



# 1756 ControlLogix Communication Modules Specifications

Catalog Numbers Standard ControlLogix Catalog Numbers: 1756-CN2, 1756-CN2R, 1756-CNB, 1756-CNBR, 1756-DNB, 1756-DHRIO, 1756-DH485, 1756-EN2F, 1756-EN2T, 1756-EN2TP, 1756-EN2TR, 1756-EN3TR, 1756-EN4TR, 1756-ENBT, 1756-EWEB, 1756-RIO, 1756-SYNCH, 1756-TIME

ControlLogix 1756 Communication Module Conformal Coated Catalog Numbers: 1756-CN2RK, 1756-EN2FK, 1756-EN2TK, 1756-EN2TPK, 1756-EN2TRK, 1756-EN4TRK, 1756-ENBTK, 1756-TIMEK

ControlLogix Extended Environment Module Catalog Numbers: 1756-CN2RXT, 1756-DHRIOXT, 1756-EN2TPXT, 1756-EN2TXT, 1756-EN2TRXT, 1756-EN4TRXT

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## Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

<b>Topic</b>	<b>Page</b>
1756-EN4TR modules support Parallel Redundancy Protocol (PRP) with firmware revision 4.001.	4
Updated the 1756-EN2F EtherNet/IP communication rate specification.	6
When the 1756-RIO module is used as a remote I/O adapter, the chassis must include a ControlLogix controller.	17

## Available Communication Modules

Network	Cat. No.	Description	Page
EtherNet/IP™	1756-EN2F, 1756-EN2T, 1756-EN2TK, 1756-EN2TP, 1756-EN2TPK, 1756-EN2TR, 1756-EN2TRK, 1756-EN3TR, 1756-EN3TRK, 1756-EN4TR, 1756-EN4TRK, 1756-ENBT	EtherNet/IP bridge	4
	1756-EN2TPXT, 1756-EN2TXT, 1756-EN2TRXT, 1756-EN4TRXT	ControlLogix-XT™ Ethernet/IP bridge	4
DeviceNet®	1756-DNB/E	DeviceNet bridge	14
Data Highway Plus™	1756-DHRIO	Data Highway Plus/Remote I/O module	16
	1756-DHRIOXT	ControlLogix-XT, Data Highway Plus/Remote I/O module	16
Remote I/O	1756-DHRIO	Data Highway Plus/Remote I/O module	16
	1756-RIO/B	Remote I/O module	16
	1756-DHRIOXT	ControlLogix-XT, Data Highway Plus/Remote I/O module	16
DH-485 module	1756-DH485	DH-485 module	21
SynchLink™	1756-SYNCH	SynchLink fiber-optic communication link	23

## Communication Connections

A ControlLogix® system uses connections to establish communication links between devices. The types of connections include the following:

- Controller-to-local I/O modules or local communication modules
- Controller-to-remote I/O or remote communication modules
- Controller-to-remote I/O (rack-optimized) modules
- Produced and consumed tags
- Messages
- Controller access with the Studio 5000® environment
- Controller access with RSLinx® software for HMI or other applications

You indirectly determine the number of connections the controller uses by configuring the controller to communicate with other devices in the system. The limit of connections ultimately resides in the communication module you use for the connection. If a message path routes through a communication module, the connection that is related to the message also counts towards the connection limit of that communication module.

## EtherNet/IP Network



The Ethernet Industrial (EtherNet/IP) network protocol is an open industrial-networking standard that supports both real-time I/O messaging and message exchange. The EtherNet/IP network uses off-the-shelf Ethernet communication chips and physical media.

For these requirements	Select this interface
Control I/O modules and drives Act as an adapter for I/O on remote EtherNet/IP links Communicate with other EtherNet/IP devices (messages and HMI) Bridge EtherNet/IP links to route messages to devices on other networks	1756-EN2F, 1756-EN2FK 1756-EN2T, 1756-EN2TK, 1756-EN2TXT 1756-EN2TP, 1756-EN2TPK, 1756-EN2TPXT 1756-EN2TR, 1756-EN2TRK, 1756-EN2TRXT 1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT 1756-ENBT, 1756-ENBTK
Support Device Level Ring (DLR) and linear topologies	1756-EN2TR, 1756-EN2TRK, 1756-EN2TRXT 1756-EN3TR, 1756-EN3TRK 1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT
Support Parallel Redundancy Protocol (PRP)	1756-EN2TP, 1756-EN2TPK, 1756-EN2TPXT 1756-EN4TR <sup>(1)</sup> , 1756-EN4TRK <sup>(1)</sup> , 1756-EN4TRXT <sup>(1)</sup>
Support redundant adapters <sup>(2)</sup>	1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT
Provide control in environments where temperatures range from -25...+70 °C (-13...+158 °F)	1756-EN2TPXT 1756-EN2TRXT 1756-EN2TXT 1756-EN4TRXT
Secure access to a control system from within the plant network	1756-EN4TR, 1756-EN4TRK, 1756-EN4TRXT

(1) 1756-EN4TR supports PRP with revision 4.001 and higher firmware.

(2) Redundant adapters require version 3.x and higher firmware.

For more information on redundant adapters and Ethernet, see the ControlLogix EtherNet/IP Network User Manual, publication [1756-UM004](#).

## EtherNet/IP Network Specifications

Table 1 - ControlLogix EtherNet/IP Connections Specifications<sup>(1)</sup>

Cat. No.	Connections		CIP Unconnected Messages (backplane + Ethernet)
	TCP	CIP <sup>(2)</sup>	
1756-ENBT	64	128	64 + 64
1756-EN2F	128	256	128 + 128
1756-EN2T	128	256	128 + 128
1756-EN2TP	128	256	128 + 128
1756-EN2TR	128	256	128 + 128
1756-EN3TR	128	256	128 + 128
1756-EN4TR	512	1000 I/O 528 <sup>(3)</sup>	256+256

(1) There are 1000 CIP™ I/O connections and 528 CIP messaging connections.

(2) CIP connections can be used for all explicit or all implicit applications. For example, a 1756-ENBT module has a total of 128 CIP connections that can be used for any combination of connections.

(3) There are 1000 explicit connections and 528 implicit connections.

**Table 2 - ControlLogix EtherNet/IP Data Specifications<sup>(1)</sup>**

Cat. No.	Produced/Consumed Tags		Socket Services	SNMP Support (password required)	Duplicate IP Detection (starting revision)
	Number of Multicast Tags, Max <sup>(2)</sup>	Unicast Available in RSLogix 5000 Software			
1756-EN2F	32	Version 16.03.00 or later	Yes	Yes	All Revisions
1756-EN2T		Version 16.03.00 or later	Yes		
1756-EN2TP		Version 24.00.00 or later	Yes		
1756-EN2TR		Version 17.01.02 or later	Yes		
1756-EN3TR		Version 18.02.00 or later	Yes		
1756-EN4TR		Version 24.00.00 or later	Yes		
1756-ENBT		Version 16.03.00 or later	No		Revision 3.3

(1) Includes the K conformal coating catalog numbers and the XT extreme environment catalog numbers.

(2) Each controller can send a maximum of 32 multicast produced tags to one single consuming controller. If these same tags are sent to multiple consumers, the maximum number is 31.

