SYSMAC CJ-series Serial Communications Units

CJ1W-SCU

CSM CJ1W-SCU DS E 1 1

The Serial Communications Units That Enable High-speed Connections with External Devices

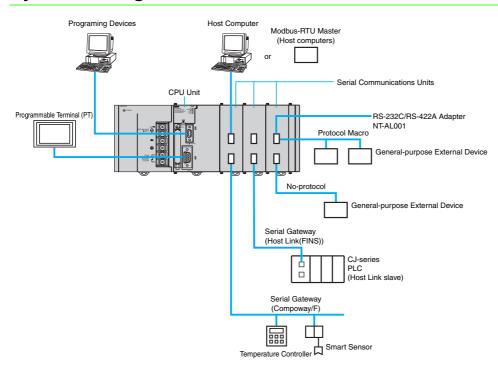
 Each Serial Communications Unit provides two serial communications ports: RS-232C and RS-422A/485, and the serial communications mode can be set separately for each port from Protocol Macro, Host Link, NT Link, Serial Gateway, and No-protocol.



Features

- Mount a total of up to 16 CPU Bus Units, including these Serial Communications Units, to the CPU Rack or Expansion Racks to create systems
 with up to 32 serial communications ports.
- Connect an NT-AL001 RS-232C/RS-442A Link Adapter to the RS-232C port to enable 1:N communications.
- With the CJ1W-SCUID2, you can use a faster baud rate (up to 230.4 kbps) and faster data transfer to the CPU Unit to enable connecting to high-speed external devices.

System Configuration



Ordering Infomation

International Standards

- 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.
- Contact your OMRON representative for further details and applicable conditions for these standards.

Unit torns	Product name	Sp	pecifications	No. of unit	Current consumption (A)		Model	Standards
Onit type	Jnit type Product name Comm		Communications functions	allocated	5V	24V	Model	Standards
CJ1 CPU Bus Units	Serial Communications Units High-speed type	2 RS-232C ports	The following functions can be selected for each port: • Protocol macro • Host Link • NT Links (1:N mode) • Serial Gateway • No-protocol • Modbus-RTU Slave	1	0.28	_	NEW CJ1W-SCU22	UC1. CE
	2 RS-422A/485 ports			·	0.40	_	<u>NEW</u> CJ1W-SCU32	
		1 RS-232C port and 1 RS-422A/485 port			0.36 *1	_	<u>NEW</u> CJ1W-SCU42	
CJ1 CPU Bus Units	Serial Communications Units	ommunications hits 2 RS-232C ports 2 RS-232C ports selected for each port: • Protocol macro • Host Link			0.28 *1	_	CJ1W-SCU21-V1	
	2 RS-422A/485 ports	NT Links (1:N mode) Serial Gateway *2 No-protocol *3 Modbus-RTU Slave *4	1	0.38	_	CJ1W-SCU31-V1	UC1, N, L, CE	
		1 RS-232C port and 1 RS-422A/485 port			0.38 *1	_	CJ1W-SCU41-V1	

- *1. When an NT-AL001 RS-232C/RS-422A Conversion Unit is used, this value increases by 0.15 A/Unit.
- *2. The Serial Gateway function is enabled only for Serial Communications Units of unit version 1.2 and later.
- *3. The no-protocol function is enabled only for Serial Communications Units of unit version 1.2 and later (and a CPU Unit of unit version 3.0 or later is also required).
- *4. The Modbus-RTU Slave function is enabled only for Serial Communications Units of unit version 1.3 and later.

Accessories

Model	Accessories	Specifications	
CJ1W-SCU22	2 Serial Port (RS-232C) Connector	Connector set for serial port connection (D-SUB 9-pin male connector)	
CJ1W-SCU32	2 Serial Port (RS-422A/485) Connector	Terminal Block Connector (FMC1.5/5-STF-3.5AU by Phoenix Contact)	
CJ1W-SCU42	1 Serial Port (RS-232C) Connector	Connector set for serial port connection (D-SUB 9-pin male connector)	
CJ1W-SC042	1 Serial Port (RS-422A/485) Connector	Terminal Block Connector (FMC1.5/5-STF-3.5AU by Phoenix Contact)	
CJ1W-SCU21-V1 CJ1W-SCU31-V1 CJ1W-SCU41-V1	2 Serial Port (RS-232C) Connector	Connector set for serial port connection (D-SUB 9-pin male connector)	

Mountable Racks

		CJ system	(CJ1, CJ2)	CP1H system	NSJ system		
Mod	el	CPU Rack	Expansion Backplane	CP1H PLC	NSJ Controller	Expansion Backplane	
CJ1W-SCU22	Unit version 2.0						
CJ1W-SCU32	Unit version 2.0						
CJ1W-SCU42	Unit version 2.0	10 Units *1	10 Units *2 (per Expansion Backplane)	2 Units *3	Not supported	10 Units *2 (per Expansion Backplane)	
CJ1W-SCU21-V1	Unit version 1.3	10 Offits *1					
CJ1W-SCU31-V1	Unit version 1.3						
CJ1W-SCU41-V1	Unit version 1.3						

- *1. This is the number of Units for a CJ2H-CPU6□ CJ2H CPU Unit (without EtherNet/IP) and a CJ1W-PA205□ or CJ1W-PD025 Power Supply Unit. (When not using NT-AL001)
- *2. This is the number of Units for a CJ1W-PA205□ or CJ1W-PD025 Power Supply Unit.
- *3. A CP1W-EXT01 CJ Unit Adaptor is required.

