

# *Installation Instructions*

## **ControlNet Ex Modular Repeater Adapter & Fiber Repeater Module**

Catalog Numbers 1797-RPA and 1797-RPFM

### **Contents**

<b>For Information About</b>	<b>See Page</b>
Important User Information	2
About the ControlNet Ex Fiber Repeater Hub	4
DIN-Rail Mount the 1797-RPA and -RPFM	5
Installation in Zone 1 for CENELEC	8
Installation in Division 1/Zone 1 for UL, C-UL and FM	8
Electrostatic Charge	9
European Community (EC) Directive Compliance	9
Inputs/Outputs	12
Wire the Modules	13
Describing the ControlNet Ex System Diagram	15
Certification Specific ControlNet Ex System Diagrams	17
CENELEC Installation Label	18
CENELEC ControlNet Ex System Diagram	19
UL, C-UL ControlNet Ex System Diagram	20
FM ControlNet Ex System Diagram	22
Module Indicators	24
About the Mounting Kit	26
Repair	26
Specifications - 1797-RPA	27
Specifications - 1797-RPFM	29
Mounting Dimensions	31

### 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.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc. is prohibited.

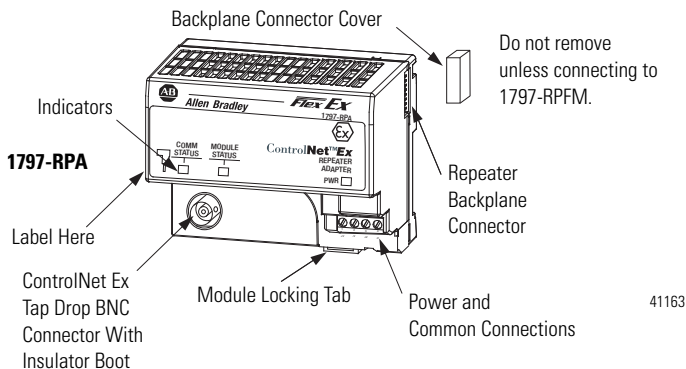
Throughout this manual we use notes to make you aware of safety considerations.

<b>WARNING</b> 	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.
<b>IMPORTANT</b>	Identifies information that is critical for successful application and understanding of the product.
<b>ATTENTION</b> 	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.
<b>SHOCK HAZARD</b> 	Labels may be located on or inside the equipment to alert people that dangerous voltage may be present.
<b>BURN HAZARD</b> 	Labels may be located on or inside the equipment to alert people that surfaces may be dangerous temperatures.

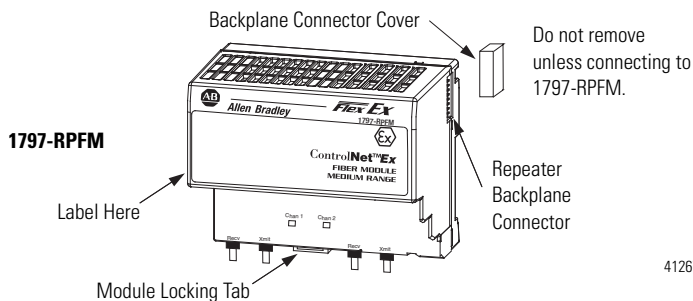
**ATTENTION****Environment and Enclosure**

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.



## 4 ControlNet Ex Modular Repeater Adapter & Fiber Repeater Module



### About the ControlNet Ex Fiber Repeater Hub

Use the repeater adapter (1797-RPA) and the fiber module (1797-RPFM) together to form a repeater hub within the hazardous area to extend the length of the ControlNet Ex segments to interlink systems all operating within the area.

The 1797-RPA repeater adapter, configured with at least one repeater adapter, functions as the intelligent starter block for a multiport repeater. The 1797-RPFM is a nonintelligent fiber-to-backplane conversion device, converting glass-fiber infrared LED media signals to backplane signals for use by the 1797-RPA.

A maximum of two 1797-RPFM modules may be used with one 1797-RPA adapter.

