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 (1)
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(2)	USB full speed (12 Mbps)	
Wiring category (3)	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[1]	
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[1]	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

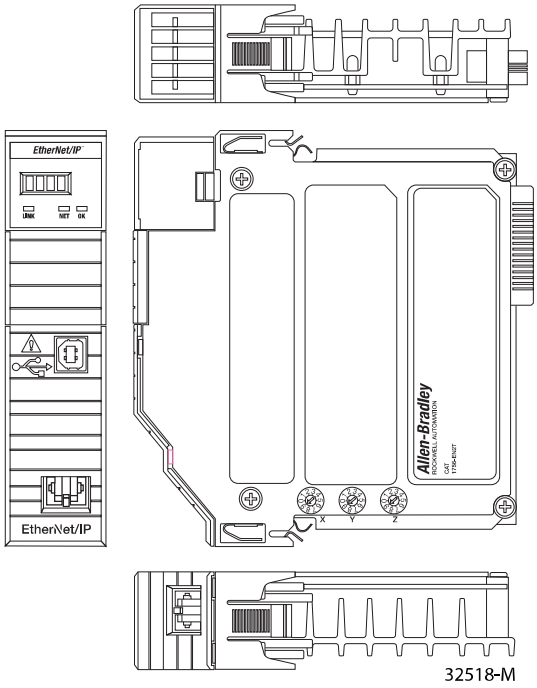


Figure 2 - 1756-EN2TP

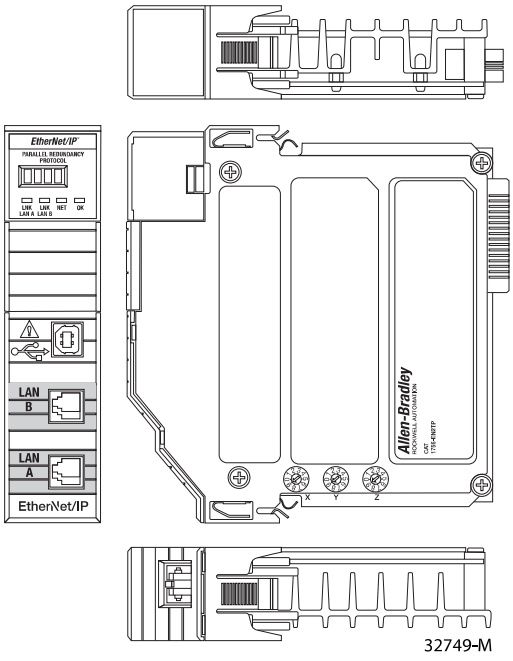


Figure 3 - 1756-EN2TR, 1756-EN3TR

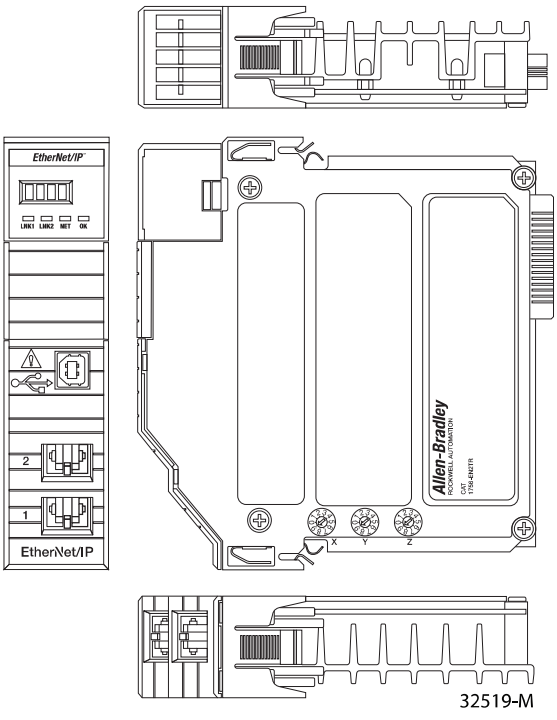


Figure 4 - 1756-EN2F

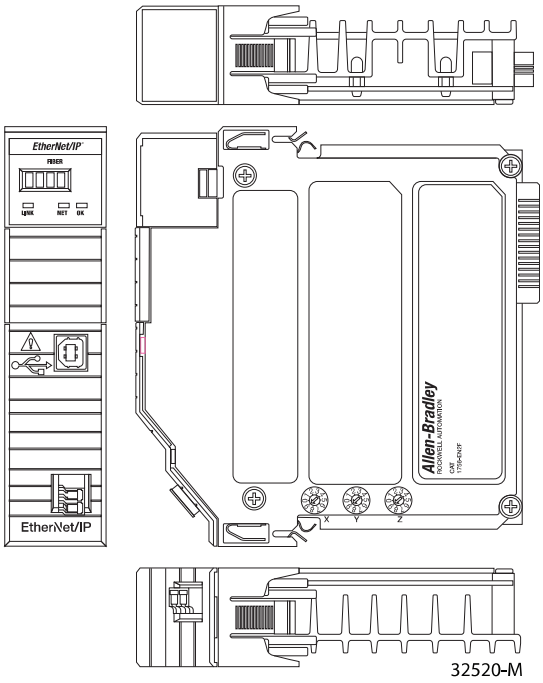
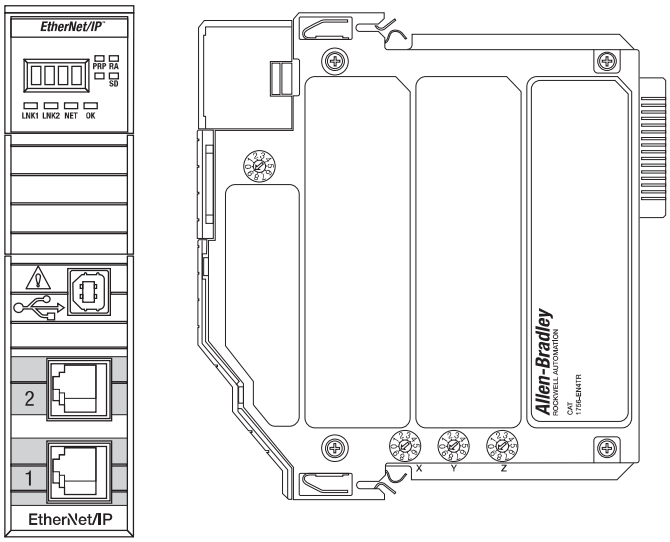


Figure 5 - 1756-EN4TR



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^2 (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^2 (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 effectively 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.

ControlNet Network

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 set up 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 10 - 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[1]		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
ControlNet cable	1786-RG6 quad shield RG6 coaxial cable			
USB port[2]	USB full speed (12 Mbps)		—	—
NAP port	—	—	1 NAP RJ45	1 NAP RJ45
NAP cable	—	—	1786-CP	
Wiring category[3]	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 11 - 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 12 - Certifications - 1756 ControlNet Modules

Certification(1)	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.	NA
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	
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 13 - Technical Specifications - 1756 ControlNet-XT Module

