

SYSMAC CS-series Controller Link Units

CS1W-CLK

CSM_CS1W-CLK_DS_E_5_11

New Controller Link Units, Now with 4,000 Send Words

- The Controller Link is an FA network that can send and receive large amounts of data easily and at high speed. The Controller Link supports data links that enable sharing data between PLCs and computers and a message service that enables sending and receiving data whenever required.
- With Wired Controller Link Units, systems can be flexibly built by using Repeater Units to enable T-branches, long-distance wiring, and converting part of the network to optical cable.



CS1W-CLK23



CS1W-CLK13



CS1W-CLK53

Includes products no longer available to order.
See *Ordering Information* for details.

Features

- Large-capacity data links are easily achieved without programming simply by setting data link tables.
- Up to 20,000 *1 send/receive words can be set per node for Units (up to 62,000 words for Boards).
- Data links can be performed with up to 4,000 *2 words per node while ensuring data concurrency.
- User-set data link tables can be changed while data links are operating. *3
- Errors for the entire system can be monitored by using error diagnosis support software and a variety of status flags.
- With the token ring mode of Optical Ring Controller Link Units/Boards, duplex communications paths enable communications to continue normally even if the cable becomes disconnected.
- Detecting locations of disconnection greatly shortens time required for maintenance.
- Installing Controller Link Units in a CS1D system enables Duplex Communications Units to further enhance reliability. *4

*1. Supported for unit version 1.2 or later.

*2. CS1W-CLK□3 and 3G8F7-CLK□3 are supported.

*3. Supported for CS1W-CLK□3, 3G8F7-CLK□3, and models ending with "-V1" (CS1W-CLK12-V1 *5 and CS1W-CLK52-V1 *5 with lot numbers 0306□□□□ or later).

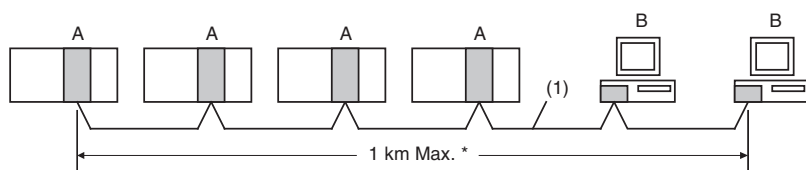
*4. Supported for CS1W-CLK13/CLK12-V1 *5/CLK53/CLK52-V1 *5 and CS1D Duplex and Simplex Systems.

*5. Discontinuation models in July 2012.

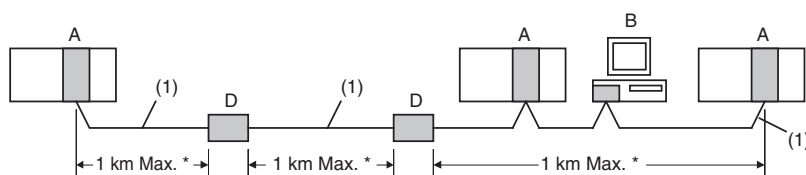
System Configuration

Wired Controller Link Units

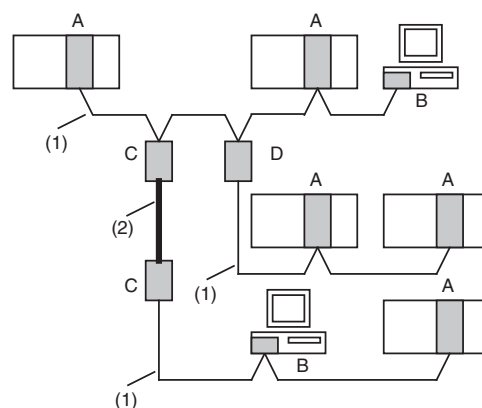
Basic Wiring (Daisy Chain Connections)



Long-distance Wiring



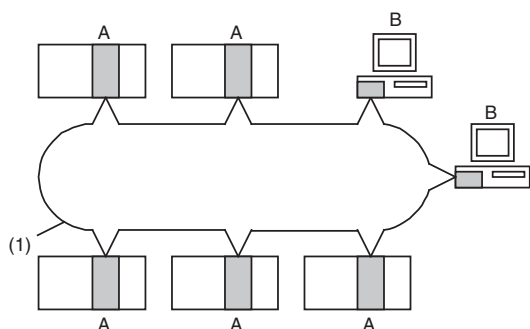
T-Branch Wiring and Partial Conversion to Optical Cable



