Technical Data

Allen-Bradley

CompactLogix Communication Modules Specifications

1768 CompactLogix Catalog Numbers

1768-ENBT, 1768-EWEB, 1768-CNB, 1768-CNBR

1769 Compact I/O Catalog Numbers

1769-SDN, 1769-ADN, 1769-AENTR

Topic	Page
Networks	2
EtherNet/IP Network	5
Stratix Switches	7
ControlNet Network	9
DeviceNet Network	12
Serial Network	14
DH-485 Network	15

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Networks

You can configure your system for information exchange between a range of devices and computing platforms and operating systems. Select a CompactLogix controller with integrated communication or the appropriate communication device for the networks that meet your needs.

Application	Network	1769-L23*x* Controller	1769-L3*x* Controller	1768-L4*x*, 1768-L4*x*S Controller	CompactLogix 5370 L1 controllers	CompactLogix 5370 L2 controllers	CompactLogix 5370 L3 controllers
• Plant management (material handling) • Configuration, data collection, safety, and control on a single, high-speed network • Inclusion of commercial technologies (such as video over IP) • Internet/Intranet connection	EtherNet/IP network	• 1769-L23E-QB1B controller • 1769-L23E-QBFC1B controller	• 1769-L32E controller • 1769-L35E controller	• 1768-ENBT bridge • 1768-EWEB web server	• 1769-L16ER controller • 1769-L18ER controller • 1769-L18ERM controller	• 1769-L24ER controller • 1769-L27ERM controller	• 1769-L30ER controller • 1769-L30ERM controller • 1769-L33ER controller • 1769-L33ERM controller • 1769-L36ERM controller
• High-speed transfer of time-critical data between controllers and I/O devices • Deterministic and repeatable data delivery • Media redundancy • Intrinsic safety • Redundant controller systems	ControlNet network	Not available	• 1769-L32C controller (nonredundant media) • 1769-L35CR controller (redundant media)	• 1768-CNB bridge (nonredundant media) • 1768-CNBR bridge (redundant media)	Not available		
• Connections of low-level devices directly to plant floor controllers, without interfacing them through I/O modules • Data sent as needed • More diagnostics for improved data collection and fault detection • Less wiring and reduced start-up time than a traditional, hard-wired system	DeviceNet network	• 1769-SDN scanner • 1769-ADN adapter			Not available	1769-SDN scanner	
• Modems • Supervisory control and data acquisition (SCADA)	Serial network	• Built-in serial port on the controller • 1769-ASCII module			Not available		
Connections to existing DH-485 networks	DH-485 network	Built-in serial port with a 1761-NET-AIC linking device			Not available		

Table 1 - Environmental Specifications - 1768 Communication Modules

Attribute	1768-ENBT, 1768-EWEB	1768-CNB, 1768-CNBR
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, 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 Nonoperating Damp Heat)	5…95% noncondensing	
Vibration IEC 60068-2-6 (Test Fc, Operating)	5 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): Group 1, Class A	CISPR 11 (IEC 61000-6-4): Class A
ESD Immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges	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 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 10V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz	
EFT/B Immunity	IEC 61000-4-4: ±2kV at 5 kHz on communications ports	
Surge Transient Immunity	IEC 61000-4-5: ±2 kV line-earth(CM) on communications ports	IEC 61000-4-5: ±1 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	

Table 2 - Environmental Specifications - 1769 Communication Modules

Attribute	1769-AENTR	1769-SDN, 1769-ADN
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, 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 Nonoperating 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)	15 g	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	CISPR 11 (IEC 61000-6-4): Group 1, 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 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 10V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz	IEC 61000-4-3: 10V/m with 1 kHz sine-wave 80% AM from 30…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
EFT/B Immunity	IEC 61000-4-4: ±3 kV at 5 kHz on communications ports	IEC 61000-4-4: ±2 kV at 5 kHz on communications ports
Surge Transient Immunity	IEC 61000-4-5: ±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	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz

Communication Connections

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

- 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 by RSLogix 5000 programming software.
- controller access by 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 may ultimately reside in the communication module you use for the connection. If a message path routes through a communication module, the connection related to the message also counts towards the connection limit of that communication module.

EtherNet/IP Network

The Ethernet Industrial network protocol (EtherNet/IP) 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.

