VAC, 16 inputs	C200H-IA222	Yes	Yes	Yes	No	Yes	1	
	200 to 240 VAC, 16 inputs	C200H-IA222V	Yes	Yes	Yes	No	Yes	1	CE	
	 AC/DC Input Units	12 to 24 VAC/VDC, 8 inputs	C200H-IM211	Yes	Yes	Yes	No	Yes	1	U, C, N, L, CE
		24 VAC/VDC, 16 inputs	C200H-IM212	Yes	Yes	Yes	No	Yes	1	
	 B7A Input Units	16 inputs	C200H-B7A11	Yes	Yes	Yes	No	Yes	1	U, C, CE
		32 inputs	C200H-B7A12	Yes	Yes	Yes	No	No (See note 3.)	2	U, C
	 Interrupt Input Unit	12 to 24 VDC, 8 inputs	C200HS-INT01	Yes	Yes (See note 2.)	Yes (See note 2.)	No (See note 2.)	No	1	
C200H Output Units (See note 1.)	 Relay Bit Output Units	250 VAC/24VDC, 2 A, 8 outputs max.	C200H-OC221	Yes	Yes	Yes	No	Yes	1	U, C, N
		250 VAC/24VDC, 2 A, 12 outputs max.	C200H-OC222	Yes	Yes	Yes	No	Yes	1	
		250 VAC/24VDC, 2 A, 12 outputs max.	C200H-OC222N	Yes	Yes	Yes	No	Yes	1	CE
		250 VAC/24VDC, 2 A, 16 outputs max.	C200H-OC225	Yes	Yes	Yes	No	Yes	1	U, C, N, L
		250 VAC/24VDC, 2 A, 16 outputs max.	C200H-OC226N	Yes	Yes	Yes	No	Yes	1	CE
		250 VAC/24VDC, 2 A, independent contacts, 5 outputs max.	C200H-OC223	Yes	Yes	Yes	No	Yes	1	U, C, N, L
		250 VAC/24 VDC, 2 A, independent contacts, 8 outputs max.	C200H-OC224	Yes	Yes	Yes	No	Yes	1	
		250 VAC/24 VDC, 2 A, independent contacts, 8 outputs max.	C200H-OC224N	Yes	Yes	Yes	No	Yes	1	CE

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Classification	Name	Specifications	Model	Mountable Racks					Bits allocated (CIO 0000 to CIO 0319)	Standards
				CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
C200H Output Units (See note 1.)	 Transistor Output Units	12 to 48 VDC, 1 A, 8 sinking outputs	C200H-OD411	Yes	Yes	Yes	No	Yes	1	U, C, N, L, CE
		24 VDC, 2.1 A, 8 sinking outputs	C200H-OD213	Yes	Yes	Yes	No	Yes	1	
		24 VDC, 0.8 A, 8 sourcing outputs, load short-circuit protection.	C200H-OD214	Yes	Yes	Yes	No	Yes	1	U, C, N, L
		5 to 24 VDC, 0.3 A, 8 sourcing outputs	C200H-OD216	Yes	Yes	Yes	No	Yes	1	
		24 VDC, 0.3 A, 12 sinking outputs	C200H-OD211	Yes	Yes	Yes	No	Yes	1	U, C, N, L, CE
		5 to 24 VDC, 0.3 A, 12 sourcing outputs	C200H-OD217	Yes	Yes	Yes	No	Yes	1	
		24 VDC, 0.3 A, 16 sinking outputs	C200H-OD212	Yes	Yes	Yes	No	Yes	1	CE
		24 VDC, 1 A, 16 sourcing outputs, load short-circuit protection.	C200H-OD21A	Yes	Yes	Yes	No	Yes	1	
	 B7A Output Units	16 outputs	C200H-B7AO1	Yes	Yes	Yes	No	Yes	1	U, C, CE
		32 outputs	C200H-B7AO2	Yes	Yes	Yes	No	No (See note 3.)	2	
 Triac Output Units	250 VAC, 1.2 A, 8 outputs	C200H-OA223	Yes	Yes	Yes	No	Yes	1	CE	
	250 VAC, 0.3 A, 12 outputs	C200H-OA222V	Yes	Yes	Yes	No	Yes	1		
	250 VAC, 0.5 A, 12 outputs	C200H-OA224	Yes	Yes	Yes	No	Yes	1	U, C, N, L	
C200H I/O Units (See note 1.)	B7A I/O Units	16 inputs, 16 outputs	C200H-B7A21	Yes	Yes	Yes	No	No (See note 3.)	Inputs: 1 Outputs: 1	U, C, CE
		32 inputs, 32 outputs	C200H-B7A22	Yes	Yes	Yes	No	No (See note 3.)	Inputs: 2 Outputs: 2	
	 Analog Timer Unit	4-point timer	C200H-TM001	Yes	Yes	Yes	No	Yes	1	U, C
External Variable Resistor Connector:		C4K-CN223	---						---	---

- Note:**
- C200H Units cannot be used with CS1D CPU Units.
  - Interrupt inputs are not supported on these Racks (i.e., used as normal I/O Unit).
  - The C200H-B7A12/02/21/22 are C200H Group-2 Units.
  - The C200H-ID001 (no-voltage contacts, 8 inputs, NPN) and C200H-ID002 (no-voltage contacts, 8 inputs, PNP) cannot be used.

## ■ C200H Group-2 High-density I/O Units

Classification	Name	Specifications	Model	Mountable Racks					Bits allocated (CIO 0000 to CIO 0319)	Standards
				CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
C200H Group-2 High-density Input Units (See note.)	 DC Input Units	24 VDC, 32 inputs	C200H-ID216	Yes	Yes	Yes	No	No	2	U, C, N, L, CE
		24 VDC, 64 inputs	C200H-ID217	Yes	Yes	Yes	No	No	4	
		24 VDC, 32 inputs, 6 mA	C200H-ID218	Yes	Yes	Yes	No	No	2	U, C, CE
		24 VDC, 64 inputs, 6 mA	C200H-ID219	Yes	Yes	Yes	No	No	4	
		12 VDC, 64 inputs	C200H-ID111	Yes	Yes	Yes	No	No	4	U, C

# Ordering Information

Classification	Name	Specifications	Model	Mountable Racks					Bits allocated (CIO 0000 to CIO 0319)	Standards
				CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
C200H Group-2 High-density Output Units (See note.)	Transistor Output Units	16 mA/4.5 V to 100 mA/26.4 V, 32 sinking outputs	C200H-OD218	Yes	Yes	Yes	No	No	2	U, C, N, L, CE
		0.5 A/ 24 VDC, 32 sourcing outputs, load short-circuit protection	C200H-OD21B	Yes	Yes	Yes	No	No	2	U, C, CE
		16 mA/4.5 V to 100mA/26.4 V, 64 sinking outputs	C200H-OD219	Yes	Yes	Yes	No	No	4	U, C, N, L, CE

**Note:** C200H Units cannot be used with CS1D CPU Units.

## Connectors for 32-point and 64-point CS1 I/O Units and C200H Group-2 High-density I/O Units

Part	Connection		Model	Remarks	Standards
Applicable connector	Soldered (included with Unit)		C500-CE404	From Fujitsu Socket: FCN-361J040-AU Connector bar: FCN-360C040-J2	---
	Crimped		C500-CE405	From Fujitsu Socket: FCN-363J040 Connector bar: FCN-360C040-J2 Contacts: FCN-363J-AU	
	Pressure welded		C500-CE403	From Fujitsu: FCN-367J040-AU/F	
Terminal block connection parts	1:1	Special Cable	XW2Z-□□□B (See note.)	For CS1W-ID231/ID261/OD231/OD232/OD261/OD262/MD261/ MD262 and C200H-ID216/ID217/ID218/ID219/ID111/OD218/OD21B/OD219	
		Terminal Block Unit	XW2B-40G4		
			XW2B-40G5		
			XW2D-40G6		
	1:2	Special Cable	XW2Z-□□□D (See note.)		
		Terminal Block Unit	XW2B-20G4		
			XW2B-20G5		
			XW2D-20G6		
			XW2C-20G5-IN16		

**Note:** Refer to the XW2□ Connector-Terminal Block Conversion Unit catalog for details. (Square boxes indicate the cable length.)


## Connectors for 96-point CS1 I/O Units

Part	Connection		Model	Remarks	Standards
Applicable connectors	Soldered (included with Unit)		CS1W-CE561	From Fujitsu Socket: FCN-361J056-AU Connector bar: FCN-360C056-J3	---
	Crimped		CS1W-CE562	From Fujitsu Socket: FCN-363J056 Connector bar: FCN-360C056-J3 Contacts: FCN-363J-AU	
	Pressure welded		CS1W-CE563	From Fujitsu: FCN-367J056-AU	
Terminal block	1:1	Special Cable	XW2Z-□□□H-1 (see note.)	For CS1W-ID291/OD291/OD292/MD291/MD292	
		Terminal Block Unit	XW2B-60G4		
			XW2B-60G5		
	1:2	Special Cable	XW2Z-□□□H-2 (see note.)		
		Terminal Block Unit	XW2B-20G4		
			XW2B-20G5		
			XW2D-20G6		
			XW2B-40G4		
			XW2B-40G5		
		XW2D-40G6			
	1:3	Special Cable	XW2Z-□□□H-3 (see note.)		
		Terminal Block Unit	XW2B-20G4		
			XW2B-20G5		
	XW2D-20G6				

**Note:** Refer to the XW2□/XW2D Connector-Terminal Block Conversion Unit catalogs for details. (Square boxes indicate the cable length.)

# Ordering Information

## ■ C200H High-density I/O Units Classified as Special I/O Units (See note.)

Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
									
DC Input Units	24 VDC, 32 inputs	C200H-ID215	Yes	Yes	Yes	No	Yes	0 to 9	U, C, N, L, CE
TTL Input Units	5 VDC, 32 inputs	C200H-ID501	Yes	Yes	Yes	No	Yes		U, C, CE
Transistor Output Units	24 VDC, 32 sinking outputs	C200H-OD215	Yes	Yes	Yes	No	Yes		
TTL Output Units	5 VDC, 32 sinking outputs	C200H-OD501	Yes	Yes	Yes	No	Yes		U, C, N, L, CE
TTL I/O Units	5 VDC, 16 inputs, 16 sinking outputs	C200H-MD501	Yes	Yes	Yes	No	Yes		
DC Input/Transistor Output Units	24 VDC, 16 inputs, 16 sinking outputs	C200H-MD215	Yes	Yes	Yes	No	Yes		
	12 VDC, 16 inputs, 16 sinking outputs	C200H-MD115	Yes	Yes	Yes	No	Yes	U, C	

**Note:** The above Units function mainly as I/O Units but are classified as Special I/O Units. They cannot be used with CS1D CPU Units.





### Connectors for C200H High-density I/O Units

Part	Connection	Model	Remarks	Standards
Applicable connectors	Soldered (included with Unit)	C500-CE241	From Fujitsu Socket: FCN-361J024-AU Connector bar: FCN-360C024-J2	---
	Crimped	C500-CE242	From Fujitsu Socket: FCN-363J024 Connector bar: FCN-360C024-J2 Contacts: FCN-363J-AU	
	Pressure welded	C500-CE243	From Fujitsu: FCN-367J024-AU/F	
Terminal block connection parts	Special Cable	XW2Z-□□□A (See note.)	For C200H-ID215/ID501/OD215/MD115/MD215 For C200H-ID215/ID501/MD115/MD215/MD501	
	Terminal Block Connector	XW2B-20G4		
		XW2B-20G5		
		XW2D-20G6		
		XW2B-20G5-D		
		XW2B-40G5-T		
	Special Cable	XW2Z-□□□A (see note)		
Terminal Block Connector	XW2C-20G6-IN16			

**Note:** The above Units function mainly as I/O Units but are classified as Special I/O Units. They cannot be used with CS1D CPU Units.







# Ordering Information

## ■ C200H Special I/O Units (Cannot Be Used with CS1D)

Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
Temperature Control Units 	Thermocouple input, time-proportioning PID, or ON/OFF transistor output	C200H-TC001	Yes	Yes	Yes	No	Yes	0 to 9	U, C, CE
	Thermocouple input, time-proportioning PID, or ON/OFF voltage output	C200H-TC002	Yes	Yes	Yes	No	Yes		
	Thermocouple input, PID current output	C200H-TC003	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer input, time-proportioning PID, or ON/OFF transistor output	C200H-TC101	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer input, time-proportioning PID, or ON/OFF voltage output	C200H-TC102	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer input, PID current output	C200H-TC103	Yes	Yes	Yes	No	Yes		
Data Setting Console 	Used with Temperature Control Units. Monitoring, setting, and changing present values, set points, alarm values, PID parameters, bank numbers, etc.	C200H-DSC01	---					---	---
	Connecting Cable, 2 m	C200H-CN225	---						
	Connecting Cable, 4 m	C200H-CN425	---						
Heat/Cool Temperature Control Units 	Thermocouple input, time-proportioning PID, or ON/OFF transistor output	C200H-TV001	Yes	Yes	Yes	No	Yes	0 to 9	U, C, CE
	Thermocouple input, time-proportioning PID, or ON/OFF voltage output	C200H-TV002	Yes	Yes	Yes	No	Yes		
	Thermocouple input, PID current output	C200H-TV003	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer input, time-proportioning PID, or ON/OFF transistor output	C200H-TV101	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer input, time-proportioning PID, or ON/OFF voltage output	C200H-TV102	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer input, PID current output	C200H-TV103	Yes	Yes	Yes	No	Yes		
Temperature Sensor Units 	Thermocouple input, K/J selectable	C200H-TS001	Yes	Yes	Yes	No	Yes	0 to 9	U, C
	Thermocouple input, K/L selectable	C200H-TS002	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer, JPt 100	C200H-TS101	Yes	Yes	Yes	No	Yes		
	Temperature-resistance thermometer, Pt 100	C200H-TS102	Yes	Yes	Yes	No	Yes		





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Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
 PID Control Units	Voltage output/current input, time-proportioning PID, or ON/OFF transistor output	C200H-PID01	Yes	Yes	Yes	No	Yes	0 to 9	U, C, CE
	Voltage output/current input, time-proportioning PID, or ON/OFF voltage output	C200H-PID02	Yes	Yes	Yes	No	Yes		
	Voltage output/current input, PID current output	C200H-PID03	Yes	Yes	Yes	No	Yes		
 Data Setting Console	Used with PID Control Units. Monitoring, setting, and changing present values, set points, alarm values, PID parameters, bank numbers, etc.	C200H-DSC01	---					---	---
	Connecting Cable, 2 m	C200H-CN225	---						
	Connecting Cable, 4 m	C200H-CN425	---						
 Cam Positioner Unit	48 cam outputs (16 external outputs and 32 internal outputs), Resolver speed: 20 μs (5 kHz)	C200H-CP114	Yes	Yes	Yes	No	Yes	0 to 9	U, C
 Data Setting Console	Used with Cam Positioner Unit. Monitoring, setting, and changing present values, set points, alarm values, PID parameters, bank numbers, etc.	C200H-DSC01	---					---	---
	Connecting Cable, 2 m	C200H-CN225	---						
	Connecting Cable, 4 m	C200H-CN425	---						
 ASCII Units	24-Kbyte RAM, 2 RS-232C ports	C200H-ASC02	Yes	Yes	Yes	No	Yes	0 to F	U, C
	200-Kbyte RAM, 2 RS-232C ports	C200H-ASC11	Yes	Yes	Yes	No	Yes		U, C, CE
	200-Kbyte RAM, RS-232C port, RS-422/485 port	C200H-ASC21	Yes	Yes	Yes	No	Yes		
	200-Kbyte RAM, 3 RS-232C ports (1 terminal only)	C200H-ASC31	Yes	Yes	Yes	No	Yes		
 Analog Input Units	4 to 20 mA, 1 to 5/0 to 10 V (selectable), 4 inputs, 1/4,000 resolution	C200H-AD001	Yes	Yes	Yes	No	Yes	0 to 9	U, C, N, L
	4 to 20 mA, 1 to 5/0 to 10 V/-10 to +10 V (selectable); 8 inputs; 1/4,000 resolution	C200H-AD002	Yes	Yes	Yes	No	Yes	0 to F	U, C, N, L, CE
	4 to 20 mA, 1 to 5/0 to 10 V/-10 to +10 V (selectable); 8 inputs; 1/4,000 resolution	C200H-AD003	Yes	Yes	Yes	No	Yes		








# Ordering Information

Name	Specifications	Model	Mountable Racks					Unit No.	Standards	
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks			
 Analog Output Units	4 to 20 mA, 1 to 5/0 to 10 V (selectable); 2 outputs; 1/4,075 resolution	C200H-DA001	Yes	Yes	Yes	No	Yes	0 to 9	U, C, N, L	
	4 to 20 mA, -10 to +10 V (selectable), 4 outputs; voltage: 1/8,190 current: 1/4,095	C200H-DA002	Yes	Yes	Yes	No	Yes	0 to F	U, C, N, L, CE	
	1 to 5 V, -10 to +10 V (selectable), 8 outputs; 1/4,000 resolution	C200H-DA003	Yes	Yes	Yes	No	Yes			
	4 to 20 mA, 8 outputs; 1/4,000 resolution	C200H-DA004	Yes	Yes	Yes	No	Yes			
 Analog I/O Units	2 inputs (4 to 20 mA, 1 to 5 V, etc.) 2 outputs (4 to 20 mA, 1 to 5 V, etc.)	C200H-MAD01	Yes	Yes	Yes	No	Yes			
 High-speed Counter Units	One-axis pulse input, counting rate: 50 kcps max.	C200H-CT001-V1	Yes	Yes	Yes	No	Yes	0 to 9	U, C, CE	
	One-axis pulse input, counting rate: 75 kcps max., line driver compatible	C200H-CT002	Yes	Yes	Yes	No	Yes			
	Two-axis pulse input, counting rate: 75 kcps max., line driver compatible	C200H-CT021	Yes	Yes	Yes	No	Yes	0 to F		
	Solder terminal; 40p and a Connector Cover	C500-CE401	---					---	---	
	Solderless terminal; 40p and a Connector Cover (Crimped)	C500-CE402	---							
	Pressure welded terminal; 40p	C500-CE403	---							
	Solder terminal; 40p and a Connector Cover (Horizontal-type)	C500-CE404	---							
	Crimp-style terminal; 40p and a Connector Cover (Horizontal-type)	C500-CE405	---							
 Motion Control Units	G-language programmable, two-axis analog outputs	C200H-MC221	Yes	Yes	Yes	No	Yes	0 to F	U, C, CE	
	CX-Motion (MC Support Software) (Windows 95/98/NT 4.0)	WS02-MCTC1-EV2	---					---	---	
	Computer Cable	Same as those for the CX-Programmer. Refer to page 191 for details.								
	Teaching Box	CVM1-PRO01-V1	---						U, C, CE	
	Connection cable for Teaching Box: 2 m long	CV500-CN224	---						CE	
	Memory Pack	CVM1-MP702-V1	---						U, C, CE	
	Terminal Block Conversion Unit Simplifies wiring.	XW2B-20J6-6	---						---	
	Connecting Cable for Terminal Block Conversion Unit	XW2Z-100J-F1	---							

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			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks			
 Position Control Units	One-axis pulse-train open-collector output	C200HW-NC113	Yes	Yes	Yes	No	Yes	0 to F	U, C, CE	
	Two-axis pulse-train open-collector output	C200HW-NC213	Yes	Yes	Yes	No	Yes			
	Four-axis pulse-train open-collector output	C200HW-NC413	Yes	Yes	Yes	No	Yes			
	NC Support Software (SYSMAC-NCT)	WS01-NCTF1-E	---	---	---	---	---			---
	Peripheral Port Connecting Cables for computer	Same as those for the CX-Programmer. Refer to page 191 for details.					---			---
	1-axis Relay Unit for C200HW-NC113	XW2B-20J6-1B	---	---	---	---	---	---		
	2-axis Relay Unit for C200HW-NC213/NC413	XW2B-40J6-2B	---	---	---	---	---	---		
	1-axis W, U-series Connecting Cables for C200HW-NC113	XW2Z-050J-A6 (0.5 m)	---	---	---	---	---	---		
		XW2Z-100J-A6 (1 m)	---	---	---	---	---	---		
	2-axis W, U-series Connecting Cables for C200HW-NC213/NC413	XW2Z-050J-A7 (0.5 m)	---	---	---	---	---	---		
		XW2Z-100J-A7 (1 m)	---	---	---	---	---	---		
	1-axis SmartStep Connecting Cables for C200HW-NC113	XW2Z-050J-A8 (0.5 m)	---	---	---	---	---	---		
		XW2Z-100J-A8 (1 m)	---	---	---	---	---	---		
2-axis SmartStep Connecting Cables for C200HW-NC213/NC413	XW2Z-050J-A9 (0.5 m)	---	---	---	---	---	---			
	XW2Z-100J-A9 (1 m)	---	---	---	---	---	---			
 ID Sensor Units	Electromagnetic coupling	C200H-IDS01-V1	Yes	Yes	Yes	No	Yes	0 to 9	U, C	
	Microwave type	C200H-IDS21	Yes	Yes	Yes	No	Yes		---	
 DeviceNet Master Unit (See note 3.)	DeviceNet Remote I/O Master, 300 bits max.	C200HW-DRM21-V1	Yes	Yes	Yes	No	No	0 to F	U, C, N, L, CE	
 DeviceNet I/O Link Unit	DeviceNet Remote I/O Slave, 64 bits max.	C200HW-DRT21	Yes	Yes	Yes	No	No	0 to F	U, C, N, CE	
 CompoBus/S Master Units	CompoBus/S Remote I/O, 256 bits max.	C200HW-SRM21-V1	Yes	Yes	Yes	No	No	0 to F	U, C, N, L, CE	


## Ordering Information

Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
PLC Link Unit	PLC links 1 level: 32 Units 2 levels: 64 Units	C200H-LK401	Yes	Yes	Yes	No	No	0 to 9	N, L, CE
SYSMAC BUS Remote I/O Master Unit (See note 4.)	Wired	C200H-RM201	Yes	Yes	Yes	No	No	0 to 3	N, L, CE
	Optical	C200H-RM001-PV1	Yes	Yes	Yes	No	No		N, L

- Note:**
1. A 25-pin to 9-pin adapter is required to be connected to a 9-pin, D-sub RS-232C connector on an IBM PC/AT or compatible.
  2. C200H Special I/O Units cannot be used with CS1D CPU Units.
  3. The DeviceNet Slaves are allocated up to 2,048 I/O bits (100 words) in the DeviceNet Area.
  4. Words (10 per unit number) are allocated to Units on Remote I/O Slave Racks in the SYSMAC BUS Area according to unit number. Other Slaves are allocated words (1 per unit number) in the I/O Terminal Area according to unit number.