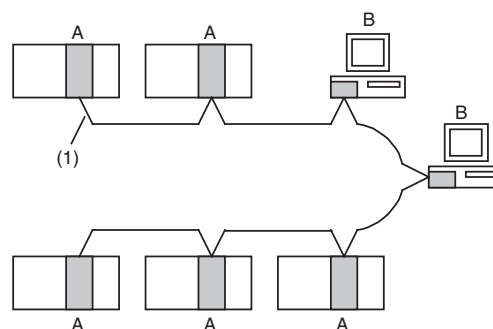
- A: Wired Controller Link Unit (1): Twisted-pair cable
 B: Wired Controller Link Support Board (2): Optical cable
 C: Wire-to-Optical Repeater Unit
 D: Wire-to-Wire Repeater Unit
 * At 500 kbits/s

Optical Controller Link Units

Token Ring Mode



Token Bus Mode



- A: Optical Ring Controller Link Unit
 B: Optical Ring Controller Link Support Board
 (1): Optical cable

Ordering Information

Controller Link Units

Unit classification	Product name	Specifications				No. of unit numbers allocated	Current consumption (A)		Model	Standards
		Communications cable	Communications type	Duplex support	Max. Units mountable per CPU Unit		5 V DC	26 V DC		
CS1 CPU Bus Unit	Controller Link Unit 	Wired shielded twisted-pair cable *1	Data links and message service	No	8	1	0.33	–	CS1W-CLK23	UC1, N, L, CE
	Controller Link Unit 	Optical ring H-PCF cable *2		Yes. Unit duplexing and cable loop back are supported.	Non-duplex: 8, Duplex: 11 (6 Units comprising 3 sets of Duplex Units + 5 Non-duplex Units)	1	0.52	–	CS1W-CLK13	
	Controller Link Unit 	Optical ring GI cable *3				1	0.65	–	CS1W-CLK53	

*1. Use the following special cable for shielded, twisted-pair cable.

- ESVC0.5×2C-13262 (Bando Electric Wire : Japanese Company)
- ESNC0.5×2C-99-087B (JMACS Japan Co., Ltd. : Japanese Company)
- EPC 1P×0.5mm² (Nagaoka Electric Wire Co., Ltd. : Japanese Company)
- Li2Y-FCY2×0.56qmm (Kromberg & Schubert, Komtec Department : German Company)
- 1×2×AWG-20PE+Tr.CUSN+PVC (Draka Cables Industrial : Spanish Company)
- #9207 (Belden : US Company)

*2. When using a wire-to-optical (H-PCF) cable, use a H-PCF cable (for both Controller Link and SYSMAC LINK) or a H-PCF optical fiber cable with connector.

*3. When using a wire-to-optical (GI) cable, use a GI optical cable that matches the specifications.

Accessories

The Optical Fiber Cable Bracket is included in CS1W-CLK13 and CS1W-CLK53.

Controller Link Support Boards (Product no longer available to order)

Product name	Specifications		Accessories	Model	Standards
	Communications cable	Communications type			
Controller Link Support Board for PCI Bus 	Wired shielded twisted-pair cable	Data links and message service	• CD-ROM × 1 * • INSTALLATION GUIDE (W467) × 1 • Communications connector × 1	3G8F7-CLK23-E	CE, KC
	H-PCF optical model		• CD-ROM × 1 * • INSTALLATION GUIDE (W467) × 1 • Optical Fiber Cable Bracket × 1 • Power supply connector × 1	3G8F7-CLK13-E	CE
	GI optical model			3G8F7-CLK53-E	

* The CD-ROM contains the following software.

- Controller Link (PCI) Driver
- FinsGateway Version 2003 (PCI-CLK Edition)
- FinsGateway Version 3 (PCI-CLK Edition)
- Setup Diagnostic Utility
- C Library

Repeater Units

Name	Specifications	Model	Standards
Controller Link Repeater Unit 	Wire-to-Wire Model	CS1W-RPT01	UC1, CE
	Wire-to-Optical (H-PCF) Model (See note 1.)	CS1W-RPT02	
	Wire-to-Optical (GI) Model (See note 2.)	CS1W-RPT03	

Using Repeater Units enables T-branches and long-distance wiring for Wired Controller Link networks, 62-node configurations, and converting part of the network to optical cable.

Note: 1. When using wire-to-optical (H-PCF) cable, use a H-PCF cable (for both Controller Link and SYSMAC LINK) or a H-PCF optical fiber cable with connector.

