

### The Key to Communication

The information is critical. The timing and coordination between systems is the key to efficient operation and maximizing system uptime. A highly reliable control communications solution is required to do the job and enhance the overall system performance.

### Quick, Efficient Communications

Controller Link is Omron's powerful, deterministic communications network, ideal for exchanging large amounts of information quickly and efficiently. Engineered to meet the strict requirements of demanding applications, Controller Link has the capability to deliver your mission critical data safely and on time, every time.



- Plug-and-Play Configuration
- Automatic Data Link and Custom Data Exchange Between Network Nodes
- Deterministic, Token Passing Bus or Ring Network Architecture
- Supports Transparent Multi Network Routing and Gateway Functions Through Omron's CS1 Controller
- Redundant Fiber Media Provides Automatic Loop-Back on Fault Detection
- Advanced Diagnostics, Status and Error Detection
- Three Media Options:
  - Shielded Twisted Pair
  - 62.5 Micron Fiber Optic Cable
  - 200 Micron Fiber Optic Cable for Extended Distance and Noise Immunity

# Features and Functions

## ■ Plug-and-Play Network Configuration

- Modules install easily with switch settings and are ready for power up.

## ■ Automatic 'Data Link' and Event Ladder Instructions

- 'Data Link' automatically shares memory areas between nodes on start up.
- 'Message Services' send data on event between specified nodes using simple ladder SEND/RECEIVE and COMMAND instructions.

## ■ Media Redundancy and Advanced Diagnostics

- Fiber has redundant transmission paths with automatic loopback in case of media failure.
- Fiber optic cable provides additional reliability and noise immunity.

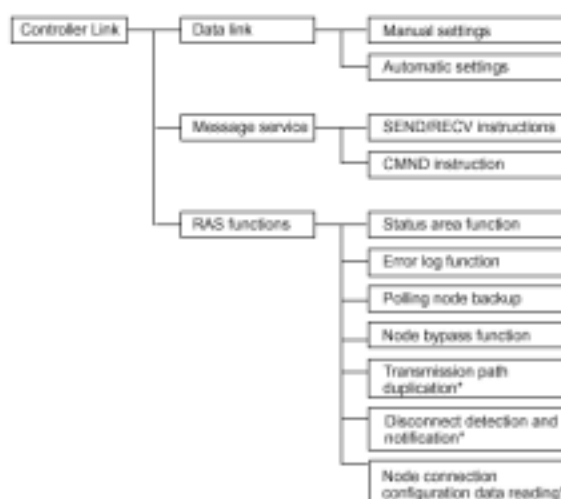
## ■ Flexible Media Options

- Shielded twisted pair (STP) for quick inexpensive installation.
- Fiber optic cable provides additional reliability and noise immunity.

## ■ Transparent Routing and Gateway

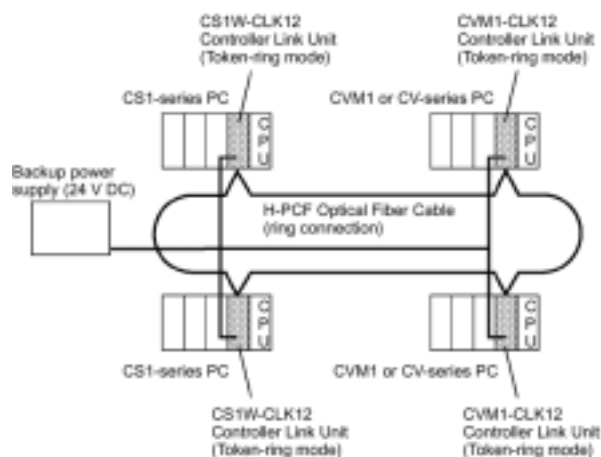
- Multi-level network configurations support 'transparent' Gateway and routing functions.
- Expand systems beyond a single network segment.
- Multi-level system functionality is supported by CX programmer, CX Server and FINS Gateway based software tools.
- Easy access to system information without complex programming and system modifications.