If your application	Select for a 1769-L23*x* controller	Select for a 1769-L3*x* controller	Select for a 1769-L4*x*, 1769-L4*x*S controller	Select for a CompactLogix 5370 controller
• Controls standard and safety I/O modules and drives • Requires an adapter for distributed 1756 I/O on EtherNet/IP links • Communicates with other EtherNet/IP devices (messages and HMI) • Bridges EtherNet/IP links to route messages to devices on other networks	1769-L23E-QB1B or 1769-L23E-QBFC1B controller with integrated EtherNet/IP port	1769-L32E or 1769-L35E controller with integrated EtherNet/IP port	1768-ENBT bridge	All CompactLogix 5370 L1, L2 and L3 controllers
• Requires remote access via an Internet browser to tags in a local controller • Support custom web pages • Bridges EtherNet/IP links to route messages to devices on other networks (no I/O support)	—	—	1768-EWEB web server	—
Uses 1769-I/O as remote I/O via EtherNet	1769-L23E-QB1B or 1769-L23E-QBFC1B controller with integrated EtherNet/IP port and 1769-AENTR	1769-L32E or 1769-L35E controller with integrated EtherNet/IP port and 1769-AENTR	1769-AENTR	1769-AENTR

For controller specifications, see CompactLogix Controllers Specifications, publication 1769-TD005.

Table 3 - Technical Specifications - 1768 and 1769 EtherNet/IP Modules

Attribute	1768-ENBT, 1768-EWEB	1769-AENTR[1]
EtherNet/IP communication rate	10/100 Mbps	10/100 Mbps
Logix communication connections	128	128
TCP/IP communication connections	64	96
Current draw @ 5V DC	N/A	500 mA
Current draw @ 5.2V DC	834 mA	N/A
Current draw @ 24V DC	0 mA	N/A
Power consumption	4.34 W	N/A
Power dissipation	4.38 W	N/A
Isolation voltage	30V (continuous), functional insulation type, Ethernet to system Tested at 710V DC for 60 s	50V (continuous), basic insulation type Tested at 710V DC for 60 s
Weight, approx.	0.213 kg (7.5 oz)	0.280 kg (0.61 lb)
Dimensions (HxWxD), approx.	132 x 56.7 x 105.1 mm (5.20 x 2.23 x 4.12 in.)	118 x 50 x 87 mm (4.65 x 1.97 x 3.43 in.)
Slot width	1	1
Module location	DIN rail or panel mount	DIN rail or panel mount
Mounting screw torque	1.16 N•m (10 lb•in) - use M4 or #8 screws	1.16 N•m (10 lb•in) - use M4 or #8 screws
Ports	1 Ethernet RJ45 Category 5	2 Ethernet RJ45 Category 5
Wire size	Ethernet connections: 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.	
Wire category	2 - on communication ports[2]	1 - on communication ports[1]
North American temperature code	T4A	T3C
Enclosure type rating	None (open-style)	None (open-style)

(1) The 1769-AENTR adapter must be used with one of the following Rockwell Automation power supply models: 1769-PA2, 1769-PB2, 1769-PA4, or 1769-PB4.

(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 4 - Certifications - 1768 and 1769 EtherNet/IP Modules

Certification[1]	1768-ENBT, 1768-EWEB	1769-AENTR
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 Industrial Control Equipment, certified for US and Canada. See UL File E322657. UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E334470.
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)	European Union 2004/108/EC 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: AS/NZS CISPR 11; Industrial Emissions	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: EN 60079-15; Potentially Explosive Atmospheres, Protection "n" EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X	N/A
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3	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	ODVA conformance tested to EtherNet/IP specifications

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

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, includes: • Pre-configured modem • Communication module • DIN rail mounting hardware • Associated cables

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.

If your application	Select
• Requires Layer 3 routing • Integrates enterprise and manufacturing environments • Manages multicast traffic • Requires diagnostics data • Requires security options	Stratix 8300 modular, managed switch
• Integrates enterprise and manufacturing environments • Manages multicast traffic • Requires diagnostics data • Requires security options	Stratix 8000 modular, managed switch
• Integrates plant floor devices • Manages multicast traffic • Requires diagnostics data • Requires security options	Stratix 6000 fixed, managed switch
• Requires easy set up and direct replacement of switches • Is a small, isolated network	Stratix 2000 unmanaged switch