2. When using wire-to-optical (GI) cable, use a GI optical cable (for Controller Link).

Relay Terminal Block

Name	Specifications	Model	Standards
Relay Terminal Blocks for Wired Controller Link Units 	Used for Wired Controller Link Units (set of 5)	CJ1W-TB101	—

Controller Link Units can be replaced without stopping the communications of the entire network if a Relay Terminal Block is installed in advance on the Unit in a Wired Controller Link network. Relay Terminal Blocks cannot be used on Controller Link Support Boards.

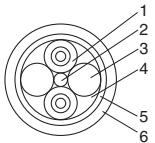
Duplex Optical Fiber Cable (H-PCF Cable)

Name	Application	Specifications	Model	Standards
Duplex Optical Fiber Cable	CS1W-CLK13 or CS1W-CLK12-V1 * in a CS1D system	H-PCF cable for connecting Duplex Controller Link Units Cable length: 50 cm	CS1D-CN051	—

This cable is used to connect Units in active mode (ACT) and standby mode (STB) in a CS1D Duplex System.

* Discontinuation models in July 2012.

H-PCF Cables and Optical Connectors

Name	Application/construction		Specifications		Model	Standards
Optical Fiber Cables		 1. Optical fiber single-core cord 2. Tension member (plastic-sheathed wire) 3. Filler (plastic) 4. Filler surrounding signal wires (plastic, yarn, or fiber) 5. Holding tape (plastic) 6. Heat-resistant PV sheath	Two-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 1000 m	S3200-HCCB103	
				Orange 10 m	S3200-HCCO101 *1	
				Orange 50 m	S3200-HCCO501 *1	
				Orange 100 m	S3200-HCCO102 *1	
				Orange 500 m	S3200-HCCO502 *1	
Optical Connectors (Crimp-cut)		Controller Link: CS1W-CLK13 CS1W-CLK12-V1 *1 3G8F7-CLK13-E *1 3G8F7-CLK12-EV1 *1 CS1W-RPT02 CS1W-SLK11 3G8F7-SLK11-E *1 C200HW-SLK13/14 *1 SYSMAC LINK:	Half lock		S3200-COCF2571	—
		Controller Link: CS1W-CLK13 CS1W-CLK12-V1 *1 3G8F7-CLK13-E *1 3G8F7-CLK12-EV1 *1 CS1W-RPT02 CS1W-SLK11 3G8F7-SLK11-E *1 SYSMAC LINK:	Full lock		S3200-COCF2071 *2	

*1. Discontinuation models.

*2. Full-lock Optical Connectors (Crimp-cut) (S3200-COCF2071) cannot be used with the CS1W-SLK11. Use a Half-lock Cable (S3200-COCF2571) or a H-PCF Optical Fiber Cable with Connector (S3200-CN□□□-□□-□□).

H-PCF Optical Fiber Cables with Connectors (Black Composite Cables with Two-Optical Lines and Two Power Supply Lines)

Application	Appearance	Model	Standards
Controller Link, SYSMAC LINK		S3200-CN□□□-20-20	—
		S3200-CN□□□-20-25	
		S3200-CN□□□-25-25	

Optical connectors for H-PCF Optical Cables with Connectors are adhesive polished.

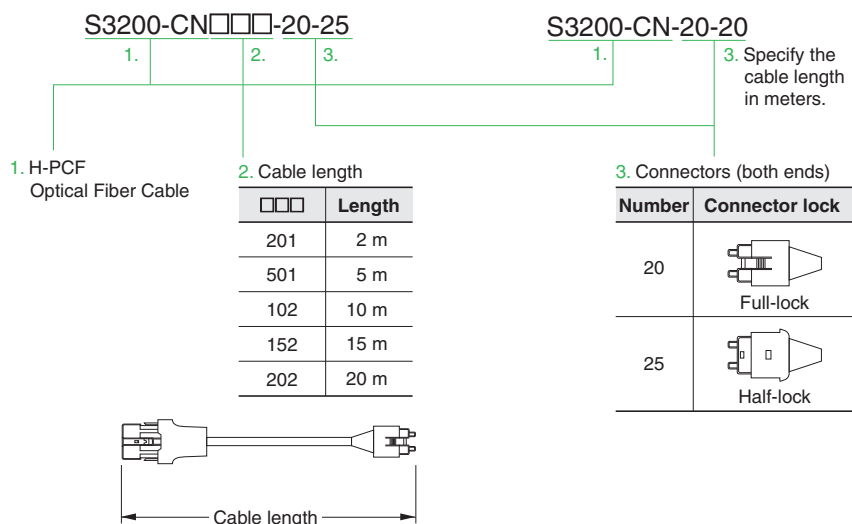
Cable Length

The following cable lengths are available: 2 m, 5 m, 15 m, and 20 m. For lengths of 21 m or more, contact your OMRON sales representative.