Summary of Controller Link Functions

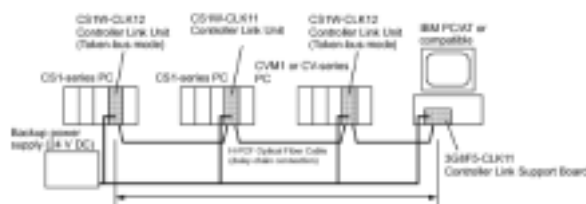


Note \*In token-ring mode only.

Back up Power Supply  
in Token Ring Fiber Configuration



Token Bus Configuration



# Specifications

Item	Shielded Twisted Pair	Fiber Optic Media	
Network Topology	Multi-drop Bus	200 Micron	62.5 micron
		Daisy Chain Bus (token), Token Ring	
Transmission Distance / Baud Rate Max. Distance Between Nodes	Variable Baud Rate w/ distance 2Mbps: 500M (1640 ft) 1Mbps: 800M (2624 ft) 500Kbps: 1KM (3280 ft)	20Km (65,600 ft) 2Mbps 800M (2624 ft)	30km 2 Mbps 2km 62.5/125 1km 50/125
Media	Shielded Twisted Pair 2 signal lines, 1 shield Belden # 9207	Omron Duplex Fiber Optic Cable 200 micron	62.5 / 125 50/125
Connections	CV/CVM1, C200H Alpha, CS1, CQM1H, Computers (ISA, PCI)	CV/CVM1, CS1, Computers (ISA, PCI)	
Maximum Number of Nodes	32	62	
Communications Functions	Data Link - Automatic or Custom settings available Message Service (Ladder Commands)		
Data Link Words Per Network	32,000 words maximum	62,000 words maximum	
Data Link Words Per Node	Automatic Transmission Area Per Node: 1000 words maximum Send/Receive (maximum words): C200HX/HG/HE, CQM1H, CV/CVM1: 8000 words max per unit CS1: 12000 words max per unit ISA / PCI Board: 32,000 words maximum Wire 62,000 words maximum Fiber Optic		
Message Length	2012 bytes maximum (including header), 1000 Words Data		
RAS Functions	Polling Node Back Up Function Power up self diagnostics Echo back and broadcast test Watchdog timer Error Log function	Polling Node Back Up Function Power up self diagnostics Echo back and broadcast test Watchdog timer Error Log function -Node Bypass – Aux. Power Supply -Redundant Transmission Path (Token Ring Only) -Loopback Test (Token Ring Only) -Media Failure detect and notification -Auto Read Node Connection	
Error Control	Manchester Code Check, CRC		
Standards	UL/CSA/CE		

## ■ Controller Link Network Service Boards (NSB) and Software

The following table outlines the compatibility issues and driver support software which is included with the purchase of each Network Service Board (NSB)

Item	ISA Board		PCI Board	
Media	Wire	Fiber Optic	Wire	Fiber Optic
Part Number	3G8F5-CLK21-E	3G8F5-CLK11-E	3G8F7-CLK21-E	3G8F7-CLK12-E 3G8F7-CLK52-E
Number Installed Per Computer	1 maximum		4 maximum	
Software Media	1.44 FDD	1.44 FDD	CDROM	CDROM
Package Contents	-ISA Board -Floppy Disk -Operation Manual W307 -Operation Manual W308 -Registration Card -Software License		-PCI Board -CDROM -Operation Manual -Comm Connector -Registration Card -Software License	-PCI Board -CDROM -Operation Manual -Fiber Bracket -Power Supply Connector -Switch Label -Software License
Computer Requirements	IBM PC/AT or Compatible CPU: 386 or higher Main Memory: 4MB minimum HDD: 2MB minimum free FDD: 1.44 required for installation		IBM PC/AT or compatible CPU: Intel Celeron 400MHz or better Main Memory: 32MB minimum Slots: 1 PCI Bus HDD: 70 MB minimum free CDROM: required for installation Display: VGA (640x480) minimum	
Compatible Operating Systems	For Libraries, IBM PC DOS Version 7.0 or MSDOS Version 6.2 (Windows 3.1, 95, 98, 2000, NT4 using FGW - Purchased separately)		For Libraries, Windows 98, 2000 NT4.0 (Service Pak 3 or later) (Windows 95, 98, 2000, NT4 using FGW - Purchased separately)	
Compatible Language	For Libraries, Microsoft C Version 7.0 Large Model (CLKMSC.LIB)		For Libraries, Microsoft Visual C++ Version 6.0 (Service Pak 3)	
Software Drivers and Utilities	-Controller Link Support Software (Optional functions are included with CX Programmer) -C Library (CLKMSC.LIB) -(FINS Gateway purchased separately)		-FINS Gateway Controller Link Runtime-Embedded Edition Version 3.0 (Full FGW Version 3.0 is optional) -PCI NSB Set Up and Diagnostic Utilities -C++ Library	
Included with NSB				