Specifications

PLC		CJ series								
Device name		Serial Communications Unit								
Classification		CPU Bus Unit								
Model number		CJ1W-SCU22	CJ1W-SCU32	CJ1W-SCU42	CJ1W-SCU21-V1	CJ1W-SCU31-V1	CJ1W-SCU41-V1			
0. 1.1	Port 1	RS-232C	RS-422A/485	RS-422A/485	RS-232C	RS-422A/485	RS-422A/485			
Serial ports	Port 2	RS-232C	RS-422A/485	RS-232C	RS-232C	RS-422A/485	RS-232C			
	Port 1		acro, Serial Gateway,			nacro, NT Link, or loop	back test can be			
Protocol	Port 2 lected for each port. *1, *2				selected for each port. Unit Ver. 1.2 or later also supports Serial Gateway, no-protocol, and 1:1 Host Link modes. (Note: The Serial Gateway car also be executed in protocol macro mode.) *1 Unit Ver. 1.3 or later also supports Modbus-RTU slave mode.					
	CPU Unit	None								
	CPU Rack		nits, including all other	CPU Bus Units. No						
Number of mountable Units	Expansion Rack	mounted in one of th CJ2H-CPU6□-EIP C CJ2H-CPU6□ or CJ CJ1M-CPU□□ CPU	nal interrupt task is use e following slots on the PU Unit: Slots 0 to 3 1G/H-CPU□□H CPU Unit: Slots 0 to 2	e CPU Rack.	A total of up to 16 Units, including all other CPU Bus Units. No restrictions on the mounting location.					
Data exchange	Ordinary refreshing of software switches and status	Allocated 25 words o	of the 25 words in the 0	CPU Bus Unit CIO Area	a (constant data excha	ange with the CPU Un	iit)			
with the CPU Unit	Transfer from the CPU Unit set by the system	Of the CPU Bus Unit DM Area, each serial port is allocated 10 words (total 20 words). Data is transferred from the CPU Unit at the following times: Startup or restart Ladder instruction: STUP(237) Port Settings Changing Flag turns ON (Auxiliary Area)								
Simple Backup Function		CPU Unit's Memory	Card. The backed-up	an be used to backup t data can be restored o with the CJ1-H and C	r compared.	ta in the Serial Comm	unications Unit to the			
Current consump	tion *3	280mA+x	400mA	360mA+x	280mA+x	380mA	380mA+x			
Weight		160g Max.	120g Max.	140g Max.	110g Max.	110g Max.	110g Max.			
General specificat	tions	Conforms to general	specifications for SYS	SMAC CJ Serise.						

- *1. Serial Gateway: The Serial Gateway can also be executed in protocol macro mode.
- *2. No-protocol: An external interrupt task can be executed when data is received in No-protocol Mode. If a CJ2 CPU Unit with unit version 1.1 or
- *3. The current consumption is for one Serial Communications Unit, power is supplied to the Link Adapter from the Unit. A current consumption of 150 mA must be added for each Link Adapter is connected. In the above specifications, "x" indicates that 150 mA must be added for each port to which an NT-AL001 Link Adapter is connected. to provide the required 5-V power supply.

Protocol Specifications

Host Link Specifications

Item	Description							
Communications mode	Half-duplex (Full-duplex for sla	Half-duplex (Full-duplex for slave-initiated communications)						
Synchronous mode	Start-stop synchronization (asy	Start-stop synchronization (asynchronous mode)						
Baud rate *1		RS-232C port and RS-422A/485 ports: 1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/230,400 bps *2 Default setting: 9,600 bps						
Communications distance *1	RS-232C port : 15 m max. *3 RS-422A/485 Port : • CJ1W-SCU□1-V1 500 m max. (total cable length: 500 m max., T-branch branch lines: 10 m max.) • CJ1W-SCU□2 1,200 m max. (total cable length: 1,200 m max., Multidrop connections are possible. However, maximum cable length is 500 m if the NT-AL001 is used for RS-422A-485 connections.)							
Connection configuration	RS-232C port : 1:1 (1:N (N = 32 Units max.) is possible using an Converting Link Adapters.) RS-422A/485 port : 1:N (N = 32 Units max.)							
Number of connected Units	32 Units max. (unit numbers 0	to 31; unit number 0 is	set for 1:1 connection)					
Frame structure	C-mode commands	Header: @, address: (host link unit number) 0 to 31 (BCD), data: header code + text, error checode: FCS, terminator: *+CR						
Frame structure	FINS commands	Header: @, address: (host link unit number) 0 to 31 (BCD), data: header code (always "FA") + FINS header + FINS command + text, error check code: FCS, terminator: * +CR						
Error check codes	Vertical parity: Even, odd. or no FCS (horizontal parity converte							
	Command flow	Commands	Contents					
		C-mode commands	1:1 or 1:N communications with directly connected PLCs *4					
Command flow and support	Host computer to PLC	FINS commands (in Host Link protocol)	1:1 or 1:N communications with directly connected PLCs.					
	PLC to host computer	FINS commands (in Host Link protocol)	Communications using SEND(090), RECV(098), and CMND(490) from CPU Unit. *5					