Model Numbers

(1) 2 m, 5 m, 10 m, 15 m, or 20 m

(2) 21 m or longer



Optical Connector Assembly Tool

Name	Applicable Unit	Model	Manufacturer	Standards
Optical Fiber Assembly Tool (See note.)	This tool is used on site for mounting crimp-cut connectors and hard plastic-clad silica optical fiber for optical transmission systems of SYSMAC C-series SYSBUS, SYSMAC LINK, and Controller Link.	CAK-0057	Sumitomo Electric Industries, Ltd.	—

Note: There is a risk of quality problems when using cables assembled by typical users, so we recommend purchasing cables with preattached connectors or having a qualified technician assemble the cables.

GI Optical Cables

A qualified technician must select, assemble, and install GI Optical Fiber Cable, so always let an optical cable specialist handle the GI cable.

Usable Optical Cables and Optical Connectors

- Optical fiber types: Graded, indexed, multi-mode, all quartz glass, fiber (GI-type AGF cable)
- Optical fiber construction (core diameter/clad diameter): 62.5/125 μm or 50/125 μm
- Optical fiber optical characteristics of optical fiber: Refer to the tables.
- Optical connector: ST connector (IEC-874-10)

• 50/125- μm AGF Cable

Item	Minimum	Standard	Maximum	Conditions
Numerical aperture (N.A)	—	0.21	—	—
Transmission loss (dB)	—	—	3.0Lf	0.5 km $\leq$ Lf
			3.0Lf+0.2	0.2 km $\leq$ Lf $\leq$ 0.5 km
			3.0Lf+0.4	Lf $\leq$ 0.2 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 λ is the peak wavelength of the test light source.

• 62.5/125- μm AGF Cable

Item	Minimum	Standard	Maximum	Conditions
Numerical aperture (N.A)	—	0.28	—	—
Transmission loss (dB)	—	—	3.5Lf	0.5 km $\leq$ Lf
			3.5Lf+0.2	0.2 km $\leq$ Lf $\leq$ 0.5 km
			3.5Lf+0.4	Lf $\leq$ 0.2 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 λ is the peak wavelength of the test light source.

International Standards

- The standards indicated in the Standards column are those current for UL, CSA, cULus, cUL, NK, and Lloyd standards and EC Directives as of the end of July 2007. 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, CE: EC Directives, and KC: KC Registration.
- Ask your OMRON representative for the conditions under which the standards were met.

Mountable Racks

Model		CS1 System						CS1D System				
		CPU Rack		Expansion Backplane (including Long-distance Expansion Rack)		SYSBUS Remote I/O Slave Rack	C200HX/HG/ HE Expansion I/O Rack	CPU Rack			Expansion Backplane	
		CS1W-BC		CS1W-BI				CS1D-BC			CS1D-BI	
□□3		□□2		□□3		□□2		052	042D	082S	092	082D
CS1W-CLK23 CS1W-CLK13 CS1W-CLK53	Unit version 2.0	8 Units (per CPU Unit)				Not supported	Not supported	8 Units (per CPU Unit)				
CS1W-CLK21-V1 CS1W-CLK12-V1 *1 CS1W-CLK52-V1	Unit version 1.2							8 Units *2 (per CPU Unit)				
CS1W-CLK21-V1 CS1W-CLK12-V1 *1 CS1W-CLK52-V1	Pre-Ver. 1.2	4 Units (per CPU Unit)						4 Units *3 (per CPU Unit)				

*1. Discontinuation models in July 2012.

*2. Optical Ring Controller Link Units support 11 Units maximum for duplex (6 Units comprising 3 sets of Duplex Units + 5 Non-duplex Units).

*3. Optical Ring Controller Link Units support 7 Units maximum for duplex (6 Units comprising 3 sets of Duplex Units + 1 Non-duplex Unit).

Individual Specifications

Controller Link Units

Item		Specifications		
Model		CS1W-CLK23 CS1W-CLK21-V1 *	CS1W-CLK13 CS1W-CLK12-V1 *	CS1W-CLK53 CS1W-CLK52-V *
Supported PLC		All CS-series CPU Units		
Number of mountable Units		Unit version 1.2 or later: 8 Units max., Pre-Ver. 1.2: 4 Units max.		
Installation site		Install onto a CPU Backplane or CS-series Expansion Backplane (classified as a CPU Bus Unit).		
Storage location for network parameters and manually set data tables		CPU Bus Unit Area (in the CPU Unit parameter area)		
Storage location for routing tables		CPU Unit parameter area		
Weight		220 g	300 g (excluding mounting bracket)	300 g (excluding mounting bracket)
Current consumption	5 V in PLC	0.33 A	0.52 A	0.65 A
	26 V in PLC	—	—	—
	External 24 V	—	0.20 A	0.26 A

* Discontinuation models in July 2012.

