

Installation Instructions

ControlNet Ex Redundant Media Adapter

Catalog Number 1797-ACNR15

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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.literature.rockwellautomation.com>) 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.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual we use notes to make you aware of safety considerations.

 WARNING	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
 ATTENTION	Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you: identify a hazard, avoid a hazard, and recognize the consequence
 SHOCK HAZARD	Labels may be located on or inside the equipment to alert people that dangerous voltage may be present.
 BURN HAZARD	Labels may be located on or inside the equipment to alert people that surfaces may be dangerous temperatures.

ATTENTION**Environment and Enclosure**

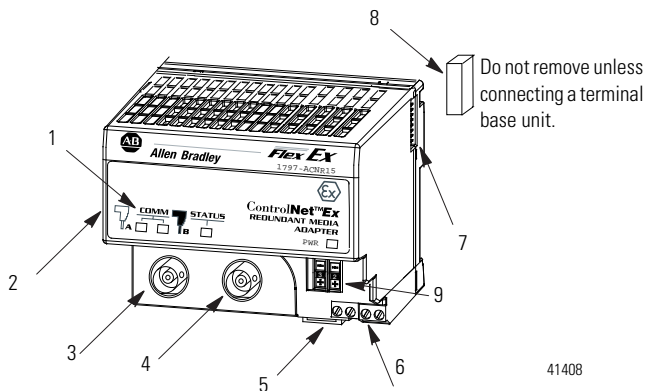
This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as open-type equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

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About the ControlNet Ex Adapter

Use the redundant media adapter to connect FLEX Ex modules to the ControlNet Ex network.



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Component Identification

1	Indicators
2	Label
3	ControlNet Ex tap drop BNC connector channel A with insulator boot
4	ControlNet Ex tap drop BNC connector channel B with insulator boot
5	Module locking tab
6	Removable power connectors
7	Backplane connector
8	Backplane connector cover
9	Node address push switch

Module Installation

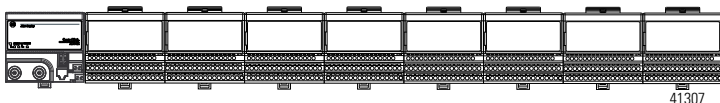
This adapter must not be exposed to the environment. Provide a suitable metal enclosure. This adapter has a protection factor of IP20.

ATTENTION

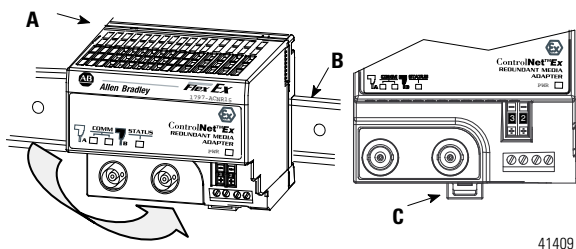


This product is grounded through the DIN rail to the dedicated intrinsic safety ground. Use zinc-plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (such as aluminum or plastic) that can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding.

Make certain that you only connect ControlNet Ex adapters to other intrinsically safe system modules to maintain the integrity of the intrinsically-safe backplane.



Install the Adapter



1. Position the ControlNet Ex adapter module (A) on a 35 x 7.5 mm DIN rail (B) (A-B pt. no. 199-DR1) at a slight angle.

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2. Hook the lip on the rear of the adapter (**A**) onto the top of the DIN rail (**B**), and rotate the module onto the rail.
3. Press the adapter module down onto the DIN rail until flush.
4. The locking tab (**C**) should snap into position and lock the adapter module to the DIN rail.
5. If the adapter does not snap into position, use a screwdriver or similar device to move the locking tab down while pressing the adapter module flush onto the DIN rail. Release the locking tab to lock the module in place.
6. If necessary, push up on the locking tab to lock.
7. Connect the adapter wiring as shown under Wiring later in this document.

Mount (or Replace) the Adapter on an Existing System

1. Disconnect the BNC connectors from the front of the ControlNet Ex adapter.
2. Remove the front power plug from the ControlNet Ex adapter.
3. Remove the I/O module from the terminal base unit that is to the immediate right of the ControlNet Ex adapter.
4. Push the flexbus connector toward the right side of the terminal base to unplug the backplane connection.

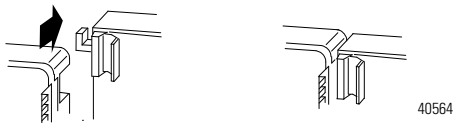
ATTENTION

Make certain that the flexbus connector is completely clear of the adapter. The slide must be completely to the right and the raised spot on the slide visible.

5. Release the locking tab and remove the adapter.
6. Remove the backplane connector cover from the adapter.

7. 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 adapter tight together, reducing the possibility of a break in communication over the backplane.

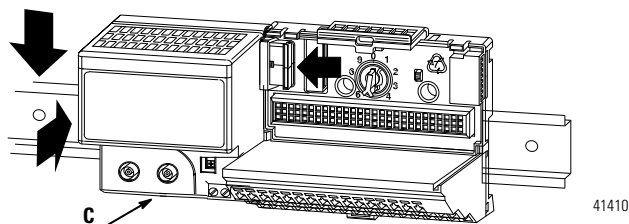
**ATTENTION**

Make certain that the hook on the terminal base is properly hooked into the adapter. Failure to lock the hook into the adjacent base/adapter can result in loss of communication on the backplane.