- *1. Confirm the baud rates and communications distance supported by connected devices.
 *2. The CJ1W-SCU□2 is required for communications at 230,400 bps.
 *3. The maximum cable length for RS-232C is 15 m. The RS-232C standard, however, does not cover baud rates above 19.2 Kbps. Refer to the manual for the device being connected to confirm support.
- *4. The specified frame format must be prepared on the host computer and then sent.
- *5. The host computer must interpret the commands and return a response in the correct format. Connection between the host computer and PLC must be 1:1.

Protocol Macro Function Specifications

ltem		Descri	ption		
Number of protocols	20 max.	Can be exected and registered with the Dreteel C	Can be created and registered with the Protocol Support Tool (CX-Protocol).		
Number of sequences	1,000 max.	Can be created and registered with the Protocol S	upport 1001 (CX-Protocol).		
	Number of sequences	60 max.			
Per protocol	Number of messages	300 max.			
. or protocol	Number of reception matrixes	100 max.			
Sequence execution condition	on	Using the CPU Unit's PMCR (260) instruction (spe	ecifying the sequence number)		
Communications mode		Half-duplex or full-duplex			
Synchronous mode		Start-stop synchronization (asynchronous mode)			
Baud rate *1		RS-232C port and RS-422A/485 ports: 1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/230,400 bps Default setting: 9,600 bps *2			
Communications distance *1		RS-232C port : 15 m max. RS-422A/485 port : • CJ1W-SCU□1-V1 500 m max. (total cable length: 500 m max., T-branch branch lines: 10 m max.) • CJ1W-SCU□2 1,200 m max. (total cable length: 1,200 m max., Multidrop connections are possible. However, maximum cable length is 500 m if the NT-AL001 is used for RS-422A-485 connections.)			
Connection configuration		RS-232C port : 1:1 (1:N (N = 32 Units max.) i: RS-422A/485 port : 1:N (N = 32 Units max.)			
Number of connected Units		32 Units max. (unit numbers 0 to 31; unit number 0	0 is set for 1:1 connection)		
Maximum number of data exchange words between	Operand setting	250 words	Including the word that specifies the number of words (1 word)		
PLC and protocol macro	Link word setting	500 words	O1, O2, I1, and I2: 500 words total		
function	Direct setting	500 words	Maximum number of words per data attribute		

		Description							
	Number of steps pe	r	1.0	· ·					
	sequence		16 max.						
	Transmission contro parameters	Ol	X-on/X-off flow, RS/CS flow, delimiter control, or contention control, and modem control can be selected.						
			Scan noti	Scan notification: Writes the receive data to I/O memory during CPU Unit scanning.					
		Response notification		hod (fixed)		Support			
Sequence contents (step common parameters)	method (operand)		Interrupt r	notification		Not support			
(Step common parameters)			Interrupt r	notification for red	ception case number	Not suppprt			
	Monitoring time dur send/receive proces				pletion, or send complet 9 s, 0.1 to 9.9 s, 1 to 99 s				
	Link word setting		Communi	Area in which data is exchanged between the CPU Unit and the Serial Communications Unit during Communications Unit refreshing. Two areas are possible for each device: An area for storing receive data and an area for storing send					
	Commands				e only (RECV), send and ON (OPEN), or ER-OFF	receive (SEND&RECV), (CLOSE)	, wait (WAIT), reception		
	Repeat counter		1 to 255 t	imes					
	Retry count		0 to 9 (Or	ly when the com	mand is SEND&RECV)				
	Send wait time				, 1 to 99 s, or 1 to 99 min is SEND or SEND&REC				
	With or without response write (operand)					receive data is stored in ter or not to store the rece			
Step contents	Next processing		When a step has ended normally, End (sequence completed), Next (proceed to the next step No.), Goto (go to the specified step No.), or Abort (interrupt the step and terminate that sequence) can be selected.						
	Error processing		When a s	When a step has ended abnormally, End, Next, Goto, or Abort can be selected.					
	Send message		Data sent to the specified address when the command is SEND or SEND&RECV.			Consists of a header, address, length, data,			
	Receive message			from the specifie	ed address when the ND&RECV.	error check code, and terminator.			
	Reception matrix		sets the e	xpected receive	CV or SEND&RECV, messages (15 max.), rocessing according to	Specifies the receive messages and the next processing for each of cases No. 00 to No. 15. Of the maximum 16 cases, one case must be set as "Other" in the receive messages (in addition to the set receive messages).			
	Header and terminator data attributes	Con- stant	ASCII data, hexadecimal data, or control code						
		Con- stant	ASCII dat	ASCII data, hexadecimal data, or control code (with an address, no control code is pos					
			No conversion, conversion to ASCII data, or conversion to hexadecimal data (the read/write direction can be specified)						
			Designa-	(X, Y)					
			tion method	X: Effective add Y: Data size (1	dress (where read from, to 1 000) *4	or where written to)			
					Word read	Specify using the 3rd operand of the PMCR(260) instruction.			
Message unit contents	Data attributes of				(I/O memory to send data)	Specify using a link word.	-		
	addresses and data in send/receive	Vari-		Word	,	I/O memory direct designation	Set leading address + n (The linear expression aN + b, including repeat counter N, is also possible for n.)		
	messages	able	x	designation	Word with	Specify using the 4th operand of the PMCR(260) instruction.			
					Word write (receive data to I/O memory)	Specify using a link word.			
						I/O memory direct designation			
				Wild card	*	Any data or address ca (only in receive message			
				Repeat counter	N				