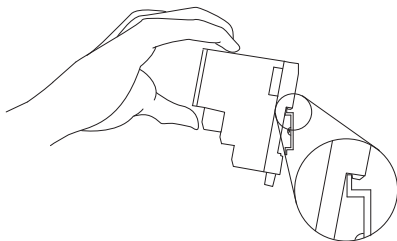
## DIN-Rail Mount the 1797-RPA and -RPFM

Refer to Mounting Dimensions on page 31. For panel mounting information, see publication 1794-5.13.

**ATTENTION**

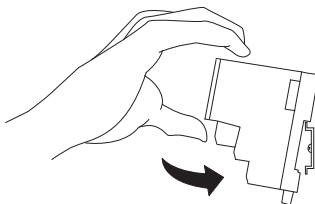
This product is grounded through the DIN rail to the dedicated intrinsic safety ground. Use zinc-plated yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (such as aluminum or plastic) that can corrode, oxidize, or are poor conductors, can result in improper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

1. Position the module on a 35 x 7.5 mm DIN rail (A-B part number 199-DR1) at approximately a 30° angle.

**ATTENTION**

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

2. Hook the lip on the rear of the adapter onto the top of the DIN rail, and rotate the module onto the rail.



## 6 ControlNet Ex Modular Repeater Adapter & Fiber Repeater Module

---

3. Press the adapter down onto the DIN rail until flush.

The locking tab should snap into position and lock the module to the DIN rail.

---

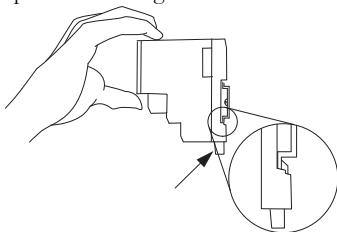
**ATTENTION**

Make certain that the adapter and fiber modules are secured together with DIN rail anchors. Failure to do so may result in the loss of communications, cause damage to the modules, or both.

---

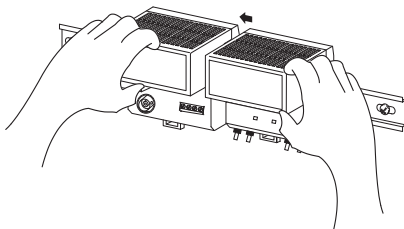
4. If the adapter does not snap into position, use a screwdriver or similar device to move the locking tab down while pressing the module flush onto the DIN rail.

Release the locking tab to lock the module in place. If necessary, push up on the locking tab to lock.



41168

5. Remove the adapter backplane connector cover.
6. Follow steps 1 to 4 to attach fiber modules to the DIN rail.
7. Once attached to the DIN rail, slide fiber modules to the left to mate with the adapter.



41169

---

**IMPORTANT**

A DIN-rail end anchor (A-B part number 1492-EA35) must be used on the left side of the adapter and on the right side of the fiber module to keep the units from moving.

---

8. Make sure the last fiber module has its backplane connector cover in place.
9. Connect the adapter wiring as shown below in the Wiring section.

---

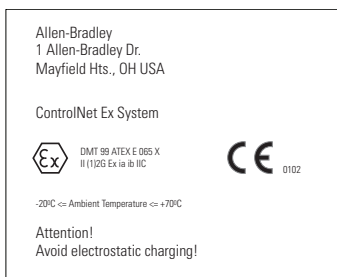
**IMPORTANT**

You can only attach two media modules to the repeater adapter. If you exceed the module limit, you may cause damage to the adapter or fiber modules and void the IS certification.

---

### Installation in Zone 1 for CENELEC

Modules must not be exposed to the environment. Provide a suitable metal enclosure. 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.



---

**WARNING**

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

The fiber optic adapter type 1797-RPFM may be used in combination with the ControlNet adapter type 1797-RPA.

---

### Installation in Division 1/Zone 1 for UL, C-UL and FM

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

---

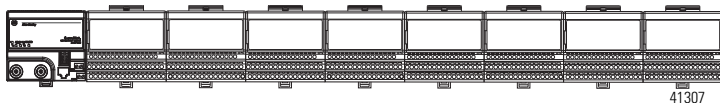
**WARNING**

This adapter cannot be used in an intrinsically safe environment after it has been exposed to nonintrinsically safe signals.