Controller Link Support Boards (for PCI Bus)

Item		Specifications		
Models		3G8F7-CLK23-E	3G8F7-CLK13-E	3G8F7-CLK53-E
Applicable computers		IBM PC/AT or compatible • CPU: Intel Celeron 400 MHz or better • Main memory: 128 MB minimum • One or more PCI bus slots (PCI bus revision 2.0 or higher, power supply: 5 V) • Available hard disk space: 70 MB min. • CD-ROM drive: One required for installation • Display: VGA (640 × 480 (pixels) min.) (Other conditions conform to the OS.)		
Compatible OS		• FinsGateway Version 2003 *1 - Windows 10 (32bit) - Windows 8 (32bit) - Windows 7 (32bit) Professional - Windows 7 (32bit) Home Premium - Windows Vista Business - Windows Vista Home Premium • FinsGateway Version 3 *2 - Windows XP Professional - Windows XP Home Edition - Windows 2000 Professional - Windows NT 4.0 (Service Pack 3 or higher) - Windows ME - Windows 98SE		
Weight		104 g	120 g (excluding mounting bracket)	124 g (excluding mounting bracket)
Current consumption	5 V in PLC	0.35 A	0.54 A	0.60 A
	External 24 V	—	0.35 A	0.35 A

Note: Controller Link Support Boards (for PCI Bus) is no longer available to order.

*1. Install the software from CD Ver. 3.12 or higher if the operating system is Windows 10 or 8 (32bit).

*2. Install FinsGateway version 3 if the operating system is Windows NT 4.0 (Service pack 3 or higher), Windows ME, or Windows 98SE. In that case, however, the new functions of Controller Link Support Boards for the PCI Bus cannot be used (i.e., automatic data link creation with 1:N allocation, changing data link tables with active data links, 62-node setting for wired models, and maximum of 4000 send words).