5

lt	em			Description				
		Vari- able		Linear expression including repeat counter	aN+b	a: 0 to 1000; b: 1 to 100 N: Repeat counter valu		
	Data attributes of		Y	Wild card	*	Can be received regardless of the length (only in receive messages)		
	addresses and data in send/receive messages			Word designa- tion	Word read (I/O memory to send data)	Specify using the 3rd operand of the PMCR(260) instruction.	Set leading address + n (The linear expression	
						Specify using a link word.	aN + b, including repeat counter N, is also possible for n.)	
Message unit contents						I/O memory direct designation		
	Error check codes	LRC, LRC2, CRC-CCITT, CRC-16, SUM, SUM1, and SUM2 can be calculated.						
	Maximum length of send/receive messa	1,000 bytes. (A maximum length between 200 and 1,000 bytes can be set in the Setup Area.)						
	Maximum number of data attributes registered in one message		96 attributes *5					
	Maximum number of write data attributes registered in one message		30 attributes *6					
Trace function			A total of up to 1,700 bytes (characters) of time-series data can be traced in send and receive messages. Changes to the step No. and control signals such as RS and CS can also be traced.					

- *1. The baud rate and the communications distance sometimes depend on the remote device.
- *2. A baud rate of 57,600 bps can be selected when using Unit Ver. 1.2 or later (115,200 bps is not possible). The CJ1W-SCU□2 is required for communications at 115,200 or 230,400 bps.
- *3. Unit Ver. 1.2 or later supports continuous I/O refreshing in addition to the previous on-request I/O refreshing.
- *4. The data size is the number of bytes on the transmission path.
- *5. The CX-Protocol can be used to register up to 96 attributes per message.
- *6. A macro syntax error will occur when the protocol macro is executed if more than 31 write attributes are registered in one message.

Note: When using 2-wire RS-422A/485 communications in Protocol Macro Mode, set only modem controls for the send control parameters, and do not use RS/CS flow controls.

Serial Gateway Specifications

Item	Description
Conversion source	FINS commands (received through network (including Host Link FINS) or CPU bus)
Conversion functions	The received FINS command sent to the Unit's serial port is converted according to the FINS command code as follows: 2803 hex: FIN header removed and converted to Compo-Way/F command. 2804 hex: FIN header removed and converted to Modbus-ATU command. 2805 hex: FIN header removed and converted to Modbus-ASCII command. The converted command is sent to the serial port. When the received FINS command is sent to the Unit (user-specified FINS command code), the FINS command is enclosed in a Host Link header and terminator.
Converted format	CompoWay/F commands Modbus-RTU commands Modbus-ASCII commands Host Link FINS commands
Enabled serial communications mode	Serial Gateway mode or protocol macro mode
Queuing functions	Up to five FINS commands can be converted and then queued for processing.
Protocol macro execution processing	When a FINS command is received during protocol macro execution, the Serial Gateway is executed using an interrupt between steps in the communications sequence. If the next step is a RECEIVE command, the Serial Gateway will not be executed until the next step. For other conditions, the interrupt is executed immediately. *1
Response timeout monitoring	The time is monitored from when the message is converted into the specified protocol using the Serial Gateway until the response is received (in Serial Gateway mode or protocol macro mode). Default: 5 s (setting range: 0.1 to 25.5 s) *2
Send start timeout monitoring	The time is monitored from when the FINS command is received until it is converted into the specified protocol and starts to be sent (in protocol macro mode only). Default: 5 s (setting range: 0.1 to 25.5 s) *3
Send delay	The time can be set from when the message is converted into another protocol using Serial Gateway conversion until the data is actually sent. (Serial Gateway or protocol macro mode) Default: 0 s (setting range: 0.01 to 300.00 s)

- *1. The reception buffer is cleared during Serial Gateway execution.
 - The Serial Gateway can be prohibited in protocol macro mode by turning ON the Serial Gateway Prohibit Switch in the CIO Area.
- *2. When a timeout occurs, the FINS end code (0205 hex: Response timeout) is returned to the source of the FINS command and a response is received after a timeout occurs.
- *3. When a timeout occurs, the FINS end code (0204 hex: Remote node busy) is returned to the source of the FINS command. The send processing will not be executed and the received FINS command will be discarded.

