

Installation Instructions

Original Instructions



Allen-Bradley
by ROCKWELL AUTOMATION

FLEX I/O ControlNet Adapters

Catalog Numbers 1794-ACN15, 1794-ACNR15, 1794-ACNR15XT, series D

Topic	Page
Summary of Changes	1
Overview	5
Install Your Adapter	5
Mounting Dimensions	6
Mount on a DIN Rail	6
Mount on a Panel or Wall	6
Mount or Replace the Adapter on an Existing System	6
Wire the Adapter	7
Interpret the Status Indicators	8
Specifications	9
Additional Resources	10

Summary of Changes

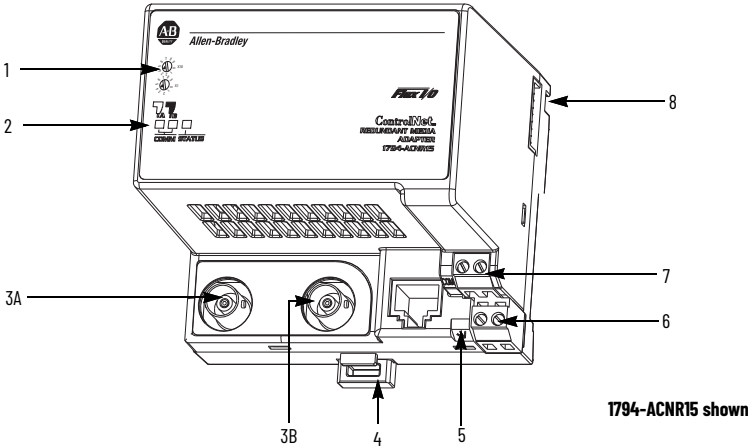
This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated minimum temperature rating for wire conductor and insulation	3

Overview

FLEX I/O ControlNet® single and redundant adapters (1794-ACN15, 1794-ACNR15, 1794-ACNR15XT, series D, firmware revision 10.3) function as drop-in replacements for series C adapters and continue to support 32-bit modules and numerical display of the firmware revision in RSNetWorx™ for ControlNet (revision 3.21 or later).

FLEX I/O ControlNet Adapter – 1794-ACN15, 1794-ACNR15, 1794-ACNR15XT, Series D



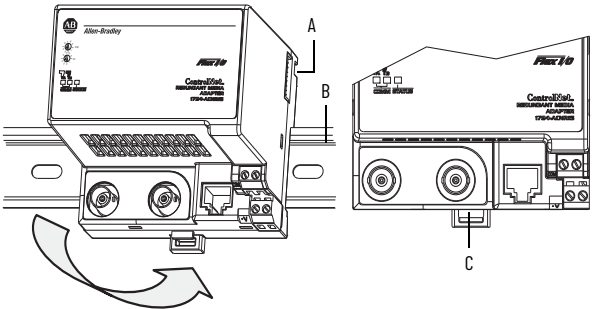
Component Identification

	Description		Description
1	ControlNet node selection dial	5	ControlNet programming terminal network access port (NAP)
2	Indicators	6	+24V DC connections
3A	ControlNet network cable BNC connector A	7	24V common connections
3B	ControlNet network cable BNC connector B ⁽¹⁾	8	Flexbus connector
4	Adapter locking tab		

(1) The ControlNet network cable BNC connector B is available on 1794-ACNR15 and 1794-ACNR15XT adapters only.

Install Your Adapter

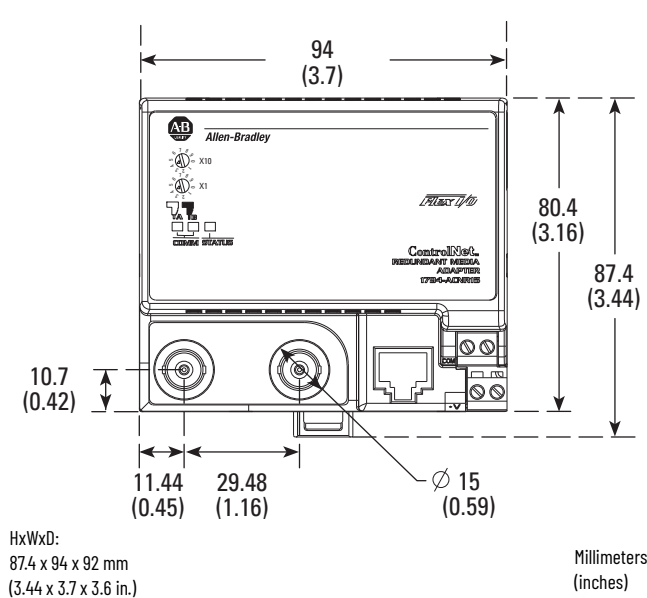
Read this for information on how to install the FLEX ControlNet adapter.