**Table 3 - ControlLogix EtherNet/IP Specifications<sup>(1)</sup>**

Cat. No.	Firmware Revision	RSLogix 5000® Software Version	RSLinx® Software Version	Packet Rate Capacity (packets/ second) <sup>(2)</sup>		Support for Extended Environment <sup>(3)</sup>	Integrated Motion on the EtherNet/IP Network Axes
				I/O	HMI/MSG		
1756-ENBT	Any	8.02.00 or later	2.30 or later	5000	900	No	—
1756-EN2F	2.x	15.02.00 or later	2.51 or later	10,000	2000	No	—
	3.6 or later	18.02.00 or later <sup>(4)</sup>		25,000 <sup>(5)</sup>			Up to 8 axes supported <sup>(5)</sup>
1756-EN2T	2.x or earlier	15.02.00 or later	2.51 or later	10,000		No	—
	3.6 or later	18.02.00 or later <sup>(4)</sup>		25,000 <sup>(5)</sup>			Up to 8 axes supported <sup>(5)</sup>
1756-EN2TXT	2.x	15.02.00 or later	2.51 or later	10,000		Yes	—
	3.6 or later	18.02.00 or later <sup>(4)</sup>		25,000 <sup>(5)</sup>			Up to 8 axes supported <sup>(5)</sup>
1756-EN2TP	Any	24.00.00 or later <sup>(4)</sup>	4.10 or later	25,000 <sup>(5)</sup>		No	Up to 8 axes supported <sup>(5)</sup>
1756-EN2TPXT	10.x or later	24.00.00 or later	4.10 or later	25,000 <sup>(5)</sup>		Yes	Up to 8 axes supported <sup>(5)</sup>
1756-EN2TR	2.x	17.01.02 or later	2.56 or later	10,000		No	—
	5.x or later	18.02.00 or later <sup>(4)</sup>		25,000 <sup>(5)</sup>			Up to 8 axes supported <sup>(5)</sup>
1756-EN2TRXT	5.028 or later	20.01.00 or later	2.56 or later	25,000 <sup>(5)</sup>	Yes	Up to 8 axes supported <sup>(5)</sup>	
1756-EN3TR	3.6 or later	18.02.00 or later <sup>(4)</sup>	2.56 or later	25,000 <sup>(5)</sup>	No	Up to 128 axes supported <sup>(5)</sup>	
1756-EN4TR	Any	24.00.00 or later <sup>(6)</sup>	4.10 or later	<ul style="list-style-type: none"> <li>50,000 without CIP Security™</li> <li>25,000 with integrity</li> <li>15,000 with integrity and confidentiality</li> </ul>	<ul style="list-style-type: none"> <li>3700 without CIP Security</li> <li>2700 with integrity</li> <li>1700 with integrity and confidentiality</li> </ul>	No	Up to 256 axes supported <sup>(5)</sup>
1756-EN4TRXT	Any	24.00.00 or later <sup>(6)</sup>	4.10 or later	<ul style="list-style-type: none"> <li>50,000 without CIP Security</li> <li>25,000 with integrity</li> <li>15,000 with integrity and confidentiality</li> </ul>	<ul style="list-style-type: none"> <li>3700 without CIP Security</li> <li>2700 with integrity</li> <li>1700 with integrity and confidentiality</li> </ul>	Yes	Up to 256 axes supported <sup>(5)</sup>

(1) Includes the K conformal coating catalog numbers.

(2) I/O numbers are maximums; they assume no HMI/MSG. HMI/MSG numbers are maximums, they assume no I/O. Packet rates vary depending on packet size. For more details, see Troubleshoot EtherNet/IP Application Technique, publication [ENET-AT003](#), and the EDS file for a specific catalog number.

(3) Module operates in a broad temperature spectrum, -20...70 °C (-4...158 °F), and meets ANSI/ISA-S71.04-1985 Class G1, G2 and G3, as well as cULus, Class 1 Div 2, C-Tick, CE, ATEX Zone 2 and SIL 2 requirements for increased protection against salts, corrosives, moisture/condensation, humidity, and fungal growth.

(4) This version is required to use CIP Sync™ technology, Integrated Motion on the EtherNet/IP Network, or Exact Match keying.

(5) This value assumes the use of a1756-L8x or 1756-L7x ControlLogix controller. For a 1756-L6x ControlLogix controller, see ControlLogix Controllers User Manual, publication [1756-UM001](#).

(6) CIP Security requires FactoryTalk® Linx version 6.11.00 or later.

**Table 4 - Technical Specifications - 1756 EtherNet/IP Modules<sup>(1)</sup>**

Attribute	1756-EN2F/B 1756-EN2F/C	1756-EN2T/D, 1756-EN2TP/A	1756-EN2TR/C, 1756-EN3TR/B	1756-EN4TR/A	1756-ENBT/A
EtherNet/IP communication rate	100 Mbps, no auto-negotiation	10/100 Mbps		10/100 Mbps 1 Gbps	10/100 Mbps
Current draw @ 5.1V DC	1.2 A	1 A		1.2 A	700 mA
Current draw @ 24V DC	3 mA				
Power dissipation	6.2 W	5.1 W		6.12 W	3.7 W
Thermal dissipation	21.28 BTU/hr	17.4 BTU/hr		20.9BTU/Hr	12.6 BTU/hr
Isolation voltage	30V (continuous), basic insulation type, USB to backplane Type tested at 980V AC for 60 s	30V (continuous), basic insulation type, Ethernet to backplane, USB to Backplane, and USB to Ethernet <sup>(2)</sup> Type tested at 980V AC for 60 s		30V (continuous), basic insulation type, Ethernet to backplane, USB to backplane, and USB to Ethernet Type tested at 860V AC for 60 s	30V (continuous), basic insulation type, Ethernet network to backplane Type tested @ 707V DC for 60 s
Slot width	1				
Module location	Chassis-based, any slot				
Chassis	1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17				
Power supply, standard	1756-PA72, 1756-PA75, 1756-PB72, 1756-PB75, 1756-PC75, 1756-PH75				
Power supply, redundant	1756-PA75R, 1756-PB75R, 1756-PSCA2				
Ethernet port	1 Ethernet fiber	1 Ethernet RJ45 Category 5	2 Ethernet RJ45 Category 5	2 Ethernet RJ45 Category 5E	1 Ethernet RJ45 Category 5
Ethernet cable	Multimode fiber, LC connector	802.3 compliant shielded or unshielded twisted-pair			
USB port <sup>(3)</sup>	USB full speed (12 Mbps)				–
Wiring category <sup>(4)</sup>	3 - on USB ports	2 - on Ethernet ports 3 - on USB ports			2 - on Ethernet ports
North American temp code	T4A				
ATEX temp code	T4				
IECEX temp code	T4				
Enclosure type rating	None (open-style)				
Transmitter launch power at Beginning of Life (BOL), min Allow -1 dB at End of Life (EOL)	-19 dBm into 62.5/125 $\mu$ m fiber, – = 0.275 -22.5 dBm into 50/125 $\mu$ m fiber, – = 0.20	–			

(1) Includes the K conformal coating catalog numbers.

(2) Applies only to these modules/series: 1756-EN2T/D, 1756-EN2TR/C, 1756-EN3TR/B.

(3) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.

(4) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 5 - Environmental Specifications - 1756 EtherNet/IP Modules<sup>(1)</sup>**

Attribute	1756-EN2F/B 1756-EN2F/C	1756-EN2T/D, 1756-EN2TP/A	1756-EN2TR/C, 1756-EN3TR/B	1756-EN4TR/A	1756-ENBT/A
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C < Ta < 60 °C (32 °F < Ta < 140 °F)			Series C Chassis: 0 ≤ Ta ≤ +60 °C (+32 ≤ Ta ≤ +140 °F)  Series B Chassis: 0 ≤ Ta ≤ +50 °C (+32 ≤ Ta ≤ +122 °F)	0 °C < Ta < 60 °C (32 °F < Ta < 140 °F)
Temperature, surrounding air, max	60 °C (140 °F)			Series C Chassis: 60 °C (140 °F) Series B Chassis: 50 °C (122 °F)	60 °C (140 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40 °C < Ta < 85 °C (-40 °F < Ta < 185 °F)				
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing				
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz				
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g				
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g	30 g <sup>(2)</sup>	30 g <sup>(2)</sup>	30 g	50 g
Emission CISPR 11 (IEC 61000-6-4)	Class A				
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges				
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...6000 MHz			10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 1V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	—	±3 kV at 5 kHz on Ethernet ports <sup>(2)</sup>		±3 kV at 5 kHz on Ethernet ports	±2 kV at 5 kHz on Ethernet ports
Surge transient immunity IEC 61000-4-5	—	±2 kV line-earth (CM) on Ethernet ports			
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz				

(1) Includes the K conformal coating catalog numbers.

(2) Applies only to these modules/series: 1756-EN2T/D, 1756-EN2TR/C, 1756-EN3TR/B.

**Table 6 - Certifications - 1756 EtherNet/IP Modules<sup>(1)</sup>**

Certification (2)	1756-EN2T/D 1756-EN2TP/A	1756-EN2F/B 1756-EN2F/C	1756-EN2TR/C, 1756-EN3TR/B	1756-ENBT/A	1756-EN4TR/A
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.				UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CSA	CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.				—
CE	European Union 2004/108/IEC EMC Directive, compliant with: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)				
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions				
ATEX	European Union 94/9/EC ATEX Directive, compliant with the following: EN 60079-15; Potentially Explosive Atmospheres, Protection "n" EN 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc X DEMKO13ATEX1325026X (1756-EN2T/C only)				European Union 2014/34/EU ATEX Directive, compliant with the following: EN IEC 60079-0 General Requirements; EN 60079-7 Explosive Atmospheres, Protection "e"; II 3 G Ex EC IIC T4 Gc DEMKO18ATEX2139X
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations				
IECEX	—	IECEX System, compliant with: IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" IEC 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc IECEX UL 14.0008X	—	IECEX System, compliant with: IEC 60079-0; General Requirements IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" IEC 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc IECEX UL 14.0008X	IECEX System, compliant with the Standards IEC 60079-0, Edition 7 General Requirements, and 60079-7, Edition 5.1, Explosive Atmospheres, Protection "e"; II 3 G Ex EC IIC T4 Gc IECEXUL 18.0130X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3				
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation				
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications				

(1) Includes the K conformal coating catalog numbers.