No-protocol Specifications

Item	Description						
Communications mode	Full-duplex						
Baud rate *1	RS-232C port and RS-422A/48 Default setting: 9,600 bps	RS-232C port and RS-422A/485 ports: 1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/230,400 bps *2 Default setting: 9,600 bps					
Communications distance *1	• CJ1W-SCU 2 1,200 m max. (total cable leng	RS-422A/485 port : • CJ1W-SCU□1-V1 500 m max. (total cable length: 500 m max., T-branch branch lines: 10 m max.)					
Messages (communications frame structure)	Data only (without start code Start code + data Data + end code Start code + data + end code Start code + data + end code Data + CR + LF Start code + data + CR + LF Set in allocated DM Area (The start code can be included 00 and FF hex. To exclude the	d by setting it to between 00 and FF hex, and the end code can be included by setting it to between end code, set the number of receive data bytes.)					
	Start code	None or 00 to FF hex					
	End code	None, 00 to FF hex, or CR + LF					
	Number of receive data bytes during reception	Set the number of receive data bytes between 1 and 256 bytes (according to the DM Area settings) when frame structure 1 or 2 above is used.					
Sending messages	TXDU(256) instruction *3						
Receiving messages	RXDU(255) instructions *3						
Maximum message length	Sending and receiving: Up to 2	259 bytes including the start code and end code (up to 256 bytes excluding start/end codes)					
Data conversion	No conversion						
Communications protocol	None						
Message delay time	When the TXD (236), TXDU (256) instruction is executed, after the send delay time, the data is sent from the port. *3 0 to 300 s (0 to 300,000 ms) (Can be set in 10-ms units depending on the DM Area settings)						
Receive counter	The number of data bytes (0 to 256) received at the port can be counted.						
Reception buffer clear timing	• CJ1W-SCU□2	d immediately after executing the RXD(235)/RXDU(255) instruction stion, you can specify whether the reception buffers will be cleared or not in a setting in the DM Area					

- *1. The baud rate and the communications distance sometimes depend on the remote device.
- *2. The CJ1W-SCU□2 is required for communications at 115,200 or 230,400 bps.
 *3. The DTXDU(262) and DRXDU(261) instructions can be used only when a CJ1W-SCU□2 Serial Communications Unit is connected to a CJ2 CPU Unit with unit versions of 1.1 or later.

Modbus-RTU Specifications

Item	Description					
Mode	Modbus-RTU slave mode ∗1					
Baud rate	1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/230,400 bps *2 Default: 19,200 bps					
Data length	8 bits					
Parity	Odd, even, or none Default: Even					
Stop bits	Odd or even parity:1 bit No parity : 2 bits					
Address setting range	1 to 247 (broadcasting: 0)					
Frame format	Slave address: 1 byte Function code: 1 byte Data: 0 to 252 bytes CRC code: 2 bytes					

- *1. Modbus-ASCII mode is not supported.
- *2. The CJ1W-SCU \square 2 is required for communications at 230,400 bps.

Supported Commands

Function code (hexadecimal)	Function	Modbus name
01	Reads multiple bits from the CIO, Work, Holding, or Auxiliary Area of I/O memory.	Read Coils
02	Reads multiple bits from the CIO Area of I/O memory.	Read Discrete Inputs
03	Reads multiple words from the DM or EM Area of I/O memory.	Read Holding Registers
04	Reads multiple words from the CIO, Work, Holding, or Auxiliary Area of I/O memory.	Read Input Registers
05	Writes a bit in I/O memory.	Write Single Coil
06	Writes a word in the DM or EM Area of I/O memory.	Write Single Register
08	Executes an echoback test.	Diagnostic
0F	Writes multiple bits in I/O memory.	Write Multiple Coils
10	Writes multiple words in the DM or EM Area of I/O memory.	Write Multiple Registers

Unit Version and Manufacturing Dates/Lot Numbers

CJ1W-SCU□1-V1

Classification	Туре	Model	May 2004	June 2004	November 2005
	Serial Communications Units	CJ1W-SCU21-V1	Per-Ver 1.2	Unit version 1.2	Unit version 1.3
CPU Bus Units		CJ1W-SCU41-V1	rei-vei 1.2	(Lot No:040617 and later)	
		CJ1W-SCU31-V1	_	_	Unit version 1.3 *
Support	pport CX-Programmer	WS02-CXPC1-EV□	Ver.4.0 or earlier	Ver.5.0	Ver.6.1
0.0	CX-Protocol	WS02-PSTC1-E	Ver.1.4 or earlier	Ver.1.5	Ver.1.7

^{*} Available April, 2006

CJ1W-SCU□2

Classification	Type Model		September 2009	
		CJ1W-SCU22		
CPU Bus Units	Serial Communications Units	CJ1W-SCU32	Unit version 2.0	
		CJ1W-SCU42		
Support	CX-Programmer	WS02-CXPC□-V□	Ver.8.3	
Software	CX-Protocol	WS02-PSTC1-E	Ver.1.9	

Function Support by Unit Version

Function Support by Unit Version 2.0

		Product	Unit version 2.0
	C		CJ1W-SCU22
CJ Ser	ies	Serial Communications Units	CJ1W-SCU32
			CJ1W-SCU42
	Serial gates	vay	Supported
		1:1 links	Supported
	Host Link	Host Link compatible device selection	Supported
ક	No-protoco	ĺ	Supported
Functions		Link word specification data exchange timing	On-request I/O refreshing Continuous I/O refreshing
3	Protocol macro	Reception buffer processing for PMCR(260) instruction execution	Select to clear or hold contents.
		Baud rate (bps)	230,400 supported.
	Standard system protocol additions		Supported
	MODBUS slave protocol added		Supported