ATTENTION: During mounting of all devices, be sure that all debris (metal chips, wire strands, and so on) is kept from falling into the module. Debris that falls into the module could cause damage on power-up.

Mounting Dimensions

The adapters have the following mounting dimensions:



Mount on a DIN Rail

1. Position the ControlNet adapter (A) on an IEC standard (35 x 7.5 x 1 mm) top-hat DIN rail (B), Allen-Bradley® part number 199-DR1; 46277-3; EN50022, at a slight angle.
2. Hook the lip on the rear of the adapter onto the top of the DIN rail, and rotate the adapter onto the rail.
3. Press the adapter down onto the DIN rail until flush. Locking tab (C) snaps the adapter into position and locks it onto the DIN rail.
4. If the adapter does not lock in place, use a screwdriver or similar device to move the locking tab down while pressing the adapter flush onto the DIN rail, and release the locking tab to lock the adapter in place. If necessary, push up on the locking tab to lock.
5. Connect the adapter wiring. See [Wire the Adapter on page 7](#).

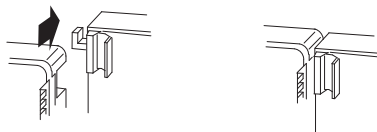
Mount on a Panel or Wall

To mount the adapter to a panel or wall, see Panel Mounting Kit Cat. No. 1794-NM1/B Installation Instructions, publication [1794-IN135](#).

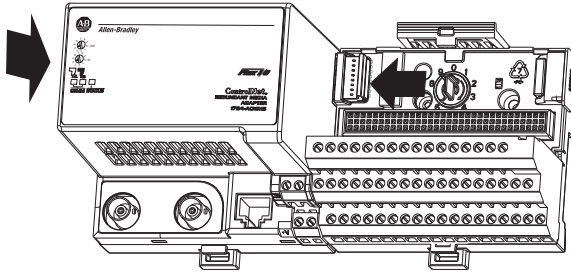
Mount or Replace the Adapter on an Existing System

1. Disconnect any wiring jumpered to the adjacent terminal base.
2. Disconnect the BNC connectors from the front of the adapter.
3. Open the module latching mechanism and remove the module from the base unit to which the adapter is attached.
4. Push the Flexbus connector toward the right side of the terminal base to unplug the backplane connection.
5. Release the locking tab and remove the adapter.

Before installing the new adapter, notice the notch on the right rear of the adapter. This notch accepts the hook on the terminal base unit. The notch is open at the bottom. The hook and adjacent connection point keep the terminal base and the adapter tight together, reducing the possibility of a break in communication over the backplane.



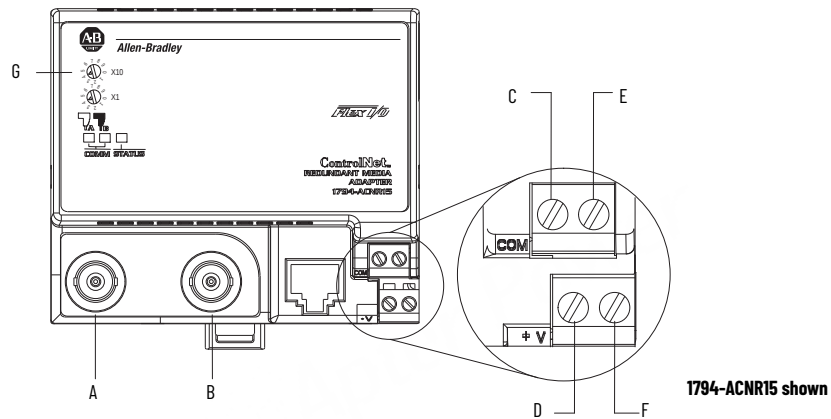
6. Push down and in at the same time to lock the adapter to the DIN rail.
If the adapter does not lock in place, use a screwdriver or similar device to move the locking tab down while pressing the adapter flush onto the DIN rail, and release the locking tab to lock the adapter in place. If necessary, push up on the locking tab to lock.