8. Complete the adapter mounting as shown below.

Push down and in at the same time to lock the adapter to the DIN rail.

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



9. If the adapter module does not lock in place, use a screwdriver or similar device to move the locking tab (C) down while pressing the adapter module flush onto the DIN rail. Then release the locking tab to lock the adapter module in place.
10. Push up on the locking tab to lock, if necessary.
11. Reinstall the I/O module into the terminal base unit.
12. Make sure the last terminal base has its right-side flexbus connector cover in place.

Installation in Zone 1

The adapter must not be exposed to the environment. Provide a suitable metal enclosure. The adapter has a protection factor of IP20.

WARNING

The adapter cannot be used in an intrinsically safe environment after they have been exposed to nonintrinsically safe signals.

Installation in Zone 22

When the adapter is installed in Zone 22, the following cabinets must be used: IVK-ISRPI-V16LC; IVK-ISRPI-V8HYW; or IVK-ISRPI-V8LC. These cabinets can be purchased from:

Pepperl+Fuchs GmbH
Lilienthalstrasse 200
68307 Mannheim, Germany
Attn: PA Sales Dept.
Kirsten Becker
Telephone +49 776 1298
www.pepperl-fuchs.com

The IS-RPI cabinets (type IVK2-ISRPI-V8LC, IVK2-ISRPI-V8HYW, or IVK2-ISRPI-V16LC) ensures the basic protection for the intrinsically safe apparatus of the Flex Ex system for use in Zone 22. It corresponds with category 3D according to RL 94/9 EG and with the type label marked with the following information:

Pepperl+Fuchs GmbH
68307 Mannheim
IVK2-ISRPI-V8LC (or IVK2-ISRPI-V8HYW or
IVK2-ISRPI-V16LC)
Ⓔ II 3 D Ex tD A22 IP54 T70 °C X
CE
Serial (manufacturing) number
Model

Electrostatic Charge

Protect the system against electrostatic charge. Post a sign near this adapter:
WARNING Avoid electrostatic charging.

ADVERTÊNCIA! PREVENIR CONTRA O ACÚMULO DE CARGA ELETROSTÁTICA.

For your convenience, a sign that can be cut out is included in this installation instruction.

European Community (EC) Directive Compliance

If this product has the CE mark it is approved for installation within the European Community or EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

These products are tested to meet the Council Directive 2014/30/EU by applying the following standards:

- EN 61000-6-4:2007, Electromagnetic Compatibility (EMC) - Part 6-4: Generic Standard for Industrial Environments (Class A)
- EN 61000-6-2:2005, Electromagnetic Compatibility (EMC) - Part 6-2: Generic Standards - Immunity for Industrial Environments
- EN 61326-1:2013 (Industrial), Electrical Equipment For Measurement, Control, and Laboratory Use - Industrial EMC Requirements

European Hazardous Location Approval

The following applies to products marked **CE** **Ex** II 2 G

- Are Equipment Group II, Equipment Category 2, and comply with the Essential Health and Safety Requirements relating to the design and construction of such equipment given in Annex II to Directive 2014/34/EU. See the EC Declaration of Conformity at <http://www.rockwellautomation.com/products/certification> for details.

- The type of protection is “Ex ib IIC T4” according to EN 60079-11.
- Comply to Standards EN 60079-0:2006, EN 60079-11:2007, reference certificate number DMT 99 ATEX E 008 X.
- Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are likely to occur occasionally. Such locations correspond to Zone 1 or 2 classification according to ATEX directive 2014/34/EU.

IEC Hazardous Location Approval

The following applies to products with the IECEx certification:

- Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are likely to occur only infrequently and for short periods. Such locations correspond to Zone 1 or 2 classification to IEC 60079-0.
- The type of protection is “Ex ib IIC T4” according to IEC 60079-11.
- Comply to Standards IEC 60079-0:2004, IEC 60079-11:2006, reference IECEx certificate number IECEx BVS 09.0026X.

Special Conditions for Safe Use:

A warning notice must be placed close to the module:

“Warning! Avoid electrostatic charging.”

UL, C-UL Compliance

If this product has the UL/C-UL mark, it has been designed, evaluated, tested, and certified to meet the following relevant standards:

- UL 913, 1988, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III Division 1, Hazardous (Classified) Locations
- UL 1203, Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
- UL 2279, Electrical Equipment for Use in Class I, Zone 0, 1, and 2 Hazardous (Classified) Locations

- UL 61010, UL Standard for Safety Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements
- CSA C22.2 No. 157-92, Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
- CSA C22.2 No. 30-M1986, Explosion-Proof Enclosures for Use in Class I Hazardous Locations
- CSA-E79-0-95, Electrical Apparatus for Explosive Gas Atmospheres, Part 0: General Requirements
- CSA-E79-11-95, Electrical Apparatus for Explosive Gas Atmospheres, Part 11: Intrinsic Safety “i”
- CSA C22.2 No. 14-95, Industrial Control Equipment