(2) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.



**Table 7 - Technical Specifications - 1756 EtherNet/IP-XT Modules**

Attribute	1756-EN2TXT/D, 1756-EN2TRXT/C, 1756-EN2TPXT/A	1756-EN4TRXT/A
EtherNet/IP communication rate	10/100 Mbps	10/100 Mbps 1 Gbps
Logix communication connections	256	1000 I/O 528 <sup>(1)</sup>
TCP communication connections	128	512
Current draw @ 5.1V DC	1 A	1.2 A
Power dissipation	5.1 W	6.12 W
Thermal dissipation	17.4 BTU/hr	20.9BTU/Hr
Isolation voltage	30V (continuous), Basic Insulation Type, Ethernet to Backplane, USB to Backplane, and USB to Ethernet	
Slot width	1	
Module location	Chassis-based, any slot	
Chassis	1756-A4LXT, 1756-A5XT, 1756-A7XT, 1756-A7LXT	1756-A4LXT/C, 1756-A5XT/C, 1756-A7XT/C, 1756-A7LXT/C
Power supply, standard	1756-PAXT, 1756-PBXT	
Power supply, redundant	1756-PAXTR, 1756-PBXTR	
Ethernet port	2 Ethernet RJ45 Category 5	
Ethernet cable	802.3 compliant shielded or unshielded twisted-pair	
USB port <sup>(2)</sup>	USB full speed (12 Mbps)	
Wiring category <sup>(3)</sup>	2 - on Ethernet ports 3 - on USB ports	
North American temperature code	T4A	
ATEX temperature code	T4	
IECEX temperature code	T4	
Enclosure type rating	None (open-style)	

(1) There are 1000 CIP I/O connections and 528 CIP messaging connections.

(2) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.

(3) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 8 - Environmental Specifications - 1756 EtherNet/IP-XT Module**

Attribute	1756-EN2TXT/D, 1756-EN2TRXT/C, 1756-EN4TRXT/A
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25 ≤ Ta ≤ +70 °C (-13 ≤ Ta ≤ +158 °F)
Temperature, surrounding air, max	70 °C (158 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...85 °C (-40...185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged damp heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Emissions CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...6000 MHz

**Table 8 - Environmental Specifications - 1756 EtherNet/IP-XT Module (Continued)**

Attribute	1756-EN2TXT/D, 1756-EN2TRXT/C, 1756-EN4TRXT/A
EFT/B immunity IEC 61000-4-4	±3 kV at 5 kHz on Ethernet ports <sup>(1)</sup>
Surge transient immunity IEC 61000-4-5	±2 kV line-earth (CM) on Ethernet ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz

(1) Applies only to these modules/series: 1756-EN2TXT/D, 1756-EN2TRXT/C 1756-EN4TXT.

**Table 9 - Certifications - 1756 EtherNet/IP-XT Module**

Certification <sup>(1)</sup>	1756-EN2TXT/D, 1756-EN2TRXT/C	1756-EN4TRXT/A
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.	
CE	European Union 2004/108/IEC EMC Directive, compliant with the following: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)	
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions	
Ex	European Union 94/9/EC ATEX Directive, compliant with the following: EN 60079-15; Potentially Explosive Atmospheres, Protection "n" EN 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc X	European Union 2014/34/EU ATEX Directive, compliant with the following: EN 60079-7; Explosive Atmospheres, Protection "e" EN 60079-0; General Requirements II 3 G Ex EC IIC T4 Gc
FM	—	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3	
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications	

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

# EtherNet/IP Module Diagrams

Figure 1 - 1756-EN2T

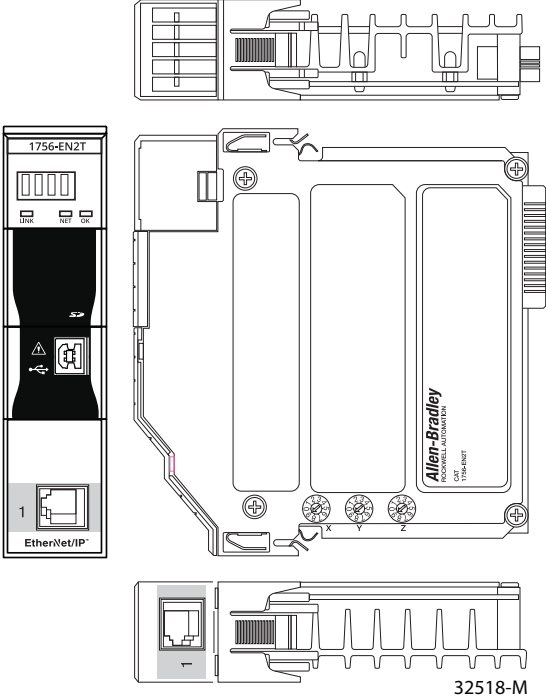


Figure 2 - 1756-EN2TP

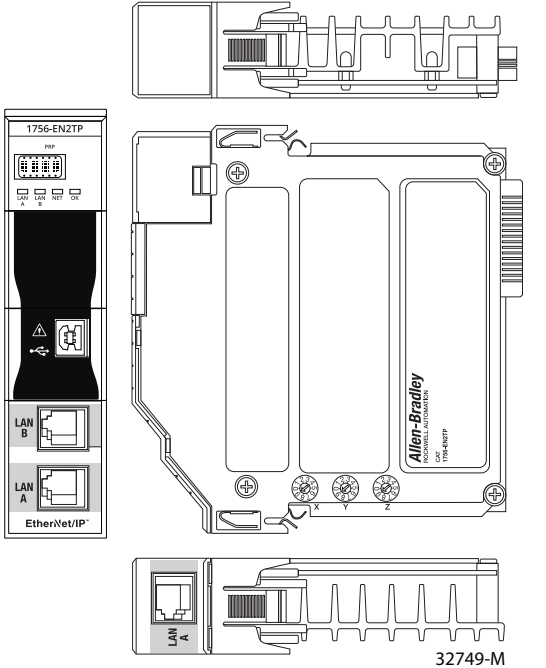


Figure 3 - 1756-EN2TR, 1756-EN3TR

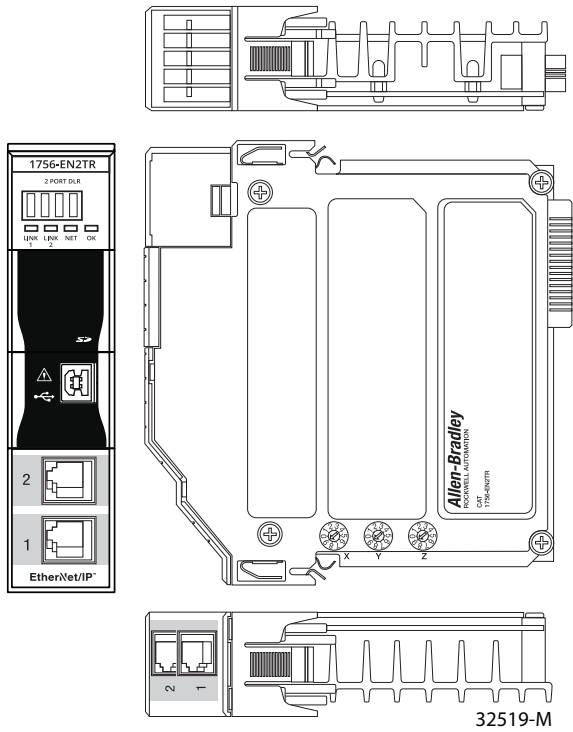
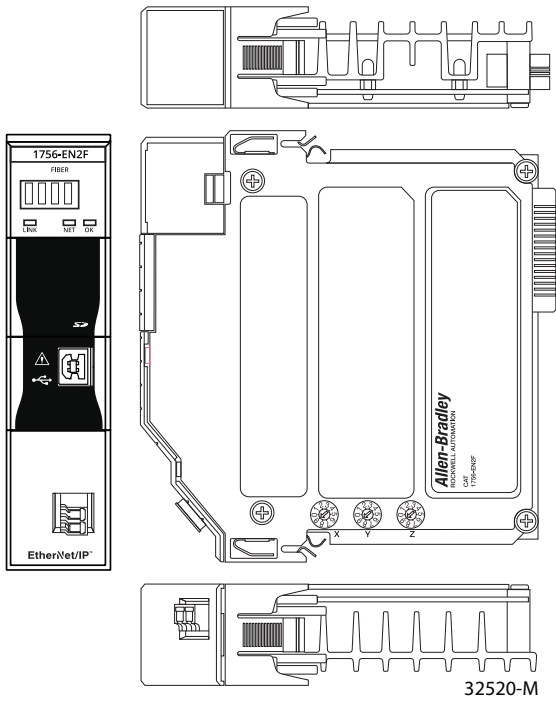
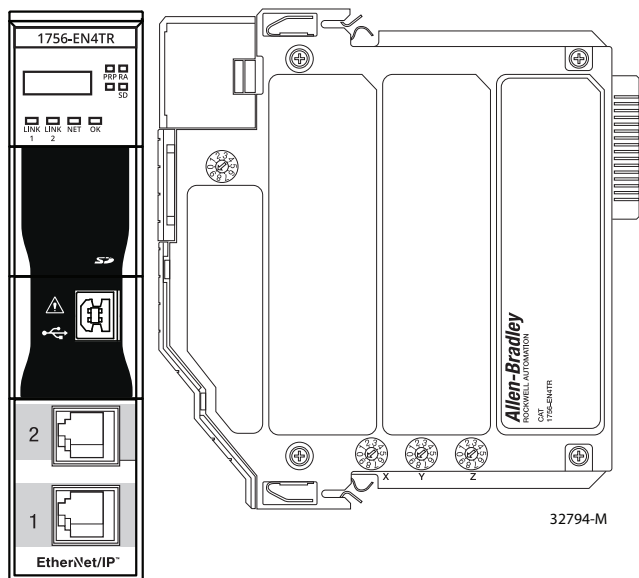