# Ordering Information

## ■ CS1 Special I/O Units

Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
ID Sensor Unit	For V600 RFID System, 1 Head	CS1W-V600C11	Yes	No	Yes	Yes	No	0 to 95	U, CE
	For V600 RFID System, 2 Heads	CS1W-V600C12						0 to 94	
Customizable Counter Units	Pulse input: 1 axis Analog input: 1 Analog output: 1 DC inputs: 12 Transistor outputs: 8	CS1W-HCA12-V1	Yes	No	Yes	Yes	No	0 to 95	U, C, CE
	Pulse input: 2 pts Pulse output: 2 pts Contact input: 12 pts Contact output: 8 pts	CS1W-HCP22-V1							
	Pulse input: 2 pts Analog output: 2 pts Contact input: 12 pts Contact output: 8 pts	CS1W-HCA22-V1							
	Contact input: 12 pts Contact output: 8 pts	CS1W-HIO01-V1							
Analog Input Unit	4 inputs (1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA) Resolution: 1/8,000 Conversion: 250 μs/point (See note 2.)	CS1W-AD041-V1	Yes	No	Yes	Yes	No		UC1, N, CE
	8 inputs (1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA) Resolution: 1/8,000 Conversion: 250 μs/point (See note 2.)	CS1W-AD081-V1							
	16 inputs (1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA) Resolution: 1/8,000 Conversion: 250 μs/point (See note 2.)	CS1W-AD161							
Analog Output Units	4 outputs (1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA) Resolution: 1/4,000	CS1W-DA041						0 to 95	UC1, N, CE
	8 outputs (1 to 5 V, 0 to 5 V, 0 to 10 V, -10 to 10 V, 4 to 20 mA) Resolution: 1/4,000	CS1W-DA08V							U, C, N, CE
	8 outputs (4 to 20 mA) Resolution: 1/4,000	CS1W-DA08C							
Analog I/O Unit 	4 inputs (4 to 20 mA, 1 to 5 V, etc.) 4 outputs (1 to 5 V, 0 to 10 V, etc.)	CS1W-MAD44							U, C, N, L, CE

# Ordering Information

Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
Process I/O Units									
Isolated Thermocouple Input Unit	4 inputs, B, E, J, K, N, R, S, T, U, WRe5-26, PLII, ±100 mV	CS1W-PTS11	Yes	No	Yes	Yes	No	0 to 95	UC1, CE, N
	4 inputs, B, J, K, R, S, T, L	CS1W-PTS51							CE, UC1
	8 inputs, B, J, K, R, S, T, L	CS1W-PTS55 <b>NEW</b>							UC1, CE
	4 inputs, B, E, J, K, N, R, S, T ±80 mV	CS1W-PTS01-V1							UC1, CE
Isolated Temperature-resistance Thermometer Input Unit	4 inputs, Pt100Ω (JIS, IEC), JPt100Ω, Pt50Ω, Ni508.4Ω	CS1W-PTS12	Yes	No	Yes	Yes	No	0 to 95	UC1, CE, N
	4 inputs, Pt100Ω (JIS, IEC), JPt100Ω	CS1W-PTS52							UC1, CE
	8 inputs, Pt100Ω (JIS, IEC), JPt100Ω	CS1W-PTS56 <b>NEW</b>							
	4 inputs, Pt100, JPt	CS1W-PTS02							
Isolated Temperature-resistance Thermometer Input Unit (Ni508.4 Ω)	4 inputs, Ni508.4Ω	CS1W-PTS03	Yes	No	Yes	Yes	No	0 to 95	
Isolated Two-wire Transmission Device Input Unit	4 inputs, 4 to 20 mA, 1 to 5 V	CS1W-PTW01	Yes	No	Yes	Yes	No	0 to 95	
Isolated DC Input Unit	4 inputs, 4 to 20 mA, 0 to 20 mA, 0 to 10 V, ±10 V, 0 to 5 V, ±5 V, 1 to 5 V, 0 to 1.25 V, ±1.25 V	CS1W-PDC11	Yes	No	Yes	Yes	No	0 to 95	UC1, CE, N
	8 inputs, 4 to 20 mA, 0 to 10 V, 1 to 5 V, 0 to 5 V,	CS1W-PDC55 <b>NEW</b>							
	4 inputs, 4 to 20 mA, 1 to 5 V, 0 to 5 V, ±5 V, 0 to 10 V, ±10 V	CS1W-PDC01							UC1, CE
Isolated Pulse Input Unit	4 inputs	CS1W-PPS01	Yes	No	Yes	Yes	No	0 to 95	
Isolated Control Output Unit	4 outputs, 4 to 20 mA, 1 to 5 V	CS1W-PMV01	Yes	No	Yes	Yes	No	0 to 95	
	4 outputs, 0 to 100 V, ±10 V, 0 to 5 V, ±5 V, 0 to 1 V, ±1 V	CS1W-PMV02							
Power Transducer Input Unit	8 inputs, 0 to 1 mA, ±1 mA	CS1W-PTR01	Yes	No	Yes	Yes	No	0 to 95	
100-mV DC Input Unit	8 inputs, 0 to 100 mA, ±100 mV	CS1W-PTR02	Yes	No	Yes	Yes	No	0 to 95	UC1, CE
Support Software	Setting tool software for the Processing I/O Units, OS: Windows 95, 98, NT 4.0, 2000 (See note 1.)	WS02-PUTC1-E	---					---	---

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Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
High-speed Counter Units	Pulse input: 2 pts Counting speed: 500 kcps max.	CS1W-CT021	Yes	No	Yes	Yes	No	0 to 92	UC, N, L, CE
	Pulse input: 4 pts Counting speed: 500 kcps max.	CS1W-CT041							
GP-IB Interface Unit	Supports Master mode/Slave mode	CS1W-GPI01						0 to 95	UC, CE
Motion Control Units 	4 axes, analog outputs, G language	CS1W-MC421-V1						0 to 91	U, C, CE
	2 axes, analog outputs, G language	CS1W-MC221-V1						0 to 93	
CX-Motion (MC Support Software)	Windows 95, 98, NT, 2000, Me, or XP	WS02-MCTC1-EV2	---					---	---
Computer Cables	Same as those for the CX-Programmer. Refer to page 191 for details.								
Teaching Box		CVM1-PRO01-V1	---					---	U, C, CE
Connection cable for Teaching Box	Length: 2 m	CV500-CN224	---						CE
Memory Pack	---	CVM1-MP702-V1	---						U, C, CE
Terminal Block Conversion Unit	For 2 axes. Simplifies wiring.	XW2B-20J6-6	---						---
Terminal Block Conversion Unit	For 4 axes. Simplifies wiring.	XW2B-20J6-7	---						---
Connecting Cable for Terminal Block Conversion Unit	---	XW2Z-100J-F1	---						---



# Ordering Information

Name	Specifications	Model	Mountable Racks					Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks		
Position Control Units	One-axis pulse train open-collector output	CS1W-NC113	Yes	No	Yes	Yes	No	0 to 95	U, C, N, L CE
	Two-axis pulse train open-collector output	CS1W-NC213							
	Four-axis pulse train open-collector output	CS1W-NC413							
	One-axis pulse train line-driver output	CS1W-NC133						0 to 95	
	Two-axis pulse train line-driver output	CS1W-NC233							
	Four-axis pulse train line-driver output	CS1W-NC433						0 to 94	
NC Support Software (CX-Position)	Windows 95, 98, NT 4.0, 2000, Me, or XP	WS02-NCTC1-EV2	---					---	---
Peripheral Port Connecting Cables for computer	Same as those for the CX-Programmer. Refer to page 191 for details.								
1-axis Relay Unit for CS1W-NC1□3		XW2B-20J6-1B	---					---	---
2-axis Relay Unit for CS1W-NC2□3/NC4□3		XW2B-40J6-2B	---						
1-axis W, U-series Connecting Cables for CS1W-NC113		XW2Z-050J-A6 (0.5 m)	---						
		XW2Z-100J-A6 (1 m)	---						
2-axis W, U-series Connecting Cables for CS1W-NC213/NC413		XW2Z-050J-A7 (0.5 m)	---						
		XW2Z-100J-A7 (1 m)	---						
1-axis SmartStep Connecting Cables for CS1W-NC113		XW2Z-050J-A8 (0.5 m)	---						
		XW2Z-100J-A8 (1 m)	---						
2-axis SmartStep Connecting Cables for CS1W-NC213/NC413		XW2Z-050J-A9 (0.5 m)	---						
		XW2Z-100J-A9 (1 m)	---						
1-axis W, U-series Connecting Cables for CS1W-NC133		XW2Z-050J-A10 (0.5 m)	---						
		XW2Z-100J-A10 (1 m)	---						
2-axis W, U-series Connecting Cables for CS1W-NC233/NC433		XW2Z-050J-A11 (0.5 m)	---						
		XW2Z-100J-A11 (1 m)	---						
1-axis SmartStep Connecting Cables for CS1W-NC133		XW2Z-050J-A12 (0.5 m)	---						
		XW2Z-100J-A12 (1 m)	---						
2-axis SmartStep Connecting Cables for CS1W-NC233/NC433		XW2Z-050J-A13 (0.5 m)	---						
		XW2Z-100J-A13 (1 m)	---						

- Note:**
- Setting support software for the Processing I/O Units also supports CS1W-AD□□□□, CS1WS-DA□□□□, and CS1W-MAD44.
  - These Analog Input Units differ from the CS1W-AD41/AD081 in that they have a higher resolution (1/8,000) and faster conversion (250 μs/point). The resolution can also be set to 1/4,000 and the conversion speed can also be set to 1 ms/point.

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# Ordering Information

## ■ CS1 CPU Bus Units

Name	Specifications	Model	Mountable Racks					Words allocated (CIO 1500 to CIO 1899)	Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks			
Motion Control Units	MECHATROLINK-II, Real axes: 32, Virtual axes: 2, Special motion control language	CS1W-MCH71	Yes	No	Yes	Yes	No	---	0 to 95	UC1, CE
MC-Miel for MCH	Support Software for CS1W-MCH71 (See note 1.)	---	---					---	---	---
Controller Link Units	Twisted pair	CS1W-CLK21-V1	Yes	No	Yes	Yes	No	25 words	0 to F	U, C, N, L, CE
	Optical ring (H-PCF cable)	CS1W-CLK12-V1	Yes	No	Yes	Yes	No	25 words		U, C, CE (L to be received soon.)
	Optical ring (GI cable)	CS1W-CLK52-V1	Yes	No	Yes	Yes	No	25 words		U, C, CE (L to be received soon.)
Controller Link Support Boards	For PCI Bus (wire type), with Support Software	3G8F7-CLK21-EV1	---					---	---	CE
	For PCI Bus (H-PCF optical type), with Support Software	3G8F7-CLK12-EV1	---					---	---	
	For PCI Bus (GI optical type)	3G8F7-CLK52-EV1	---					---	---	
Controller Link Relay Terminals	Wired (a set of 5)	CJ1W-TB101	---					---	---	---
Controller Link Repeater Units	Twisted-pair	CS1W-RPT01	---					---	---	UC1, CE
	Optical ring (H-PCF cable) (See note 2.)	CS1W-RPT02	---					---	---	
	Optical ring (GI cable) (See note 3.)	CS1W-RPT03	---					---	---	
SYSMAC LINK Units	Coaxial cable (5C-2V cable)	CS1W-SLK21	Yes	No	Yes	Yes	No	25 words	0 to F	U, C, CE
	Optical cable (H-PCF cable)	CS1W-SLK11						25 words		U, C, N, CE
SYSMAC LINK Support Boards	For PCI Bus (coaxial type), with Support Software	3G8F7-SLK21-E	---					---	---	CE
	For PCI Bus (H-PCF optical type), with Support Software	3G8F7-SLK11-E	---					---	---	
F-Adapter	---	C1000H-CE001	One each included with Coaxial SYSMAC LINK Unit.						N	
F-Cover	---	C1000H-COV01							---	
Terminator	---	C1000H-TER01	One required at the node at each end of the network.						N	
Serial Communications Units	Two RS-232C Ports	CS1W-SCU21-V1	Yes	No	Yes	Yes	No	25 words	0 to F	U, C, N, L, CE
RS-422A Adapters	Converts RS-232C to RS-422A/RS485.	CJ1W-CIF11	---					25 words	---	UC, N, CE
RS-232C-RS-422A Conversion Units	1 RS-232C port and 1 RS-422A terminal block	NT-AL001	---					---	---	---

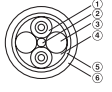



## Ordering Information

Name	Specifications	Model	Mountable Racks					Words allocated (CIO 1500 to CIO 1899)	Unit No.	Standards
			CPU Rack	C200H Expansion I/O Racks	CS1 Expansion Racks	CS1 Long-distance Racks	SYSMAC BUS Slave Racks			
Ethernet Units	10Base-5	CS1W-ETN01	Yes	No	Yes	Yes	No	25 words	0 to F	U, C, N, L, CE
	10Base-T	CS1W-ETN11								UC1, N, L, CE
	100Base-TX	CS1W-ETN21								UC1, N, L, CE
		CS1D-ETN21D								
FL-net Units	FL-net (OPCN-2) version 2 specifications, 100Base-TX	CS1W-FLN22 <i>NEW</i>	Yes	No	Yes	Yes	No	25 words	0 to F	UC1, CE
	FL-net (OPCN-2) version 2 specifications, 10Base-5	CS1W-FLN02	Yes	No	Yes	Yes	No			
	FL-net (OPCN-2) version 2 specifications, 10Base-T	CS1W-FLN12	Yes	No	Yes	Yes	No			
DeviceNet Units (See note 4.)	Functions as master and/or slave; allows control of 2,048 points max. per master.	CS1W-DRM21-V1	Yes	No	Yes	Yes	No	---	0 to F	U, C, N, L, CE
Loop Control Units	Control loops: 32 Processes: 250	CS1W-LC001	Yes	No	No	No	No	---	0 to F	UC1, N, CE
Loop Control Boards	50 blocks maximum including both adjustment and operation blocks	CS1W-LCB01	CPU Unit Inner Board for CS1-H PLCs							UC1, N, CE
	500 blocks maximum including both adjustment and operation blocks	CS1W-LCB05								
CX-Process		WS02-LCTC1-EV4	Programming tool for Loop Control Board/Unit Tool Software: Windows 95, 98, Me, NT 4.0, 2000, or XP					---	---	---
	For 3 licences	WS02-LCTC1-EV4L03								
	For 10 licences	WS02-LCTC1-EV4L10								
CX-Process Monitor Plus		WS02-LCMC1-E	Programming tool for Loop Control Board/Unit Tool Software: Windows 95, 98, Me, NT 4.0, 2000, or XP					---	---	---
	For 3 licences	WS02-LCMC1-EL03								
	For 10 licences	WS02-LCMC1-EL10z								

- Note:**
1. Order *MC-Miel for MCH Support Software Operation Manual* (Cat. No. I809) to obtain the MC-Miel for MCH Support Software for CS1W-MCH71 CD-ROM.
  2. Use the H-PCF cables or H-PCF optical fiber cables with connectors listed in the following table for Optical Ring (H-PCF cable) Controller Link Repeater Units.
  3. Use the GI optical cables listed on the following page for Optical Ring (GI cable) Controller Link Repeater Units.
  4. The DeviceNet Slaves are allocated up to 2,048 I/O bits (100 words) in the DeviceNet Area.

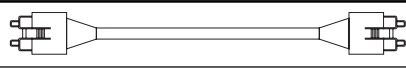
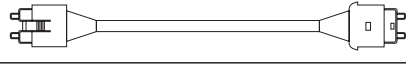
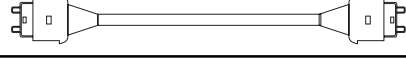
# Ordering Information

## H-PCF Cables

Name	Applicable Units/Construction	Specifications	Model	Standards	
Optical Fiber Cables	Controller Link  <ol style="list-style-type: none"> <li>Optical-fiber single-core cable</li> <li>Tension member (plastic-covered copper wire)</li> <li>Lacing (plastic lacing)</li> <li>Inclusion (plastic yarn or fiber)</li> <li>Holding tape (plastic fiber)</li> <li>Heat-resistant PVC sheath</li> </ol>	2-core optical cable with tension member	Black: 10 m	S3200-HCCB101	---
			Black: 50 m	S3200-HCCB501	
			Black: 100 m	S3200-HCCB102	
			Black: 500 m	S3200-HCCB502	
			Black: 1,000 m	S3200-HCCB103	
			Orange: 10 m	S3200-HCCO101	
			Orange: 50 m	S3200-HCCO501	
			Orange: 100 m	S3200-HCCO102	
			Orange: 500 m	S3200-HCCO502	
			Orange: 1,000 m	S3200-HCCO103	
Optical Connectors (Crimp-cut)	SYSMAC BUS: C200H-RM001-(P)V1, C200H-RT001/RT002-(P)V1 	Half-lock Remote I/O Master/Slave Unit	S3200-COCH82		
	Controller Link: CS1W-CLK12, 3G8F7-CLK12, CS1W-RPT02 	Half-lock	S3200-OCCF2571		
	SYSMAC LINK: CS1W-SLK11, 3G8F7-SLK11, C200HW-SLK13/SLK14 Controller Link: CS1W-CLK12, 3G8F7-CLK12, CS1W-RPT02  SYSMAC LINK: 3G8F7-SLK11	Full-lock	S3200-COCF2071 (See note.)		

**Note:** The S3200-COCF2071 Crimp-cut Optical Connector cannot be used with the CS1W-SLK11. Use the S3200-OCCF2571 Half-lock Optical Connector or a S3200-CN□□□-□□-□□ H-PCF Fiber Cable with Connectors.

## H-PCF Optical Fiber Cables with Connectors (Composite Cable with 2 Fibers and 2 Power Supply Lines, Black)

Applicable Units	Appearance	Model	Standards
Controller Link		S3200-CN□□□-20-20	---
		S3200-CN□□□-20-25	
		S3200-CN□□□-25-25	

**Note:** The optical connectors on the H-PCF Optical Fiber Cables with Connectors are glue-and-polish connectors.

### Cable Length

Cables are available in lengths of 2 m, 5 m, 10 m, 15 m, and 20 m. Contact your sales representative for details on cables 21 m or longer.

### Model Number Legend

(1) Cable length: 2 m, 5 m, 10 m, 15 m, 20 m

(2) Cable length: 21 m or longer

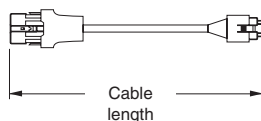
Example: S3200-CN□□□-20-25



Example: S3200-CN-20-20



(1) H-PCF optical fiber cable

Code	Length
201	2 m
501	5 m
102	10 m
152	15 m
202	20 m



Code	Appearance
20	 Full lock
25	 Half lock

# Ordering Information

## Optical Connector Assembly Tool

Name	Applicable Units	Model	Manufacturer	Standards
Optical Fiber Assembly Tool	Used for assembling crimp-cut connectors and hard plastic-clad, quartz-fiber for SYSMAC C-series SYSMAC BUS, SYSMAC LINK, and Controller Link optical transmission systems.	CAK-0057	Sumitomo Electric Industries, Ltd	---

- Note:** 1. Contact your nearest OMRON sales representative for details on the CAK-0057.  
 2. Optical Fiber Cable (H-PCF) Connector Assembly  
 Performance may be adversely affected if cable connectors are assembled by the user. Cables with connectors or assembly by a professional is recommended.

## GI Optical Cables

To handle optical cables, always use a qualified technician with the knowledge required to select, assemble, and lay GI optical cables.