FM Compliance

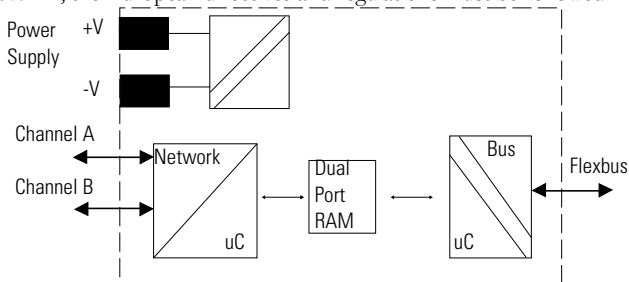
If this product has the FM mark, it has been designed, evaluated, tested, and certified to meet the following standards:

- FM C1. No.3600:1998, Electrical Equipment for Use in Hazardous (Classified) Locations General Requirements
- FM C1. No.3610:1999, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, III Division 1 Hazardous (Classified) Locations
- FM C1. No.3615:1989, Explosionproof Electrical Equipment General Requirements
- FM C1. No.3810:1989, 1995, Electrical and Electronic Test, Measuring and Process Control Equipment
- ANSI/NEMA 250, 1991, Enclosures for Electrical Equipment

Inputs/Outputs

Do not apply any nonintrinsically safe signals to the adapter.

When using as an intrinsically safe electrical apparatus according to EN 60079-11, the European directives and regulations must be followed.



ControlNet Ex Adapter Operation

The ControlNet Ex adapter, combined with FLEX Ex output modules, provides a two-tier fault state mechanism. It is important to consider and understand the operation of this mechanism when designing your system.

Two sets of programmable fault states are available, one each in the adapter and output module. This two-tier method is meant to give you a wider fault coverage compared with normal methods.

Network Communication Monitoring

The adapter is the primary monitor of network activity. If it detects loss of network communication, it can be programmed to:

- continue writing the last valid received data to the module (hold last state).
- apply local module safe states.⁽¹⁾
- write a programmable fault state value to the module, depending upon the module type.

This mechanism primarily targets fault behavior for loss of network communication.

Program Mode Behavior

The adapter also monitors the state of the controlling processor or scanner. Two states can be detected: Run mode and Program mode (idle).

When run mode is detected, the adapter writes the output data received from the processor to the corresponding module output.

When Program mode is detected, the adapter can be configured to:

- continue writing the last valid received data to the module (hold last state).
- apply local module safe states to zero.⁽¹⁾
- write a programmable fault state value to the module, depending upon the module type.

⁽¹⁾ This selection is shown as Reset Outputs in RSNetWorx software but its action is Apply Local Module Safe States.

FLEX Ex Output Module Operation

Refer to the following communication monitoring and power-up state behavior.

Flexbus Communication Monitoring

The module monitors flexbus communication activity and the state of its Output Enable bit. If it detects loss of flexbus communication activity or the Output Enable bit transitioning to 0, it can be programmed to:

- continue writing the last valid received data to the outputs (hold last state).
- reset the outputs.
- write the local module fault state value to the output, depending upon the module type.

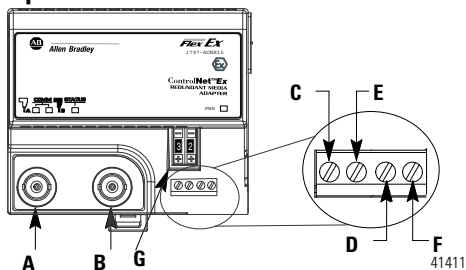
This mechanism primarily targets fault behavior for loss of backplane communication.

Power-up State Behavior

The system and modules use the Output Enable bit at system power-up. The power-up state of the Output Enable bit is 0 and must be transitioned to 1 through application program control to initialize activity of a module's outputs.

Before the Output Enable bit is transitioned to 1, module outputs remain off. Once the initial power-up and application-program control transitions the Output Enable bit to 1, and module output activity begins, subsequent transitions of the Output Enable bit by any source will cause the output module to apply the local module fault state.

Wire the Adapter



ATTENTION



When connecting wiring, torque terminal screws to 0.8 to 1 Nm (5 to 7 lb-in).

WARNING



Make certain that you power this adapter with an intrinsically safe power supply. Do not exceed the values listed in the specifications for this adapter.

If you connect or disconnect wiring while the field-side power is on, an electrical 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.

1. Connect the ControlNet Ex tap drop cable to connector, terminal **A** after removing the insulator boot.

IMPORTANT

The tap drop BNC must also have its insulator ring in position when inserted.

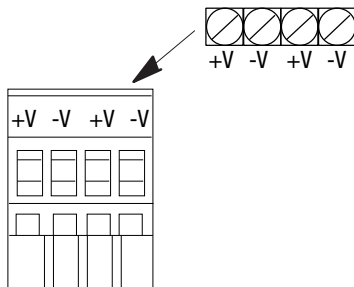
2. Connect the redundant ControlNet Ex tap drop cable to connector **B** after removing the insulator boot.

IMPORTANT

The tap drop BNC must also have its insulator ring in position when inserted.

Only remove the BNC covers if the ControlNet Ex tap drop cable is installed.

3. Apply +V and -V power to the adapter through a removable terminal block.



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Screw terminals and spring terminals are provided.

4. Strip the +V and -V wires to a length so no bare conductor shows after inserting the wires into position (+V, -V).
5. If you are using the spring terminals of the plug, insert a screwdriver into the slot and **carefully** pry until the spring clamp opens to accept the wire.

WARNING

Do not remove or replace an adapter when power is applied. Interruption of the bus can result in unintended operation or machine motion.