---



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



## Electrostatic Charge

Protect the system against electrostatic charge. Post a sign near this module:

**WARNING Avoid electrostatic charging.**

**AVERTÊNCIA! 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

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.

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 (1)2 G

- Are Equipment Group II, Equipment Category (1)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[ia] IIC T4” according to EN 60079-11.
- Comply to Standards EN 60079-0:2006, EN 60079-11:2007, and EN 60079-26:2004, reference certificate number DMT 99 ATEX E 011 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” and “Ex ib[ia] IIC T4” according to IEC 60079-11.
- Comply to Standards IEC 60079-0:2004, IEC 60079-11:2006, reference IECEx certificate number IECEx BVS 09.0021X.

### Special Conditions for Safe Use:

The fibre optic adapter type 1797-RPFM\* can only be use in combination with the ControlNet adapter type 1797-RPA\*.

A warning sign shall be installed in the direct vicinity of this Fibre Optic Hub: **“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 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

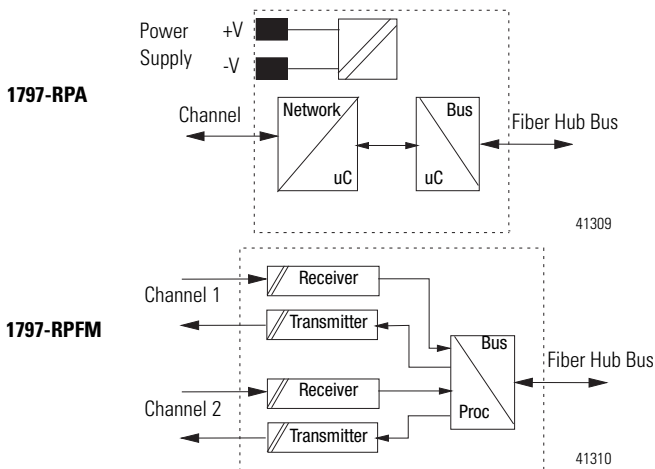
## 12 ControlNet Ex Modular Repeater Adapter & Fiber Repeater Module

- 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

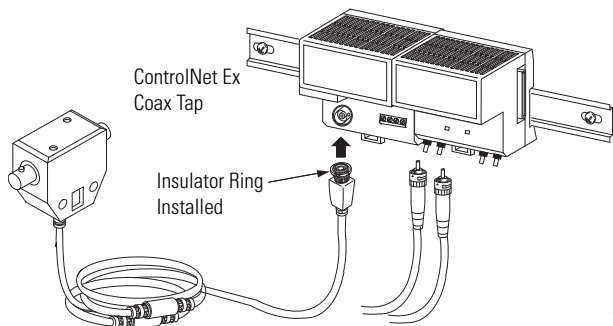
Do not apply any nonintrinsically safe signals to the adapter or fiber modules.

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



## Wire the Modules

1. Connect the ControlNet Ex tap drop cable to the connector after removing the insulator boot.



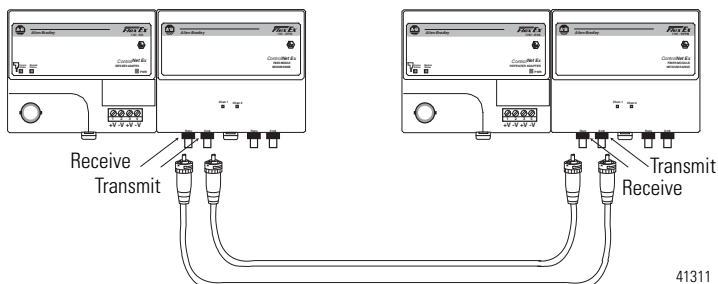
### IMPORTANT

The tap drop BNC must have its insulator ring in position when inserted in the adapter BNC connector.