## ■ Controller Link Network Service Board Compatibility with Omron Software Tools

The following table outlines the compatibility issues between other Omron software tools and the Controller Link NSBs. Software version listed is the earliest board-compatible version. For information on software versions not listed, contact an Omron representative. This table is correct as of 5/01/01.

Item	ISA Board		PCI Board	
	Wire	Fiber Optic	Wire	Fiber Optic
Part Number	3G8F5-CLK21-E	3G8F5-CLK11-E	3G8F7-CLK21-E	3G8F7-CLK12-E 3G8F7-CLK52-E
CX Server	Version 1.5		Under Development	
CX Programmer	Version 1.2 (CX Server Ver. 1.5)		Under Development	
CX Motion	N/A.		N/A.	
CX Simulator	N/A.		N/A.	
CX Supervisor	Version 1.0 (CX Server Ver. 1.5)		Under Development	
CX Server LITE	Version 1.0 (CX Server Ver. 1.5)		Under Development	
CX Server OPC	Version 1.0 (CX Server Ver. 1.5)		Under Development	
CX Protocol	N/A.		N/A.	
CX Process	N/A.		N/A.	
Controller Link Support Software	Supported in Version 2.0		Not Supported. Use Utility Software included w/NSB.	
FINS Gateway	FGW Version 2.0 or Version 3.0		-FGW CLK Version 3.0 Embedded is included with purchase of NSB. -Requires FGW Version 3.0 Runtime License purchase to add Host Link, Ethernet, Sysmac Link, etc. -FGW V2.0 and V3.0 can not be installed on the same computer.	
Compolet	Version x.x (FGW V 2.0 or 3.0)		Version 2.61 includes FGW Version 3.0 Runtime License	
Value Aid Pak	Version x.x (FGW Version 2.0 or 3.0)		Version x.xx includes FGW Version 3.0 Runtime License.	
PLC Reporter	Supported.		Version x.xx includes FGW Version 3.0 Runtime License.	
Wonderware Intellution	-V2.0 Embedded Edition included from ISV -V3.0 may be purchased separately from Omron. -Uninstall Version 2.0 first -No change required by ISV.		-Not supported by FGW Version 2.0 -V3.0 must be purchased separately from Omron. -Uninstall V2.0 first. Functions limited to V2.0. -No change required by ISV.	

## Ordering Information

### ■ Controller Link Modules, Computer Network Service Boards (NSBs)

Media Type	Network Connection	Description	Part Number
Wire (STP= Shielded Twisted Pair)	CV/CVM1 Series	Controller Link Module, STP	CVM1-CLK21
	C200HX/HG/HE Alpha	Controller Link Module, STP	C200HW-CLK21
		Bus Connector -for connecting 1 CLK21	C200H-CE001
		Bus Connector -for connecting 2 CLK21	C200H-CE002
		Bus Connector -for connecting 1 CLK21 and PC Card Module	C200H-CE012
		Comm Board, for Bus Connector	C200HW-COM01
		Comm Board w/RS232, For Bus Connector	C200HW-COM04
	CS1 Series	Controller Link Module, Wire (STP)	CS1W-CLK21
	CQM1H Series	Controller Link Module, Wire (STP)	CQM1H-CLK21
	Computer - ISA	Controller Link NSB, ½ Slot ISA, Wire	3G8F5-CLK21-E
	Computer - PCI	Controller Link NSB, ½ Slot PCI, Wire	3G8F7-CLK21-E
Fiber Optic (200 Micron) (See Note 1.)	CV/CVM1	Controller Link Module, H-PCF 200 micron	CVM1-CLK12
	CS1	Controller Link Module, H-PCF 200 micron	CS1W-CLK12
	Computer - ISA	Controller Link NSB, ½ slot, 200 micron	3G8F5-CLK11
	Computer - PCI	Controller Link NSB, ½ slot, 200 micron	3G8F7-CLK12-E
Fiber Optic (62.5/125 50/125 Micron) (See Note 3.)	CV/CVM1	Controller Link Module, 62.5 Fiber	CVM1-CLK52
	CS1	Controller Link Module, 62.5 Fiber	CS1W-CLK52
	Computer - PCI	Controller Link NSB, ½ slot, 62.5 micron	3G8F7-CLK52-E