### Compatible Optical Cables and Connectors

- Optical fiber category: Graded, index, multi-mode, all quartz crystal, fiber (GI AGF cable)
- Optical fiber construction (core/clad diameter): 62.5/125  $\mu\text{m}$  or 50/125  $\mu\text{m}$
- Optical fiber optical characteristics: Refer to the following table.
- Optical connector: ST connector (IEC-874-10)

### 50/125 $\mu\text{m}$ AGF Cable

Item	Minimum	Standard	Maximum	Conditions	
Numerical aperture (N.A.)	---	0.21	---	---	
Transmission loss (dB)	---	---	3.0 Lf	$0.5 \text{ km} \leq \text{Lf}$	$\lambda = 0.8 \mu\text{m}$ $T_a = 25^\circ\text{C}$
			3.0 Lf + 0.2	$0.2 \text{ km} \leq \text{Lf} < 0.5 \text{ km}$	
			3.0 Lf + 0.4	$\text{Lf} \leq 0.2 \text{ km}$	
Connection loss (dB)	---	---	1.0	$\lambda = 0.8 \mu\text{m}$ , one location	
Transmission bandwidth (MHz·km)	500	---	---	$\lambda = 0.85 \mu\text{m}$ (LD)	

Lf is fiber length in km, Ta is ambient temperature, and  $\lambda$  is the peak wavelength of the test light source.

### 62.5/125 $\mu\text{m}$ AGF Cable

Item	Minimum	Standard	Maximum	Conditions	
Numerical aperture (N.A.)	---	0.28	---	---	
Transmission loss (dB)	---	---	3.5 Lf	$0.5 \text{ km} \leq \text{Lf}$	$\lambda = 0.8 \mu\text{m}$ $T_a = 25^\circ\text{C}$
			3.5 Lf + 0.2	$0.2 \text{ km} \leq \text{Lf} < 0.5 \text{ km}$	
			3.5 Lf + 0.4	$\text{Lf} \leq 0.2 \text{ km}$	
Connection loss (dB)	---	---	1.0	$\lambda = 0.8 \mu\text{m}$ , one location	
Transmission bandwidth (MHz·km)	200	---	---	$\lambda = 0.85 \mu\text{m}$ (LD)	

Lf is fiber length in km, Ta is ambient temperature, and  $\lambda$  is the peak wavelength of the test light source.

## Configurator

Product	Model	Specifications	Standards
DeviceNet Configurator	WS02-CFDC1-E	DeviceNet Configurator Software (Windows 95, 98, NT4.0, 2000, or XP)	---
	3G8E2-DRM21-EV1	PC Card (provided with software running on Windows 95, 98, Me, 2000, or XP)	

## Monitor Software

Product	Model	Specifications	Standards
NX-Server	WS02-NXD1-E	DDE Edition	---

# Ordering Information

## ■ DeviceNet Slaves

### Smart Slaves

Product		Model	Specifications	Standards
Remote I/O Terminals with Transistors		DRT2-ID16	16 inputs for terminals with NPN, + common	U1, CE
		DRT2-ID16-1	16 inputs for terminals with PNP, – common	
		DRT2-OD16	16 outputs for terminals with NPN, – common	
		DRT2-OD16-1	16 outputs for terminals with PNP, + common	
Remote I/O Terminal Expansion Units with Transistors		XWT-ID08	8 inputs for terminals with NPN, + common	U1, CE
		XWT-ID08-1	8 inputs for terminals with PNP, – common	
		XWT-OD08	8 outputs for terminals with NPN, – common	
		XWT-OD08-1	8 outputs for terminals with PNP, + common	
		XWT-ID16	16 inputs for terminals with NPN, + common	
		XWT-ID16-1	16 inputs for terminals with PNP, – common	
		XWT-OD16	16 outputs for terminals with NPN, – common	
		XWT-OD16-1	16 outputs for terminals with NPN, + common	
Remote I/O Terminal with Relay Outputs		DRT2-ROS16	16 output points	CE, UR
Remote I/O Terminals with 3-tier Terminal Blocks and Transistors		DRT2-ID16TA	NPN with + common	U1, CE
		DRT2-ID16TA-1	PNP with – common	
		DRT2-OD16TA	NPN with + common	
		DRT2-OD16TA-1	PNP with – common	
		DRT2-MD16TA	NPN with + common	
		DRT2-MD16TA-1	PNP with – common	
Remote I/O Terminals with Transistors and MIL Connectors		DRT2-ID32ML	NPN with + common	U1, CE
		DRT2-ID32ML-1	PNP with – common	
		DRT2-OD32ML	NPN with + common	
		DRT2-OD32ML-1	PNP with – common	
		DRT2-MD32ML	NPN with + common	
		DRT2-MD32ML-1	PNP with – common	
Board Terminals with MIL Connectors		Horizontal mounting		U, CE
		DRT2-ID32B	32 inputs for terminals with NPN, + common	
		DRT2-ID32B-1	32 inputs for terminals with PNP, – common	
		DRT2-OD32B	32 inputs for terminals with NPN, + common	
		DRT2-OD32B-1	32 inputs for terminals with PNP, – common	
		DRT2-MD32B	16 inputs/16 outputs (NPN inputs with + common/NPN outputs with – common)	
		DRT2-MD32B-1	16 inputs/16 outputs (PNP inputs with – common/NPN outputs with + common)	
		Vertical mounting		
		DRT2-ID32BV	32 inputs for terminals with NPN, + common	
		DRT2-ID32BV-1	32 inputs for terminals with PNP, – common	
		DRT2-OD32BV	32 inputs for terminals with NPN, + common	
		DRT2-OD32BV-1	32 inputs for terminals with PNP, – common	
		DRT2-MD32BV	16 inputs/16 outputs (NPN inputs with + common/NPN outputs with – common)	
		DRT2-MD32BV-1	16 inputs/16 outputs (PNP inputs with – common/NPN outputs with + common)	
Sensor Connector Terminals		DRT2-ID16S	16 inputs for terminals with NPN, + common	U, CE
		DRT2-ID16S-1	16 inputs for terminals with PNP, – common	
		DRT2-MD16S	8 inputs/8 outputs (NPN inputs with + common/NPN outputs with – common)	
		DRT2-MD16S-1	8 inputs/8 outputs (PNP inputs with – common/NPN outputs with + common)	
Analog Input Terminals		DRT2-AD04	4 inputs	U1, CE
		DRT2-AD04H	4 inputs, high-resolution	
Analog Output Terminals		DRT2-DA02	2 outputs	



## Ordering Information

Product	Model	Specifications	Standards
Screwless Clamp Terminals with Transistors	DRT2-ID32SLH	32 inputs (NPN with + common) with detection functions	U, CE
	DRT2-ID32SLH-1	32 inputs (PNP with – common) with detection functions	
	DRT2-OD32SLH	32 outputs (NPN with + common) with detection functions	
	DRT2-OD32SLH-1	32 outputs (PNP with – common) with detection functions	
	DRT2-MD32SLH	16 inputs/16 outputs (NPN inputs with + common, NPN outputs with – common) with detection functions	
	DRT2-MD32SLH-1	16 inputs/16 outputs (PNP inputs with – common, NPN outputs with + common) with detection functions	
	DRT2-ID32SL	32 inputs (NPN with + common) without detection functions	
	DRT2-ID32SL-1	32 inputs (PNP with – common) without detection functions	
	DRT2-OD32SL	32 outputs (NPN with + common) without detection functions	
	DRT2-OD32SL-1	32 outputs (PNP with – common) without detection functions	
	DRT2-MD32SL	16 inputs/16 outputs (NPN inputs with + common, NPN outputs with – common) without detection functions	
	DRT2-MD32SL-1	16 inputs/16 outputs (PNP inputs with – common, NPN outputs with + common) without detection functions	
Environment-resistant Terminals with Transistors	DRT2-ID08C	8 inputs for terminals with NPN, + common	U, CE
	DRT2-ID08C-1	8 inputs for terminals with PNP, – common	
	DRT2-OD08C	8 outputs for terminals with NPN, – common	
	DRT2-OD08C-1	8 outputs for terminals with PNP, + common	
	DRT2-HD16C	16 inputs for terminals with NPN, + common	
	DRT2-HD16C-1	16 inputs for terminals with PNP, – common	
Modular Temperature Controller	E5ZN-DRT	E5ZN DeviceNet Communications Unit	U, CE
	E5ZN-SCT24S-500	Terminal Unit	
	E5ZN-SDL	Setting Display Unit	
DeviceNet Communications Units (for Inverters)	3G3MV-PDRT2	3G3MV DeviceNet Communications Unit	U, CE
	3G3RV-PDRT2	3G3RV/3G3FV DeviceNet Communications Unit	

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# Ordering Information

## General-purpose Slaves

Product	Model	Specifications	Standards
Transistor Remote I/O Terminals	DRT1-ID08	8 inputs for terminals with NPN, + common	U, C, CE
	DRT1-ID08-1	8 inputs for terminals with PNP, – common	
	DRT1-ID16	16 inputs for terminals with NPN, + common	
	DRT1-ID16-1	16 inputs for terminals with PNP, – common	
	DRT1-OD08	8 outputs for terminals with PNP, – common	
	DRT1-OD08-1	8 outputs for terminals with NPN, + common	
	DRT1-OD16	16 outputs for terminals with PNP, – common	
	DRT1-OD16-1	16 outputs for terminals with NPN, + common	
	DRT1-MD16	8 inputs/8 outputs for terminals with NPN, + common for inputs, – common for outputs	
Remote Adapters	DRT1-ID16X	16 inputs with pull-wire connectors, NPN, + common	U, C, CE
	DRT1-ID16X-1	16 inputs with pull-wire connectors, PNP, – common	
	DRT1-OD16X	16 outputs with pull-wire connectors, NPN, – common	
	DRT1-OD16X-1	16 outputs with pull-wire connectors, PNP, + common	
MIL Socket Flat Cable Connectors	XG4A-2031	DIP straight terminal connector plug	---
	XG4A-2034	DIP L terminal connector plug	
Analog Input Terminals	DRT1-AD04	4 or 2 input points (selectable using DIP switch) (Allocated 4 or 2 input words at the master)	U, CE
	DRT1-AD04H	4 input points (Allocated 4 input words at the master)	
Analog Output Terminals	DRT1-DA02	2 output points Current output: 0 to 20 mA, 4 to 20 mA Voltage output: 1 to 5 V, 0 to 10 V, –10 to 10 V	
Temperature Input Terminals	DRT1-TS04T	4 input points (Allocated 4 input words at the master)	Input types: R, S, K1, K2, J1, J2, T, E, B, N, L1, L2, U, W, PLII Input types: Pt100, JPt100
	DRT1-TS04P		
Sensor Terminals (2-wire Sensors)	DRT1-HD16S	8 input and 8 output points for sensors (NPN) 2 input points for 1 sensor	---
	DRT1-ND16S	8 input and 8 output points for sensors	
	XS8A-0441 (See note.)	Cable Connector (0.3 to 0.5 mm <sup>2</sup> )	
	XS8A-0442 (See note.)	Cable Connector (0.14 to 0.2 mm <sup>2</sup> )	
Waterproof Terminals	DRT1-ID04CL	4 transistor inputs, NPN (+ common)	CE, L
	DRT1-ID04CL-1	4 transistor inputs, PNP (– common)	
	DRT1-OD04CL	4 transistor outputs, NPN (– common)	
	DRT1-OD04CL-1	4 transistor outputs, PNP (+ common)	
	DRT1-ID08CL	8 transistor inputs, NPN (+ common)	
	DRT1-ID08CL-1	8 transistor inputs, PNP (– common)	
	DRT1-OD08CL	8 transistor outputs, NPN (– common)	
	DRT1-OD08CL-1	8 transistor outputs, PNP (+ common)	
Environment-resistive Transistor Terminals	DRT1-ID08C	8 inputs, NPN (+ common)	U, C, CE
	DRT1-HD16C	16 inputs, NPN (+ common)	
	DRT1-HD16C-1	16 inputs, PNP (– common)	U, C
	DRT1-OD08C	8 outputs, NPN (– common)	U, C, CE
	DRT1-WD16C	16 outputs, NPN (– common)	U, C
	DRT1-WD16C-1	16 outputs, PNP (+ common)	
	DRT1-MD16C	8 inputs, NPN (+ common) 8 outputs, NPN (– common)	U, C, CE
	DRT1-MD16C-1	8 inputs, PNP (– common) 8 outputs, PNP (+ common)	U, E
B7AC Interface Unit	DRT1-B7AC	10 inputs x 3 Units (i.e., branching for 3 B7AC Units)	U, C, CE

**Note:** Orders are accepted in units of 10 Connectors.

# Ordering Information

## Intelligent Slaves Operating as PLC Units

Product	Model	Specifications		Standards
Programmable Slaves	CPM2C-S100C-DRT	Slave equipped with CPM2C CPU Unit functions	4 transistor outputs (sinking)	U, C, CE
	CPM2C-S110C-DRT	1,024 points max. for Remote I/O Links Includes Compo-Bus/S Master.	4 transistor outputs (sourcing)	
I/O Link Units	C200HW-DRT21	For CS1, C200HX/HG/HE 512 input points max. 512 output points max.		U, C, N, CE
	CQM1-DRT21	For CQM1H/CQM1 16 input points 16 output points		U, C, CE
	CPM1A-DRT21	For CPM1A/CPM2A 32 input points 32 output points		

## Other Intelligent Slaves

Product	Model	Specifications		Standards
RS-232C Unit	DRT1-232C2	2 RS-232C ports 16 input points (communications status)		U, C, CE
Fiber Amplifier DeviceNet Communications Unit	E3X-DRT21	Up to 16 E3X-DA-N Fiber Amplifiers can be connected.		---
	E3X-DA6-P (See note.)	Fiber Amplifier		
	E3X-CN02 (See note.)	Reduced-wiring Connector		
	E39-TM1	Terminal Block Unit		
Intelligent Flag III	V600-HAM42-DRT	ID system for DeviceNet		CE
Vision Sensor Controller	F150-C10E-3-DRT	Vision Sensor for DeviceNet		CE
Digital Controller	E5EK-AA2-DRT-500	Digital Controller for DeviceNet		---
High-density Temperature Controllers	E5ZE-8AQHD1-TCB-V2	Thermocouple	Heating control, voltage output	---
	E5ZE-8ACAD1-TCB-V2		Heating control, current output	
	E5ZE-8VQHD1-TCB-V2		Heating/cooling control, voltage output	
	E5ZE-8VCAD1-TCB-V2		Heating/cooling control, current output	
	E5ZE-8AQHD1-TPB-V2	Platinum-resistance thermometer	Heating control, voltage output	
	E5ZE-8ACAD1-TPB-V2		Heating control, current output	
	E5ZE-8VQHD1-TPB-V2		Heating/cooling control, voltage output	
	E5ZE-8VCAD1-TPB-V2		Heating/cooling control, current output	
AC Servo Drivers	R88A-NCW152-DRT	DeviceNet Option Unit for OMNUC W-series AC Servo Drivers		CE
	R88A-CNU01R	External I/O Connector		---
	R88A-CCW002P4	Cable for Setup Tool (IBM PC/AT or compatible, 2 m)		
Programmable Terminals	NT-DRT21	DeviceNet Interface Unit for NT31/NT631 Programmable Terminals		U, CE
DeviceNet Wireless Unit	WD30-ME	DeviceNet Wireless Master Station	Pencil antenna	---
	WD30-ME01		Magnetic Base Antenna	
	WD30-SE	DeviceNet Wireless Slave Station	Pencil antenna	
	WD30-SE01		Magnetic Base Antenna	
	WD30-AT001		Magnetic Base Antenna	

**Note:** Order the Fiber Amplifier and Reduced-wiring Connector together.

# Ordering Information

## ■ DeviceNet MULTIPLE I/O TERMINAL Units

Name		Model number	I/O points	Specifications	Standards
Communications Unit		DRT1-COM	---	Total Slave I/O points: 1,024 max.	U, C, CE
Digital I/O Units	Units with Terminal Blocks	GT1-ID16	16 inputs	NPN (+ common)	
		GT1-ID16-1	16 inputs	PNP (- common)	
		GT1-OD16	16 outputs	NPN (- common)	
		GT1-OD16-1	16 outputs	PNP (+ common)	
	Units with MOLEX Connectors	GT1-ID16MX	16 inputs	NPN (+ common)	
		GT1-ID16MX-1	16 inputs	PNP (- common)	
		GT1-OD16MX	16 outputs	NPN (- common)	
		GT1-OD16MX-1	16 outputs	PNP (+ common)	
	Units with Fujitsu Connectors	GT1-ID16ML	16 inputs	NPN (+ common)	
		GT1-ID16ML-1	16 inputs	PNP (- common)	
		GT1-OD16ML	16 outputs	NPN (- common)	
		GT1-OD16ML-1	16 outputs	PNP (+ common)	
	Units with D-Sub 25-pin Connectors	GT1-ID16DS	16 inputs	NPN (+ common)	
		GT1-ID16DS-1	16 inputs	PNP (- common)	
		GT1-OD16DS	16 outputs	NPN (- common)	
		GT1-OD16DS-1	16 outputs	PNP (+ common)	
Units with High-density Fujitsu Connectors	GT1-ID32ML	32 inputs	NPN (+ common)		
	GT1-ID32ML-1	32 inputs	PNP (- common)		
	GT1-OD32ML	32 outputs	NPN (- common)		
	GT1-OD32ML-1	32 outputs	PNP (+ common)		
Analog Input Units		GT1-AD08MX	8 inputs	MOLEX connector	
		GT1-AD04	4 inputs	Terminal block	
Analog Output Units		GT1-DA04MX	4 outputs	MOLEX connector	
		GT1-DA04	4 outputs	Terminal block	
Temperature Input Units		GT1-TS04T	4 inputs	Thermocouple	
		GT1-TS04P	4 inputs	Platinum resistance thermometer	
Counter Unit		GT1-CT01	1 input, 2 outputs	1 input, 2 outputs Counter Unit with encoder input	CE
Relay Output Units		GT1-ROP08	8 outputs	8 relay outputs, 2 A, SPST-NO	U, C, CE
		GT1-ROS16	16 outputs	8 relay outputs, 5 A, SPST-NO	
		GT1-FOP08	8 outputs	8 SSR outputs, 1.5 A, SPST-NO	---
I/O Unit Connecting Cable		GCN1-100	---	1 m	---

**Note:** For details on DeviceNet, refer to the DeviceNet Catalog (Cat. No. Q102).

# Ordering Information

## ■ CompoBus/S Slave Units

Name	Model number	Specifications	Standards (See note.)
I/O Link Units	CPM2C-SRT21	For CPM2C; 8 input points, 8 output points	CE
	CPM1A-SRT21	For CPM1A/CPM2A; 8 input points, 8 output points	U, C, CE
Remote I/O Terminals with Transistors	SRT2-ID04	4 input points, NPN (+ common)	U, C, CE
	SRT2-ID04	4 input points, NPN (+ common)	
	SRT2-ID04-1	4 input points, PNP (- common)	
	SRT2-OD04	4 output points, NPN (- common)	
	SRT2-OD04-1	4 output points, PNP (+ common)	
	SRT2-ID08	8 input points, NPN (+ common)	
	SRT2-ID08-1	8 input points, PNP (- common)	
	SRT2-OD08	8 output points, NPN (- common)	
	SRT2-OD08-1	8 output points, PNP (+ common)	
	SRT2-ID16	16 input points, NPN (+ common)	
	SRT2-ID16-1	16 input points, PNP (- common)	
	SRT2-OD16	16 output points, NPN (- common)	
	SRT2-OD16-1	16 output points, PNP (+ common)	
	Remote I/O Terminals with Transistors and 3-tier Terminal Block	SRT2-ID16T	
SRT2-ID16T-1		16 input points, PNP (- common)	
SRT2-MD16T		16 I/O points, NPN (inputs: + common, outputs: - common)	
SRT2-MD16T-1		16 I/O points, PNP (inputs: - common, outputs: + common)	
SRT2-OD16T		16 output points, NPN (- common)	
SRT2-OD16T-1		16 output points, PNP (+ common)	
Remote Input Terminals with Transistors and Connectors (4/8 points)	SRT2-ID04MX	4 input points, NPN (+ common)	CE
	SRT2-ID08MX	8 input points, PNP (+ common)	
Remote Output Terminals with Relays	SRT2-ROC08	8 relay output points	U, C, CE
	SRT2-ROC16	16 relay output points	
	SRT2-ROF08	8 power MOSFET relay output points	
	SRT2-ROF16	16 power MOSFET relay output points	
Remote I/O Terminals with Transistors and Connectors	SRT2-ID32ML	32 input points, NPN (+ common)	CE
	SRT2-ID32ML-1	32 input points, PNP (- common)	
	SRT2-OD32ML	32 output points, NPN (- common)	
	SRT2-OD32ML-1	32 output points, PNP (+ common)	
	SRT2-MD32ML	32 I/O points, NPN (inputs: + common, outputs: - common)	
	SRT2-MD32ML-1	32 I/O points, PNP (inputs: - common, outputs: + common)	
	SRT2-VID08S	8 input points, NPN (+ common)	U, C, CE
	SRT2-VID08S-1	8 input points, PNP (- common)	
	SRT2-VOD08S	8 output points, NPN (- common)	
	SRT2-VOD08S-1	8 output points, PNP (+ common)	
	SRT2-VID16ML	16 input points, NPN (+ common)	
	SRT2-VID16ML-1	16 input points, PNP (- common)	
	SRT2-VOD16ML	16 output points, NPN (- common)	
	SRT2-VOD16ML-1	16 output points, PNP (+ common)	
	SRT2-ATT01	Mounting Bracket A	
	SRT2-ATT02	Mounting Bracket B	







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# Ordering Information

Name	Model number	Specifications	Standards (See note.)
Waterproof Terminals (with Transistors)	SRT2-ID04CL	4 input points, NPN (+ common)	CE
	SRT2-ID04CL-1	4 input points, PNP (- common)	
	SRT2-OD04CL	4 output points, NPN (- common)	
	SRT2-OD04CL-1	4 output points, PNP (+ common)	
	SRT2-ID08CL	8 input points, NPN (+ common)	
	SRT2-ID08CL-1	8 input points, PNP (- common)	
	SRT2-OD08CL	8 output points, NPN (- common)	
	SRT2-OD08CL-1	8 output points, PNP (+ common)	
CompoBus/S Fiber Amplifier Sensor Communication Unit	E3X-SRT21	Connects to up to 14 Fiber Amplifier Units	
Sensor Terminals	SRT2-ID08S	8 Sensor inputs (NPN)	---
	SRT2-ND08S	4 remote-teaching Sensor inputs, 4 outputs (NPN)	
	SRT2-OD08S	8 Sensor outputs (NPN)	
Analog Input Terminal	SRT2-AD04	1 to 4 inputs (set via DIP switch)	U, C, CE
Analog Output Terminal	SRT2-DA02	1 or 2 outputs (set via DIP switch)	
Remote I/O Modules	SRT2-ID16P	16 input points, NPN (+ common)	---
	SRT2-OD16P	16 output points, NPN (- common)	
Positioner Drivers (Cannot be used in Long-distance Communications Mode.)	FND-X06H-SRT	200-VAC input, 6 A	U, CE, CU
	FND-X12H-SRT	200-VAC input, 12 A	
	FND-X25H-SRT	200-VAC input, 25 A	
	FND-X50H-SRT	200-VAC input, 50 A	
	FND-X06L-SRT	100-VAC input, 6 A	
	FND-X12L-SRT	100-VAC input, 12 A	

- Note:**
1. OMRON products that comply with EC Directives also comply with the common emission standard of the EMC Directive as individual products. The user must, however, confirm compliance with the EMC Directive for the overall device or machine containing the OMRON product, which can be affected by the configuration of the control panel, wiring conditions, layout, and other factors.
  2. For details on CompoBus/S, refer to the CompoBus/S Catalog (Cat. No. Q103).