Figure 4 - 1756-EN2F



**Figure 5 - 1756-EN4TR**



## Accessories—Ethernet Network

Cat. No.	Description	Specifications
1585J-M8PBJM-x	Ethernet RJ45 patchcord x = 2 (2 m), 5 (5 m), or 10 (10 m)	8-conductor, teal riser PVC cable (flex-rated cable also available)
1585J-M8CC-H	RJ45 insulation displacement connector (IDC)	0.128...0.325 mm <sup>2</sup> (26...22 AWG), Cat. 6, IDC, no tool required
1585J-M8CC-C	RJ45 crimp connector with boot, qty = 50 pieces	0.128...0.205 mm <sup>2</sup> (26...24 AWG), Cat. 5e, requires crimp tool for assembly
1585A-JCRIMP	Crimp tool	—
9300-RADES	Remote access dial-in kit	56 Kbps modem connection to devices on an Ethernet network

## Stratix Switches

To manage real-time control and information flow throughout the manufacturing and IT enterprise, Rockwell Automation offers a full portfolio of industrial Ethernet switches and media, including a line of Stratix® switches integrated with Cisco® technology. The Stratix line of switches includes modular managed, fixed managed, and unmanaged switches.

For detailed specifications for Stratix switches, see Stratix Ethernet Switch Specifications Technical Data, publication [1783-TD001](#).

## DeviceNet Network



The DeviceNet network is open, providing connections between simple industrial devices, such as sensors and actuators, and higher-level devices, such as controllers and computers. The DeviceNet network uses the Common Industrial Protocol (CIP) to control, configure, and collect data for industrial devices.

**Table 10 - Technical Specifications - 1756-DNB DeviceNet Module**

Attribute	1756-DNB/E
DeviceNet communication rate	125 Kbps (500 m max) 250 Kbps (250 m max) 500 Kbps (100 m max)
Number of nodes, max	64
Current draw @ 5.1V DC	400 mA
Current draw @ 24V DC	0 mA
DeviceNet current draw @ 24V DC	60 mA
DeviceNet voltage range	11...25V DC CL 2/SELV
Power dissipation	3.5 W
Thermal dissipation	11.9 BTU/hr
Isolation voltage	50V (continuous), basic insulation type, DeviceNet network to backplane Type tested at 853V AC for 60 s No isolation between USB and backplane
Slot width	1
Module location	Chassis-based, any slot
Chassis	1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17
Power supply, standard	1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B
Power supply, redundant	1756-PA75R, 1756-PB75R, 1756-PSCA2
DeviceNet power	To comply with the CE Low Voltage Directive (LVD), the DeviceNet network must be powered from a source compliant with the safety extra low voltage (SELV) or protected extra low voltage (PELV). To comply with UL restrictions, the DeviceNet network must be powered from a source compliant with Class 2 or limited voltage/current.
DeviceNet port	1 DeviceNet open-style 5- or 10-pin linear plug
DeviceNet connector torque	0.56...0.79 N•m (5...7 lb•in)
USB port <sup>(1)</sup>	USB full speed (12 Mbps)
Wiring category <sup>(2)</sup>	1 - On DeviceNet ports 3 - On USB ports
North American temperature code	T4A
IEC temperature code	T4
Enclosure type rating	None (open-style)

(1) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.

(2) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#). Refer to the DeviceNet Media Design and Planning Guide, publication [DNET-UM072](#), for information specific to your DeviceNet network.

**Table 11 - Environmental Specifications - 1756-DNB DeviceNet Module**

Attribute	1756-DNB/E
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...60 °C (32...140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing

**Table 11 - Environmental Specifications - 1756-DNB DeviceNet Module**

Attribute	1756-DNB/E
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions CISPR 11 (IEC 61000-6-4):	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	±3 kV at 5 kHz on DeviceNet ports
Surge transient immunity IEC 61000-4-5	±2 kV line-earth (CM) on DeviceNet ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz

**Table 12 - Certifications - 1756-DNB DeviceNet Module**

Certification <sup>(1)</sup>	1756-DNB/E
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CSA	CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.
CE	European Union 2004/108/IEC EMC Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc X</li> </ul>
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
DeviceNet	ODVA conformance tested to DeviceNet specifications

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

## Accessories—DeviceNet Network

Cat. No.	Description
KwikLink™ Lite flat media	KwikLink™ Lite flat media is a newer, ODVA-approved solution for wiring DeviceNet networks. Drop-lines for connecting nodes are added by using the KwikLink Lite two-piece connectors. This cable system supports the intermixing of DeviceNet cable types (thin-round with flat). All of the KwikLink Lite connectors provide insulation displacement technology with reduced assembly time.
KwikLink flat media	The KwikLink flat media system provides a modular cabling method with its flat four-wire cable and Insulation Displacement Connectors (IDCs). The KwikLink system allows nodes to be added to the network without severing the trunkline. Cutting or stripping of the trunkline is eliminated, as is the need for predetermined cable lengths.
Round media	Round trunk cable is available in bulk spools or as pre-molded patchcords in varying lengths. A wide variety of rugged, durable DeviceNet components is available for use in round trunk systems. Stainless steel versions of round cable system components are also available: <ul style="list-style-type: none"> <li>• Thick-trunk round media systems use thick cable for maximum DeviceNet trunk line length.</li> <li>• Round media thin-trunk systems use thin cable to reduce maximum trunk line distances with a more compact and cost-effective installation for some applications. Thin-cable outer jacket material is TPE for additional chemical resistance.</li> </ul>

For more information, see the DeviceNet Media User Manual, publication [DNET-UM072](#).

## DH+ and Remote I/O Networks

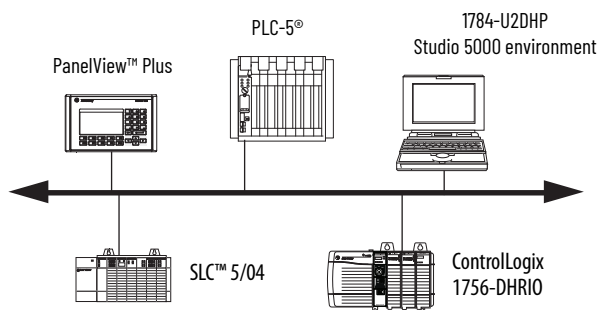


The Data Highway Plus network supports messaging between devices. The remote I/O-Link connects to remote I/O chassis and other intelligent devices.

The 1756-DHRIO module supports messaging between devices on DH+™ networks. The remote I/O functionality enables the module to act as a scanner for transferring digital and block transfer data to and from remote I/O devices.