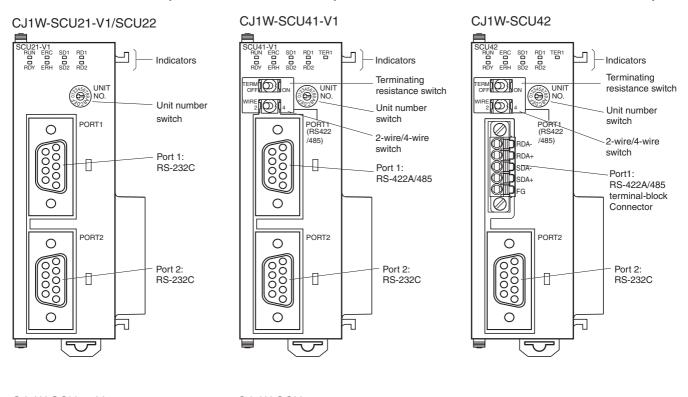
Function Support by Unit Version 1.2 and Unit Version 1.3

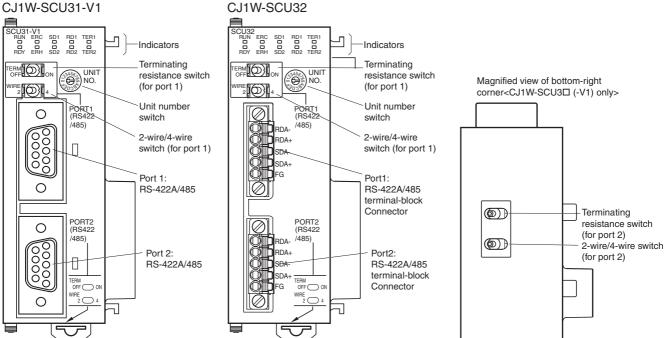
		Product	Earlier version (pre-ver. 1.2)	Unit version 1.2	Unit version 1.3
			CJ1W-SCU21	CJ1W-SCU21-V1	CJ1W-SCU21-V1 (Same as pre-ver. 1.2)
CJ Ser	ies	Serial Communications Units	_	_	CJ1W-SCU31-V1
			CJ1W-SCU41	CJ1W-SCU41-V1	CJ1W-SCU41-V1 (Same as pre-ver. 1.2)
	Serial gates	vay	Not supported	Supported	Supported (Same as pre-ver. 1.2)
		1:1 links	Not supported	Supported	Supported (Same as pre-ver. 1.2)
	Host Link	Host Link compatible device selection	Not supported	Supported	Supported (Same as pre-ver. 1.2)
	No-protoco	ĺ	Not supported	Supported	Supported (Same as pre-ver. 1.2)
Functions		Link word specification data exchange timing	On-request I/O refreshing only	On-request I/O refreshing Continuous I/O refreshing	On-request I/O refreshing Continuous I/O refreshing (Same as pre-ver. 1.2)
Ē	Protocol macro	Reception buffer processing for PMCR(260) instruction execution	Clearing only	Select to clear or hold contents.	Select to clear or hold contents. (Same as pre-ver. 1.2)
		Baud rate (bps)	38,400 max. (57,600 and 115,200 not supported)	57,600 supported.	57,600 supported. (Same as pre-ver. 1.2)
	Standard sy	ystem protocol additions	Not supported	Supported	Supported (Same as pre-ver. 1.2)
	MODBUS slave protocol added		_	_	Supported

Note: Make sure that a CJ-series CPU Unit with unit version 3.0 or later is used when using no-protocol mode.

External Interface

Serial Communications Units provide two communications ports for external interface: RS-232C and/or RS-422A/485 ports.





Specifications of the RS-232C port and RS-422A/485 port

RS-232C Port

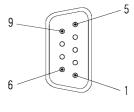
Protocol	Host Link	Protocol macro	1:N NT Links		
Communications method	Full-duplex	Full-duplex or half-duplex	Half-duplex		
Synchronization	Start-stop synchronization (asynchronous)				
Baud rate	1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/230,400 bps *1 Standard NT link or high-speed NT link *				
Connections	1:1 (1:N is possible using Link Adapters)				
Transmission distance	15 m max. *3				
Interface	Complies with EIA RS-232C				

Protocol	No-protocol	Serial Gateway	Modbus-RTU		
Communications method	Full-duplex	_	_		
Synchronization	_	_	_		
Baud rate	1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/ 230,400 bps *1				
Connections	1:1 (1:N is possible using Link Adapters)				
Transmission distance	15 m max. *3				
Interface	Complies with EIA RS-232C				

- *1. The CJ1W-SCU□2 is required for communications at 230,400 bps.
- *2. High-speed NT link is only available with Serial Communications Units manufactured on or after December 20th, 1999. With earlier models, only standard NT link is available.
- *3. The maximum cable length for RS-232C is 15 m. The RS-232C standard, however, does not cover baud rates above 19.2 Kbps. Refer to the manual for the device being connected to confirm support.