## Optional Products

Name	Specifications	Model	Standards	
I/O Unit Cover 	Cover for 10-pin terminal block	C200H-COV11	---	
Terminal Block Covers 	Short protection for 10-pin terminal block (package of 10 covers); 8 pts	C200H-COV02		
	Short protection for 19-pin terminal block (package of 10 covers); 12 pts	C200H-COV03		
C200H Unit Connector Cover 	Protective cover for unused I/O Connecting Cable connectors	C500-COV01		
CS1 Special I/O Unit Connector Cover	Protective cover for unused I/O Connecting Cable connectors	CV500-COV01		
C200H Expansion I/O Backplane Insulation Plates 	Electrically insulate C200H Expansion I/O Backplanes from the control panel to increase noise resistance.	For 3-slot Backplane	C200HW-ATT32	N, L, CE
		For 5-slot Backplane	C200HW-ATT52	
		For 8-slot Backplane	C200HW-ATT82	
		For 10-slot Backplane	C200HW-ATTA2	
Relay 	24 VDC, for C200H-OC221/OC222/OC223/OC224/OC225	NTKPG6B-1174P-FD-US	---	
Programming Console Mounting Bracket 	Used to attach C200H-PRO27-E Hand-held Programming Console to a panel.	C200H-ATT01		







## Ordering Information

Name	Specifications	Model	Standards
Space Units	Used for empty I/O slot on the CS1W-BC□□□3/BI□□□3 or C200HW-BI□□□□.	C200H-SP001	---
	Used for empty I/O slot on CS1W-BC□□□2/BI□□□2 and CS1D-BC□□□□(S)/BI□□□□	CS1W-SP001	
	Used for empty Power Supply Unit slot on CS1D-BC□□□□(S)/BI□□□□; same shape as the CS1W-PA207R.	CS1W-SP001	
	Used for empty Power Supply Unit slot on CS1D-BC□□□□(S)/BI□□□□; same shape as the CS1W-PA207R.	CS1W-SP002	
Battery Set	For CS-series CPU Units. (Use batteries within two years of manufacture.)	CS1W-BAT01	L, CE
Terminating Resistor (See note.)	Mounts to end of CS1 Long-distance Expansion Rack	CV500-TER01	U, C

**Note:** Two Terminating Resistors are included with the CS1W-IC102 I/O Control Unit.

### ■ Mounting Rails and Accessories

Name	Specifications	Model number	Standards
DIN Track Mounting Bracket 	1 set (2 included)	C200H-DIN01	---
DIN Tracks 	Length: 50 cm; height: 7.3 cm	PFP-50N	
	Length: 1 m; height: 7.3 cm	PFP-100N	
	Length: 50 cm; height: 16 mm	PFP-100N2	
End Plate 	---	PFP-M	
Spacer 	---	PFP-S	

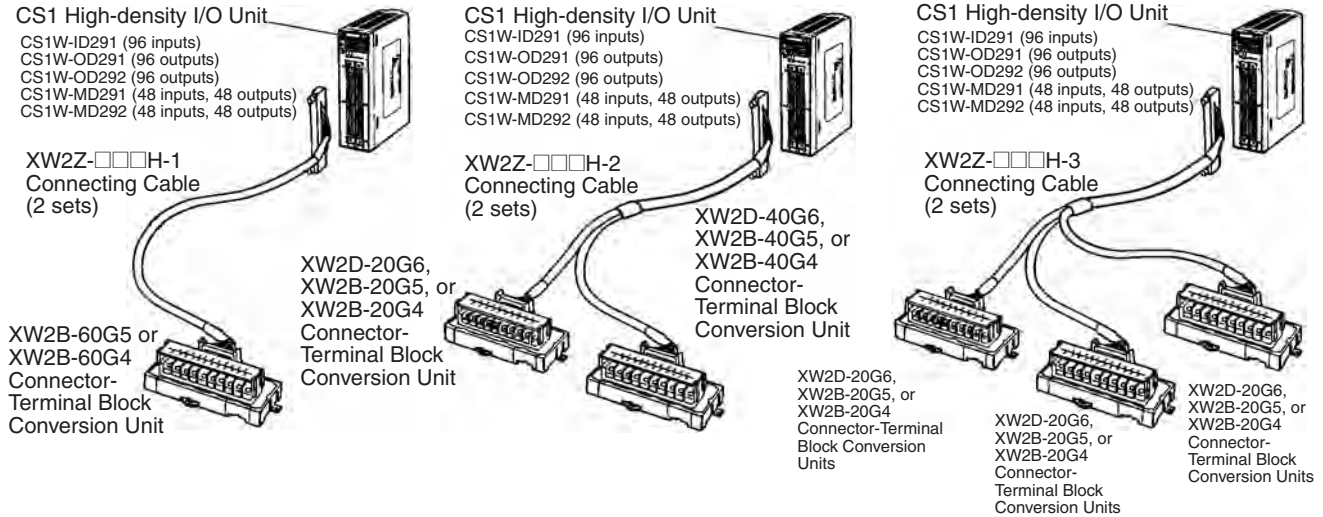
**Note:** Order PFP products in increments of 10.

# Wiring Devices for High-density I/O Units

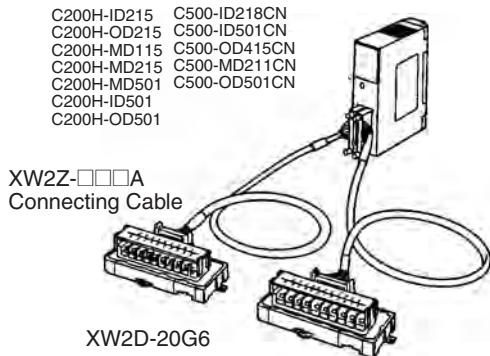
## ■ XW2Z Connecting Cables and XW2□ Connector-Terminal Block Conversion Units

*The XW2D Series for Connecting to Various Controllers*

### CS1-series PLC Basic I/O Units (96 or 48/48 I/O Points)

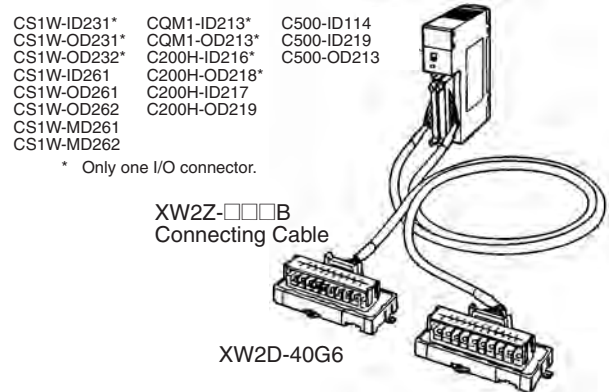


### PLC 32-point I/O Units with Connectors



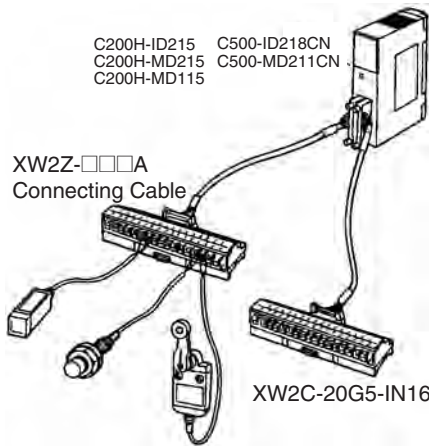
### PLC 32-point Group-2 I/O Units with Connectors

### PLC 64-point I/O Units with Connectors

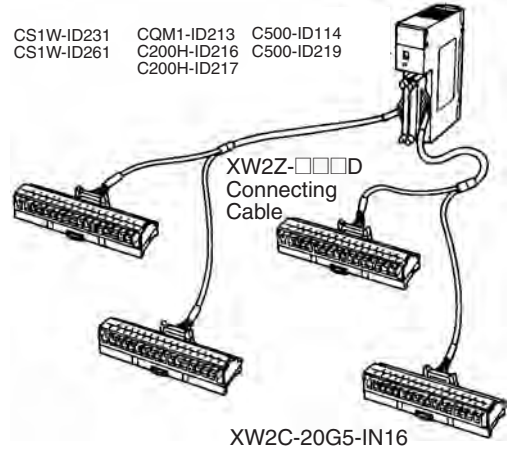


The XW2C-20G5-IN16 for when a Power Supply Common Terminal Is Required

**PLC 32-point I/O Units with Connectors**



**PLC 32-point Group-2 Input Units with Connectors**  
**PLC 64-point Input Units with Connectors**

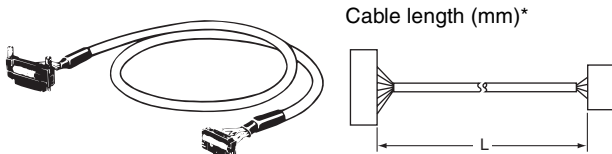


**■ XW2Z Connecting Cables for Connector-Terminal Block Conversion Units**

Refer to the table of Connecting Cables on page 224 for information on Connecting Cables between PLC I/O Units and Connector-Terminal Block Conversion Units.

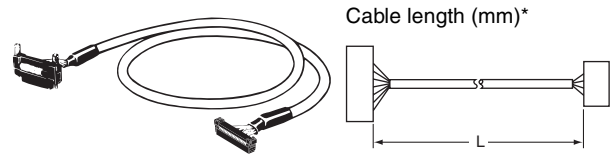
**The XW2Z-□□□A for PLC 32-point I/O Units with Connectors**

**XW2Z-□□□A**



*Cable length L (mm)	Model
500	XW2Z-050A
1,000	XW2Z-100A
1,500	XW2Z-150A
2,000	XW2Z-200A
3,000	XW2Z-300A
5,000	XW2Z-500A

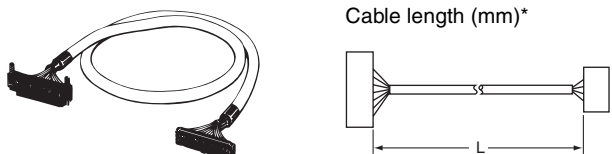
**XW2Z-□□□AU**



*Cable length L (mm)	Model
500	XW2Z-050AU
1,000	XW2Z-100AU
1,500	XW2Z-150AU
2,000	XW2Z-200AU
3,000	XW2Z-300AU
5,000	XW2Z-500AU

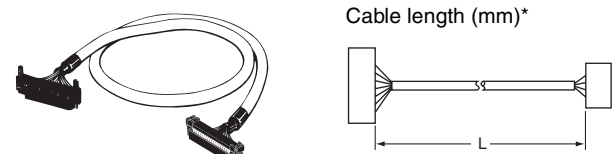
**The XW2Z-□□□B for PLC 32-point Group-2 I/O Units with Connectors and PLC 64-point I/O Units with Connectors**

**XW2Z-□□□B**



Type	*Cable length L (mm)	Model
Normal wiring	500	XW2Z-050B
	1,000	XW2Z-100B
	1,500	XW2Z-150B
	2,000	XW2Z-200B
	3,000	XW2Z-300B
	5,000	XW2Z-500B

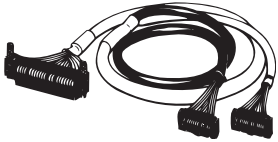
**XW2Z-□□□BU**



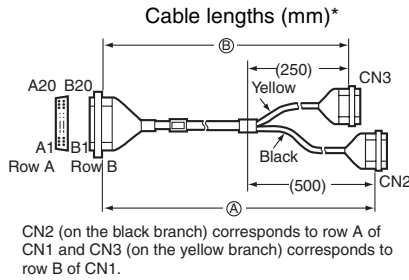
Type	*Cable length L (mm)	Model
Normal wiring	500	XW2Z-050BU
	1,000	XW2Z-100BU
	1,500	XW2Z-150BU
	2,000	XW2Z-200BU
	3,000	XW2Z-300BU
	5,000	XW2Z-500BU

**The XW2Z-□□□D for PLC 32-point Group-2 Input Units with Connectors and PLC 64-point Input Units with Connectors**

**XW2Z-□□□D**



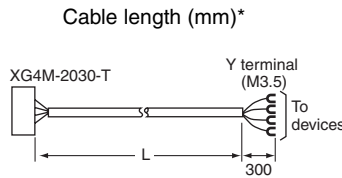
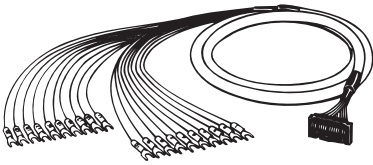
**Note:** The G79-□□C-□ Cable with a Connector for the G7TC cannot be used with the XW2C because the wiring is not the same.



*Cable lengths (mm)		Model
A	B	
1,000	750	XW2Z-100D
1,500	1,250	XW2Z-150D
2,000	1,750	XW2Z-200D
3,000	2,750	XW2Z-300D
5,000	4,750	XW2Z-500D

**The XW2Z-□□□F Cable with Loose Wires with Crimp Connectors (20 Wires)**

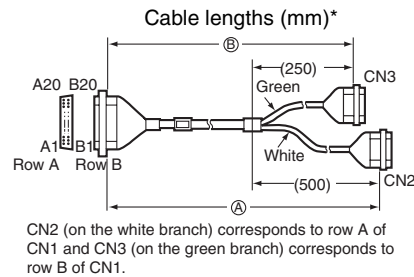
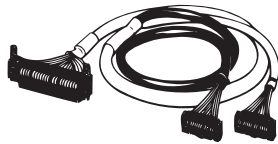
**XW2Z-□□□F**



*Cable length L (mm)	Model
1,000	XW2Z-100F
1,500	XW2Z-150F
2,000	XW2Z-200F
3,000	XW2Z-300F
5,000	XW2Z-500F

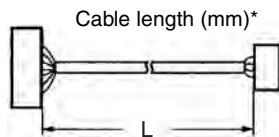
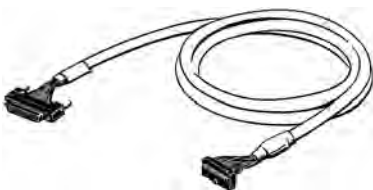
**The XW2Z-□□□L for PLC 32-point Group-2 Output Units with Connectors and PLC 64-point Output Units with Connectors**

**XW2Z-□□□L**



*Cable lengths (mm)		Model
A	B	
1,000	750	XW2Z-100L
1,500	1,250	XW2Z-150L
2,000	1,750	XW2Z-200L
3,000	2,750	XW2Z-300L
5,000	4,750	XW2Z-500L

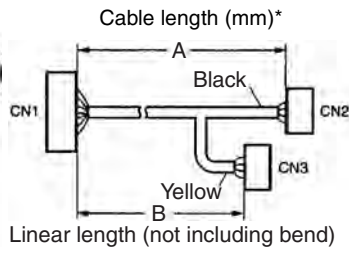
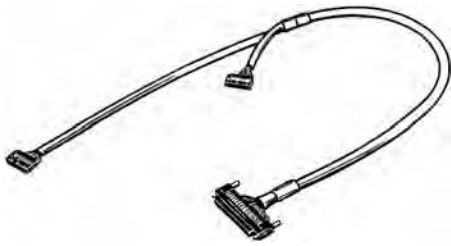
**The XW2Z-□□□H-1 for PLC 96-point I/O Units with Connectors**



*Cable length L (mm)	Model
500	XW2Z-050H-1
1,000	XW2Z-100H-1
1,500	XW2Z-150H-1
2,000	XW2Z-200H-1
3,000	XW2Z-300H-1
5,000	XW2Z-500H-1
7,000	XW2Z-700H-1
10,000	XW2Z-010H-1

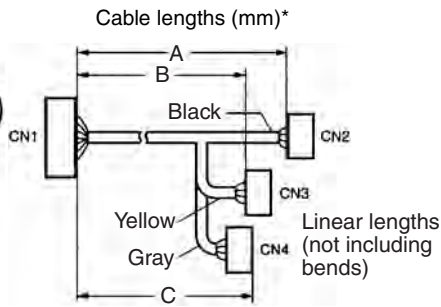
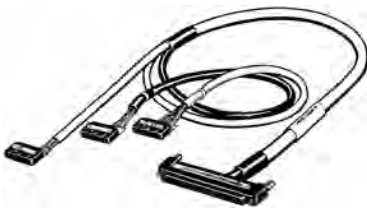
Lineup of Units  
CPU Unit Overview  
Basic System Configuration  
Better Basic Performance  
Peripheral Devices  
CPU Unit Overview  
I/O Allocations  
Current Consumption  
Instructions  
Replacing C200H I/O Units  
ORDERING GUIDE  
Wiring Devices for High-density I/O Units  
Connector Cables  
Peripheral Devices

**XW2Z-□□□H-2**



*Cable lengths (mm)		Model
A	B	
1,000	750	XW2Z-100H-2
1,500	1,250	XW2Z-150H-2
2,000	1,750	XW2Z-200H-2
3,000	2,750	XW2Z-300H-2
5,000	4,750	XW2Z-500H-2
10,000	9,750	XW2Z-010H-2

**XW2Z-□□□H-3**

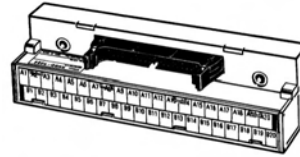


*Cable lengths (mm)			Model
A	B	C	
1,000	750	1,000	XW2Z-100H-3
1,500	1,250	1,500	XW2Z-150H-3
2,000	1,750	2,000	XW2Z-200H-3
3,000	2,750	3,000	XW2Z-300H-3
5,000	4,750	5,000	XW2Z-500H-3
10,000	9,750	10,000	XW2Z-010H-3

## ■ XW2 Connector-Terminal Block Conversion Units

### XW2D Connector-Terminal Block Conversion Units, Slim Type

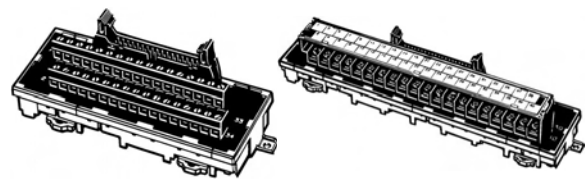
- Mounting area 35% less than 40-point XW2B models enabling down-sizing of control panel and automatic devices.
- Fallout-prevention mechanism used with terminal screws.
- Round crimp terminals and Y-shaped crimp terminals can be used together.
- Units available with built-in bleeder resistance (5.6 kΩ) for each terminal (model numbers ending in -RF or -RM). Applicable to input currents of 8.4 mA (typical).



XW2D-40G6 (M3 screws)

### XW2B Connector-Terminal Block Conversion Units, Through Type

- Mount to DIN track or via screws.
- MIL flat cable connectors or multi-pin square connectors available.
- Terminal blocks available with M3 or M3.5 screws.

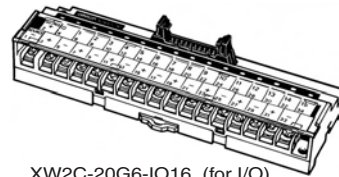


XW2B-40G4 (M3 screws)

XW2B-40G5 (M3.5 screws)

### XW2C Connector-Terminal Block Conversion Units with Commons

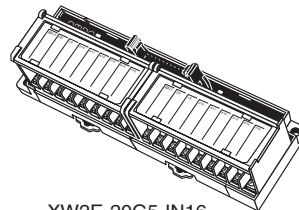
- Equipped with common terminal for I/O device power supply.
- ON/OFF status indicators. (XW2C-20G5-IN16)
- Mount to DIN track or via screws.
- Connectable to either PLC Input or Output Unit by changing a short bar (included). (XW2C-20G6-IO16)



XW2C-20G6-IO16 (for I/O)  
XW2C-20G5-IN16 (for inputs)

### XW2E Connector-Terminal Block Conversion Units with Commons and 3-tier Terminal Block

- Common terminal block with power supply terminals.
- Three-tier terminal block for easy wiring.