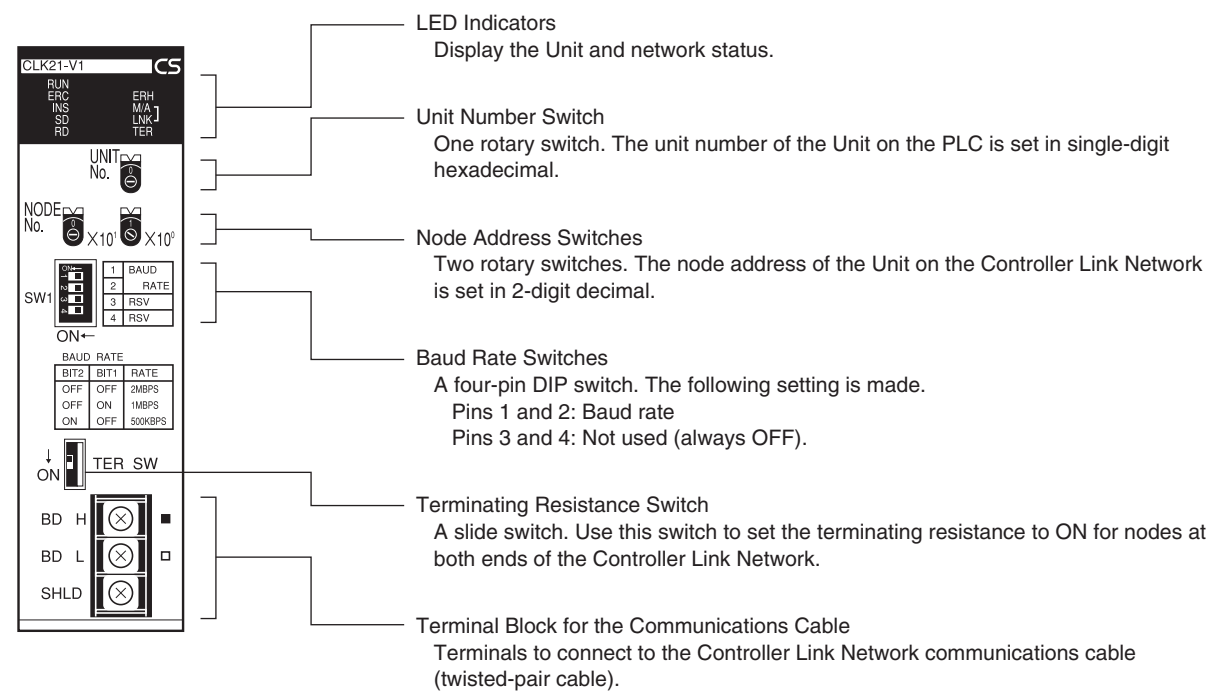
Repeater Units

Item		Specifications		
Model		CS1W-RPT01	CS1W-RPT02	CS1W-RPT03
Supported Units and Boards		All wired Controller Link Units and Boards Note: If a maximum of 62 nodes is used, models that support 62 nodes must be used.		
Transmission path		Wire-to-wire	Wire-to-optical (H-PCF)	Wire-to-optical (GI)
Transmission path format		Multi-drop Tree	1:1	1:1
Installation		Repeater Units are not mounted to the PLC. They are mounted separately with screws or on a DIN Track.		
Weight		130 g	130 g (excluding mounting bracket)	130 g (excluding mounting bracket)
Allowable power supply voltage range		20.4 to 26.4 VDC (24 VDC –15 V to +10%)		
Current consumption		0.06 A at 24 VDC	0.06 A at 24 VDC	0.07 A at 24 VDC
Inrush current		2.5 A max. (24 VDC with rise time of 5 ms)		

Repeater Units are used to expand the Controller Link network for wired models. For Wired-to-optical Repeater Units, always use a set of two (1:1). Optical Ring Controller Link Units and Boards cannot be connected to the optical cable section between Repeater Units.

External Interfac

CS1W-CLK23/CS1W-CLK21-V1 *



* Discontinuation models in July 2012.

Definition of Terminal Block Pin Names for Communications Cables

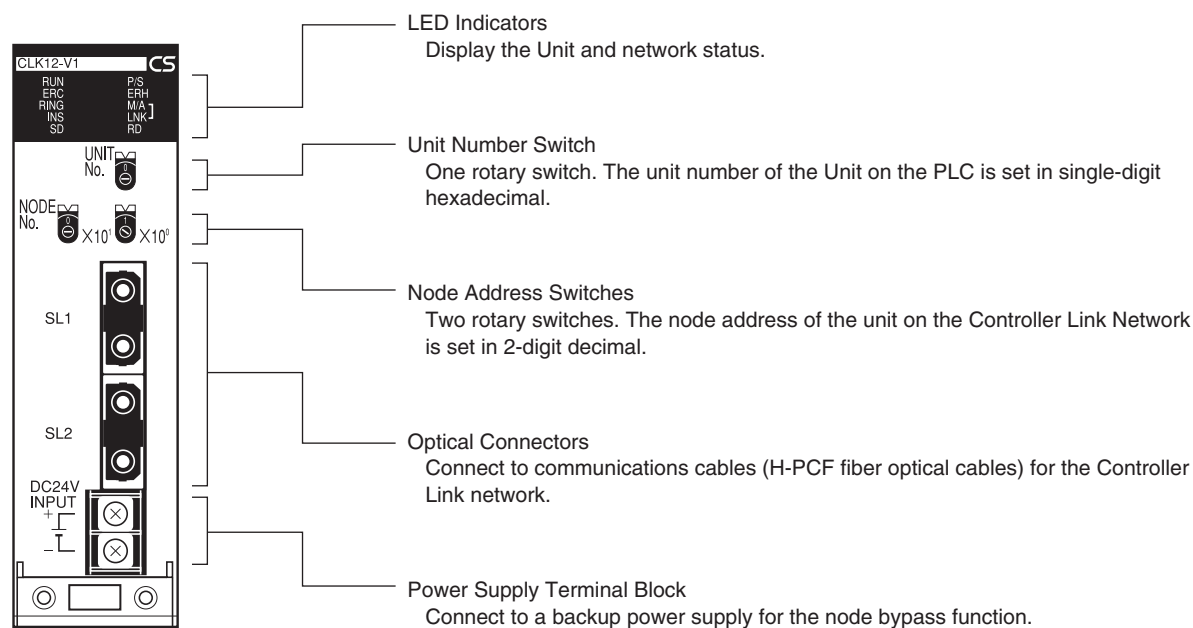
Marking	Notation	Signal name	Line color
■	BD H	Communications data, high	Black
□	BD L	Communication data, low	White
None	SHLD	Shield	None

Crimp Terminals

Use crimp terminals (M3) having the dimensions shown below.