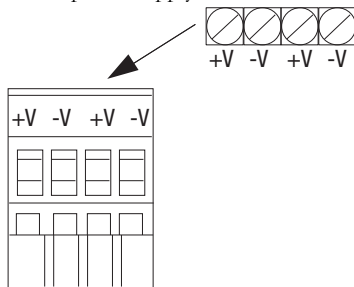
2. Connect the fiber media to the fiber module by selecting either the left or right set of receive and transmit ports and attaching the receive and transmit fibers, as appropriate.

### IMPORTANT

Make note of which fiber is receive and which is transmit as they must be interchanged at the opposite end.



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



41297

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.
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 use any unused terminals on this adapter. Using these terminals as supporting terminals can result in damage to the module and 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.

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

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.

---

**IMPORTANT**

Make sure all fiber modules are attached and secured prior to applying intrinsically safe power to the adapter. Failure to do so may cause damage to the adapter and modules.

---

## **Describing the ControlNet Ex System Diagram**

A maximum of 48 ControlNet Ex nodes may be connected together by 250 m (820 ft) of coax cable and 48 taps. The distance to increases to 1000 m (3280 ft) 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).

## 16 ControlNet Ex Modular Repeater Adapter & Fiber Repeater Module

<b>System Diagram Name</b>	<b>Catalog Number</b>	<b>Catalog Name</b>	<b>Description</b>
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/B	1797-ACNR15/B	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)
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 $\Omega$ ) 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 $\Omega$ 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°, 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-RPA⑦	Allen-Bradley
1797-RPFM	1797-RPFM⑦	Allen-Bradley
1797-ACNR15	1797-ACNR15⑦	Allen-Bradley
Coax Trunk Cable <sup>(1)</sup>	1786-RG6	Allen-Bradley
	3092A <sup>(2)</sup>	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 =  $\leq 5.94 \text{ nF per } 100 \text{ m}$

Cable Resistance =  $\geq 9.08 \Omega \text{ per } 100 \text{ m}$

Cable Attenuation	0.2 MHz $\geq 0.93 \text{ dB/100 m}$	5 MHz $\geq 1.39 \text{ dB/100 m}$
(-20...70 °C)	0.5 MHz $\geq 0.95 \text{ dB/100 m}$	10 MHz $\geq 1.86 \text{ dB/100 m}$
	1 MHz $\geq 1.07 \text{ dB/100 m}$	20 MHz $\geq 2.73 \text{ dB/100 m}$
	2 MHz $\geq 1.16 \text{ dB/100 m}$	50 MHz $\geq 4.33 \text{ dB/100 m}$

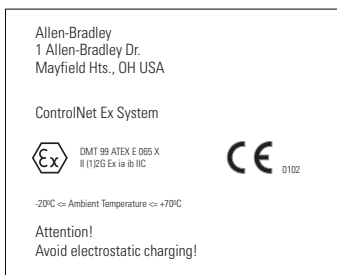
- 2 Belden Wire & Cable 1189A may be used, but with functional loss of communication distance, nodes, or both.