XW2E-20G5-IN16

## ■ Models

Name		I/O	Model
Connector-Terminal Block Conversion Unit, Slim Type	M3	32	XW2D-40G6
Connector-Terminal Block Conversion Units with Built-in Bleeder Resistance	M3	32	XW2D-40G6-RF
			XW2D-40G6-RM
Connector-Terminal Block Conversion Units, Through Type	M3.5	32	XW2B-40G5
	M3		XW2B-40G4
Connector-Terminal Block Conversion Unit, Slim Type	M3	16	XW2B-20G6
Connector-Terminal Block Conversion Units, Through Type	M3.5	16	XW2B-20G5
	M3		XW2B-20G4
Connector-Terminal Block Conversion Unit with Common	M3	16 inputs/16 outputs	XW2C-20G6-IO16
Connector-Terminal Block Conversion Unit with Common	M3.5	16 inputs	XW2C-20G5-IN16
Connector-Terminal Block Conversion Unit with Common and 3-Tier Terminal Block	M3	16 inputs	XW2E-20G5-IN16

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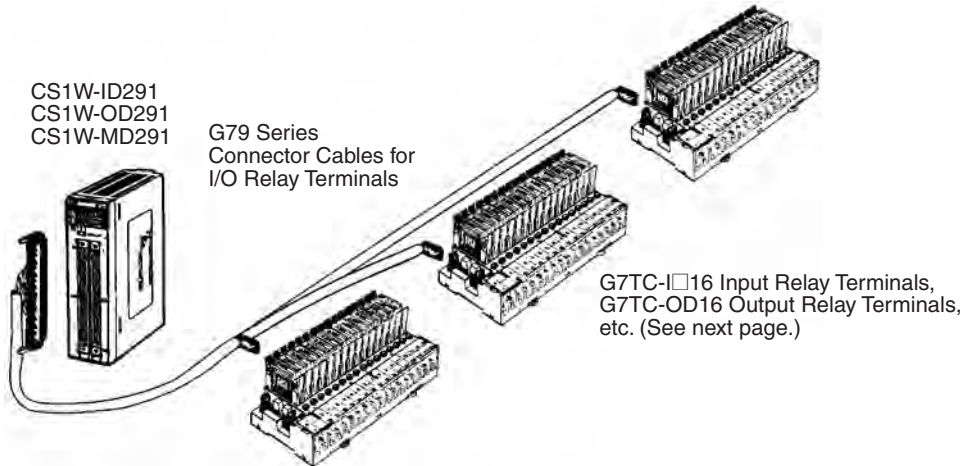


## ■ G79 I/O Relay Terminal Connector Cables and G7TC, G70A, and G70D I/O Relay Terminals for Connector Cables

Connect High-density I/O Units to Relay Terminals

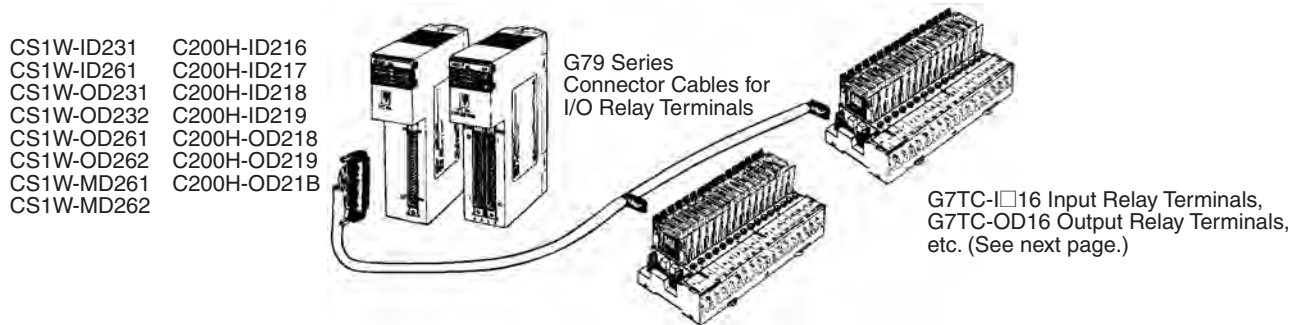
### CS1 High-density I/O Units with 48/48 or 96 I/O Points (Basic I/O Units)

#### 1:3 Connector Cables



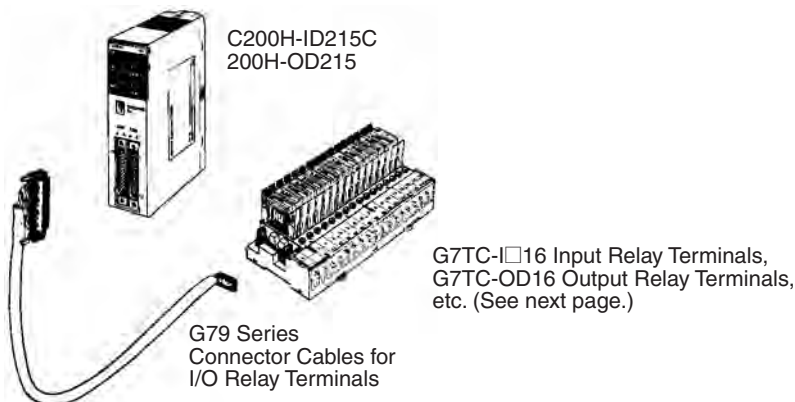
### CS1 High-density (32, 64, or 32/32 I/O Points) and C200H Group-2 High-density I/O Units (Basic I/O Units)

#### 1:2 Connector Cables



### C200H High-density I/O Units (Special I/O Units)

#### 1:1 Connector Cables

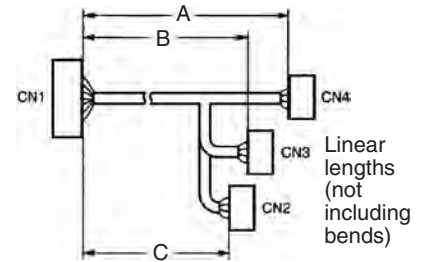
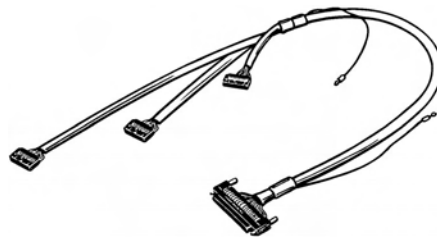


## ■ G79 I/O Relay Terminal Connector Cables

### G79-□□□C-□-□

CS1 High-density I/O Units (96, 48/48 points) (Basic I/O Units)		I/O Relay Terminal Connector Cables (See note 1.)			Applicable Relay Terminals (See note 2.)	
		Cable lengths (m)				Model numbers
Model	I/O	A	B	C	Model numbers	
CS1W-ID291	96 inputs	1.5	1.25	1	G79-150C-125-100 G79-200C-175-150 G79-300C-275-250	G7TC-□□16
CS1W-OD291	96 outputs	2	1.75	1.5		G7TC-OC16
		3	2.75	2.5		G70D-□□□16 G70A-ZOC16-3 (plus relays)
CS1W-MD291	48 inputs				G7TC-□□16	
	48 outputs				G7TC-OC16 G70D-□□□16 G70A-ZOC16-3 (plus relays)	

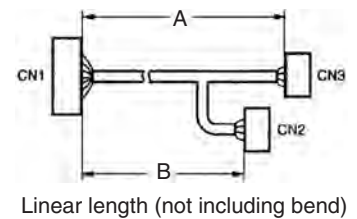
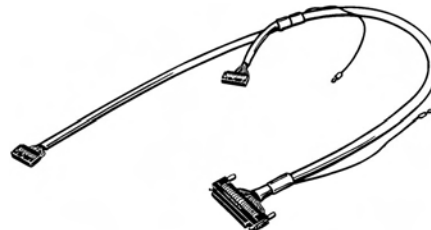
- Note:** 1. One connector required for each I/O Unit connector.  
2. Relay Terminals required for number of I/O.



### G79-I□□□C-□/ G79-O□□□C-□

CS1 High-density (32, 64, 32/32 points) and C200H Group-2 High-density I/O Units (Basic I/O Units)		I/O Relay Terminal Connector Cables (See note 1.)		Applicable Relay Terminals (See note 2.)	
		Cable lengths (m)			Model numbers
Model	I/O	A	B	Model numbers	
CS1W-ID231	32 inputs	1	0.75	G79-I100C-75 G79-I150C-125 G79-I200C-175 G79-I300C-275 G79-I500C-475	G7TC-□□16
CS1W-ID261	64 inputs	1.5	1.25		
CS1W-MD261 (Inputs)		2	1.75		
		3	2.75		
C200H-ID216		5	4.75		
C200H-ID217					
C200H-ID218					
C200H-ID219					
CS1W-OD231	32 outputs	1	0.75	G79-O100C-75 G79-O150C-125 G79-O200C-175 G79-P300C-275 G79-O500C-475	G7TC-OC16 G70D-□□□16 G70A-ZOC16-3 (plus relays)
CS1W-OD261	64 outputs	1.5	1.25		
CS1W-MD261 (Outputs)		2	1.75		
		3	2.75		
C200H-OD218		5	4.75		
C200H-OD219					
CS1W-OD232	32 outputs	1	0.75	G79-O100C-75 G79-O150C-125 G79-O200C-175 G79-O300C-275 G79-O500C-475	G70D-□□16-1 G70A-ZOC16-4 (plus relays)
CS1W-OD262	64 outputs	1.5	1.25		
CS1W-MD262 (Outputs)		2	1.75		
		3	2.75		
C200H-OD21B		5	4.75		

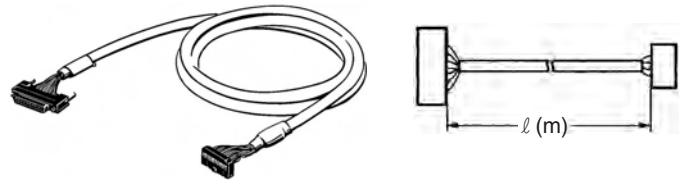
- Note:** 1. One connector required for each I/O Unit connector.  
2. Relay Terminals required for number of I/O.



■ G79□□□C

C200H High-density I/O Units (Special I/O Units)		I/O Relay Terminal Connector Cables (See note 1.)		Applicable Relay Terminals (See note 2.)
Model	I/O	Cable length $l$ (m)	Model numbers	Model numbers
C200H-ID215	32 inputs	1	G79-100C	G7TC-I□16
C200H-OD215	32 outputs	1.5	G79-150C	G7TC-OC16 G70D-□O□16 G70A-ZOC16-3 (plus relays)
		2	G79-200C	
		3	G79-300C	
		5	G79-500C	

- Note:** 1. One connector required for each I/O Unit connector.  
 2. Relay Terminals required for number of I/O.



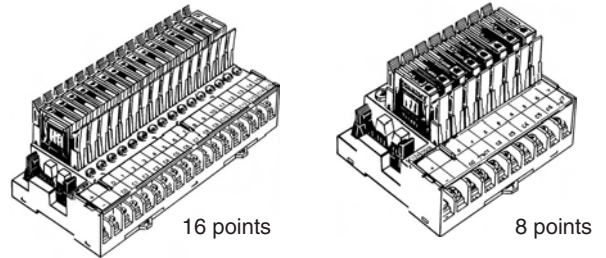
■ G7TC, G70A, and G70D I/O Relay Terminals for Connector Cables

**G7TC:**

**I/O Relay Terminals with High-capacity Relays**

- Models with 8 outputs, 16 outputs, or 16 inputs.
- PNP model with 16 outputs.
- Compact: 182 x 85 x 68 mm (WxDxH) (8-pt: 102 mm W).
- G7T I/O relays (SPST-NO, 5 A/relay) mounted.
- Models available meeting UL and CSA standards.
- Model with 16 independent points.

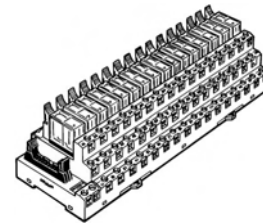
- G3TA I/O Solid-state Relays can be mounted.



**G70A-ZOC16:**

**I/O Relay Terminals with User-selected Relays**

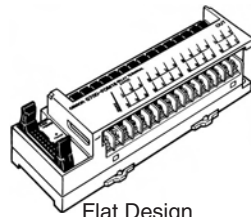
- 16-output relay terminal sockets.
- PNP models available.
- Compact: 234 x 75 x 64 mm (WxDxH).
- Mount G2R Power Relays, G3R Solid-state Relays, G3RZ Power MOS FET Relays, or H3RN Timers as required (Relays/Timers sold separately).
- High-capacity terminal block: 10 A.
- VDE standards met.
- Model with 16 independent points.



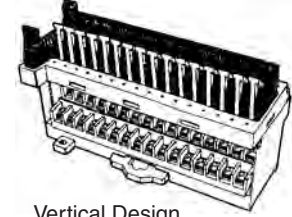
**Note:** Relays sold separately.

**G70D:**  
**16-point I/O Relay Terminals with G6D and G3DZ**

- 16-output relay terminal.
- Pick from a flat design (156 x 51 x 39 mm (WxDxH)) or vertical design (135 x 46 x 81 mm (WxDxH))
- G6C Power Relays (SPST-NO, 3 A/relay for flat design and 3 A/common for vertical design) or G3DZ Power MOS FET Relays (SPST-NO, 0.3 A/relay) mounted.
- Flat design: 2 outputs/common, Vertical design: 16 independent outputs.



Flat Design  
 G70D-SOC16  
 (Relay outputs)  
 G70D-FOM16  
 (MOS FET outputs)



Vertical Design  
 G70D-VSOC16  
 (Relay outputs)  
 G70D-VFOM16  
 (MOS FET outputs)

■ **Models**

Model	Rated voltage
G7TC-ID16	24 VDC
G7TC-IA16	100/110 VAC
	200/220 VAC
G7TC-OC16	24 VDC
G70A-ZOC16-3	Relays sold separately.
G70A-ZOC16-4	Relays sold separately.
G70D-SOC16	24 VDC
G70D-VSOC16	24 VDC
G70D-FOM16	24 VDC
G70D-VFOM16	24 VDC

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# Connecting Cable Tables

## ■ Connecting to CS1 I/O Units

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable					
		Branching	Length (m)	Model	Page		
CS1W-ID291 (48 points × 2)	XW2B-60G5 XW2B-60G4	1:1	0.5	XW2Z-050H-1	222		
			1	XW2Z-100H-1			
			1.5	XW2Z-150H-1			
			2	XW2Z-200H-1			
			3	XW2Z-300H-1			
			5	XW2Z-500H-1			
			7	XW2Z-700H-1			
			10	XW2Z-010H-1			
			XW2D-20G6 + XW2D-40G6 XW2B-20G5 + XW2B-40G5 XW2B-20G4 + XW2B-40G4	1:2		1	XW2Z-100H-2
						1.5	XW2Z-150H-2
	2	XW2Z-200H-2					
	3	XW2Z-300H-2					
	5	XW2Z-500H-2					
	10	XW2Z-010H-2					
	XW2D-20G6 (3 Units) XW2B-20G5 (3 Units) XW2B-20G4 (3 Units)	1:3			1	XW2Z-100H-3	
					1.5	XW2Z-150H-3	
					2	XW2Z-200H-3	
					3	XW2Z-300H-3	
			5	XW2Z-500H-3			
			10	XW2Z-010H-3			
			G7TC-IA16/ID16	1:3	1.5	G79-150C-125-100	226
					2	G79-200C-175-150	
					3	G79-300C-275-250	
			CS1W-OD291 (48 points × 2)	XW2B-60G5 XW2B-60G4	1:1	0.5	XW2Z-050H-1
	1	XW2Z-100H-1					
	1.5	XW2Z-150H-1					
	2	XW2Z-200H-1					
3	XW2Z-300H-1						
5	XW2Z-500H-1						
7	XW2Z-700H-1						
10	XW2Z-010H-1						
XW2D-20G6 + XW2D-40G6 XW2B-20G5 + XW2B-40G5 XW2B-20G4 + XW2B-40G4	1:2	1				XW2Z-100H-2	
		1.5				XW2Z-150H-2	
		2		XW2Z-200H-2			
		3		XW2Z-300H-2			
		5		XW2Z-500H-2			
		10		XW2Z-010H-2			
		XW2D-20G6 (3 Units) XW2B-20G5 (3 Units) XW2B-20G4 (3 Units)		1:3	1	XW2Z-100H-3	
					1.5	XW2Z-150H-3	
					2	XW2Z-200H-3	
					3	XW2Z-300H-3	
5	XW2Z-500H-3						
10	XW2Z-010H-3						
G7TC-OC16/08 G70D-SOC16/VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:3				1.5	G79-150C-125-100	226
					2	G79-200C-175-150	
					3	G79-300C-275-250	

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable					
		Branching	Length (m)	Model	Page		
CS1W-OD292 (48 points × 2)	XW2B-60G5 XW2B-60G4	1:1	0.5	XW2Z-050H-1	222		
			1	XW2Z-100H-1			
			1.5	XW2Z-150H-1			
			2	XW2Z-200H-1			
			3	XW2Z-300H-1			
			5	XW2Z-500H-1			
			7	XW2Z-700H-1			
			10	XW2Z-010H-1			
			XW2D-20G6 + XW2D-40G6 XW2B-20G5 + XW2B-40G5 XW2B-20G4 + XW2B-40G4	1:2		1	XW2Z-100H-2
						1.5	XW2Z-150H-2
	2	XW2Z-200H-2					
	3	XW2Z-300H-2					
	5	XW2Z-500H-2					
	10	XW2Z-010H-2					
	XW2D-20G6 (3 Units) XW2B-20G5 (3 Units) XW2B-20G4 (3 Units)	1:3			1	XW2Z-100H-3	
					1.5	XW2Z-150H-3	
					2	XW2Z-200H-3	
					3	XW2Z-300H-3	
			5	XW2Z-500H-3			
			10	XW2Z-010H-3			
			G7TC-OC16-1	1:3	1.5	G79-150C-125-100	226
					2	G79-200C-175-150	
					3	G79-300C-275-250	
			CS1W-MD291 (48 inputs) (48 outputs)	XW2B-60G5 XW2B-60G4	1:1	0.5	XW2Z-050H-1
	1	XW2Z-100H-1					
	1.5	XW2Z-150H-1					
	2	XW2Z-200H-1					
	3	XW2Z-300H-1					
	5	XW2Z-500H-1					
	7	XW2Z-700H-1					
10	XW2Z-010H-1						
XW2D-20G6 + XW2D-40G6 XW2B-20G5 + XW2B-40G5 XW2B-20G4 + XW2B-40G4	1:2	1				XW2Z-100H-2	
		1.5				XW2Z-150H-2	
		2		XW2Z-200H-2			
		3		XW2Z-300H-2			
		5		XW2Z-500H-2			
		10		XW2Z-010H-2			
		XW2D-20G6 (3 Units) XW2B-20G5 (3 Units) XW2B-20G4 (3 Units)		1:3	1	XW2Z-100H-3	
					1.5	XW2Z-150H-3	
					2	XW2Z-200H-3	
					3	XW2Z-300H-3	
5	XW2Z-500H-3						
10	XW2Z-010H-3						
G7TC-IA16/ID16 G7TC-OC16/08 G70D-SOC16/VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:3				1.5	G79-150C-125-100	226
					2	G79-200C-175-150	
					3	G79-300C-275-250	

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable					
		Branching	Length (m)	Model	Page		
CS1W-MD292 (48 inputs) (48 outputs)	XW2B-60G5 XW2B-60G4	1:1	0.5	XW2Z-050H-1	222		
			1	XW2Z-100H-1			
			1.5	XW2Z-150H-1			
			2	XW2Z-200H-1			
			3	XW2Z-300H-1			
			5	XW2Z-500H-1			
			7	XW2Z-700H-1			
			10	XW2Z-010H-1			
			XW2D-20G6 + XW2D-40G6 XW2B-20G5 + XW2B-40G5 XW2B-20G4 + XW2B-40G4	1:2		1	XW2Z-100H-2
						1.5	XW2Z-150H-2
	2	XW2Z-200H-2					
	3	XW2Z-300H-2					
	5	XW2Z-500H-2					
	10	XW2Z-010H-2					
	XW2D-20G6 (3 Units) XW2B-20G5 (3 Units) XW2B-20G4 (3 Units)	1:3			1	XW2Z-100H-3	
					1.5	XW2Z-150H-3	
					2	XW2Z-200H-3	
					3	XW2Z-300H-3	
			5	XW2Z-500H-3			
			10	XW2Z-010H-3			
G7TC-IA16/ID16 G7TC-OC16-1	1:3	1.5	G79-150C-125-100	226			
		2	G79-200C-175-150				
		3	G79-300C-275-250				
CS1W-ID231 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221		
			1	XW2Z-100B			
			1.5	XW2Z-150B			
			2	XW2Z-200B			
			3	XW2Z-300B			
	XW2D-40C6	1:1	0.5	XW2Z-050BU			
			1	XW2Z-100BU			
			1.5	XW2Z-150BU			
			2	XW2Z-200BU			
			3	XW2Z-300BU			
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D			
			1.5	XW2Z-150D			
			2	XW2Z-200D			
			3	XW2Z-300D			
			5	XW2Z-500D			
	CS1W-OD231 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221	
				1	XW2Z-100B		
				1.5	XW2Z-150B		
				2	XW2Z-200B		
				3	XW2Z-300B		
XW2D-40C6		1:1	0.5	XW2Z-050BU			
			1	XW2Z-100BU			
			1.5	XW2Z-150BU			
			2	XW2Z-200BU			
			3	XW2Z-300BU			
XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units)	1:2	1	XW2Z-100L	221			
		1.5	XW2Z-150L				
		2	XW2Z-200L				
		3	XW2Z-300L				
		5	XW2Z-500L				