Do not use any unused terminals on this adapter. Using these terminals as supporting terminals can result in damage to the module, or unintended operation of your system.

Make certain that you power this adapter with an intrinsically safe power supply. Do not exceed the values listed in the specifications for this adapter.

6. Set the network address using the 2-position push-switch **G**.

Valid settings range from 01 to 99. Press either the + or - buttons to change the number.

Description of the ControlNet Ex System Diagrams

A maximum of 48 ControlNet Ex nodes may be connected together by 250 m of coax cable and 48 taps. The distance increases to 1000 m when you use only 2 taps. See the table below for more information.

The fiber media of the 1797-RPFM can be installed in a hazardous location (Zone 0, 1 or 2; Class I, Zones 0, 1, and 2; Class I, Division 1 and 2; Class II, Division 1 and 2; Class III, Division 1 and 2) to connect two 1797-RPFM modules or they can be installed through different locations into the nonhazardous location to connect the 1797-RPFM with any approved associated apparatus.

All cables and fiber media that are not light blue must be marked as IS using the 1797-EXMK marking kit or other locally approved IS identification or segregation method.

During the installation of the ControlNet Ex system, all metallic parts must be isolated to prevent an earth connection (high voltage withstanding of isolating material must be > 500V ac).

System Diagram Name	Catalog Number	Catalog Name	Description
1797-RPA	1797-RPA	ControlNet Ex Modular Repeater Adapter	Represents one ControlNet Ex node and must be connected to a coax trunk cable by 1797-TPx
1797-RPFM	1797-RPFM	ControlNet Ex Fiber Repeater Module, Medium Distance	Allows connection of a maximum of two devices per 1797-RPA and is powered directly by 1797-RPA
1797-ACNR15	1797-ACNR15	Redundant Media ControlNet Ex Adapter	Represents one ControlNet Ex node and must be connected to a coax trunk cable by 1797-TPx - each one with two redundant output channels that are connected to different ControlNet Ex networks (coax cables and 1797-TPx)

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System Diagram Name	Catalog Number	Catalog Name	Description
CNet Ex Tap Trm	1797-TCAP	ControlNet Ex Tap (Dummy) Terminator	Represents one ControlNet Ex node and is a simple capacitor (56 pF) with a coax connector
ControlNet Ex Tap	1797-TPx	ControlNet Ex Coax Tap	Four types of connections available: S (straight t-tap), R (right angle t-tap), YS (straight y-tap), and YR (right angle y-tap) - a maximum of 48 taps can be connected together by coax trunk cable
CNet Ex Trk Trm	1797-XT	ControlNet Ex Trunk Terminator	Simple resistor (75 Ω) with coax connector that must be on each end of the ControlNet Ex coax trunk for termination
Coax Trunk Cable	1786-RG6	Quad-Shield, RG-6 75 Ω Coax Trunk Cable	Maximum (functional) length between 2 1797-TPx is 1000 m (3280 ft) - each 1797-TPx reduces the (functional) coax cable length by 16.3 m (53.4 ft)
None	None	Standard Coax Trunk Cable BNC Couplers	Different standard cable couplers, such as 90 ° or 180 °.

Certified Equivalent ControlNet Ex System Diagram Items

You may use these items as equivalents for the items shown on the system diagram.

System Diagram Name	Catalog Number	Source
1797-RPA	1797-RPA	Allen-Bradley
1797-RPFM	1797-RPFM	Allen-Bradley
1797-ACNR15	1797-ACNR15	Allen-Bradley
Coax Trunk Cable ⁽¹⁾	1786-RG6	Allen-Bradley
	3092A ⁽²⁾	Belden Wire & Cable Co.
	3092A with blue jacket	Belden Wire & Cable Co.
ControlNet Ex Tap	1797-TPx	Allen-Bradley
CNet Ex Trk Trm	1797-XT	Allen-Bradley
CNet Ex Tap Trm	1797-TCAP	Allen-Bradley

- 1 In addition to these cable types, the following specification can be followed to allow additional types:

Cable Impedance = $75 \Omega \pm 3 \Omega$

Cable Capacitance = ≤ 6 nF per 100 m

Cable Resistance = $\geq 9.08 \Omega$ per 100 m

Cable Attenuation	0.2 MHz ≥ 0.93 dB/100 m	5 MHz ≥ 1.39 dB/100 m
(-20... +70 °C)	0.5 MHz ≥ 0.95 dB/100 m	10 MHz ≥ 1.86 dB/100 m
	1 MHz ≥ 1.07 dB/100 m	20 MHz ≥ 2.73 dB/100 m
	2 MHz ≥ 1.16 dB/100 m	50 MHz ≥ 4.33 dB/100 m

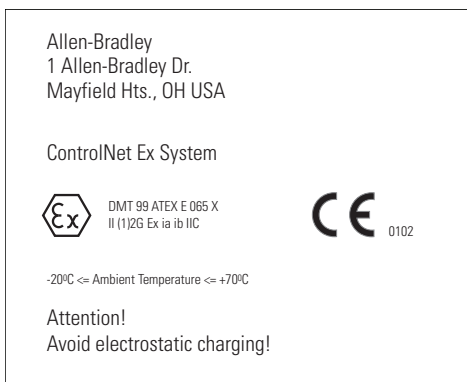
- 2 Belden Wire & Cable 1189A may be used, but with functional loss of communication distance or nodes.