CS1W-CLK13/CS1W-CLK12-V1 *



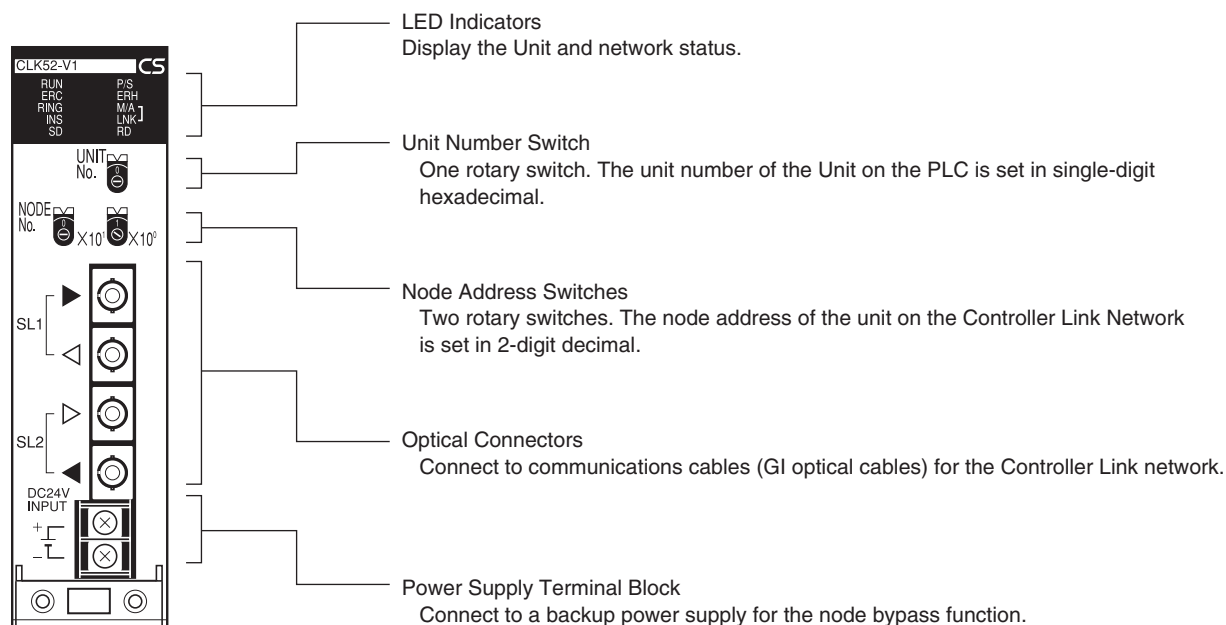
* Discontinuation models in July 2012.

Crimp Terminals

Use crimp terminals (M3) having the dimensions shown below.



CS1W-CLK53/CS1W-CLK52-V1 *



* Discontinuation models in July 2012.

Crimp Terminals

Use crimp terminals (M3) having the dimensions shown below.



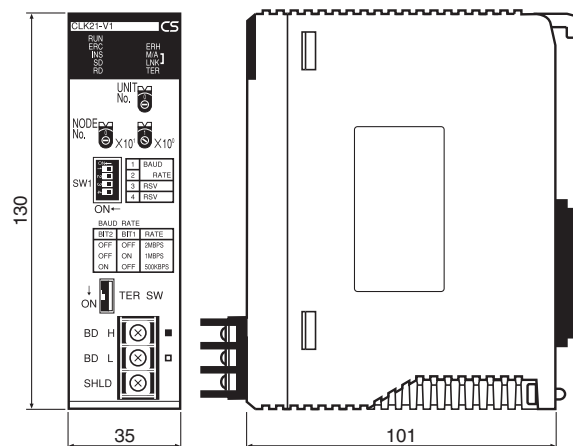
Usage Precautions

- Old models and new models can be used mixed on the same network. In that case, however, build the system using the specifications for the old models. The data link send/receive words can be separately set to their maximums when new and old models are mixed.
- Repeater Units can be used to expand a Wired Controller Link Network. For Wired-to-optical Repeater Units, always use a set of two (1:1). Optical Ring Controller Link Units and Boards cannot be connected to the optical cable section between Repeater Units.
- Connect Repeater Units so that there are no more than two stages between any two nodes. One set of two Wire-to-Optical Repeater Units is counted as one stage.