**Note:**

1. Fiber optic cable and connectors not included with Modules. Each module requires 2 connectors purchased separately from Omron. See table below for information.
2. Consult Omron for Network configuration assistance.
3. 62.5 Fiber optic Cable and Connectors not provided by Omron. Must be purchased separately. Cable assemblies must be assembled, installed and certified by a qualified provider.

### ■ Literature

Item	Description	Part Number
Operation Manual	Controller Link Wire Modules, CS1, C200HW, CVM1, CQM1H	W309
Operation Manual	Controller Link Fiber Optic Modules, CS1, CVM1	W370
Operation Manual	Controller Link Network Support Boards - ISA	W307
Operation Manual	Controller Link Network Support Boards - PCI	W383
Operation Manual	Controller Link Support Software V 2.0	W369

## ■ H-PCF 200 Micron Fiber Optic Cable, Connectors and Termination Kit

Item	Type	Description	Part Number
Fiber Optic Cable	Zipcord	Fiber Cable, 200 micron, 50M, Zipcord	FCS-HCP-ZIPCORD-50M
	Duplex	Fiber Cable, 200 micron, 50M, Duplex	FCS-HCP-DUPLEX-50M
		Fiber Cable, 200 micron, 100M, Duplex	FCS-HCP-DUPLEX-100M
		Fiber Cable, 200 micron, 250M, Duplex	FCS-HCP-DUPLEX-250M
		Fiber Cable, 200 micron, 500M, Duplex	FCS-HCP-DUPLEX-500M
		Fiber Cable, 200 micron, 1000M, Duplex	FCS-HCP-DUPLEX-1000M
Connectors (2 Required per Module)		Connector Kit, Full Lock	S3200-COCF2011
		Connector Kit, Half Lock	S3200-COCF2511
		Inline Adapter	S3200-COAT2000
Termination Kit		Termination Kit, 200 Micron Cable	FCS-PK230-OMRON-JK-6

- Note:**
1. Assembly of Fiber Optic Cables and connectors requires special termination procedures.
  2. Tested and Certified Pre-assembled Fiber Optic Cables are available. Please contact Omron for additional information.
  3. Zip cord Fiber Cable is for use in cable trays. It is not recommended for pulling through conduit.
  4. Duplex cable has an external jacket and kevlar stress members, designed for added strength. There are 2 additional members used to assist in pulling cable through conduit.
  5. For additional information regarding installation of Fiber Optic Cable or connectors, please contact Omron.

## ■ Controller Link Support Software

Item	Description	Part Number
Support Software	Controller Link Support Software Version 2.0 Set Custom Data Link, Routing Table, Network Diagnostics, status, error logs, Use RS232 or ISA NSB Interface to the Network Not Compatible with PCI NSB's ( Use Utility software supplied with PCI NSB) Works with any CLK Module, or ISA NSB's Windows 95, 98 compatible only	C200HW-ZW3AT2-E-V2
CX Programmer	CX Programmer (Version 2.0) Includes Functionality of Controller Link Support Software Not compatible with PCI NSB's (under development) See Omron Software Compatibility Table for details.	WS02-CXPC1-EVX.X

## ■ Omron Network/Communications Interface Software

Item	Description	Part Number
API (Application Program Interface)	FINS Gateway Version 3.0 Runtime	See Note
CX Programmer	CX Programmer	WS02-CXPC1-EVX.X

**Note:** For more information on embedded communications interfaces for all Omron Networks, please contact Omron Product Marketing.



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