Stratix Managed Switch Specifications

Feature	Stratix 8000 and 8300						Stratix 6000	
	Base 1783-MS06T	Base 1783-RMS06T	Base 1783-MS10T	Base 1783-RMS10T	Expansion 1783-MX08T	Expansion 1783-MX08F	1783-EMS04T	1783-EMS08T
Ports per module	6		10		8		4	9
Layer 3 routing	No	Yes	No	Yes	No	No	No	No
Total ports, max	Up to 26(1)						—	—
Fiber ports	0...10(1)						—	1
10/100 copper ports	4...24(1)						4	8
100 base LC fiber ports	0...8(1)							
SFP slots	2(2)						—	1
10/100/1000 copper ports	2(2)						—	—
100 Mbs fiber support	Yes						No	No
1 G fiber support	Yes						No	Yes
CompactFlash memory	Yes						No	No
Power requirements	24/48V DC						8...48V DC	

(1) Maximum port counts require expansion ports.
(2) Two ports each can be used for SFP or 10/100/1000 copper.

Stratix Unmanaged Switch Specifications

Feature	Stratix 2000			
	1783-US03T01F	1783-US05T	1783-US06T01F	1783-US08T
Ports per module	4	5	7	8
Fiber ports	1	—	1	—
10/100 copper ports	3	5	6	8
100 base LC fiber ports	1	—	1	—
100 Mbs fiber support	Yes	—	Yes	—
CompactFlash memory	No	No	No	No
Power requirements	810...35V DC			

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 uses	Select for a 1769-L3*x* controller	Select for a 1769-L4*x*, 1769-L4*x*S controller
• Single media	1769-L32C controller with integrated ControlNet port	1768-CNB bridge
• Redundant media	1769-L35CR controller with integrated ControlNet port	1768-CNBR bridge

For controller specifications, see CompactLogix Controllers Specifications, publication 1769-TD005.

Connect to Other Devices via a ControlNet Network

The RSLogix 5000 Enterprise Series software 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 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 5 - Technical Specifications - 1768 ControlNet Modules

Attribute	1768-CNB	1768-CNBR
Configuration	Standard	Redundant
ControlNet communication rate	5 Mbps	
Logix communication connections	48	
Number of nodes, max	99	
Current draw @ 5.2V DC	1 A	
Current draw @ 24V DC	0 A	
Power dissipation	5.14 W	
Thermal dissipation	17.5 BTU/hr	
Isolation voltage	30V (continuous), functional insulation type, ControlNet to backplane No isolation between NAP and Backplane Type tested at 500V AC for 60 s, ControlNet network to system	
Weight, approx.	0.260 kg (0.57 lb)	0.293 kg (0.64 lb)
Dimensions (HxWxD), approx.	132 x 56.7 x 105.1 mm (5.20 x 2.23 x 4.12 in.)	
Slot width	1	
Module location	DIN rail or panel mount	
Mounting screw torque	1.16 N•m (10 lb•in) - use M4 or #8 screws	
Ports	1 ControlNet BNC 1 ControlNet RJ45	2 ControlNet BNC 1 ControlNet RJ45
ControlNet cable	Quad shield RG6 coaxial cable	
Wire category	2 - on communication ports(1)	
North American temperature code	T4A	
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 6 - Certifications - 1768 ControlNet Modules

Certification(1)	1768-CNB, 1768-CNBR
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: 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)
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
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 marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

Accessories - ControlNet Network

Category	Cat. No.	Description
Taps	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
	1786-RG6	ControlNet network, shield high-flex cable
	1756-RG6F	ControlNet network, quad-shield high-flex coax cable
Other	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
	1786-RPFRXL	ControlNet fiber-ring repeater, extra long
	1786-RPFS	ControlNet fiber-ring repeater, short
	1786-RPFM	ControlNet fiber-ring repeater, medium

DeviceNet Network

The DeviceNet network is an open, low-level network that provides connections between simple industrial devices (such as sensors and actuators) and higher-level devices (such as controllers and computers). The DeviceNet network uses the proven Common Industrial Protocol (CIP) to provide the control, configure, and data collection capabilities for industrial devices.