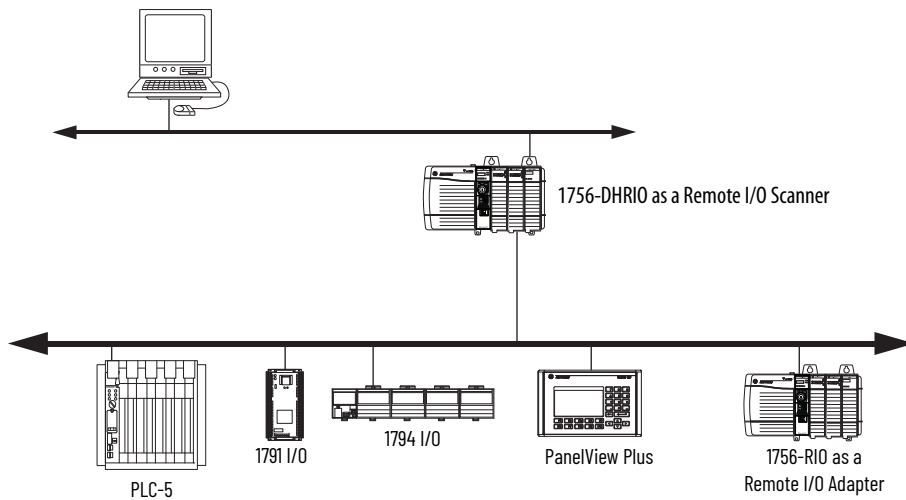
The 1756-RIO module can act as a scanner or adapter on a remote I/O network. In addition to digital and block transfer data, the 1756-RIO module transfers analog and specialty data without message instructions.

## Example Configuration—DH+ Network





## Example Configuration—Remote I/O Network



**Table 13 - Technical Specifications - 1756 DH+ and Remote I/O Modules**

Attribute	1756-DHRIO/E	1756-RIO/B
Communication rate	57.6 Kbps, 115.2 Kbps, 230.4 Kbps	
Remote I/O communication	Remote I/O scanner only 32 logical rack connections per remote I/O channel 16 block transfer connections per remote I/O channel	Remote I/O scanner or adapter <sup>(1)</sup> 32 physical racks (0...76), any combination of rack size and block transfers
Connections supported, max	32	10 scheduled I/O
Current draw @ 5.1V DC	850 mA	450 mA
Current draw @ 24V DC	1.7 mA	5 mA
Power dissipation	4.5 W	2.5 W
Thermal dissipation	15.4 BTU/hr	8.5 BTU/hr
Isolation voltage	30V (continuous), basic insulation type, DHRIO A/B to backplane, and DHRIO A/programming port to DHRIO B No isolation between DHRIO A and Programming port Type tested at 877V DC for 60 s	50V (continuous), basic insulation type, RIO communication lines to backplane Type tested at 500V AC for 60 s
Slot width	1	
Module location	Chassis-based, any slot	
Chassis	1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17	
Power supply, standard	1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B	
Power supply, redundant	1756-PA75R, 1756-PB75R, 1756-PSCA2	
Ports	2, individually selectable for DH+ or remote I/O	1 for remote I/O
Screw terminal torque	—	0.5...0.6 N•m (5...7 lb•in)
Wire size	0.519 mm <sup>2</sup> (20 AWG) Belden 9463 copper twinaxial	
Wiring category <sup>(2)</sup>	2 - on DHRIO ports 3 - on local programming port	2 - on RIO ports
North American temperature code	T4A	
IEC temperature code	T4	—
Enclosure type rating	None (open-style)	

(1) When the 1756-RIO module is used as a remote I/O adapter, the chassis must include a ControlLogix controller.

(2) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 14 - Environmental Specifications - 1756 DH+ and Remote I/O Modules**

Attribute	1756-DHRIO/E	1756-RIO/B
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...60 °C (32...140 °F)	
Temperature, surrounding air, max	60 °C (140 °F)	
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)	
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing	
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz	
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g	
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g	
Emissions CISPR 11 (IEC 61000-6-4)	Class A	
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges	
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz	
EFT/B immunity IEC 61000-4-4	± 2 kV at 5 kHz	±2 kV at 5 kHz
Surge transient immunity IEC 61000-4-5	± 2 kV line-earth (CM)	
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz	

**Table 15 - Certifications - 1756 DH+ and Remote I/O Modules**

Certification <sup>(1)</sup>	1756-DHRIO/E	1756-RIO/B
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.	
CSA	CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.	—
CE	European Union 2004/108/IEC EMC Directive, compliant with the following: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>	
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions	
Ex	European Union 94/9/EC ATEX Directive, compliant with the following: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc X</li> </ul>	—
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3	

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

**Table 16 - Technical Specifications - 1756 DH+ and Remote I/O XT Module**

Attribute	1756-DHRIOXT/E
Communication rate	57.6 Kbps, 115.2 Kbps, 230.4 Kbps
DH+ communication connections	32 DH+ messages per DH+ module
Remote I/O communication connections	Remote I/O scanner only 32 logical rack connections per remote I/O channel 16 block transfer connections per remote I/O channel
Connections supported, max	32
Current draw @ 5.1V DC	850 mA
Current draw @ 24V DC	1.7 mA
Power dissipation	4.5 W
Thermal dissipation	15.4 BTU/hr
Isolation voltage	30V (continuous), basic insulation type, DHRIO A/B to backplane, and DHRIO A/programming port to DHRIO B No Isolation between DHRIO A and Programming port Type tested at 853V AC for 60 s
Slot width	1
Module location	Chassis-based, any slot
Chassis	1756-A4LXT, 1756-A5XT, 1756-A7XT, 1756-A7LXT
Power supply, standard	1756-PBXT
Power supply, redundant	None
Ports	2, individually selectable for DH+ or remote I/O
Screw terminal torque	0.5...0.6 N•m (5...7 lb•in)
Wire size	0.519 mm <sup>2</sup> (20 AWG) Belden 9463 copper twinaxial
Wiring category <sup>(1)</sup>	2 - on DHRIO ports 3 - on local programming port
North American temperature code	T4A
IEC temperature code	T4
Enclosure type rating	None (open-style)

(1) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 17 - Environmental Specifications - 1756 DH+ and Remote I/O XT Module**

Attribute	1756-DHRIOXT
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25...+70 °C (-13...+158 °F)
Temperature, surrounding air, max	70 °C (158 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz

**Table 17 - Environmental Specifications - 1756 DH+ and Remote I/O XT Module (Continued)**

Attribute	1756-DHRIOXT
EFT/B immunity IEC 61000-4-4	±2 kV at 5 kHz on DHRIO ports
Surge transient immunity IEC 61000-4-5	±2 kV line-earth (CM) on DHRIO ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz

**Table 18 - Certifications - 1756 DH+ and Remote I/O XT Module**

Certification <sup>(1)</sup>	1756-DHRIOXT
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/IEC EMC Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc X</li> </ul>
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

## Accessories—DH+ and Remote I/O Networks

Cat. No.	Description	Specifications
1770-CD	Cable to connect communication module to DH+ network	Belden 9463 twinaxial
9300-RADKIT	Remote access dial-in kit	56 Kbps modem connection to devices on a DH+ network, including the following: <ul style="list-style-type: none"> <li>• Preconfigured modem</li> <li>• Communication module</li> <li>• DIN rail mounting hardware</li> <li>• Associated cables</li> </ul>

## DH-485 Network

On the DH-485 network, the controller can send and receive messages to and from other controllers on the network. The DH-485 connection does support remote programming and monitoring via the Studio 5000 environment. Excessive traffic over a DH-485 connection can adversely affect overall performance and can lead to timeouts and loss in the Studio 5000 environment configuration performance.

**IMPORTANT** Use Logix 5000® controllers on DH-485 networks only when you want to add controllers to an existing DH-485 network. For new applications with Logix 5000 controllers, we recommend open architecture networks.

You need a 1761-NET-AIC converter for each controller on the DH-485 network. You can have two controllers per one 1761-NET-AIC converter, but you need another cable for each controller. Connect one controller to port 1 (9-pin connector) and one controller to port 2 (mini-DIN connector).