## 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.

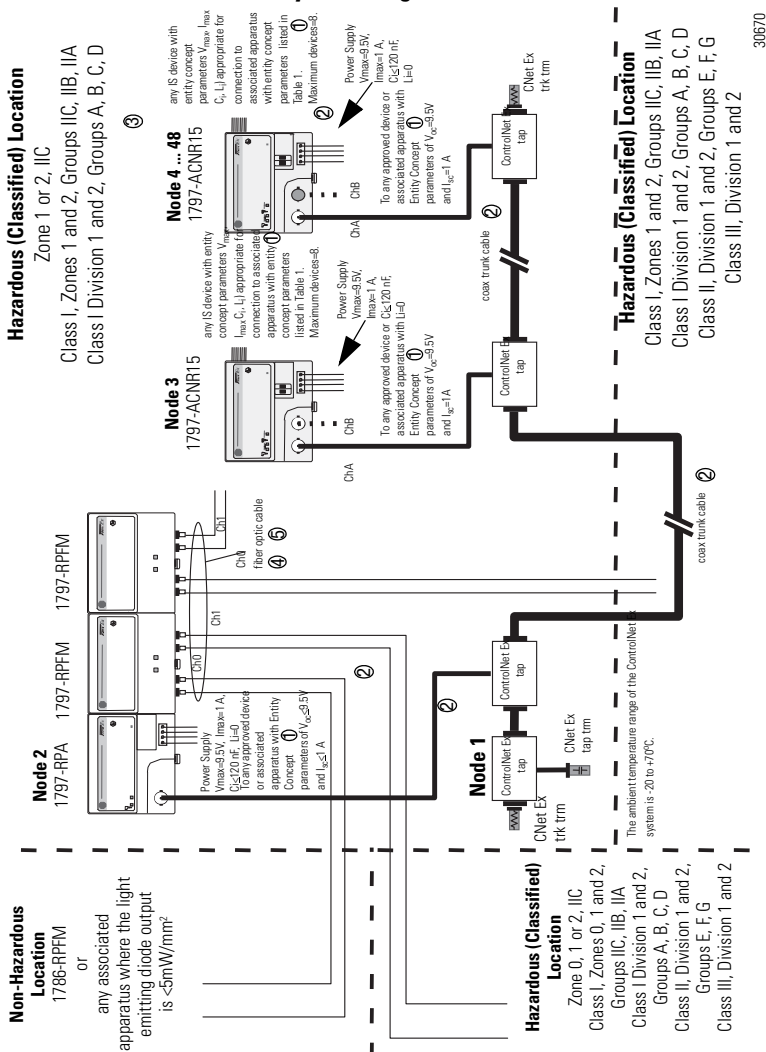


### CENELEC 1797-RPA, -RPFM I/O Entity Parameters

Terminals	$U_o$ (V)	$I_o$ (mA)	Groups	$C_o$ ( $\mu$ F)	$L_o$ ( $\mu$ H)
Male Bus Connector	5.4	400	IIB/IIC	65	10



# UL, C-UL ControlNet Ex System Diagram



## UL, C-UL ControlNet Ex System Requirements

- 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  $\mu\text{m}$ .

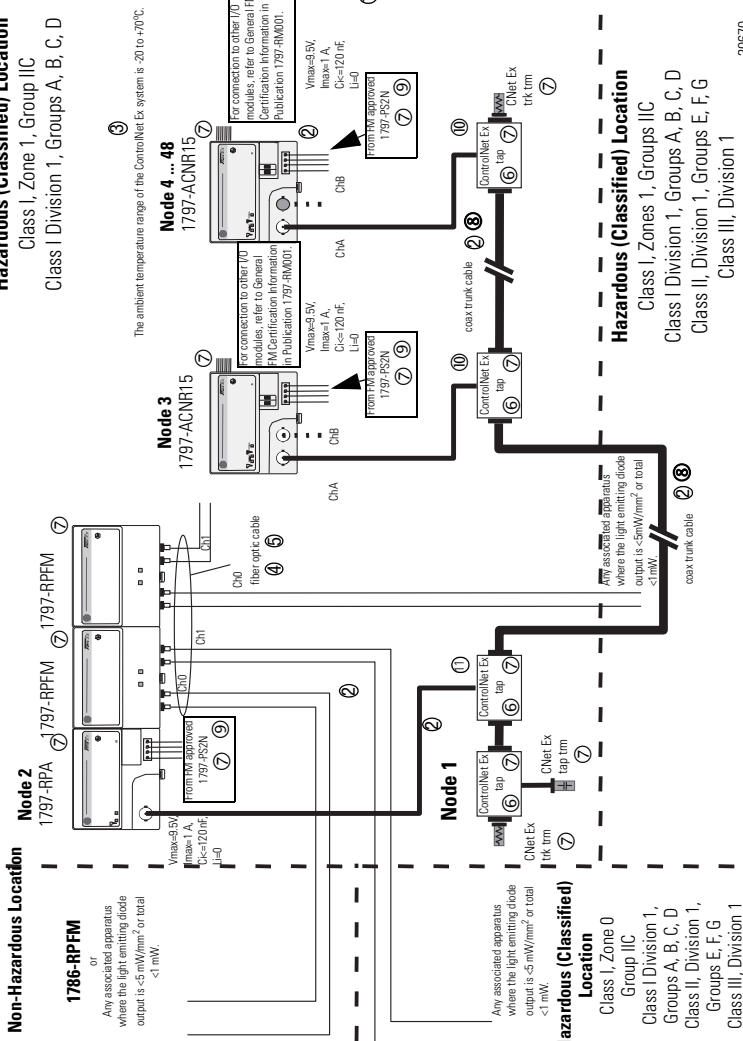
## UL, C-UL, FM 1797-RPA, -RPFM I/O Entity Parameters