Certification Specific ControlNet Ex System Diagrams

The following pages include certification specific ControlNet Ex system diagrams and notes pertaining to these diagrams. Select either CENELEC, UL, C-UL, or FM and follow the requirements of that diagram as you configure and install your system.

CENELEC Installation Label

A label with this system marking must be attached near the main components of the system. If the system is installed in a cabinet, this label must be fixed inside the cabinet.



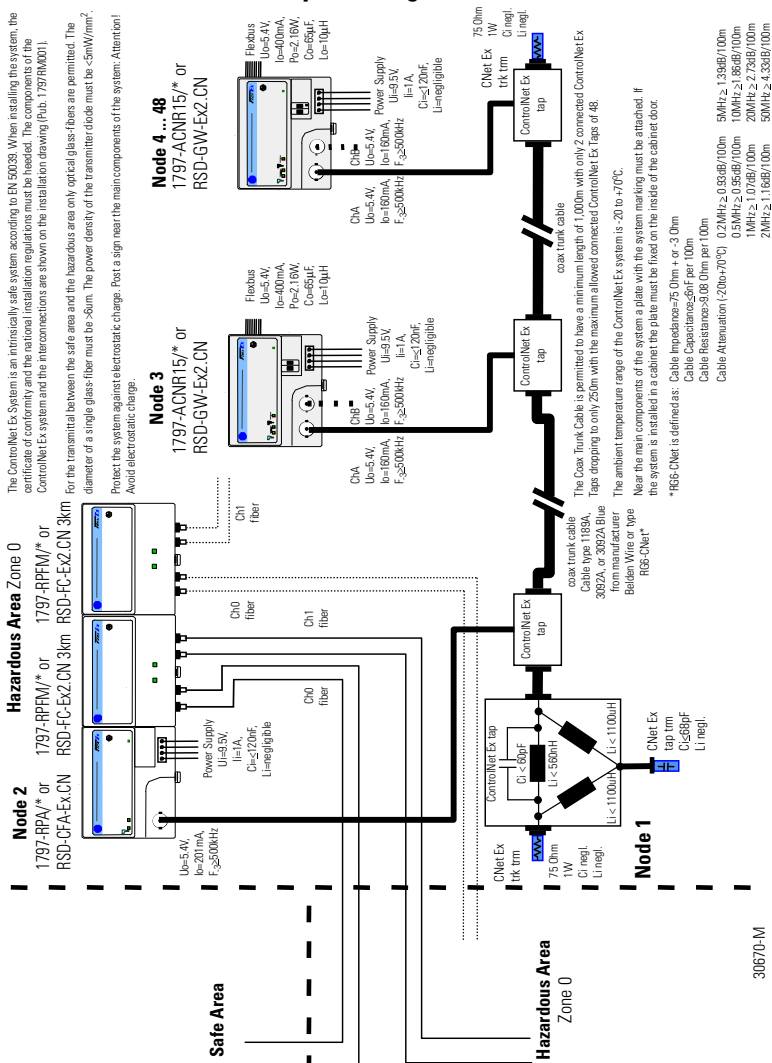
CENELEC 1797-ACNR15 I/O Entity Parameters

Terminals	U _o (V)	I _o (mA)	Groups	C _o (μF)	L _o (μH)
Male Bus Connector	5.4	400	IIB/IIC	65	10

CENELEC ControlNet Ex System Diagram

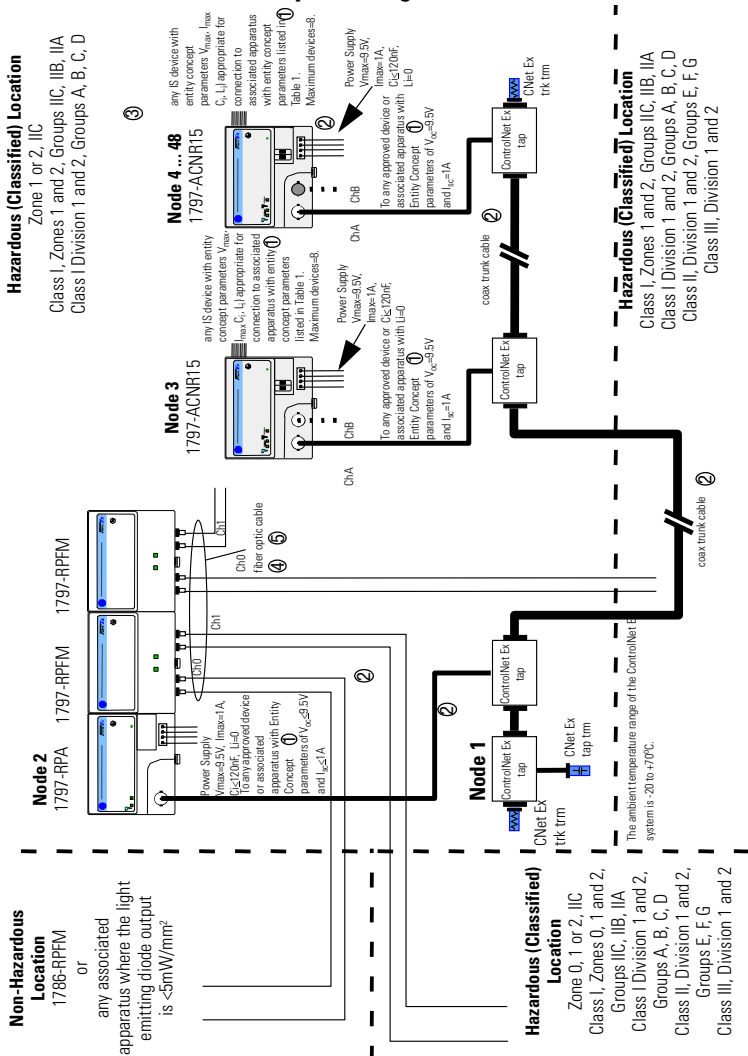
The ControlNet Ex System is an intrinsically safe system according to EN 50038. When installing the system, the certificate of conformity and the national installation regulations must be heeded. The components of the ControlNet Ex system and the interconnections are shown on the installation drawing (Pub. 1797RM001).