To connect to this port	Use this cable
Port 1 DB-9 RS-232, DTE connection	1747-CP3, 1761-CBL-AC00
Port 2 mini-DIN 8 RS-232 connection	1761-CBL-AP00, 1761-CBL-PM02

**Table 19 - Technical Specifications - 1756-DH485 Module**

Attribute	1756-DH485
Communication rate	19.2 Kbps 9600 Kbps
Current draw @ 5.1V DC	850 mA
Current draw @ 24V DC	1.7 mA
Power dissipation	4.5 W
Thermal dissipation	15.4 BTU/hr
Isolation voltage	50V (continuous), basic insulation type, DH-485 A/B to backplane, and DH485 A to DH485 B Type tested at 750V DC for 60 s
Slot width	1
Module location	Chassis
Power supply, standard	1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B
Power supply, redundant	1756-PA75R, 1756-PB75R, 1756-PSCA2
Ports	2 DH-485 9-pin, D-shell
Wiring category <sup>(1)</sup>	2 - on DH-485 ports
North American temperature code	T5
Enclosure type rating	None (open-style)

(1) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 20 - Environmental Specifications - 1756-DH485 Module**

Attribute	1756-DH485
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...60 °C (32...140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz

**Table 20 - Environmental Specifications - 1756-DH485 Module**

Attribute	1756-DH485
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emissions CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	4 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 1V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	±2 kV at 5 kHz on communication ports
Surge transient immunity IEC 61000-4-5	±1 kV line-earth (CM) on communication ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz

**Table 21 - Certifications - 1756-DH485 Module**

Certification <sup>(1)</sup>	1756-DH485
c-UL-us	UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/IEC EMC Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

## Accessories—DH-485 Network

Cat. No.	Description	Specifications
1747-CP3	9-pin D-shell, straight; 9-pin D-shell, right angle	3 m (9.8 ft)
1761-CBL-AC00	9-pin D-shell, right angle; 9-pin D-shell, right angle	45 cm (17.7 in.)
1761-CBL-APO0	9-pin D-shell, right angle; 8-pin mini-DIN	45 cm (17.7 in.)
1761-CBL-PM02	9-pin D-shell, straight; 8-pin mini-DIN	2 m (6.5 ft)
1761-NET-AIC	Advanced Interface Converter (AIC+) connects each channel on the 1756-DH485 module to the DH-485 network	20.4...28.8V DC power source required Typical 120 mA 24V DC current draw
9300-RADKIT	Remote access dial-in kit	56 Kbps modem connection to devices on a DH+ network, including the following: <ul style="list-style-type: none"> <li>• Preconfigured modem</li> <li>• Communication module</li> <li>• DIN rail mounting hardware</li> <li>• Associated cables</li> </ul>

## SynchLink Communication

The SynchLink module provides time synchronization and data broadcasting capabilities for distributed motion and coordinated drive control. The 1756-SYNCH SynchLink module connects a ControlLogix chassis to a SynchLink fiber-optic communication link. The module does the following:

- Coordinates Coordinated System Time across multiple ControlLogix chassis
- Moves a limited amount of data from one chassis to another at a high speed
- Lets one controller consume motion axes data from a controller in another chassis

**Table 22 - Technical Specifications - 1756-SYNCH Module**

Attribute	1756-SYNCH
SynchLink data rate	5 Mbps
Operating wavelength	650 nm (red)
Type of communication	Synchronous
Frame period	50 $\mu$ s
Frame parameters	3 Flags - 3 bytes Control field - 1 byte Data field - 24 bytes CRC field - 2 bytes
Current draw @ 5.1V DC	1200 mA
Current draw @ 24V DC	3 mA
Power dissipation	6.2 W
Thermal dissipation	21.2 BTU/hr
Slot width	1
Module location	Chassis-based, any slot
Chassis	1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17
Power supply, standard	1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B
Power supply, redundant	1756-PA1756-PA75R, 1756-PB75R, 1756-PSCA2
Ports	2 fiber-optic
Cable fiber type	200/230 micron HCS (Hard Clad Silica)
Cable fiber termination type	Versalink V-System
Cable length	1...300 m (3.28...984.2 ft)
North American temp code	T4A
Enclosure type rating	None (open-style)

**Table 23 - Environmental Specifications - 1756-SYNCH Module**

Attribute	1756-SYNCH
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...60 °C (32...140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g

**Table 23 - Environmental Specifications - 1756-SYNCH Module**

Attribute	1756-SYNCH
Emissions CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 1V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz

**Table 24 - Certifications - 1756-SYNCH Module**

Certification <sup>(1)</sup>	1756-SYNCH
UL	UL Listed Industrial Control Equipment. See UL file E65584
CSA	CSA Certified Process Control Equipment. See CSA File LR54689C CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA file LR69960C
CE	European Union 2004/108/EC EMC Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

## Accessories—SynchLink Network

Cat. No.	Description
1403-CFxxx	Rockwell Automation fiber-optic cable assembly
HCP-M0200T V01RK	Lucent Technologies 200 $\mu$ m simplex cable



## ControlNet Network



The ControlNet network is considered a legacy network. For replacement information, see the ControlNet to EtherNet/IP Migration Reference Manual, publication [CNET-RM001](#).

The ControlNet network is an open, control network for real-time, high-throughput applications. The ControlNet network uses the Common Industrial Protocol (CIP) to combine the functionality of an I/O network and a peer-to-peer network providing high-speed performance for both functions. The ControlNet network gives you deterministic, repeatable transfers of all mission-critical control data in addition to supporting transfers of non-time-critical data. I/O updates and controller-to-controller interlocking always take precedence over program uploads and downloads, and messaging.

If your application requires	Select one of these interfaces
128 ControlNet connections per communication module	1756-CN2/B 1756-CN2/C 1756-CN2R/B 1756-CN2R/C 1756-CN2RK/C 1756-CN2RXT/B 1756-CN2RXT/C
Control in environments where temperatures range from -25...+70 °C (-13...+158 °F)	1756-CN2RXT/C
40...48 ControlNet connections per communication module	1756-CNB 1756-CNBR

## Connect to Other Devices via a ControlNet Network

The Studio 5000 environment supports a generic ControlNet module that allows connections to ControlNet nodes for which there is no specific support currently available in the programming software. A module configured as a generic ControlNet module communicates with the controller in the form of input, output, status, and configuration tags.

For example, use the generic module configuration to configure communication between a ControlLogix controller and a 1203-CN1 ControlNet communication module. Then use the CIP generic MSG instruction type to send and receive messages from the 1203-CN1 module.

**Table 25 - Technical Specifications - 1756 ControlNet Modules**

Attribute	1756-CN2/C	1756-CN2R/C, 1756-CN2RK/C	1756-CNB/E	1756-CNBR/E
Configuration	Standard	Redundant	Standard	Redundant
ControlNet communication rate	5 Mbps			
Logix communication connections	128		40...48	
Connections supported, max	131 <sup>(1)</sup>		64	
Number of nodes, max	99			
Current draw @ 5.1V DC	1100 mA	1300 mA	970 mA	
Current draw @ 24V DC	3 mA		1.7 mA	
Power dissipation	5.6 W	6.7 W	5.1 W	
Thermal dissipation	19.1 BTU/Hr	22.9 BTU/hr	17.4 BTU/hr	
Isolation voltage	Standard: 30V (continuous), basic insulation type, ControlNet network to backplane Redundant: 30V (continuous), basic insulation type, ControlNet A/B to backplane, and ControlNet A to ControlNet B USB to backplane and USB to ControlNet No isolation between NAP or USB and backplane Type tested at 500V AC for 60 s			
Weight, approx.	0.26 kg (0.57 lb)	0.293 kg (0.64 lb)	0.26 kg (0.57 lb)	0.293 kg (0.64 lb)
Slot width	1			
Module location	Chassis-based, any slot			
Chassis	1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17			
Power supply, standard	1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B			
Power supply, redundant	1756-PA75R, 1756-PB75R, 1756-PSCA2			
ControlNet port	1 ControlNet BNC	2 ControlNet BNC	1 ControlNet BNC	2 ControlNet BNC

**Table 25 - Technical Specifications - 1756 ControlNet Modules (Continued)**

Attribute	1756-CN2/C	1756-CN2R/C, 1756-CN2RK/C	1756-CNB/E	1756-CNBR/E
ControlNet cable	1786-RG6 quad shield RG6 coaxial cable			
USB port <sup>(2)</sup>	USB full speed (12 Mbps)		—	—
NAP port	—	—	1 NAP RJ45	1 NAP RJ45
NAP cable	—	—	1786-CP	
Wiring category <sup>(3)</sup>	1 - on ControlNet ports 3 - on USB ports		1 - on ControlNet ports 3 - on NAP ports	
North American temperature code	T4A			
IEC temperature code	T4			
Enclosure type rating	None (open-style)			

(1) 128 connections are available for standard use. An additional three connections are reserved for redundant control.

(2) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.