Terminals	$V_t$ (V)	$I_t$ (mA)	Groups	$C_a$ ( $\mu\text{F}$ )	$L_a$ ( $\mu\text{H}$ )
Male Bus Connector	5.8	400	A to 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



## FM ControlNet Ex Requirements

- 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  $\mu\text{m}$ .
- 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.

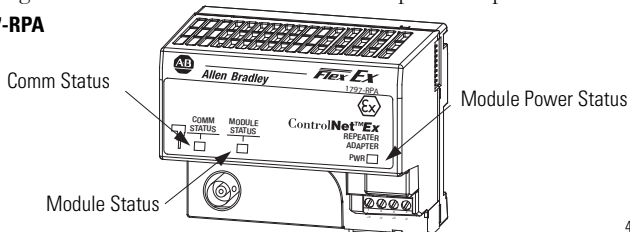
## Module Indicators

The following explains the indications seen on the 1797-RPA and 1797-RPFM modules.

### 1797-RPA Indicators

The figure below identifies indicators on the repeater adapter.

#### 1797-RPA



41174

#### Power Indicator

If	This Indicates
Steady Green	Power is applied.
Off	No power is applied.

#### Comm and Module Status Indicators for the 1797-RPA Module

If Both Are	This Indicates
Alternately Red/Green	The adapter is being powered-up or reset. The LEDs alternately flash red and green for about 5 s.
Steady Green	Normal operation.
Off	The unit is not powered. Check the module power status.
Red	There is an adapter fault. If the fault indication is caused by a jabber condition, the fault indication will automatically be cleared when the jabber condition is removed from the coax or fiber port. If a jabber condition is not causing the fault, replace the repeater adapter.

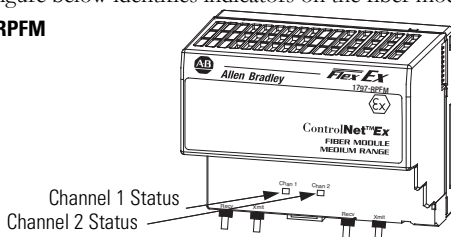


If Either Is	The Respective Segment (1 or 2) is
Flashing Green/Off	Experiencing temporary network errors. The situation will normally correct itself. If the situation persists, troubleshoot your nodes and cable system. When troubleshooting your cable system, make sure: <ul style="list-style-type: none"> <li>• all BNC connector pins are properly sealed.</li> <li>• all taps are A-B taps.</li> <li>• all terminators are 75 <math>\Omega</math> and are installed at both ends of all segments.</li> </ul>
Flashing Red/Off	Experiencing a high level of network errors. This may indicate a broken cable, broken tap, or missing segment terminator. <b>Important:</b> The indicators will flash red/off when a system has no network activity. This would be normal for a system that has no ControlNet nodes installed or enabled.

## 1797-RPFM Indicators

The figure below identifies indicators on the fiber module.

### 1797-RPFM



41312

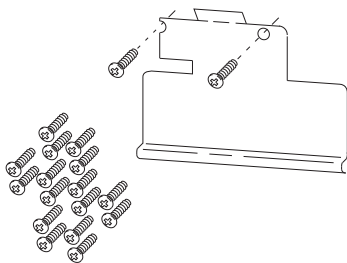
### 1797-RPFM Comm and Status Indicators

If Both Are	This Indicates
Off	There is no power or the module is faulted.
Green	The channel is operational.
Flashing Green/Off	There is no data activity on the associated channel.