For the transmitter between the safe area and the hazardous area only optical glass-fibers are permitted. The diameter of a single glass-fiber must be $\leq 6\mu\text{m}$. The power density of the transmitter diode must be $\leq 5\text{mW}/\text{mm}^2$. Protect the system against electrostatic charge. Post a sign near the main components of the system. Attention! Avoid electrostatic charge.



30870-M

UL, C-UL ControlNet Ex System Diagram



UL, C-UL ControlNet Ex System Diagram Notes

① The entity concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system when the approved values of V_{oc} and I_{sc} or V_t and I_t of the associated apparatus are less than or equal to V_{max} and I_{max} of the intrinsically safe apparatus and the approved values of C_a and L_a of the associated apparatus are greater than $C_i + C_{cable}$ and $L_i + L_{cable}$ respectively for the intrinsically safe apparatus.

② Wiring methods must be in accordance with the National Electric Code, ANSI/NFPA 70, Article 504 and 505 or the Canadian Electric Code CSA C22.1, Part 1, Appendix F. For additional information refer to ANSI/ISA RP12.6.

③ **WARNING:** Substitution of components may impair intrinsic safety.
AVERTISSEMENT: La substitution de composant peut compromettre la securite intrinseque.

④ If fiber optic cable is provided with a metal shield, it must be connected to a dedicated intrinsic safety ground in the nonhazardous location and tied back in the hazardous location or be connected to a ground in the hazardous location and tied back in the nonhazardous location.

⑤ The glass fiber must have a minimum diameter of 6 μm .

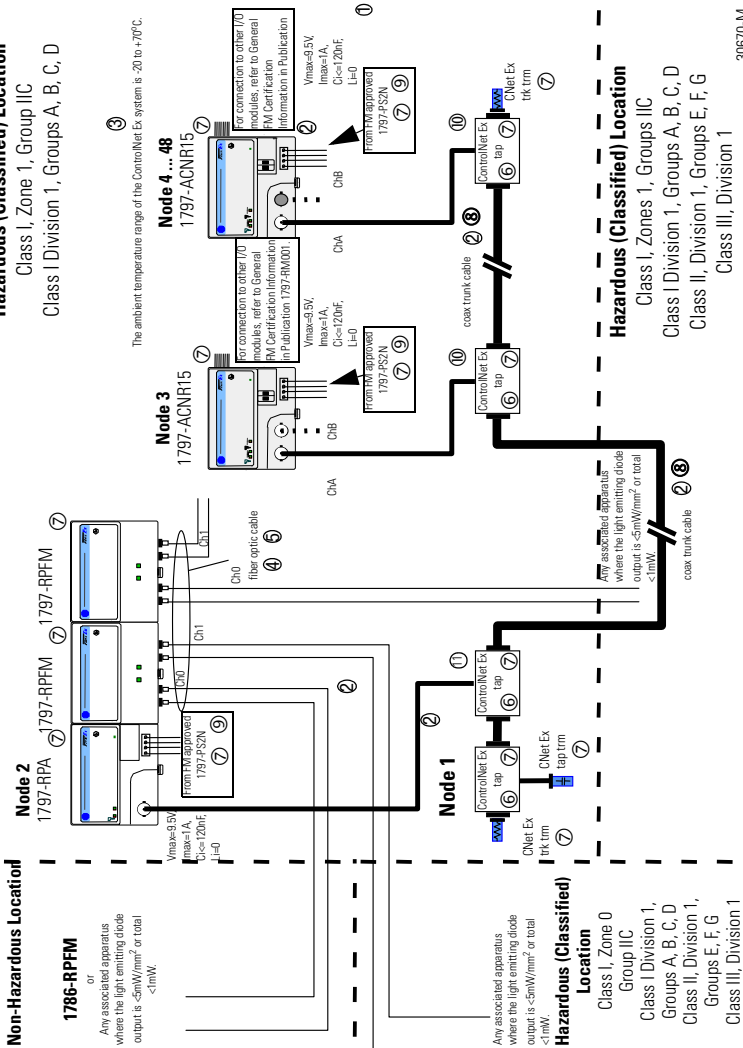
UL, C-UL 1797-ACNR15 I/O Entity Parameters

Terminals	V_t (V)	I_t (mA)	Groups	C_a (μF)	L_a (μH)
Male Bus Connector	5.8	400	A-G	3.0	3.0