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
CS1W-OD232 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units)	1:2	1	XW2Z-100L	221
			1.5	XW2Z-150L	
			2	XW2Z-200L	
			3	XW2Z-300L	
			5	XW2Z-500L	
CS1W-ID261 (32 points × 2)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D	221	
		1.5	XW2Z-150D		
		2	XW2Z-200D		
		3	XW2Z-300D		
		5	XW2Z-500D		
CS1W-OD261 (32 points × 2)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units)	1:2	1	XW2Z-100L	221	
		1.5	XW2Z-150L		
		2	XW2Z-200L		
		3	XW2Z-300L		
		5	XW2Z-500L		



I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
CS1W-OD262 (32 points × 2)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units)	1:2	1	XW2Z-100L	
			1.5	XW2Z-150L	
			2	XW2Z-200L	
			3	XW2Z-300L	
			5	XW2Z-500L	
CS1W-MD261 (32 inputs)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D	
			1.5	XW2Z-150D	
			2	XW2Z-200D	
			3	XW2Z-300D	
			5	XW2Z-500D	
CS1W-MD261 (32 outputs)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100L	
			1.5	XW2Z-150L	
			2	XW2Z-200L	
			3	XW2Z-300L	
			5	XW2Z-500L	

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
CS1W-MD262 (32 inputs)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D	
			1.5	XW2Z-150D	
			2	XW2Z-200D	
			3	XW2Z-300D	
			5	XW2Z-500D	
CS1W-MD262 (32 outputs)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units)	1:2	1	XW2Z-100L	
			1.5	XW2Z-150L	
			2	XW2Z-200L	
			3	XW2Z-300L	
			5	XW2Z-500L	

## ■ Connecting to C200H I/O Units

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
C200H-ID217 (32 points × 2)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D	
			1.5	XW2Z-150D	
			2	XW2Z-200D	
			3	XW2Z-300D	
			5	XW2Z-500D	
G7TC-IA16/ID16	1:2	1	G79-I100C-75	226	
		1.5	G79-I150C-125		
		2	G79-I200C-175		
		3	G79-I300C-275		
		5	G79-I500C-475		

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
C200H-ID219 (32 points x 2)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D	
			1.5	XW2Z-150D	
			2	XW2Z-200D	
			3	XW2Z-300D	
			5	XW2Z-500D	
G7TC-IA16/ID16	1:2	1	G79-I100C-75	226	
		1.5	G79-I150C-125		
		2	G79-I200C-175		
		3	G79-I300C-275		
		5	G79-I500C-475		
C200H-OD219 (32 points x 2)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units)	1:2	1	XW2Z-100L	221
			1.5	XW2Z-150L	
			2	XW2Z-200L	
			3	XW2Z-300L	
			5	XW2Z-500L	
G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3	1:2	1	G79-O100C-75	226	
		1.5	G79-O150C-125		
		2	G79-O200C-175		
		3	G79-O300C-275		
		5	G79-O500C-475		

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
C200H-ID216 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D	
			1.5	XW2Z-150D	
			2	XW2Z-200D	
			3	XW2Z-300D	
			5	XW2Z-500D	
G7TC-IA16/ID16	1:2	1	G79-I100C-75	226	
		1.5	G79-I150C-125		
		2	G79-I200C-175		
		3	G79-I300C-275		
		5	G79-I500C-475		
C200H-ID218 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2C-20G5-IN16 (2 Units) XW2E-20G5-IN16 (2 Units)	1:2	1	XW2Z-100D	
			1.5	XW2Z-150D	
			2	XW2Z-200D	
			3	XW2Z-300D	
			5	XW2Z-500D	
C200H-OD218 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
			3	XW2Z-300BU	
	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units)	1:2	1	XW2Z-100L	221
			1.5	XW2Z-150L	
			2	XW2Z-200L	
			3	XW2Z-300L	
			5	XW2Z-500L	
G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:2	1	G79-O100C-75	226	
		1.5	G79-O150C-125		
		2	G79-O200C-175		
		3	G79-O300C-275		
		5	G79-O500C-475		

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
C200H-ID215 (16 points × 2)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 XW2C-20G5-IN16 XW2E-20G5-IN16	1:1	0.5	XW2Z-050A	221
			1	XW2Z-100A	
			1.5	XW2Z-150A	
			2	XW2Z-200A	
			3	XW2Z-300A	
		5	XW2Z-500A		
		1:1	0.5	XW2Z-050AU	
			1	XW2Z-100AU	
			1.5	XW2Z-150AU	
			2	XW2Z-200AU	
	3		XW2Z-300AU		
	1:1	G7TC-IA16/ID16	1	G79-100C	226
			1.5	G79-150C	
			2	G79-200C	
			3	G79-300C	
5			G79-500C		
C200H-OD215 (16 points × 2)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16	1:1	0.5	XW2Z-050A	221
			1	XW2Z-100A	
			1.5	XW2Z-150A	
			2	XW2Z-200A	
			3	XW2Z-300A	
		5	XW2Z-500A		
		1:1	0.5	XW2Z-050AU	
			1	XW2Z-100AU	
			1.5	XW2Z-150AU	
			2	XW2Z-200AU	
	3		XW2Z-300AU		
	1:1	G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1	G79-100C	226
			1.5	G79-150C	
			2	G79-200C	
			3	G79-300C	
5			G79-500C		
C200H- MD215 (16 in- puts)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 XW2C-20G5-IN16 XW2E-20G5-IN16	1:1	0.5	XW2Z-050A	221
			1	XW2Z-100A	
			1.5	XW2Z-150A	
			2	XW2Z-200A	
			3	XW2Z-300A	
		5	XW2Z-500A		
		1:1	0.5	XW2Z-050AU	
			1	XW2Z-100AU	
			1.5	XW2Z-150AU	
			2	XW2Z-200AU	
	3		XW2Z-300AU		
	1:1	G7TC-IA16/ID16	1	G79-100C	226
			1.5	G79-150C	
			2	G79-200C	
			3	G79-300C	
5			G79-500C		

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable				
		Branching	Length (m)	Model	Page	
C200H- MD215 (16 outputs)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16	1:1	0.5	XW2Z-050A	221	
			1	XW2Z-100A		
			1.5	XW2Z-150A		
			2	XW2Z-200A		
			3	XW2Z-300A		
		5	XW2Z-500A			
		1:1	XW2D-20C6	0.5		XW2Z-050AU
			1	XW2Z-100AU		
			1.5	XW2Z-150AU		
			2	XW2Z-200AU		
	3		XW2Z-300AU			
	1:1	G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1	G79-100C	226	
			1.5	G79-150C		
			2	G79-200C		
			3	G79-300C		
5			G79-500C			
C200H-ID111 (32 points × 2)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221	
			1	XW2Z-100B		
			1.5	XW2Z-150B		
			2	XW2Z-200B		
			3	XW2Z-300B		
		5	XW2Z-500B			
		1:1	XW2D-40C6	0.5		XW2Z-050BU
			1	XW2Z-100BU		
			1.5	XW2Z-150BU		
			2	XW2Z-200BU		
	3		XW2Z-300BU			
	1:2	XW2D-20G6 (2 Units) XW2B-20G5 (2 Units) XW2B-20G4 (2 Units) XW2B-40G5-T XW2C-20G6-IO16 (2 Units) XW2E-20G5-IN16 (2 Units)	1	XW2Z-100D		
			1.5	XW2Z-150D		
			2	XW2Z-200D		
			3	XW2Z-300D		
5			XW2Z-500D			
C200H-ID501 (16 points × 2)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 XW2E-20G5-IN16	1:1	0.5	XW2Z-050A	221	
			1	XW2Z-100A		
			1.5	XW2Z-150A		
			2	XW2Z-200A		
			3	XW2Z-300A		
		5	XW2Z-500A			
		1:1	XW2D-20C6	0.5		XW2Z-050AU
			1	XW2Z-100AU		
			1.5	XW2Z-150AU		
			2	XW2Z-200AU		
	3		XW2Z-300AU			
	C200H-OD501 (16 points × 2)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16	1:1	0.5	XW2Z-050A	221
				1	XW2Z-100A	
				1.5	XW2Z-150A	
				2	XW2Z-200A	
3				XW2Z-300A		
5			XW2Z-500A			
1:1			XW2D-20C6	0.5	XW2Z-050AU	
			1	XW2Z-100AU		
			1.5	XW2Z-150AU		
			2	XW2Z-200AU		
		3	XW2Z-300AU			

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
C200H-MD501 (16 inputs)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 XW2E-20G5-IN16	1:1	0.5	XW2Z-050A	221
			1	XW2Z-100A	
			1.5	XW2Z-150A	
			2	XW2Z-200A	
			3	XW2Z-300A	
	5	XW2Z-500A			
	XW2D-20C6	1:1	0.5	XW2Z-050AU	
			1	XW2Z-100AU	
			1.5	XW2Z-150AU	
			2	XW2Z-200AU	
3			XW2Z-300AU		
5	XW2Z-500AU				
C200H-MD501 (16 outputs)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16	1:1	0.5	XW2Z-050A	221
			1	XW2Z-100A	
			1.5	XW2Z-150A	
			2	XW2Z-200A	
			3	XW2Z-300A	
	5	XW2Z-500A			
	XW2D-20C6	1:1	0.5	XW2Z-050AU	
			1	XW2Z-100AU	
			1.5	XW2Z-150AU	
			2	XW2Z-200AU	
3			XW2Z-300AU		
5	XW2Z-500AU				

### ■ Connecting to DeviceNet I/O Terminals

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
GT1-ID32ML (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	5	XW2Z-500B			
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
3			XW2Z-300BU		
5	XW2Z-500BU				
G7TC-IA16/ID16	1:1	0.25	G79-I25C	---	
		0.5	G79-I50C		
GT1-ID32ML-1 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	5	XW2Z-500B			
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
3			XW2Z-300BU		
5	XW2Z-500BU				

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
GT1-OD32ML (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	5	XW2Z-500B			
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
3			XW2Z-300BU		
5	XW2Z-500BU				
G7TC-OC16/08 G70D-SOC16/VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:1	0.25	G79-O25C	---	
		0.5	G79-O50C		
GT1-OD32ML-1 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.5	XW2Z-050B	221
			1	XW2Z-100B	
			1.5	XW2Z-150B	
			2	XW2Z-200B	
			3	XW2Z-300B	
	5	XW2Z-500B			
	XW2D-40C6	1:1	0.5	XW2Z-050BU	
			1	XW2Z-100BU	
			1.5	XW2Z-150BU	
			2	XW2Z-200BU	
3			XW2Z-300BU		
5	XW2Z-500BU				
GT1-ID16ML (16 points)	XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1	0.5	XW2Z-050A	221
			1	XW2Z-100A	
			1.5	XW2Z-150A	
			2	XW2Z-200A	
			3	XW2Z-300A	
	5	XW2Z-500A			
	XW2D-20C6	1:1	0.5	XW2Z-050AU	
			1	XW2Z-100AU	
			1.5	XW2Z-150AU	
			2	XW2Z-200AU	
3			XW2Z-300AU		
5	XW2Z-500AU				
G7TC-IA16/ID16	1:1	1	G79-100C	226	
		1.5	G79-150C		
		2	G79-200C		
		3	G79-300C		
		5	G79-500C		
GT1-ID16ML-1 (16 points)	XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1	0.5	XW2Z-050A	221
			1	XW2Z-100A	
			1.5	XW2Z-150A	
			2	XW2Z-200A	
			3	XW2Z-300A	
	5	XW2Z-500A			
	XW2D-20C6	1:1	0.5	XW2Z-050AU	
			1	XW2Z-100AU	
			1.5	XW2Z-150AU	
			2	XW2Z-200AU	
3			XW2Z-300AU		
5	XW2Z-500AU				

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable					
		Branching	Length (m)	Model	Page		
GT1-OD16ML (16 points)	XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1	0.5	XW2Z-050A	221		
			1	XW2Z-100A			
			1.5	XW2Z-150A			
			2	XW2Z-200A			
			3	XW2Z-300A			
	XW2D-20C6	1:1	0.5	XW2Z-050AU			
			1	XW2Z-100AU			
			1.5	XW2Z-150AU			
			2	XW2Z-200AU			
			3	XW2Z-300AU			
	G7TC-OC16/08 G70D-SOC16/VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:1	5	XW2Z-500AU			
			1	G79-100C		226	
			1.5	G79-150C			
			2	G79-200C			
			3	G79-300C			
5	G79-500C						
GT1-OD16ML-1 (16 points)	XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1	0.5	XW2Z-050A	221		
			1	XW2Z-100A			
			1.5	XW2Z-150A			
			2	XW2Z-200A			
			3	XW2Z-300A			
	XW2D-20C6	1:1	5	XW2Z-500A			
			0.5	XW2Z-050AU			
			1	XW2Z-100AU			
			1.5	XW2Z-150AU			
			2	XW2Z-200AU			
		1:1	3	XW2Z-300AU			
			5	XW2Z-500AU			
			0.25	XW2Z-C25K		---	
			0.5	XW2Z-C50K			
			1	XW2Z-100K			
1.5	XW2Z-150K						
2	XW2Z-200K						
G7TC-IA16/ID16	1:2	3	XW2Z-300K				
		5	XW2Z-500K				
		0.5	G79-I50-25-D1				
		0.75	G79-I75-50-D1				
		0.25	XW2Z-C25K	---			
XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1	0.5	XW2Z-C50K				
		1	XW2Z-100K				
		1.5	XW2Z-150K				
		2	XW2Z-200K				
		3	XW2Z-300K				
G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:1	5	XW2Z-500K				
		0.25	G79-O25C		---		
		XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1			0.5	G79-O50C
						1	XW2Z-100K
						1.5	XW2Z-150K
2	XW2Z-200K						
3	XW2Z-300K						
G7TC-OD16/08 G70D-SOC16/VSOC16 G70A-ZIC16-3 G70D-SOC08 G70R-SOC08	1:2	5	XW2Z-500K				
		0.5	G79-O50-25-D1				
		0.75	G79-O75-50-D1				
		XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1	0.25		XW2Z-C25K	---
				0.5		XW2Z-C50K	
1	XW2Z-100K						
1.5	XW2Z-150K						
2	XW2Z-200K						
G70A-ZOC16-4	1:2	3	XW2Z-300K				
		5	XW2Z-500K				
		0.5	G79-O50-25-D1				
		0.75	G79-O75-50-D1				
		0.25	XW2Z-C25K	---			
XW2D-20G6 XW2B-20G5 XW2B-20G4	1:1	0.5	XW2Z-C50K				
		1	XW2Z-100K				
		1.5	XW2Z-150K				
		2	XW2Z-200K				
		3	XW2Z-300K				
G7TC-IA16/ID16	1:2	5	XW2Z-500K				
		0.5	G79-I50-25-D1				
		0.75	G79-I75-50-D1				

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
DRT2-MD32ML DRT1-MD32ML (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.25	XW2Z-C25K	---
			0.5	XW2Z-C50K	
			1	XW2Z-100K	
			1.5	XW2Z-150K	
			2	XW2Z-200K	
	G7TC-IA16/ID16 G7TC-OC16/08 G70D-SOC16/VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:2	3	XW2Z-300K	
			5	XW2Z-500K	
			0.5	G79-M50-25-D1	
			0.75	G79-M75-50-D1	
			DRT2-MD32ML-1 DRT1-MD32ML-1 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	
0.5	XW2Z-C50K				
1	XW2Z-100K				
1.5	XW2Z-150K				
2	XW2Z-200K				
G70A-ZOC16-4	1:2	3		XW2Z-300K	
		5		XW2Z-500K	
		0.5		G79-M50-25-D2	
		0.75		G79-M75-50-D2	

## Connecting to CompoBus/S I/O Terminals

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable				
		Branching	Length (m)	Model	Page	
SRT2-VID16ML (16 points)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 XW2C-20G5-IN16 XW2E-20G5-IN16	1:1	0.25	G79-O25C	---	
			0.5	G79-O50C		
		G7TC-IA16/ID16	1:1	0.25		G79-I25C
				0.5		G79-I50C
				SRT2-VID16ML-1 (16 points)		XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 XW2C-20G5-IN16 XW2E-20G5-IN16
0.5	G79-O50C					
G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:1	0.25	G79-O25C			
		0.5	G79-O50C			
		SRT2-VOD16ML-1 (16 points)	XW2D-20G6 XW2B-20G5 XW2B-20G4 XW2C-20G6-IO16 XW2C-20G5-IN16 XW2E-20G5-IN16		1:1	
0.5	G79-O50C					
G70A-ZOC16-4	1:1			0.25	G79-O25C	
				0.5	G79-O50C	
				SRT2-ID32ML (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1
0.5	XW2Z-C50K					
1	XW2Z-100K					
1.5	XW2Z-150K					
2	XW2Z-200K					
G7TC-IA16/ID16	1:2	3	XW2Z-300K			
		5	XW2Z-500K			
		0.5	G79-I50-25-D1			
		0.75	G79-I75-50-D1			

I/O Unit model	Connector-Terminal Conversion Unit or I/O Block model	Connecting Cable			
		Branching	Length (m)	Model	Page
SRT2-ID32ML-1 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.25	XW2Z-C25K	---
			0.5	XW2Z-C50K	
			1	XW2Z-100K	
			1.5	XW2Z-150K	
			2	XW2Z-200K	
			3	XW2Z-300K	
			5	XW2Z-500K	
SRT2-OD32ML (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.25	XW2Z-C25K	---
			0.5	XW2Z-C50K	
			1	XW2Z-100K	
			1.5	XW2Z-150K	
			2	XW2Z-200K	
			3	XW2Z-300K	
	5	XW2Z-500K			
	G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:2	0.5	G79-O50-25-D1	
			0.75	G79-O75-50-D1	
SRT2-OD32ML-1 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.25	XW2Z-C25K	---
			0.5	XW2Z-C50K	
			1	XW2Z-100K	
			1.5	XW2Z-150K	
			2	XW2Z-200K	
			3	XW2Z-300K	
	5	XW2Z-500K			
	G70A-ZOC16-4	1:2	0.5	G79-M50-25-D1	
			0.75	G79-M75-50-D1	
SRT2-MD32ML (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.25	XW2Z-C25K	---
			0.5	XW2Z-C50K	
			1	XW2Z-100K	
			1.5	XW2Z-150K	
			2	XW2Z-200K	
			3	XW2Z-300K	
	5	XW2Z-500K			
	G7TC-IA16/ID16 G7TC-OC16/08 G70D-SOC16/ VSOC16 G70A-ZOC16-3 G70D-SOC08 G70R-SOC08	1:2	0.5	G79-M50-25-D1	
			0.75	G79-M75-50-D1	
SRT2-MD32ML-1 (32 points)	XW2D-40G6 XW2B-40G5 XW2B-40G4	1:1	0.25	XW2Z-C25K	---
			0.5	XW2Z-C50K	
			1	XW2Z-100K	
			1.5	XW2Z-150K	
			2	XW2Z-200K	
			3	XW2Z-300K	
	5	XW2Z-500K			
	G70A-ZOC16-4	1:2	0.5	G79-M50-25-D2	
			0.75	G79-M75-50-D2	



# Peripheral Devices

## Programmable Terminals NS12-V1/NS10-V1/NS8-V1/NS5-V1

### PTs as a Machine Navigator. NS-series PTs Navigate All Areas of Machine Operation, from Daily Operation to Device Error Displays and Error Recovery

The PT is traditionally a terminal that exchanges data in allocated areas with the PLC's CPU Unit. The internal and external control of a PLC with only this type of data exchange is, however, difficult. An NS-series PT, however, uses communications functions and Smart Active Parts to incorporate software computer functions to operate as a Device Navigator.



Consider the possibilities in using an NS-series PT with your existing system.

- NS-series PTs support serious networking to enable creating flexible communications systems.
- Simulate PT operations on personal computers without PT hardware.
- Monitor PLC ladder programs from an NS-series PT after system startup. (Applies to SYSMAC CS-series and CJ-series PLCs.)
- Use macro programs. A wide range of processing can be written in an easy-to-understand language.
- Use the many functions that greatly increase screen creation efficiency.
- Use Memory Cards with a wide range of data formats: CSV, RTF, TXT, BMP, and JPEG.

### NS-Designer

The new NS-Designer screen creation software provides an easy, comfortable development environment.