Attribute	1756-CN2RXT/C
Configuration	Redundant
ControlNet communication rate	5 Mbps
Logix communication connections	128
Connections supported, max	131(1)
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, 1.3A
Power dissipation	6.6W 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(2)	USB full speed (12 Mbps)
Wiring category(3)	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 14 - 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)
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

Table 14 - Environmental Specifications - 1756 ControlNet-XT Module

Attribute	1756-CN2RXT/C
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 15 - Certifications - 1756 ControlNet-XT Module

Certification[1]	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: • 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
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

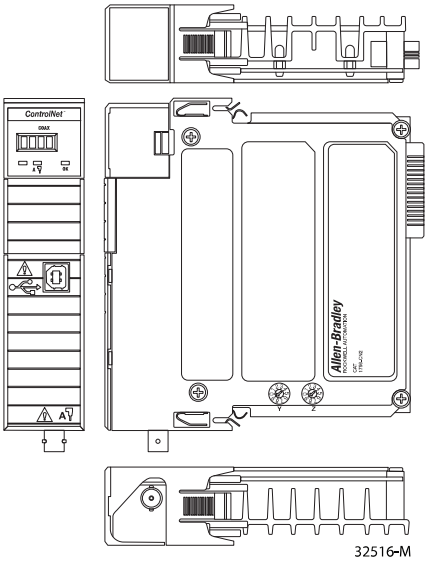
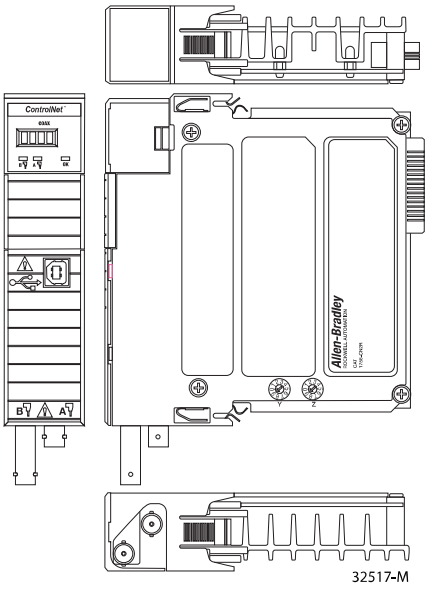


Figure 7 - 1756-CN2R



Accessories—ControlNet Network

Cat. No.	Description
Taps	
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
Cables	
1786-CP	Programming cable to ControlNet RJ45 port

Cat. No.	Description
1786-RG6	ControlNet network, shield high-flex cable
1756-RG6F	ControlNet network, quad-shield high-flex coax cable
Other	
1786-TNCLXT4	ControlNet IP67 termination resistor
1786-XT	ControlNet termination resistor
Repeaters	
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.

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 16 - 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(1)	USB full speed (12 Mbps)
Wiring category(2)	1 - On DeviceNet ports 3 - On USB ports