When the adapter is locked onto the DIN rail, gently push the Flexbus connector into the adapter to complete the backplane.

7. Reinstall the module in the adjacent terminal base unit.

Wire the Adapter



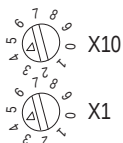
1. Connect the ControlNet network cable to connector, terminal A.
2. **For 1794-ACNR15, 1794-ACNR15XT only:** Connect the redundant ControlNet network cable to connector B.



WARNING:

- If you connect or disconnect the ControlNet cable with power applied to this adapter or any device on the network, an electric arc can occur. This could cause an explosion in hazardous installations. Be sure that power is removed or the area is nonhazardous before proceeding.
- If you connect or disconnect wiring while the field side power is on, an electric arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.
- When connecting wiring, torque terminal screws C, D, E, and F to 0.8 N•m (7 lb•in.).
- Power wiring must be less than 10 m (32.8 ft) in length.
- Do not wire more than 2 conductors on any single terminal.

3. Connect +V DC power to the left side of the lower connector, terminal D.
4. Connect -V common to the left side of the upper connector, terminal C.
5. Connections E and F are used to pass -V common (E) and +V DC power (F) to the next module in the series (if necessary).
6. Set the network address using the selection dials G. Valid settings range from 01...99.



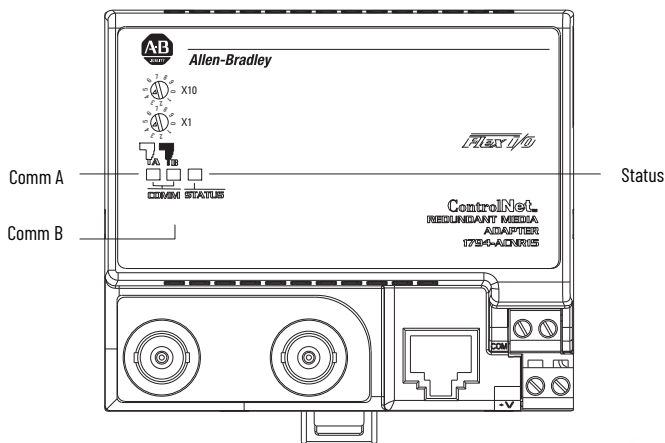
ATTENTION: Do not remove or replace a terminal base unit or an adapter while power is applied. Interruption of the backplane can result in unintentional operation or machine motion.



ATTENTION: To reduce susceptibility to noise, power the analog modules and digital modules from separate power supplies. Do not exceed a cable length of 3 m (9.8 ft) for DC power.

Interpret the Status Indicators

The adapter has LED indicators to specify its status and aid the user in troubleshooting.



Status Indicators

Status Indicator	Probable Cause
Comm A and Comm B Simultaneously	
Off	No power or reset
Red	The adapter is inoperative.
Red/green flashing alternately	The adapter is in self-test mode.
Red/off flashing alternately	Bad node configuration (duplicate address)
Comm A or Comm B (individually)	
Off	The channel is disabled.
Green	The channel is operational.
Flashing green/off	Temporary network errors
Flashing red/off	Cable fault, broken cable, or redundancy warning
Flashing red/green	Bad network configuration
Status	
Off	No power
Flashing green/off	The adapter is online but not connected.
Green	The adapter is online, link is ok and connected.
Flashing red	The I/O module is removed, a wrong I/O module is inserted, or a FLASH program update is in progress.
Red	Critical - Adapter failure