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NS-series Lineup

Series		NS12-V1	NS10-V1	NS8-V1	NS5-V1
Appearance					
Dimensions (WxHxD)		315 x 241 x 48.5 mm	315 x 241 x 48.5 mm	232 x 177 x 48.5 mm	195 x142 x54 mm
Effective display area		12.1 inch	10.4 inch	8 inch	5.7 inch
Display device		TFT	TFT	TFT	STN
Number of dots		800 x 600 dots	640 x 480 dots	640 x 480 dots	320 x 240 dots
Display color	Basic colors (objects, background, etc.)	256 colors (See note.)	256 colors (See note.)	256 colors (See note.)	256 colors
	Image data (BMP or JPG images)	32,768 colors	32,768 colors	32,768 colors	4,096 colors
	Images displayed via video input (See note 2.)	260,000 colors	260,000 colors	260,000 colors	---
Screen data capacity		20 Mbytes	20 Mbytes	20 Mbytes (See note 1.)	6 Mbytes
Memory Card		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ladder Monitor function		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	---
Video Input Unit support		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	---
Controller Link Interface Unit support		<input type="radio"/>	<input type="radio"/>	---	---

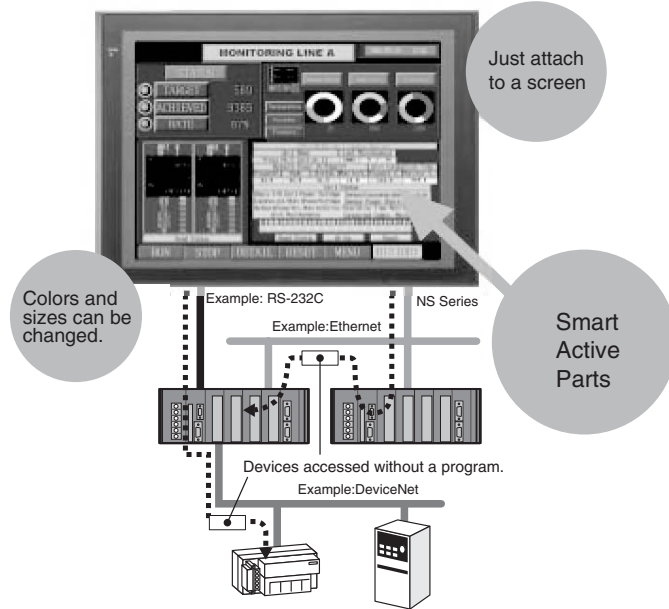
**Note:** 1. The screen data capacity of the NS8-V1 depends on the model.  
 2. The video input is not supported by NS5-V1.

# Peripheral Devices

NS-series Lineup

With an NS-series PT, just drag and drop Smart Active Parts to customize the interface for your machine.

NS-series PTs provide Smart Active Parts that allow direct data access to a variety of devices.



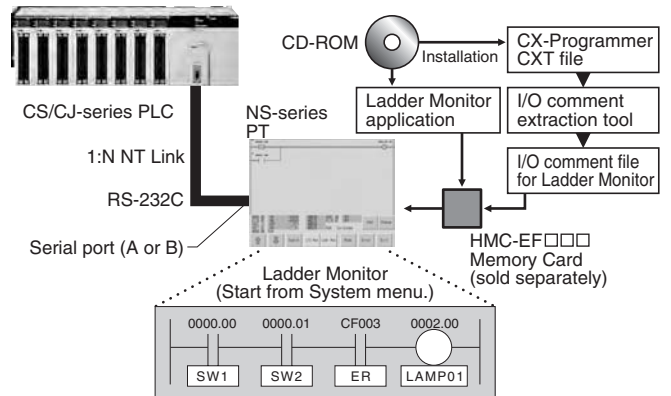
**A SYSMAC CS/CJ-series PLC's Ladder Program can be monitored from an NS-series Programmable Terminal after the System is started.**

## NS Ladder Monitor

### Monitoring/Editing the Ladder Program Do You Need to Monitor Execution of the PLC's Ladder Program?

#### Ladder Monitor Function

Save the NS-EXT01 Ladder Monitor system program on a Memory Card and install the Memory Card to enable monitoring of a ladder program (I/O bit status monitor, address/instruction search, multiple I/O bit monitor, etc.) being executed in a CS/CJ-series PLC connected by a serial connection. It is also possible to display I/O comments created with the CX-Programmer.



Note: The PLC operation can be monitored only if the PLC is a CS/CJ-series PLC connected to serial port A or serial port B of the Programmable Terminal with 1:N NT Link protocol.

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# Standard Models

Model name	Specifications	Model number		
		Ethernet	Case color	
NS12 PT	12-inch TFT 800 x 600 dots	No	Ivory	NS12-TS00-V1
			Black	NS12-TS00B-V1
		Yes	Ivory	NS12-TS01-V1
			Black	NS12-TS01B-V1
NS10 PT	10-inch TFT 640 x 480 dots	No	Ivory	NS10-TV00-V1
			Black	NS10-TV00B-V1
		Yes	Ivory	NS10-TV01-V1
			Black	NS10-TV01B-V1
NS8 PT	8-inch TFT 640 x 480 dots	No	Ivory	NS8-TV00-V1
			Black	NS8-TV00B-V1
		Yes	Ivory	NS8-TV01-V1
			Black	NS8-TV01B-V1
NS5 PT	5-inch TFT 320 x 240 dots	No	Ivory	NS5-SQ00-V1
			Black	NS5-SQ00B-V1
		Yes	Ivory	NS5-SQ01-V1
			Black	NS5-SQ01B-V1
NS-Designer Screen design software	Windows version on CD-ROM	NS-NSDC1-V6		
Cable (See note 1.)	Screen transfer cable for IBM PC/AT or compatible	XW2Z-S002		
	USB Host Cable, cable length: 5 m	NS-US52 (5 m)		
	USB Host Cable, cable length: 2 m	NS-US22 (2 m)		
PT-to-PLC Connecting Cable	PT connection: 9 pins PLC connection: 9 pins	Length: 2 m	XW2Z-200T	
		Length: 5 m	XW2Z-500T	
Accessories	Ladder Monitor Software	One CD-ROM Ladder Monitor application (See note 1.) and I/O Comment File Extraction Tool (See note 2.)	NS-EXT01-V2	
			NS-EXT01-V2L03 (3 licenses)	

- Note:** 1. NS-series PT application used to monitor a SYSMAC CS/CJ-series PLC's ladder program from the PT.  
 2. This tool extracts I/O comment data from the CX-Programmer's CXT file and converts the data to a format that can be used by the Ladder Monitor Software for NS.

■ Options

Model name	Specifications	Model number	
Video Input Unit	Inputs: 4 channels Signal type: NTSC/PAL	NS-CA001	
	Inputs channels: 2 video channels and 1 RGBI channels (See note 5.) Signal model: NTSC/PAL	NS-CA002	
Special Cable for the Console		F150-VKP (2m)	
		F150-VKP (5m)	
Controller Link Interface Unit	For Controller Link Communications	NS-CLK21	
RS-422A Adapter	Transmission distance: 500 m total length  Note: User this model when connecting PT models without a V1 Suffix. Note: PT models with a suffix of V1 can also be connected.	NS-AL002	
	Transmission on distance: 50 m total length Note: Only PT models with a suffix of V1 are connectable. Use the NS-002 to connect models without a V1a suffix.	CJ1W-CIF11	
Sheet/Cover (See note 4.)	Anti-reflection Sheets (5 surface sheets)	NS12/10	NS12-KBA04
		NS8	NS7-KBA04
		NS5	NS31C-KBA04
	Anti-reflection Sheets (5 surface sheets) (anti-reflection coating)	NS12/10	NS12-KB0A05
		NS8	NS7-KBA05
		NS5	NS31C-KBA05
	Protective Covers (5 pack) (Transparent)	NS12/10	NS12-KBA05
		NS8	NS7-KBA05
		NS5	NS31C-KBA05N
Attachment	(NT625C/631/631C Series to NS12 Series)		NS12-ATT01
	(NT625C//631/631C Series to NS12 Series)		NS12-ATT01B
	(NT600M//600G/610G/612G Series to NS8 Series)		NS8-ATT01
	(NT620S//620C/600C Series to NS8 Series)		NS8-ATT01B
Memory Card	15 MB	HMC-EF172	
	30 MB	HMC-EF372	
	64 MB	HMC-EF672	
Memory Card Adapter	HMC-AP001		
Battery	CPM2A-BAT01		
Bar Code Reader (Refer to the Catalog for details.)	V520-RH21-6		

- Note:** 1. Be sure to use cables made by OMRON when connecting NS hardware to a printer.  
 2. NS-series PT application used to monitor a SYSMAC CS/CJ-series PLC's ladder program from the PT.  
 3. This tool extracts I/O comment data from the CX-Programmer's CXT file and converts the data to a format that can be used by the Ladder Monitor Software for NS.  
 4. Chemical-resistant Cover NT30-KBA01 is available for only the NS5.  
 5. One screen cannot display two video inputs simultaneously.

# Servo Systems

## ■ R7M-A/R7D-A AC SMARTSTEP Servomotors/Servo Drivers

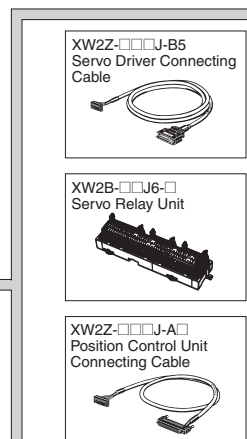
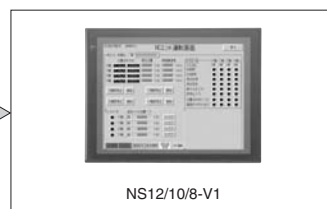
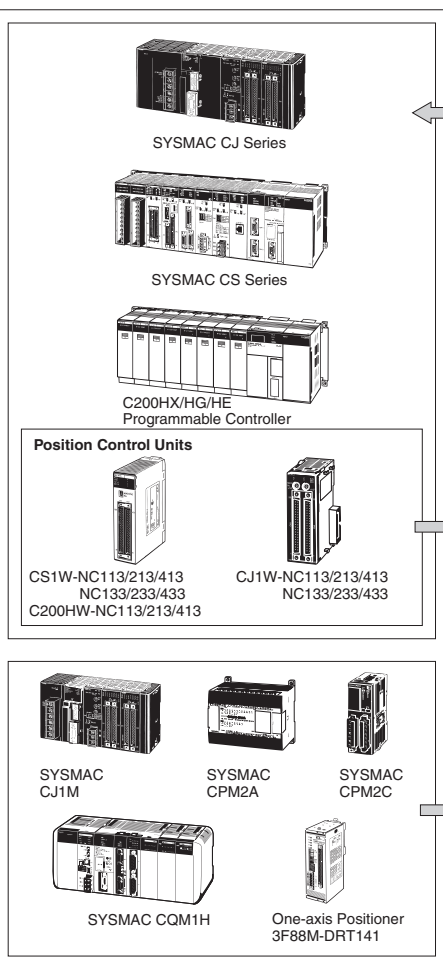
*SMARTSTEP Provides an Easy-Setup Operation Environment*



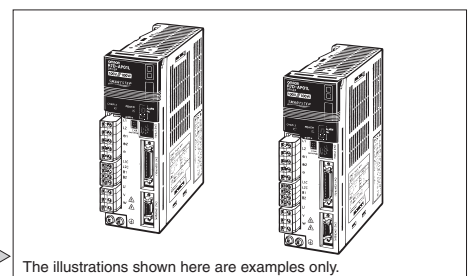
- A lineup of control cables ensures easy connections between the Driver and a variety of controllers. A single cable is all that is required to connect the motor as well. Special reduction gears are available.
- Easily achieve a monitoring/debugging system by combining NS-series PTs with OMRON SYSMAC CJ- or CS-series PLCs. A complete line of specialized tools, such as Monitoring Software and Parameter Units, is also available.
- Easy system setup is possible from front-panel switches. The system does not require time-consuming parameter settings and the Servomotor can be used as easily as a stepping motor.
- Servomotor Capacities  
30 W, 50 W, 100 W, 200 W, 400 W, 750 W

### System Configuration

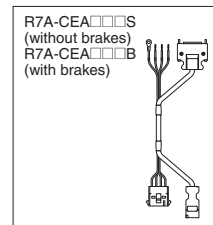
#### Controllers



#### Servo Drivers

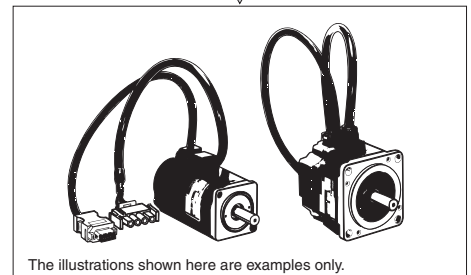


#### Motor Cables



**Motor Drive and Encoder Signals**  
Separate cables are also available for the motor drive and encoder signals.

#### Servomotors



**Note:** Refer to the *SMARTSTEP* catalog (Cat. No. I807) for details.

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**■ R88M-W/R88D-W AC Servomotors/Servo Drivers (OMNUC W Series)**

*The Performance, Response, Speed, and Control Accuracy Required of Servos Onsite: Greatly Improve Machine Performance and Productivity*

**AC Servo Drivers**

- Control algorithms greatly reduce positioning time (1/3rd of OMRON U Series).
- Online auto-tuning to automatically measure machine characteristics and easily adjust the servo gain.

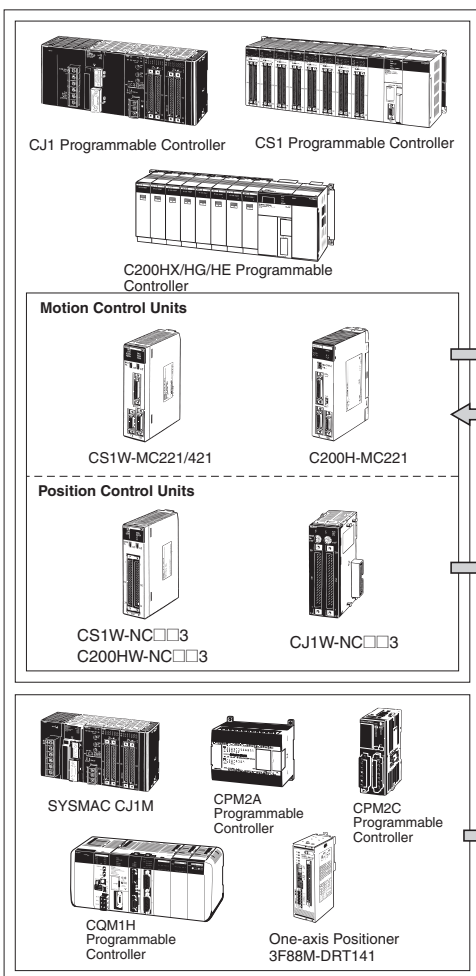
**AC Servomotors**

- Comprehensive lineup: Models with brakes, models with gears, 1,000-r/min models (300 W to 5.5 kW), 1,500-r/min models (450 W to 15 kW), and 3,000-r/min models (30 W to 5 kW).
- Greatly reduce motor speed ripple for smoother operation.
- Maximum speeds of 5,000 r/min and high-resolution serial encoder for a fast, accurate drive (not provided on all models).

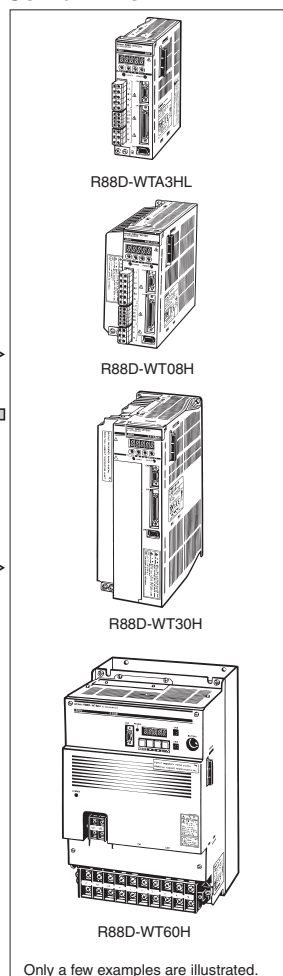


**System Configuration**

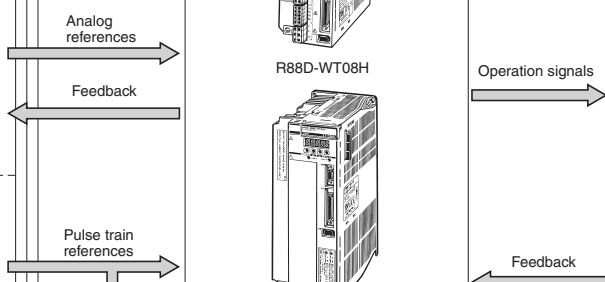
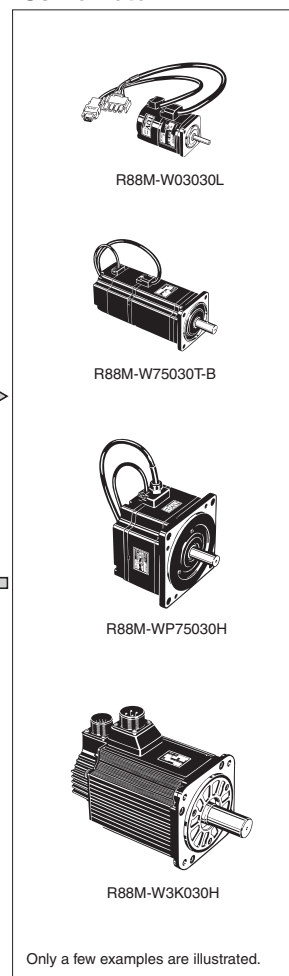
**Controller**



**Servo Driver**



**Servomotor**






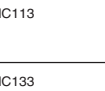













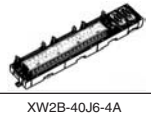

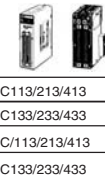




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### ■ XW2B Servo Relay Units

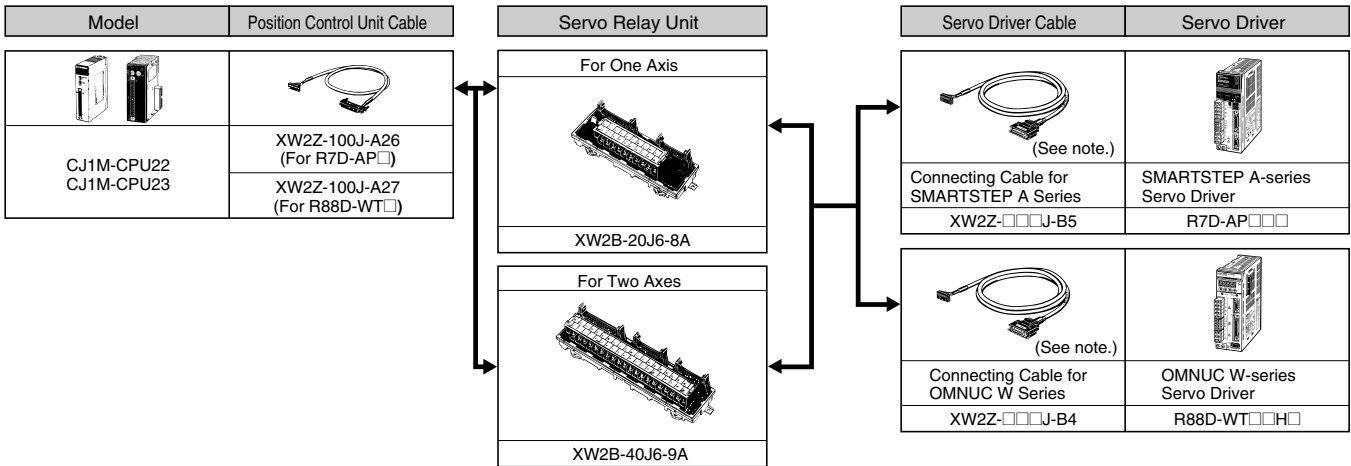
#### Combinations of Servo Relay Units, Servo Drivers, and Position Control