Connector Pin Layout

Pin No.	Abbreviation	Signal name	I/O
1 *1	FG	Shield	_
2	SD	Send data	Output
3	RD	Receive data	Input
4 *2	RTS (RS)	Request to send	Output
5 *2	CTS (CS)	Clear to send	Input
6 *3	5V	Power supply	_
7 *2	DSR (DR)	Data set ready *4	Input
8 *2	DTR (ER)	Data terminal ready	Output
9	SG	Signal ground	_
Shell *1	FG	Shield	



- *1. Pin No. 1 and the shell are connected to the ground terminal (GR) of the Power Supply Unit inside of the Serial Communications Unit. Therefore, the cable shield can be grounded by grounding the GR of the Power Supply Unit.
- *2. The status of the RTS (RS), CTS (CS), DSR (DR), and DTR (ER) signals can be monitored in the words allocated in the CIO Area. For details, refer to 2-3 I/O Memory Allocations.
- *3. Pin 6 (5 V) is required when the NT-AL001 Link Adapter is connected.
- *4. The DSR signal is used to monitor the signal cable. It can also be used as a CD (carrier detect) signal. (The DSR signal does not affect system operation, and is available for use by the user.)

Note: Do not connect the 5-V power supply of Pin 6 to any external device other than an NT-AL001 Link Adapter. Otherwise, the external device and the Serial Communications Unit may be damaged.

The following cables are provided for connection to NT-AL001 Link Adapters. We recommend that these cables be used.

NT-AL001 connecting cables: XW2Z-070T-1 (0.7 m)

XW2Z-200T-1 (2 m)

Applicable Connectors

Plug: XM2A-0901 (manufactured by OMRON) or equivalent Hood: XM2S-0911-E (manufactured by OMRON) or equivalent One plug and one hood are provided for each port.

Recommended Cables

UL2426 AWG28 \times 5P IFS-RVV-SB (UL-approved, Fujikura Ltd.) AWG28 \times 5P IFVV-SB (not UL-approved, Fujikura Ltd.)

UL2426-SB (MA) $5P \times 28AWG$ (7/0.127) (UL-approved, Hitachi Cable, Ltd.) CO-MA-VV-SB $5P \times 28AWG$ (7/0.127) (not UL-approved, Hitachi Cable, Ltd.) Cable length: 15 m max.

RS-422A/485 Port

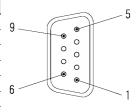
Protocol	Host Link	Protocol macro	1:N NT Links		
Communications method	Full-duplex	Full-duplex or half-duplex	Half-duplex		
Synchronization	Start-stop synchronous (asynchronous)				
Baud rate	1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/230,400 bps *1 Standard NT link or high-speed NT link				
Connections	1:N (N: 32 Units max.) 1:N (N: 8 Units max.)				
Transmission distance	500 m max. (The total combined cable length is 500 m max. Tbranch lines must be a maximum of 10 m long.)				
Interface	Complies with EIA RS-485				

Protocol	No-protocol	Serial Gateway	Modbus-RTU		
Communications method	Full-duplex	_	_		
Synchronization	_	_	_		
Baud rate	1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200/ 230,400 bps *1				
Connections	1:N (N: 32 Units max.)				
Transmission distance	500 m max. (The total combined cable length is 500 m max. Tbranch lines must be a maximum of 10 m long.)				
Interface	Complies with EIA RS-485				

- *1. The CJ1W-SCU□2 is required for communications at 230,400 bps.
- *2. High-speed NT link is only available with Serial Communications Units manufactured on or after December 20th, 1999. With earlier models, only standard NT link is available.

Connector Pin Layout (CJ1W-SCU31-V1/SCU41-V1)

Pin No.	Abbreviation	Signal name	I/O
1 *1	SDA	Send data -	Output
2 *1	SDB	Send data +	Output
3	NC	Not used	_
4	NC	Not used	_
5	NC	Not used	_
6 *1	RDA	Receive data -	Input
7	NC	Not used	_
8 *1	RDB	Receive data +	Input
9	NC	Not used	_
Shell *2	FG	Shield	_



- *1. When 2-wire connections are used, use Pins 1 and 2, or Pins 6 and 8.
- *2. The shell is connected to the ground terminal (GR) of the Power Supply Unit inside of the Serial Communications Unit. Therefore, the cable shield can be grounded by grounding the GR of the Power Supply Unit.

Note: With SDA/B or RDA/B, the signal polarity may be reversed by the remote device. Be sure to check the polarity before wiring.

Applicable Connectors

Plug: XM2A-0901 (OMRON) or equivalent Hood: XM2S-0911-E (OMRON) or equivalent One plug and one hood are provided for each port.

Recommended Cables

CO-HC-ESV-3P \times 7/0.2 (manufactured by Hirakawa Hewtech Corp.)

Cable length: 500 m max. (The total combined cable length is 500 m max. Tbranch lines must be a maximum of 10 m long.)

Connector Pin Layout (CJ1W-SCU32/SCU42)

Pin No.	Abbreviation	Signal name	1/0
1 *1	RDA	Receive data-	Input
2 *1	RDB	Receive data+	Input
3 *1	SDA	Send data-	Output
4 *1	SDB	Send data+	Output
5 *2	FG	Shield	_



Note: The signal names SDA/B and RDA/B do not always have the same polarity as that shown above. Check the polarity of the external device before making connections.