(3) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 26 - Environmental Specifications - 1756 ControlNet Modules**

Attribute	1756-CN2/C, 1756-CN2R/C, 1756-CN2RK/C	1756-CNB/E, 1756-CNBR/E
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...60 °C (32...140 °F)	
Temperature, surrounding air, max	60 °C (140 °F)	
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)	
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing	
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz	
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g	
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g	50 g
Emissions CISPR 11 (IEC 61000-6-4)	Class A	
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges	
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz	
EFT/B immunity IEC 61000-4-4	±3 kV at 5 kHz on ControlNet ports	
Surge transient immunity IEC 61000-4-5	±2 kV line-earth (CM) on ControlNet ports	
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz	

**Table 27 - Certifications - 1756 ControlNet Modules**

Certification <sup>(1)</sup>	1756-CN2R/B, 1756-CNB/E, 1756-CNBR/E	1756-CN2/C, 1756-CN2R/C, 1756-CN2RK/C
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.	
CSA	CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.	—
CE	European Union 2004/108/IEC EMC Directive, compliant with the following: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>	

**Table 27 - Certifications - 1756 ControlNet Modules (Continued)**

RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with the following: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements</li> <li>II 3 G Ex nA IIC T4 Gc X</li> </ul>
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
CI	ControlNet International conformance tested to ControlNet specifications

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

**Table 28 - Technical Specifications - 1756 ControlNet-XT Module**

Attribute	1756-CN2RXT/C
Configuration	Redundant
ControlNet communication rate	5 Mbps
Logix communication connections	128
Connections supported, max	13 <sup>(1)</sup>
Number of nodes, max	99
Current draw @ 5.1V DC	1300 mA
Current draw @ 24V DC	3 mA
Voltage and current ratings	5.1V DC, 1.3 A
Power dissipation	6.6 W 22.5 BTU/Hr
Thermal dissipation	22.9 BTU/hr
Isolation voltage	30V (continuous), Basic Insulation Type, ControlNet A/B to Backplane, ControlNet A to ControlNet B, USB to ControlNet A/B, and USB to Backplane Type tested at 500V AC for 60 s
Weight, approx.	0.293 kg (0.64 lb)
Slot width	1
Module location	Chassis-based, any slot
Chassis	1756-A4LXT, 1756-A5XT, 1756-A7XT, 1756-A7LXT
Power supply, standard	1756-PAXT, 1756-PBXT
Power supply, redundant	None
ControlNet port	2 ControlNet BNC
ControlNet cable	1786-RG6 quad-shield RG6 coaxial cable
USB port <sup>(2)</sup>	USB full speed (12 Mbps)
Wiring category <sup>(3)</sup>	1 - on ControlNet ports 3 - on USB port
North American temperature code	T4A
IEC temperature code	T4
Enclosure type rating	None (open-style)

(1) There are 128 connections are available for standard use. An additional 3 connections are reserved for redundant control.

(2) The USB port is intended for temporary local programming purposes only and not intended for permanent connection. Do not use the USB port in hazardous locations.

(3) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 29 - Environmental Specifications - 1756 ControlNet-XT Module**

Attribute	1756-CN2RXT/C
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-25...+70 °C (-13...+158 °F)
Temperature, surrounding air, max	70 °C (158 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40...+85 °C (-40...+185 °F)

**Table 29 - Environmental Specifications - 1756 ControlNet-XT Module (Continued)**

Attribute	1756-CN2RXT/C
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	1756-CN2RXT/C, 30 g 1756-CN2RXT/B, 50 g
Emissions CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 3V/m with 1 kHz sine wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	±3 kV at 5 kHz on ControlNet ports
Surge transient immunity IEC 61000-4-5	±2 kV line-earth (CM) on ControlNet port
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz

**Table 30 - Certifications - 1756 ControlNet-XT Module**

Certification <sup>(1)</sup>	1756-CN2RXT/C
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/IEC EMC Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul>
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with the following: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc X</li> </ul>
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
CI	ControlNet International conformance tested to ControlNet specifications

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

# ControlNet Module Diagrams

Figure 6 - 1756-CN2

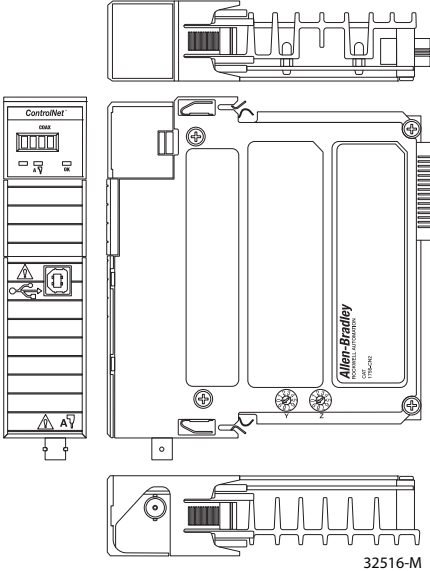
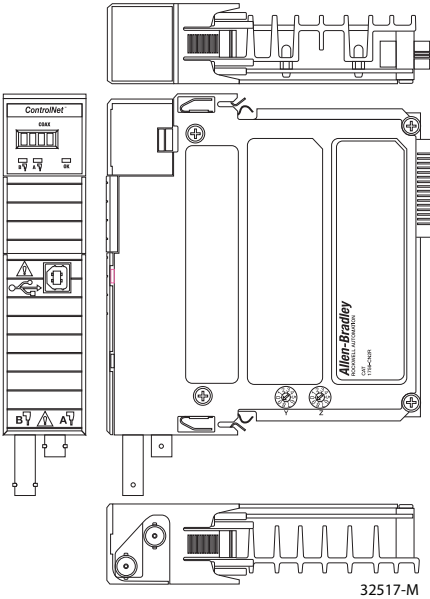


Figure 7 - 1756-CN2R



## Accessories—ControlNet Network

Cat. No.	Description
<b>Taps</b>	
1786-TCT2BD1	T-tap straight IP67 rated
1786-TPR	T-tap right angle
1786-TPS	T-tap straight
1786-TPYR	Y-tap right angle
1786-TPYS	Y-tap straight
<b>Cables</b>	
1786-CP	Programming cable to ControlNet RJ45 port
1786-RG6	ControlNet network, shield high-flex cable
1756-RG6F	ControlNet network, quad-shield high-flex coax cable
<b>Other</b>	
1786-TNCLXT4	ControlNet IP67 termination resistor
1786-XT	ControlNet termination resistor
<b>Repeaters</b>	
1786-RPA	ControlNet modular repeater adapter
1786-RPCD	ControlNet coaxial hub repeater
1786-RPFRL	ControlNet fiber ring repeater, long distance
1786-RPFRXL	ControlNet fiber ring repeater, extra long distance
1786-RPFS	ControlNet fiber repeater, short distance
1786-RPFM	ControlNet fiber repeater, medium distance

For more information, see ControlNet Media System Components List, publication [AG-PA002](#).

## Legacy Modules

Refer the following sections to replace these legacy modules in your systems:

- 1756-EWEB module
- 1756-TIME module

### 1756-EWEB Module

The 1756-EWEB module provides access to information from the control system using a web browser.

The 1756-EWEB module is End of Life as of November 1, 2021. As an engineered replacement, use a ControlLogix 1756 Compute module (1756-CMS1B1, 1756-CMS1C1). For more information, see the EtherNet/IP Web Server Module Migration Reference Manual, [publication 1756-RM013](#).

**Table 31 - 1756-EWEB Connections Specifications**

Connections		CIP Unconnected Messages (backplane + Ethernet)
TCP	CIP	
64	128	128 + 128

**Table 32 - 1756-EWEB Data Specifications**

Socket Services	SNMP Support (password required)	Duplicate IP Detection (starting revision)
Yes	Yes	Revision 2.2

**Table 33 - 1756-EWEB Technical Specifications**

Attribute	1756-EWEB
EtherNet/IP communication rate	10/100 Mbps
Current draw @ 5.1V DC	700 mA
Current draw @ 24V DC	3 mA
Power dissipation	3.7 W
Thermal dissipation	12.6 BTU/hr
Isolation voltage	30V (continuous), basic insulation type, Ethernet network to backplane Type tested @ 707V DC for 60 s
Slot width	1
Module location	Chassis-based, any slot
Chassis	1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17
Power supply, standard	1756-PA72, 1756-PA75, 1756-PB72, 1756-PB75, 1756-PC75, 1756-PH75
Power supply, redundant	1756-PA75R, 1756-PB75R, 1756-PSCA2
Ethernet port	1 Ethernet RJ45 Category 5
Ethernet cable	Multimode fiber, LC connector 802.3 compliant shielded or unshielded twisted pair
Wiring category <sup>(1)</sup>	2 - on Ethernet ports
North American temp code	T4A
ATEX temp code	T4
IECEX temp code	T4
Enclosure type rating	None (open-style)
Transmitter launch power at Beginning of Life (BOL), min Allow -1 dB at End of Life (EOL)	-19 dBm into 62.5/125 μm fiber, – = 0.275 -22.5 dBm into 50/125 μm fiber, – = 0.20