Position Control Units	Position Control Unit Connecting Cables	Servo Relay Units	Servo Driver Connecting Cables	Servo Drivers
 C200H-NC112 C200HW-NC113 CS1W-NC113	 XW2Z-□□□J-A1 XW2Z-□□□J-A4 (For R7D-AP only) XW2Z-□□□J-A6 XW2Z-□□□J-A8 (For R7D-AP only) XW2Z-□□□J-A10 XW2Z-□□□J-A12 (For R7D-AP only)	 XW2B-20J6-1B (See note 1.)	(See notes 2 and 3.)  SMARTSTEP A-series Connecting Cable XW2Z-□□□J-B5 Communications function not supported (XW2B-□□J6-□□B only)	 SMARTSTEP A-series Servo Driver R7D-AP□□□
 CJ1W-NC113 CJ1W-NC133	XW2Z-□□□J-A14 XW2Z-□□□J-A16 (For R7D-AP only) XW2Z-□□□J-A18 XW2Z-□□□J-A20 (For R7D-AP only)	 XW2B-40J6-2B (See note 1.)	(See notes 2 and 3.)  OMNUC W-series Connecting Cable XW2Z-□□□J-B4	 OMNUC W-series Servo Driver R88D-WT□□□□
 3F88M-DRT141	XW2Z-□□□J-A24 XW2Z-□□□J-A25 (For R7D-AP only)		(See notes 2 and 3.)  OMNUC U-series Connecting Cable XW2Z-□□□J-B1 XW2Z-□□□J-B4 XW2Z-□□□J-B5	 OMNUC U-series Servo Driver R88D-UP□□□□ R88D-UT□□□□ R88D-UEP□□□□ (See note 4.)
 C200H-NC211 C200HW-NC213/413 CS1W-NC213/413	 XW2Z-□□□J-A2 XW2Z-□□□J-A5 (For R7D-AP only) XW2Z-□□□J-A7 XW2Z-□□□J-A9 (For R7D-AP only) XW2Z-□□□J-A11 XW2Z-□□□J-A13 (For R7D-AP only) XW2Z-□□□J-A15 XW2Z-□□□J-A17 (For R7D-AP only) XW2Z-□□□J-A19	 XW2B-20J6-3B (See note 1.)	(See note 3.)  CQM1-CPU43-V1 CQM1H-PLB21	(See note 3.)  XW2Z-□□□J-A3 XW2Z-□□□J-A22 XW2Z-□□□J-A23
 CS1W-HCP222 (for 1 axis) CS1W-HCP22 (for 2 axes)	(See note 5.)  XW2Z-□□□J-A9 XW2Z-□□□J-A13 XW2Z-□□□J-A17 XW2Z-□□□J-A21		 XW2B-40J6-4A	(See notes 2 and 3.)  SMARTSTEP A-series Connecting Cable XW2Z-□□□J-B7 Communications function supported (XW2B-40J6-4A only).
 CS1W-NC113/213/413 CS1W-NC133/233/433 CS1W-NC/113/213/413 CS1W-NC133/233/433	Serial Communications Unit/Board Serial Communications Unit/Board Connecting Cable (See note 6.)  CS1W-SCB41 CJ1W-SCU41	 XW2Z-□□□J-C1	<b>Note:</b> <ol style="list-style-type: none"> <li>1. Satisfies the functions of conventional models such as the XW2B-20J6-2, XW2B-40J6-2, and XW2B-20J6-3 and can be connected to the R88D-UEP□□□□ or R7D-AP□□□□.</li> <li>2. When connecting to a C200H-NC211, C200HW-NC213/-413, or CS1W-NC213/-233/-413/-433, two Servo Driver Connecting Cables are required for one Relay Unit.</li> <li>3. When using the CQM1-CPU43-V1 for two axes, two Position Control Unit Connecting Cables, two Relay Units, and two Servo Driver Connecting Cables are required.</li> <li>4. Use the following Connecting Cables:                          C200H-NC112: XW2Z-□□□J-A4                          C200HW-NC113, CS1W-NC113: XW2Z-□□□J-A8                          C200H-NC211: XW2Z-□□□J-A5                          C200HW-NC213/-413, CS1W-NC213: XW2Z-□□□J-A9</li> <li>5. Do not wire signals to the Y-axis terminals of the XW2B-40J6-4A when using a One-axis Position Control Unit.</li> <li>6. Connect these Cables to the communications connector of the XW2B-40J6-4A when using two axes or more.</li> </ol>	

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# Peripheral Devices

## Servo Systems



**Note:** When using the Unit for two axes, two Servo Driver Cables are required for each Servo Relay Unit.

# Peripheral Devices

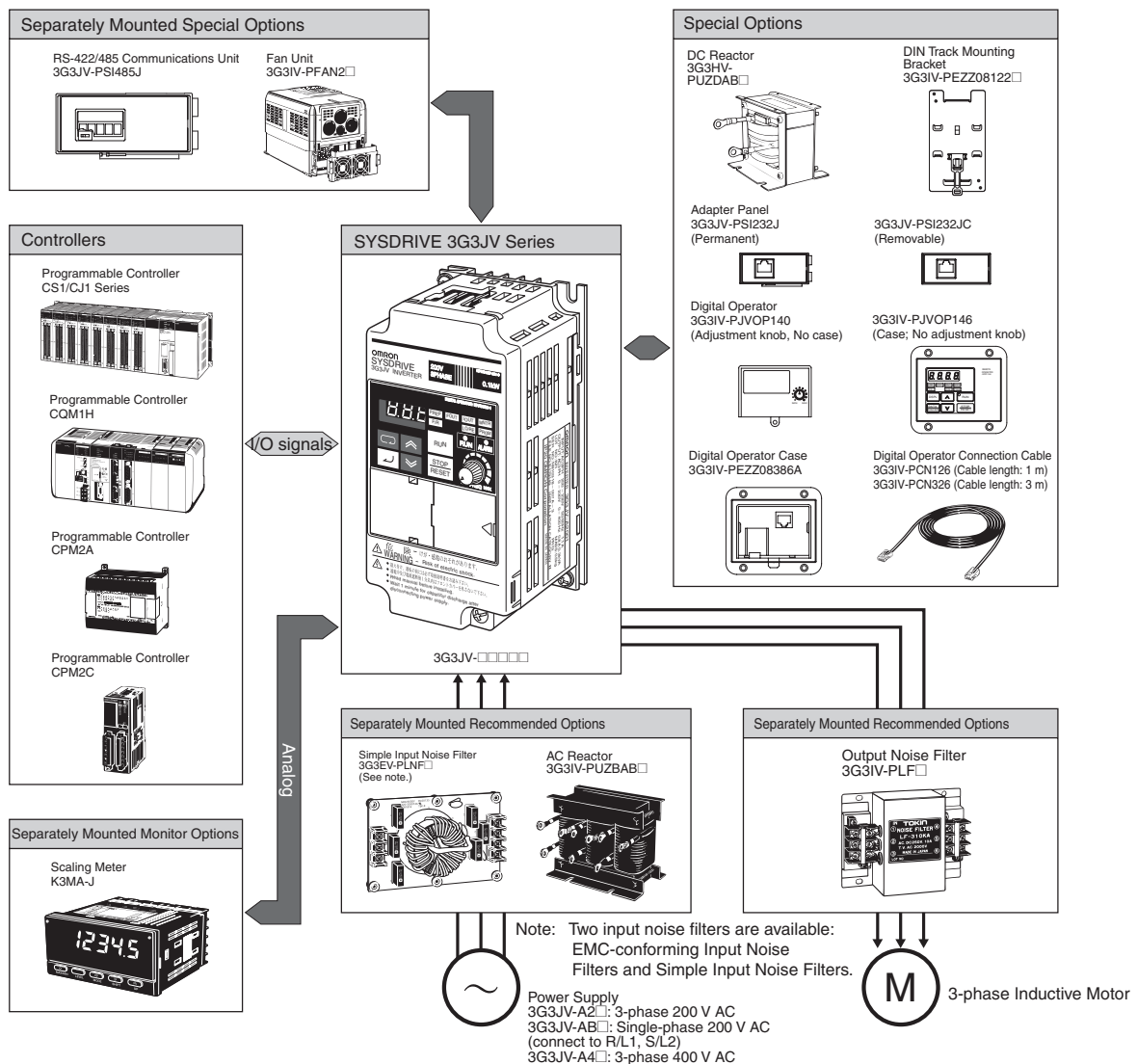
## ■ SYSDRIVE 3G3JV-series Compact Simplified Inverters

*Economic Compact Inverter with Versatile Functions for Easy Application, Maintenance, and Speed Control*

- The speed adjuster on the front panel ensures easy speed control.
- Offers versatile speed control operations such as multi-step speed control up to a maximum of eight steps, jog operations, and acceleration and deceleration (UP/DOWN) control.
- Numerous easy-to-use functions including slip compensation, over-torque detection, and speed search functions packed into a compact body.
- A cooling fan can be snapped on in a single action, making mounting and removal easy, and simplifying maintenance.
- Compact size for easily building into panels.
- The main circuit terminals are arranged on the top and bottom of the housing, making it possible to mount the Inverter like a contactor. The optional DIN Track Mounting Bracket enables the Inverter to be easily mounted to a DIN Track in one easy action.
- Conforms to CE and UL/cUL standards.



## System Configuration



# Peripheral Devices

## ■ SYSDRIVE 3G3MV-series Multi-function Compact Inverters Powerful with Complete Functions and New Networking Capabilities

- Sensor-free vector control function to deliver high torque at low speeds.
- RS-422/485 communications are provided as a standard feature and an optional DeviceNet Communications Unit is available for complete network compatibility.
- Even easier to use, with frequency control located on the top of the Digital Operator, and parameter constants able to be copied and managed from a standard Digital Operator.
- Standard features include energy-saving control and PID control. The high-speed current limit function further improves tripless operation.
- Incorporates an inrush current preventive circuit for even more robust protection.
- Conforms to CE and UL/cUL standards.



**Separately Mounted Special Options**

DeviceNet Communications Unit 3G3MV-PDRT2

Fan Unit 3G3IV-PFAN2□

**Special Options**

Braking Resistor 3G3IV-PERF 150W□

Braking Resistor Unit 3G3IV-PLKEB□

DC Reactor 3G3HV-PUZDAB□

Digital Operator 3G3IV-PJVOP146 (Adjustment knob, No case)

Digital Operator Case 3G3IV-PEZZ08386A (See note.)

DIN Track Mounting Bracket 3G3IV-PEZZ08122□

Digital Operator Connection Cable 3G3IV-PCN126 (Cable length: 1 m) 3G3IV-PCN326 (Cable length: 3 m)

**Controllers**

Programmable Controller CS1/CJ1 Series

Programmable Controller CQM1H

Programmable Controller CPM2A

Programmable Controller CPM2C

**SYSDRIVE 3G3MV Series**

**Recommended Options**

AC Reactor 3G3IV-PUZBAB□

Simple Input Noise Filter 3G3EV-PLNF□

Input Noise Filter 3G3IV-PFN□

**Recommended Options**

Output Noise Filter 3G3IV-PLF□

**Separately Mounted Monitor Options**

Scaling Meter K3MA-J

Note: Three input noise filters are available: EMC-conforming Noise Filters, Simple Input Noise Filters, and Normal Input Noise Filters. Use EMC-conforming noise filters whenever EMC directives must be met.

Power Supply  
 3G3MV-A2□: 3-phase 200 V AC  
 3G3MV-AB□: Single-phase 200 V AC (connect to R/L1, S/L2)  
 3G3MV-A4□: 3-phase 400 V AC

3-phase Inductive Motor

I/O signals

Analogue

Note: Connect the Case to the Digital Operator attached to the Inverter.

## Open Network Controllers

### ■ ITNC-EI□01 (-DRM/-CST) Open Network Controller

#### *Information Station for Manufacturing Equipment and Production Lines*

- Simply put, the ONC is an information station. It provides onsite information to your information system from manufacturing equipment and production lines by sending data collected from PLCs, DeviceNet, Temperature Controllers, Digital Panel Meters, and other FA components via Ethernet, intranet, and Internet connections. It can be used to add advanced information capabilities to equipment and production facilities without changing the PLC system.



### Ordering Information

#### Hardware

Name	Specifications	Model
Version 2	Expansion slot (See note 1.); Three RS-232C ports and one RS-422A/485 port; No DeviceNet interface	ITNC-EPX01
Version 2 with DeviceNet	Expansion slot (See note 1.); Three RS-232C ports and one RS-422A/485 port; DeviceNet interface	ITNC-EPX01-DRM
Version 1 Standard model	No expansion slot; Two RS-232C ports; No DeviceNet interface	ITNC-EIS01
Version 1 Standard model with DeviceNet	No expansion slot; Two RS-232C ports; DeviceNet interface	ITNC-EIS01-DRM
Version 1 Expandable model	Expansion slot (See note 2.); Two RS-232C ports and one RS-422A/485 port; No DeviceNet interface	ITNC-EIX01
Version 1 Expandable model with DeviceNet	Expansion slot (See note 2.); Two RS-232C ports and one RS-422A/485 port; DeviceNet interface	ITNC-EIX01-DRM
Version 1 Standard model with CS1 Bus Interface	No expansion slot; Two RS-232C ports; CS1 bus interface (See note 3.)	ITNC-EIS01-CST
Version 1 Expandable model with CS1 Bus Interface	Expansion slot (See note 2.); Two RS-232C ports and one RS-422A/485 port; CS1 bus interface (See note 3.)	ITNC-EIX01-CST
CS1 Bus Interface Cable	Cable length: 1 m	ITBC-CN001-CST
	Cable length: 5 m	ITBC-CN005-CST
	Cable length: 12 m	ITBC-CN012-CST
Standard model with Mounting Bracket for vertical mounting	For version 1	ITNC-AP001
Expandable model with Mounting Bracket for vertical mounting	For version 1	ITNC-AP002
DIN Track Mounting Bracket	Common to standard and expandable model	ITNC-DIN01

- Note:**
- The expansion slot is a PCI bus slot into which either a Controller Link Support Board, SYSMAC Link Support Board, or CS1 Bus Interface Board (PCI bus type) can be mounted. Only one slot is provided.
  - The expansion slot is an ISA bus slot into which either a Controller Link Support Board, SYSMAC Link Support Board, or SYSMAC Board (ISA bus type) can be mounted. Only one slot is provided.
  - Models with CS1 bus interfaces cannot be connected to DeviceNet.

#### Software (for Both ONC Version 1 and Version 2)

Name	Licensed product	Specifications	Model
Data Collection/Distribution Service Software Ver. 2.00 (See note 2.)	Available (for 1 user, 5 users, or 10 users)	A Memory Card (15 Mbytes min.) must be purchased separately. (See note 1.)	ITNC-DL1Q-ECD-V2
WebToolKit Software Ver. 1.00			ITNC-WK1Q-ECD
RemoteKit Software Ver. 1.11			ITNC-RK1Q-ECD
DataBase ToolKit Software Ver. 1.00			ITNC-DK1Q-ECD
Third-party PLC Connection Unit Ver. 1.00 (Mitsubishi A-series Computer Link Unit)	None	---	ITNC-MD1Q-EF
NX-Server for DeviceNet ONC Edition Ver. 2.00			ITNC-NS1Q-EF

- Note:**
- A Memory Card (sold separately) is required for ONC version 1. A Memory Card is not required for ONC version 2 if the available space in the internal disk is sufficient.
  - A Memory Card is also recommended for ONC version 2.



## General Specifications

Item	Ver. 1		Ver. 2
	ITNC-EIS01 ITNC-EIS01-DRM ITNC-EIS01-CST	ITNC-EIX01 ITNC-EIX01-DRM ITNC-EIX01-CST	ITNC-EPX01 ITNC-EPX01-DRM
CPU	486 compatible, CPU: 66 MHz, equivalent to 486SX		486 compatible, CPU: 133 MHz, equivalent to 486DX
FPU	None (software emulation)		Provided
Memory	16 Mbytes		32 Mbytes
Internal disk	Flash disk, 8 Mbytes		Flash disk, 32 Mbytes
Interface	LAN	10Base-T	
	Serial ports	Two RS-232C ports	Two RS-232C ports and one RS-422A/485 port
	DeviceNet	Available (ITNC-EIS01-DRM only)	Available (ITNC-EIX01-DRM only)
	CS1 bus interface	Available (ITNC-EIS01-CST only)	Available (ITNC-EIX01-CST only)
CF card slot	None	One ISA bus slot (half size)	One PCI bus slot (half size)
Memory card	One slot		
Power supply	24 VDC, 15 W max.	24 VDC, 20 W max.	24 VDC, 20 W max.
Backup memory	None		Provided
Setup utility	No Setup/Maintenance Utility (use a Dedicated Memory Card)		Setup/Maintenance Utility installed in internal disk

## Application as a Data Collection Station

### Collect Data and Send It Using FTP

Collect data under the required conditions from PLCs (see note 1) connected via various networks and from DeviceNet slaves (see note 2) and save it in CSV or binary files in the Memory Card in the ONC. Without any changes to the PLC system, the ONC can be used as a collection station for production, error, inspection, and history data.

**Note: 1.** CIO and DM Area data from the PLC can be collected if it is set for event memory in the ONC or specified for a serial connection.

**2.** Periodic collection: Collection at a specified time interval, such as 500 ms.

Event collection: Collection when some event occurs, such as a change in I/O status or data contents in the PLC or in DeviceNet devices.

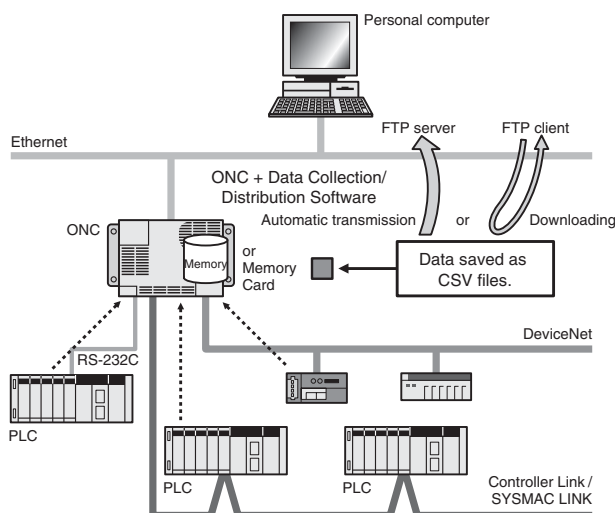
Example: Collecting status information when an error occurs by using the occurrence of an error in processing or inspections on the production line as the event.

Scheduled collection: Collection at specific times, such as each hour.

Example: Collection every hour on the hour, such as 12:00 noon, 1:00 PM, etc. (minimum setting: every minute)

Example: Data collected using the Data Collection/Distribution Software can be displayed in Excel as shown below. A sample CSV file is shown set to collect data when bit 00 in CIO 0000 turns ON. The date can be added each time data is collected, and field names can be attached.

	A	B	C	D	E	F	G
1	Date	Time	DM_0ch	DM_315ch	Product Counts	Error Counts	
2	2/7/03	19:45:56	c641	0a2d	6144	4679	
3	2/7/03	19:46:06	5669	1a3e	4728	672c	
4	2/7/03	19:46:31	bef6	a636	a430	8605	
5	2/7/03	19:47:01	1a65	180a	8813	741f	
6	2/7/03	19:47:21	a64d	3a35	c320	9304	
7							
8							
9							



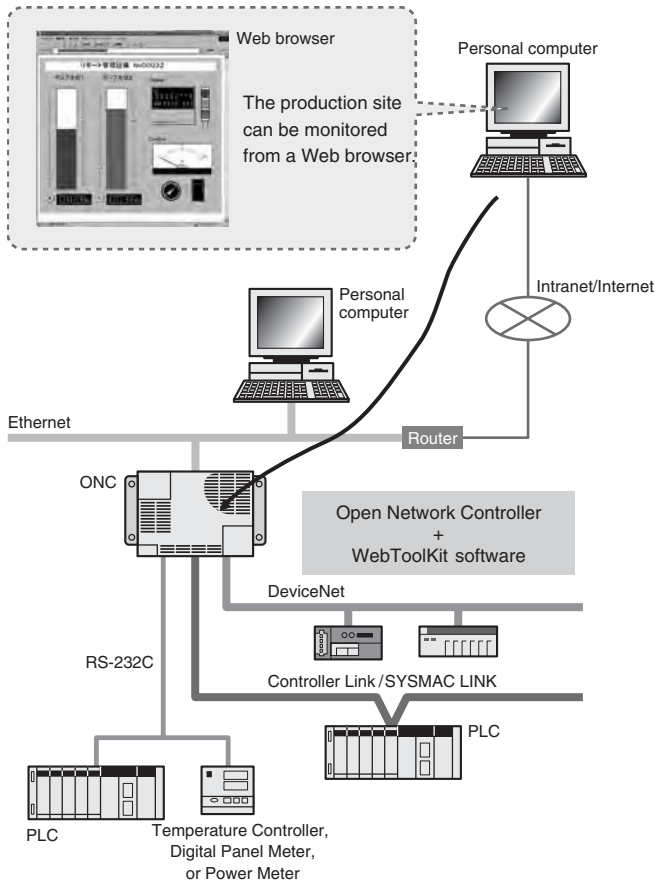


# Peripheral Devices

## WebToolKit for ONC Application as a Browser Station

Information from FA components connected to the ONC can be viewed from a Web browser running on a personal computer connected to Ethernet, an intranet, or Internet (see note). This enables using Internet Explorer on your computer for monitoring. The WebToolKit is a development kit for building Web applications using Visual Basic or Java. The Web application is built in the ONC, allowing Web browsers running on personal computers to monitor data. (The computer is used as a graphic terminal.)

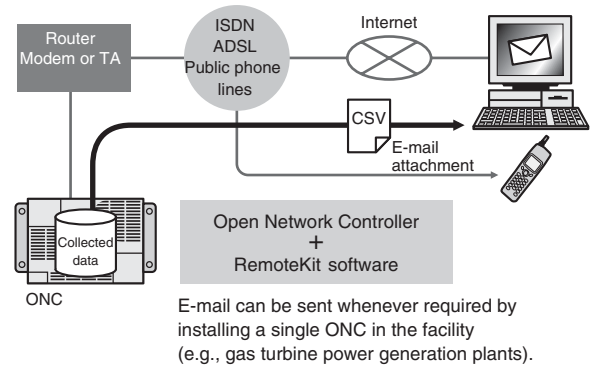
**Note:** Obtain a fixed IP address from the provider to use Internet.



## RemoteKit for ONC Application as an E-mail Station

E-mail can be sent from the ONC to personal computers or cell phones on specified conditions (see note). Files created by the Data Collection/Distribution Software can also be attached to e-mail sent to personal computers. This enables e-mail to be used to provide status reports periodically, when errors occur, or at scheduled times. Dialup connections can be automatically processed through a modem to your ISP.

**Note:** E-mail can be sent based on a schedule or according to changes in bits or analog data from components connected to the ONC, such as PLCs or DeviceNet slaves.



Lineup of Units  
CPU Unit Overview  
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Peripheral Devices



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