



# 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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## 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.

## 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

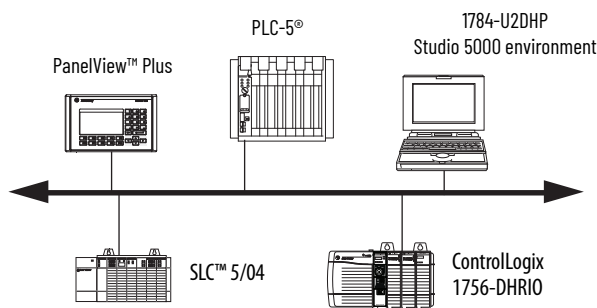


The Data Highway Plus network supports messaging between devices. The remote I/O-Link connects to remote I/O chassis and other intelligent devices.

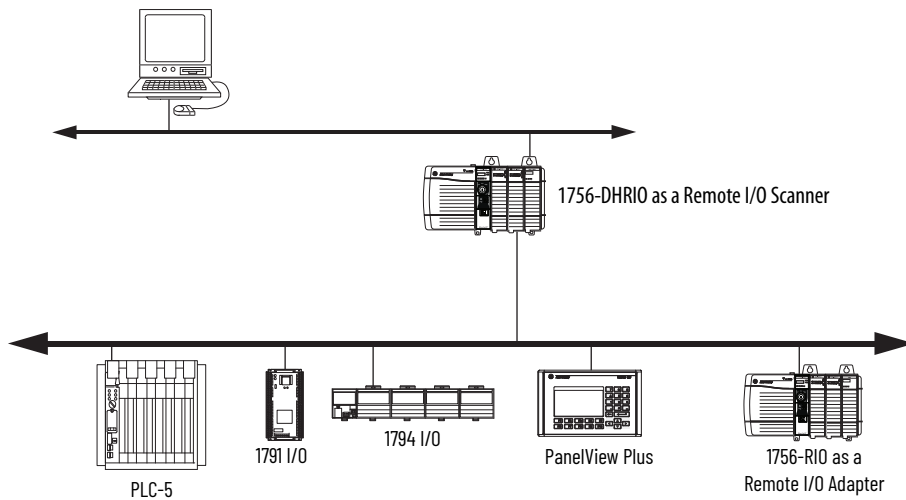
The 1756-DHRIO module supports messaging between devices on DH+™ networks. The remote I/O functionality enables the module to act as a scanner for transferring digital and block transfer data to and from remote I/O devices.

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