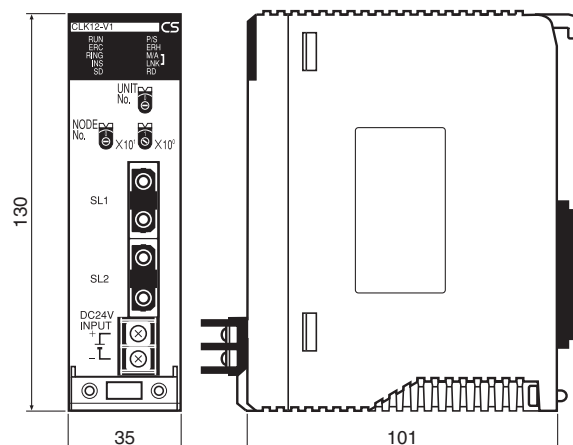
Dimensions

(Unit: mm)

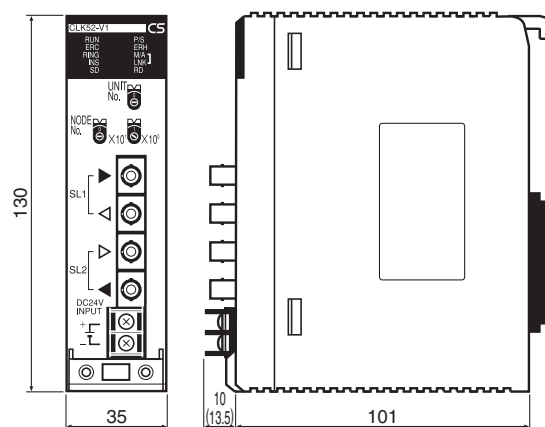
CS1W-CLK23/CS1W-CLK21-V1 *



CS1W-CLK13/CS1W-CLK12-V1 *



CS1W-CLK53/CS1W-CLK52-V1 *



Note: The dimensions in parentheses are for the CS1W-CLK53 (including the terminal cover).
* Discontinuation models in July 2012.

Related Manuals

Cat. No.	Models	Name	Application	Description
W309	CS1W-CLK23 CS1W-CLK21-V1 CJ1W-CLK23 CJ1W-CLK21-V1 C200HW-CLK21 CVM1-CLK21 CQM1H-CLK21 CS1W-RPT01/02/03	Controller Link Units Operation Manual	Used when information regarding operating procedures for Wired Controller Link Units is needed.	Describes operating procedures for Controller Link Units. Controller Link Units can connect to Wired Controller Link Units.
W422	3G8F7-CLK12-V1 3G8F7-CLK52-V1 3G8F7-CLK21-V1	Controller Link Support Boards for PCI Bus Installation Guide (3G8F7-CLK12/21/52-V1)	Used when information regarding setup procedures for Controller Link Support Boards for PCI bus connections is needed.	Describes the setup method for the Controller Link Support Boards for PCI bus connections.
W467	3G8F7-CLK13 3G8F7-CLK12-V1 3G8F7-CLK53 3G8F7-CLK52-V1 3G8F7-CLK23 3G8F7-CLK21-V1	Controller Link Support Board for PCI Bus Installation Guide (3G8F7-CLK13/12-V1/53/52-V1/23/21-V1)	Used when information regarding setup procedures for Controller Link Support Boards for PCI bus connections is needed.	Describes the setup method for the Controller Link Support Boards for PCI bus connections.
W383	3G8F7-CLK13 3G8F7-CLK12-V1 3G8F7-CLK53 3G8F7-CLK52-V1 3G8F7-CLK23 3G8F7-CLK21-V1	Controller Link Support Boards for PCI Bus Operation Manual	Used when information regarding setup procedures for Controller Link Support Boards for PCI bus connections is needed.	Describes the setup method for the Controller Link Support Boards for PCI bus connections.
W370	CS1W-CLK13 CS1W-CLK12-V1 CVM1-CLK12 CS1W-CLK53 CS1W-CLK52-V1 CVM1-CLK52	Optical Ring Controller Link Units Operation Manual	Used when information regarding operating procedures for Optical Ring Model Controller Link Units is needed.	Describes the operating procedures for Controller Link Units. Controller Link Units can connect to Controller Link Networks (Optical Ring System for H-PCF Cable, or GI Cable). Refer to this manual for information regarding the discontinued CS1W-CLK11 Optical Bus Controller Link Unit.
W464	CXONE-AL□□D-V□	CX-Integrator Operation Manual	Used when network setup or network monitoring needs to be performed.	Describes the operating procedures for the CX-Integrator.
W463	CXONE-AL□□D-V□	CX-One FA Integrated Tool Package Setup Manual	Used when installing software from the CX-One.	Provides an overview of the FA Integration Tool Package CX-One, and describes the CX-One installation procedures.

Terms and Conditions Agreement

Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See <http://www.omron.com/global/> or contact your Omron representative for published information.

Limitation on Liability: Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.