(1) Use this conductor category information for planning conductor routing as described in the system level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 34 - 1756-EWEB Environmental Specifications**

Attribute	1756-EWEB/B
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0 °C < Ta < 60 °C (32 °F < Ta < 140 °F)
Temperature, surrounding air, max	60 °C (140 °F)
Temperature, storage IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40 °C < Ta < 85 °C (-40 °F < Ta < 185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged damp heat)	5...95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10...500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	50 g
Emission CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz
EFT/B immunity IEC 61000-4-4	±2 kV at 5 kHz on Ethernet ports
Surge transient immunity IEC 61000-4-5	±2 kV line-earth (CM) on Ethernet ports
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz

**Table 35 - 1756-EWEB Certifications**

Certification <sup>(1)</sup>	1756-EWEB/B
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CSA	CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.
CE	European Union 2004/108/IEC EMC Directive, compliant with: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
RCM	Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions
ATEX	European Union 94/9/EC ATEX Directive, compliant with the following: EN 60079-15; Potentially Explosive Atmospheres, Protection "n" EN 60079-0; General Requirements II 3 G Ex nA IIC T4 Gc X DEMKO13ATEX1325026X (1756-EN2T/C only)
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
IECEX	–
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications

(1) When product is marked. See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.



## 1756-TIME Module

The 1756-TIME module provides accurate time synchronization on different interfaces by using Global Positioning System (GPS) technology. The 1756-TIME module can obtain time from various sources, and provide time synchronization on other devices by acting as a gateway between different time synchronization methods and standards.

The 1756-TIME module is End of Life as of November 1, 2021. As a replacement, use the Time Sync A-TSM/B module available from Aparian. For more information, see <https://www.aparian.com/products/timesync>.

**Table 36 - Technical Specifications - 1756-TIME Module**

Attribute	1756-TIME
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	0...+50 °C (+32...+122 °F) in a Series B Chassis 0...+60 °C (+32...+140 °F) in a Series C Chassis
Temperature, surrounding air, max	+50 °C (+122 °F) in a Series B Chassis +60 °C (+140 °F) in a Series C Chassis
Temperature, nonoperating IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-40...+85 °C (-40...+185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5...95% noncondensing
Emissions	IEC 61000-6-4
EDS Immunity IEC 61000-4-2	4 kV contact discharges 8 kV air discharges
Radiated RF Immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000...6000 MHz
EFT/B Immunity IEC 61000-4-4	±2 kV at 5 kHz on signal ports ±2 kV at 5 kHz on communications ports
Surge Transient Immunity IEC 61000-4-5	±2 kV line-earth(CM) on signal ports no shielded ports - omit from publication ±2 kV line-earth(CM) on communications ports
Conducted RF Immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz
Enclosure type rating	None (open-style)
Voltage and current ratings	Backplane: 1.01A @ 5.1V DC, 2.64 mA @ 1.2 V DC
Isolation voltage	30V (continuous), Basic Insulation Type Type tested at 1000V AC for 60 s <ul style="list-style-type: none"> <li>Ethernet Ports to Backplane</li> <li>IRIG-B to Backplane</li> </ul>
Wire size	Ethernet connections <ul style="list-style-type: none"> <li>RJ45 connector according to IEC 60603-7, 2 or 4 pair Category 5e minimum cable according to TIA 568-B.1 or Category 5 cable according to ISO/IEC 24702</li> </ul> IRIG-B connection <ul style="list-style-type: none"> <li>Type RG58 or equivalent</li> </ul> Antenna connection <ul style="list-style-type: none"> <li>Cable assembly, TNC Plug to SMA, ships with product</li> </ul>
Wiring Category <sup>(1)</sup>	<ul style="list-style-type: none"> <li>2 - on signal ports</li> <li>2 - on communications ports</li> </ul>

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Table 37 - Certifications - 1756-TIME Module**

<b>Certification<sup>(1)</sup> (when product is marked)</b>	<b>1756-TIME</b>
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.
CE	<ul style="list-style-type: none"><li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li><li>• EN 61000-6-2; Industrial Immunity</li><li>• EN 61000-6-4; Industrial Emissions</li><li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li></ul>
CE	European Union 1999/5/EC R&TTE, compliant with: <ul style="list-style-type: none"><li>• EN 61010-1; Measurement, Control, and Laboratory Equipment Safety Requirements</li><li>• EN 61010-2-201; Control Equipment Safety Requirements</li><li>• EN 300 440-1 V1.6.1; CSE</li></ul> European Union 2011/65/EU RoHS, compliant with: <ul style="list-style-type: none"><li>• EN 50581; Technical documentation</li></ul>
RCM	Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"><li>• EN 61000-6-4; Industrial Emissions</li></ul>
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: <ul style="list-style-type: none"><li>• Article 58-2 of Radio Waves Act, Clause 3</li></ul>

(1) See the Product Certification link at [www.ab.com](http://www.ab.com) for Declarations of Conformity, Certificates, and other certification details.

## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
1756 EtherNet/IP Communication Modules Installation Instructions, publication <a href="#">1756-IN050</a>	Provides information on installing EtherNet/IP™ modules.
ControlLogix EtherNet/IP Network Devices User Manual, publication <a href="#">1756-UM004</a>	Describes how you can use ControlLogix® EtherNet/IP communication modules with a Logix 5000® controller and communicate with various devices on the Ethernet/IP network.
ControlNet Modules Installation Instructions, publication <a href="#">CNET-IN005</a>	Provides instructions for installing ControlNet® modules.
ControlLogix System User Manual, publication <a href="#">1756-UM001</a>	Provides information on system architecture, configuring secure communication, and diagnostics.
ControlLogix Time Synchronization Module - Series B User Manual, publication <a href="#">1756-UM542</a>	Describes the functionality, installation, configuration, and operation of the 1756-TIME module.
DeviceNet Network Configuration User Manual, publication <a href="#">DNET-UM004</a>	Provides information on system architecture, configuring communication, and diagnostics.
EtherNet/IP Network Devices User Manual, publication <a href="#">ENET-UM006</a>	Describes how to use EtherNet/IP communication modules in Logix 5000 control systems
ControlLogix DH-485 Communication Module User Manual, publication <a href="#">1756-UM532</a>	Provides information on system architecture, configuring communication, and diagnostics.
ControlLogix Data Highway Plus-Remote I/O Communication Interface Module User Manual, publication <a href="#">1756-UM514</a>	Provides information about programming, messaging, applying, and connecting the module.
ControlLogix SynchLink Module User Manual, publication <a href="#">1756-UM521</a>	Provides information about topologies, configurations, planning, and installing a Synchlink™ module.
EtherNet/IP Network Devices User Manual, <a href="#">ENET-UM006</a>	Describes how to configure and use EtherNet/IP devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, <a href="#">ENET-RM002</a>	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
System Security Design Guidelines Reference Manual, <a href="#">SECURE-RM001</a>	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
UL Standards Listing for Industrial Control Products, publication <a href="#">CMPNTS-SR002</a>	Assists original equipment manufacturers (OEMs) with construction of panels, to help ensure that they conform to the requirements of Underwriters Laboratories.
American Standards, Configurations, and Ratings: Introduction to Motor Circuit Design, publication <a href="#">IC-AT001</a>	Provides an overview of American motor circuit design based on methods that are outlined in the NEC.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication <a href="#">IC-TD002</a>	Provides a quick reference tool for Allen-Bradley industrial automation controls and assemblies.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication <a href="#">SGI-1.1</a>	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, <a href="http://rok.auto/certifications">rok.auto/certifications</a> .	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at [rok.auto/literature](http://rok.auto/literature).

# Rockwell Automation Support

Use these resources to access support information.

<b>Technical Support Center</b>	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	<a href="http://rok.auto/support">rok.auto/support</a>
<b>Knowledgebase</b>	Access Knowledgebase articles.	<a href="http://rok.auto/knowledgebase">rok.auto/knowledgebase</a>
<b>Local Technical Support Phone Numbers</b>	Locate the telephone number for your country.	<a href="http://rok.auto/phonesupport">rok.auto/phonesupport</a>
<b>Literature Library</b>	Find installation instructions, manuals, brochures, and technical data publications.	<a href="http://rok.auto/literature">rok.auto/literature</a>
<b>Product Compatibility and Download Center (PCDC)</b>	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	<a href="http://rok.auto/pcdc">rok.auto/pcdc</a>

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Rockwell Automation maintains current product environmental compliance information on its website at [rok.auto/pec](http://rok.auto/pec).

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