If your application	Select
• Communicates with other DeviceNet devices (I/O and messages) • Requires explicit messaging • Uses the controller as a master or slave • Uses the controller serial port for other communication • Requires higher performance than the 1769-NET-DNI interface	1769-SDN DeviceNet scanner
• Uses any CompactLogix controller • Accesses as many as 30 remote Compact I/O modules • Sends remote I/O data back to a scanner or controller	1769 DeviceNet adapter

Table 7 - Technical Specifications - 1769 DeviceNet Modules

Attribute	1769-SDN(1)	1769-ADN
DeviceNet communication rate	125 Kbps (500 m max) 250 Kbps (250 m max) 500 Kbps (100 m max)	
Number of nodes, max	64	30
Current draw @ 5V DC	440 mA	Series A 450 mA Series B 500 mA
Current draw @ 24V DC	0 mA	
DeviceNet current range	11…25V DC	
DeviceNet current draw	110 mA @ 24V DC Class 2/SELV	90 mA @ 24V DC Class 2/SELV
Power dissipation	4.7 W	4.7 W
Isolation voltage	30V (continuous), basic insulation type, DeviceNet to backplane Type tested at 710V DC for 60 s	
Weight, approx.	0.280 kg (0.61 lb)	
Dimensions (HxWxD), approx.	118 x 50 x 87 mm (4.65 x 1.97 x 3.43 in.)	
Slot width	1	
Module location	DIN rail or panel mount	
Mounting screw torque	1.16 N•m (10 lb•in) - use M4 or #8 screws	
Power supply distance rating	4 modules	Series A 4 modules Series B 5 modules
Ports	1 DeviceNet open-style 5-pin linear plug	
DeviceNet connector torque	0.56…0.79 N•m (5…7 lb•in)	
Wire size	802.3 compliant shielded or unshielded twisted pair	
Wire category	2 - on communication ports(2)	
North American Temperature Code	T3C	T4A
Enclosure type rating	None (open-style)	

(1) The 1769-SDN does not support CIP Safety (safety communication).

(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 8 - Certifications - 1769 DeviceNet Modules

Certification[1]	1769-SDN	1769-ADN
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 E10314.	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: EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions	
C-Tick	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions	
ODVA	ODVA conformance tested to DeviceNet specifications	

(1) When 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 cordsets or 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. • Thick-trunk round media systems use thick cable for maximum DeviceNet trunk line length. • 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 has thermoplastic elastomers (TPE) for additional chemical resistance.

For more information on selecting DeviceNet media, see the NetLinx Selection Guide, publication NETS-SG001.

Serial Network

The controller serial port is compatible with RS-232 serial communication. The serial port supports the DF1 protocol to communicate with other devices on the serial link.

Use this DF1 mode	For
Point-to-point	Communication between a controller and other DF1-compatible devices by using DF1 full-duplex protocol.
DF1 radio modem	SCADA applications where controllers exchange data via radio transmission.
DF1 master	Control of polling and message transmission between the master and each slave by using DF1 half-duplex polled protocol.
DF1 slave	Using the controller as a slave station in a master/slave serial network by using DF1 half-duplex protocol.
User mode (ASCII)	Communication between a controller and an ASCII device, such as a bar code reader.

The controller you choose determines the number of serial ports that are available.

Table 9 - Serial Port Options Based on Controller

If you need	Identified as	With this protocol	Select
One serial port	Channel 0 (fully isolated)	DF1, DH-485, ASCII	1768-L43 1769-L35CR, 1769-L32C 1769-L35E, 1769-L32E 1769-L23E-QB1B, 1769-L23E-QBFC1B
Two serial ports	Channel 0 (fully isolated) Channel 1 (nonisolated)	Channel 0: DF1, DH-485, ASCII Channel 1: DF1, DH-485	1769-L31 1769-L23-QBFC1B

If you connect the controller to a nonisolated port (channel 1) on the controller to a computer, modem, or ASCII device, install an isolator (such as the 1761-NET-AIC interface converter) between the controller and the end device.

Modbus Support

To use Logix5000 controllers on a Modbus network, you connect through the serial port and execute a specific ladder logic routine. The controller project is available with RSLogix 5000 Enterprise programming software. For more information, see Using Logix5000 Controllers as Masters or Slaves on Modbus Application Solution, publication CIG-AP129.

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 RSLogix 5000 software. However, excessive traffic over a DH-485 connection can adversely affect overall performance and can lead to timeouts and loss in RSLogix 5000 configuration performance.

IMPORTANT Use Logix5000 controllers on DH-485 networks only when you want to add controllers to an existing DH-485 network. For new applications with Logix5000 controllers, networks in the NetLinx open architecture are the recommended networks.

You need a 1761-NET-AIC converter for each controller you want to put on the DH-485 network. You can have two controllers per one 1761-NET-AIC converter, but you need a different 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

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-AP00	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, includes: • Pre-configured modem • Communication module • DIN rail mounting hardware • Associated cables

Additional Resources

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

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com/literature/) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

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Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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