Specifications

General Specifications – FLEX I/O ControlNet Adapter

Attribute	Value
I/O capacity	8 modules
Supply voltage, input	19.2...31.2V DC, 400 mA
Supply voltage, output	5V DC, 640 mA
Inrush current	14 A for 2 ms
Communication rate	5 Mbps
Status indicators	I/O Status – Red/green Comm A – Red/green Comm B – Red/green
Isolation voltage	50V (continuous), Basic Insulation Type Type tested @ 860V AC for 60 s, power to system, power to ControlNet, and ControlNet to system No isolation between ControlNet channels
Power dissipation, max	3.4 W @ 19.2V DC
Terminal screw torque	0.8 N•m (7 lb•in)
Wire size	Power connections: Single wire connection: 0.33...2.5 mm ² (22...12 AWG) solid or stranded copper wire rated at 105 °C (221 °F) or greater 1.2 mm (3/64 in.) insulation max Double wire connection: 0.33...1.3 mm ² (22...16 AWG) solid or stranded (not intermixed) copper wire rated at 105 °C (221 °F) or greater 1.2 mm (3/64 in.) insulation max
Wire category ⁽¹⁾	3 – on power ports 2 – on communications ports
Dimensions, approx. (HxWxD)	87.4 x 94 x 92 mm (3.44 x 3.7 x 3.6 in.)
Weight, approx.	220 g (7.76 oz)
Enclosure type rating	None (open-style)
ControlNet cable	Belden RG-6/U
North American temp code	T4A
UKEX/ATEX temp code	T4
IECEx temp code	T4

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

Environmental Specifications

Attribute	1794-ACN15, 1794-ACNR15	1794-ACNR15XT
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...+55 °C (-13...+131 °F)	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, 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)	
Surrounding air temperature, max	55 °C (131 °F)	70 °C (158 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5...95% noncondensing	
Vibration	IEC60068-2-6 (Test Fc, Operating): 5 g @ 10...500 Hz	
Shock, operating	IEC60068-2-27 (Test Ea, Unpackaged shock): 30 g	
Shock, nonoperating	IEC60068-2-27 (Test Ea, Unpackaged shock): 50 g	
Emissions	IEC 61000-6-4	
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...6000 MHz	

FLEX I/O ControlNet Adapters Installation Instructions

Environmental Specifications (Continued)

Attribute	1794-ACN15, 1794-ACNR15	1794-ACNR15XT
EFT/B immunity	IEC 61000-4-4: ±4 kV at 5 kHz on power ports ±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	

Certifications

Certifications (when product is marked) ⁽¹⁾	Value
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.
UK and CE	UK Statutory Instrument 2016 No. 1091 and European Union 2014/30/EU EMC Directive, compliant with: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61131-2; Programmable Controllers EN 61000-6-4; Industrial Emissions UK Statutory Instrument 2012 No. 3032 and European Union 2011/65/EU RoHS, compliant with: EN 63000; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
Ex	UK Statutory Instrument 2016 No. 1107 and European Union 2014/34/EU ATEX Directive, compliant with: EN IEC 60079-0; General Requirements EN IEC 60079-7; Explosive Atmospheres, Protection "e" II 3 G Ex ec IIC T4 Gc DEMKO 14 ATEX 1342501X UL22UKEX2378X
IECEX	IECEX System, compliant with: IEC 60079-0; General Requirements IEC 60079-7; Explosive Atmospheres, Protection "e" Ex ec IIC T4 Gc IECEX UL 14.0066X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
Morocco	Arrêté ministériel n° 6404-15 du 29 ramadan 1436
CCC	CNCA-C23-01 强制性产品认证实施规则 防爆电气 CNCA-C23-01 CCC Implementation Rule Explosion-Proof Electrical Products

(1) See the Product Certification link at rok.auto/certifications for Declarations of Conformity, Certificates, and other certification details.

Additional Resources

For more information on the products that are described in this publication, use these resources. You can view or download publications at rok.auto/literature.

Resource	Description
FLEX I/O and FLEX I/O-XT Selection Guide, publication 1794-SG002	A description and overview of the 1794 series FLEX I/O and FLEX I/O-XT™ modules and compatible control platforms.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.