Applicable Connectors

Plug: FMC 1.5/5-STF-3.5AU (by Phoenix Contact)

Recommended Cable

CO-HC-ESV-3P×7/0.2 (by Hirakawa Hewtech) Cable length: 1,200 m max. (multidrop connections)

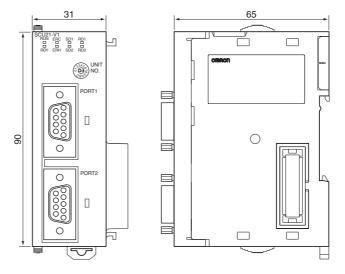
^{*1.} For 2-wire connections, use either pins 1 and 2 or pins 3 and 4.

*2. Pin 5 (the shield) is connected to the GR terminal on the Power Supply Unit though the Serial Communications Unit. The cable shield can thus be grounded by grounding the GR terminal of the Power Supply Unit.

Dimensions (Unit: mm)

CJ1W-SCU22 CJ1W-SCU21-V1/SCU31-V1/SCU41-V1

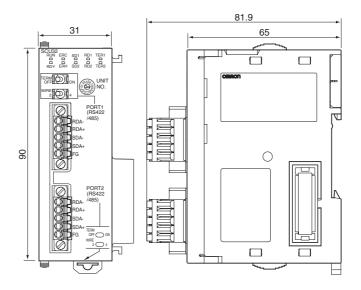




Note: The appearance varies with the model.

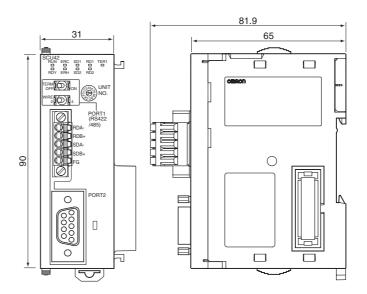
CJ1W-SCU32





CJ1W-SCU42





Related Manuals

Name	Cat. No	Contents
SYSMAC CS/CJ-series CS1W-SCB□□-V1 CS1W-SCU□□-V1 CJ1W-SCU□□-V1 Serial Communications Boards and Serial Communications Units Operation Manual	W336	Describes the use of Serial Communications Unit and Boards to perform serial communications with external devices, including the usage of standard system protocols for OMRON products.
CJ-series CJ2 CPU CJ2H-CPU6□-EIP CJ2H-CPU6□ Unit Hardware User's Manual	W472	Describes the following for CJ2 CPU Units: Overview and features Basic system configuration Part nomenclature and functions Mounting and setting procedure Remedies for errors Also refer to the Software User's Manual (W473).
SYSMAC CJ Series CJ1H-CPU□□H-R CJ1G/H-CPU□□H CJ1G-CPU□□□ CJ1M-CPU□□ CJ1M-CPU□□□ Programmable Controllers Operation Manual	W393	Provides an outlines of and describes the design, installation, maintenance, and other basic operations for the CJ-series PLCs.
CS/CJ/NSJ-series CJ2H-CPU6□-EIP CJ2H-CPU6□ CS1G/H-CPU□□H CS1G/H-CPU□□H CJ1G-CPU□□ CJ1M-CPU□□ CJ1M-CPU□□ NSJ□-□□□□(B)-G5D NSJ□-□□□□□(B)-M3D Instructions Reference Manual	W474	Describes each programming instruction in detail. Also refer to the Software User's Manual (W473) when you do programming.
SYSMAC CS/CJ/NSJ Series CS1G/H-CPU□□-EV1 CS1G/H-CPU□□H CS1D-CPU□□H CS1D-CPU□□B CJ1G-CPU□□ CJ1M-CPU□□ CJ1G/H-CPU□□H CS1W-SCB□-V1 CS1W-SCB□-V1 CS1W-SCU□□-V1 CP1H-X□□□-□ CP1H-X□□□□-□ CP1H-Y□□□□-□ CP1H-Y□□□□-□ NSJ□-□□□□(B)-G5D NSJ□-□□□□(B)-M3D Communications Commands Reference Manual	W342	Describes the C-series (Host Link) and FINS communications commands used with CS/CJseries PLCs.
CXONE-AL□□C-V□/AL□□D-V□ CX-One FA Integrated Tool Package Setup Manual	W463	Installation and overview of CX-One FA Integrated Tool Package.
SYSMAC WS02-CX□□-V□ CX-Programmer Operation Manual	W446	Provides information on how to use the CX-Programmer for all functionality except for function blocks.
SYSMAC WS02-PSTC1-E CX-Protocol Operation Manual	W344	Describes the use of the CX-Protocol to create protocol macros as communications sequences to communicate with external devices.
CXONE-AL□□C-V□/ CXONE-AL□□D-V□ CX-Integrator Operation Manual	W464	Describes operating procedures for the CX-Integrator Network Configuration Tool for CS-, CJ-, CP-, and NSJ-series Controllers.

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Note: This datasheet is provided as a guideline for selecting products. Do not use this document to operate the Unit.

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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

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