FM ControlNet Ex System Diagram

Hazardous (Classified) Location

Class I, Zone 1, Group IIC
Class I Division 1, Groups A, B, C, D



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FM ControlNet Ex System Diagram Notes

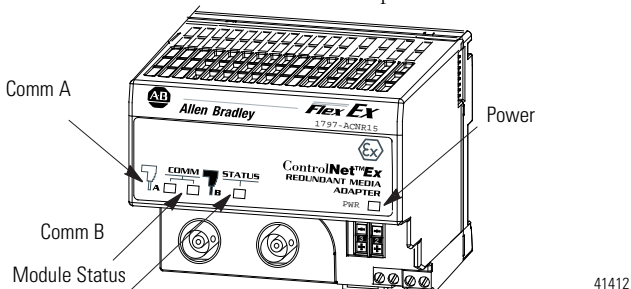
- ① The entity concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system when the approved values of V_{oc} and I_{sc} or V_t and I_t of the associated apparatus are less than or equal to V_{max} and I_{max} of the intrinsically safe apparatus and the approved values of C_a and L_a of the associated apparatus are greater than $C_i + C_{cable}$ and $L_i + L_{cable}$ respectively for the intrinsically safe apparatus.
- ② Wiring methods must be in accordance with the National Electric Code, ANSI/NFPA 70, Article 504 and 505. For additional information refer to ANSI/ISA RP12.6.
- ③ **WARNING:** Substitution of components may impair intrinsic safety.
- ④ If fiber optic cable is provided with a metal shield, it must be connected to a dedicated intrinsic safety ground in the nonhazardous location and tied back in the hazardous location or be connected to a ground in the hazardous location and tied back in the nonhazardous location.
- ⑤ The glass fiber must have a minimum diameter of 6 μm .
- ⑥ The ControlNet Ex tap must be connected directly to the module (no additional cable may be connected).
- ⑦ Must be FM approved.
- ⑧ Total coax trunk cable length is limited to 1000 m (3280 ft) with up to 2 ControlNet Ex taps connected and to 250 m (820 ft) with the maximum allowed ControlNet Ex taps of 48. For ControlNet Ex taps between 2 and 48 use: $1000 \text{ m (3280 ft)} - 16.3 \text{ m (53.4 ft)} \times (\text{number of taps} - 2)$ to find the maximum allowed cable length.
- ⑨ Power supplies are suitable for mounting in Class I, Division 1, Groups B-D or Class I, Zone 1, Group IIC.
- ⑩ The maximum number of 1797-ACNR15 modules that can be connected to one system is 47.
- ⑪ The maximum number of 1797-RPA modules that can be connected to one system is 47.

FM 1797-ACNR15 I/O Entity Parameters

Terminals	V _i (V)	I _i (mA)	Groups	C _a (μF)	L _a (μH)
Male Bus Connector	5.8	400	A-G	3.0	3.0

Indicators

The figure below identifies indicators on the adapter module.



41412

Comm, Module, and Power Status Indicators

Status Indicators	Probable Cause
Comm A and Comm B Simultaneously	
Off	No power, or reset
Red	Adapter inoperative
Red/Grn - (Flashing Alternately)	Adapter self-test
Red/Off - (Flashing Alternately)	Bad node configuration (duplicate address)

Comm A or Comm B Individually

Off	Channel disabled
Green	Channel operational
Flashing Grn/Off	Temporary network errors
Flashing Red/Off	Cable fault, broken cable, redundancy warning
Flashing Red/Grn	Bad network configuration

Status Indicator

Off	No power
Flashing Grn	Online, but not connected
Green	Online, link okay, connected
Flashing Red	I/O module removed, wrong I/O module inserted, FLASH program update in progress
Red	Critical - adapter failure

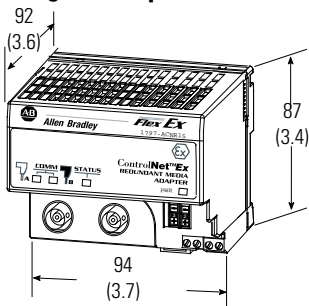
Module Status

Steady Green	At least one connection is established
Flashing Green	No connections are established
Flashing Red	Module removed, wrong module reinserted, or flash update in progress
Steady Red	Bad adapter

Power

Steady Green	Power is applied to the module
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Dimensions for Mounting the Adapter



Millimeters
(Inches)

41413

ATTENTION

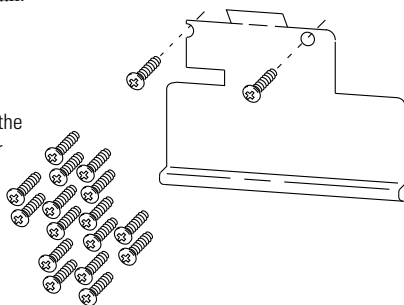


The DIN rail or mounting bracket must be appropriately connected to the dedicated intrinsic safety ground.

About the Mounting Kit

Use the optional 1794-NM1 mounting kit to mount your system on a panel or wall without a DIN rail.

1794-NM1
Mounting Kit With
18 Screws (2 Screws for the
Adapter and 2 Screws for
each Module)



30238

Repair

The adapter is not field-repairable. Any attempt to open this adapter module will void the warranty and the IS certification. If repair is necessary, return the adapter module to the manufacturer.

IMPORTANT

For detailed certification information, refer to the FLEX Ex System Certification Reference Manual, publication [1797-RM001](#).

WARNING Avoid electrostatic charging.
ADVERTÊNCIA! PREVENIR CONTRA O ACÚMULO DE CARGA ELETROSTÁTICA.

Specifications

1797-ACNR15 Specifications






I/O Capacity	8 modules
IS Media Type	Ex ib IIB/IIC T4, AEx ib IIC T4, Class I, Division 1 Groups A-G T4
IS Module Type	Ex ib IIB/IIC T4, AEx ib IIC T4, Class I Division 1 Groups A-D T4
Communication Rate	5 Mbps
ControlNet Ex BNC (ChA and ChB)	Oscillation powered by: $U_o \leq 5.4V$ dc $I_o \leq 160$ mA ac coupled with high-pass filter $f_{.3} \geq 500$ kHz
Indicators	Comm Ared/grn Comm Bred/grn Module Statusred/grn Powergrn

30 ControlNet Ex Redundant Media Adapter

1797-ACNR15 Specifications

Output (Intrinsically Safe) (16 Position Male/female Flexbus Connector)	$U_o \leq 5.4V$ dc $I_o \leq 400$ mA $P_o \leq 2.16$ W $L_o \leq 10$ μ H $C_o \leq 65$ μ F
Isolation Path Flexbus to Power Supply Flexbus to ControlNet ControlNet Ex Node to Other Node ControlNet Ex to Power Supply	Galvanic to DIN EN 60079-11 Galvanic functional Galvanic functional Galvanic to DIN EN 60079-11
Power Supply (+V, -V Intrinsically Safe)	$U_i \leq 9.5V$ dc $I_i \leq 1$ A $P_i \leq 9.5$ W $L_i =$ Negligible $C_i \leq 120$ nF
Power Consumption	8.5 W
Power Dissipation	8.5 W
Thermal Dissipation	29 BTU/hr
Conductor Wire Size	4 mm ² (12 gauge) stranded max 1.2 mm (3/64 in.) insulation max
Weight	Approximately 200 g
Environmental Conditions	
Operational Temperature	-20...70 °C (-4...158 °F)
Storage Temperature	-40...85 °C (-40...185 °F)
Relative Humidity	5...95% noncondensing
Shock	Operating Nonoperating
Vibration	Tested 15 g peak acceleration, 11 (\pm 1) ms pulse width Tested 15 g peak acceleration, 11 (\pm 1) ms pulse width Tested 2 g @ 10...500 Hz per IEC 68-2-6
Agency Certification	
CENELEC UL, C-UL	II 2G Ex ib IIC T4 Class I, Groups A, B, C and D; Class II, Groups E, F and G; Class III Hazardous Locations Class I, Zone 1, AEx ib IIC T4.
FM	Intrinsically safe Class I, Div 1, Groups A, B, C, D, T4 Associated Apparatus with Intrinsically safe connections Class I, II, III, Div 1, Groups A--G Intrinsically safe Class I, Zone 1, AEx ib IIC T4
INMETRO IECEx	BR-Ex ib IIB/IIC T4 Ex ib IIC T4

1797-ACNR15 Specifications**Certificates**

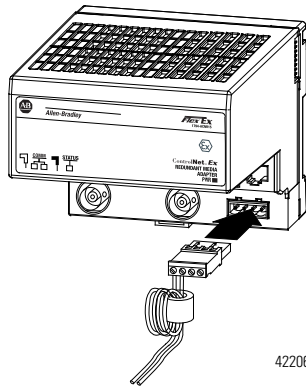
CENELEC	DMT 99 ATEX E008 X 
UL, C-UL	UL Certificate Number E197983 Class I Division 1 Hazardous
FM	 Class I Division 1 Hazardous FM Certificate Number 3009806 
INMETRO	APPROVED 05/UL-BRAE-0009X 
IECEX	 IECEX BVS 09.0026X

Ferrite Beads

Five ferrites come with each ControlNet Ex adapter. Four are identical and are for use on the ControlNet Ex trunk cable as shown below (two for Segment A and two for Segment B). The fifth ferrite is longer and you use it on the adapter power cable.

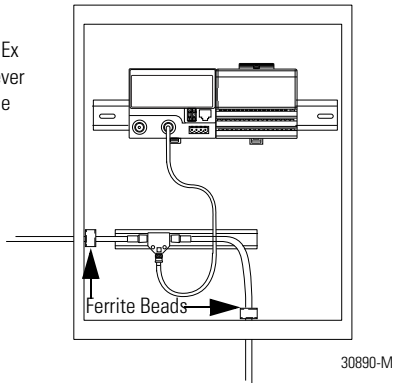
Wrap the IS power input cable two turns around the ferrite bead before connecting the terminal block to the adapter.

Five ferrite beads come with the adapter. Four are short and identical. Use these on the ControlNet Ex trunk cable. The fifth, longer ferrite bead is for the adapter power cable.



Add ferrite beads on the ControlNet Ex trunk cable inside the cabinet wherever the trunk cable goes into or out of the cabinet.

Only Segment B is shown with ferrites. If you use Segment A, then add ferrites similar to Segment B.



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Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <http://support.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running.

United States	1.440.646.3434 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning, it may need to be returned.

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

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Rockwell Automation maintains current product environmental information on its website at

<http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance-page>.

www.rockwellautomation.com

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