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

---

**IMPORTANT**





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

---

**Specifications - 1797-RPA**

I/O Capacity	2 fiber modules
IS Media Type	Ex ib IIB/IIC T4, AEx ib IIC T4, Class I, Division 1 Groups A to G T4
IS Module Type	Ex ib IIB/IIC T4, AEx ib IIC T4, Class I Division 1 Groups A to D T4
Communication Rate	5 Mbps
ControlNet Ex BNC	Oscillation powered by: $U_o \leq 5.4V$ dc $I_o \leq 201$ mA ac coupled with high-pass filter $f \geq 500$ kHz
Indicators	Comm - green/red Module - green/red Power - green
Output (Intrinsically Safe) (30 Pin Male TTL Bus Connector)	Manufacturer specific bus $U_o \leq 5.4V$ $I_o \leq 201$ mA $P_o \leq 1.09$ W $L_o \leq 0.45$ mH $C_o \leq 71$ $\mu$ F
Isolation Path Bus to Power Supply Adapter to Adapter ControlNet Ex Node to Other Nodes ControlNet 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
Conductors	Wire Size 4 mm <sup>2</sup> (12 gauge) stranded max 1.2 mm (3/64 in.) insulation max
Dimensions	Metric 94 mm x 94 mm x 91 mm Imperial (3.7 in. x 3.7 in. x 3.58 in.)





## 28 ControlNet Ex Modular Repeater Adapter & Fiber Repeater Module

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
	Tested 15 g peak acceleration, 11 (±1) ms pulse width
	Tested 15 g peak acceleration, 11 (±1) ms pulse width
Vibration	Tested 2 g @ 10...500 Hz per IEC 68-2-6
Agency Certification	
CENELEC	II (1) 2G ib[ia] IIC T4
UL, C-UL	Class I Division 1 Groups A to D T4 Class I Zone 1 AEx ib IIC T4
FM	Class I Division 1 Groups A to D T4 Class I Zone 1 AEx ib IIC T4
INMETRO	BR-Ex ia/ib IIB/IIC T4
IECEx	Ex ib IIC T4 and Ex ib[ia] IIC T4
Certificates	
CENELEC	DMT 99 ATEX E011 X 
UL, C-UL	UL File Number E197983  Class I Division 1 Hazardous
FM	FM Certificate Number 3009806 
INMETRO	05/UL-BRAE-0011X 
IECEx	IECEx BVS 09.0021X

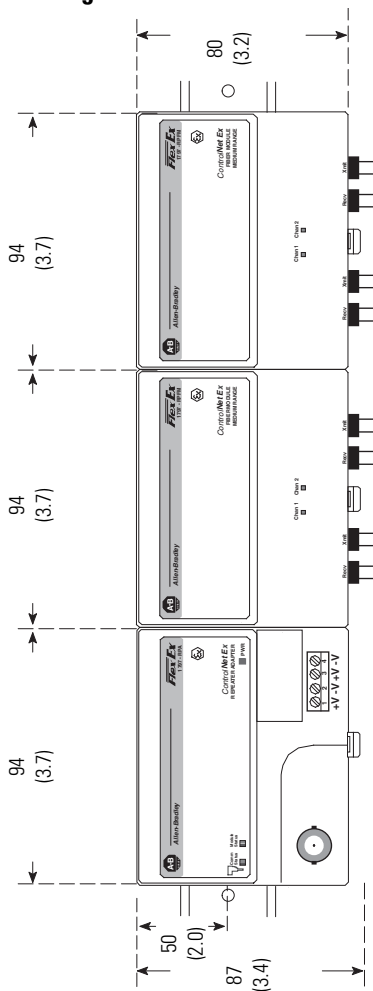
**Specifications - 1797-RPFM**

IS Media Type	Ex ia IIB/IIC T4, AEx ia IIC T4, Class I, Division 1 Groups A to G T4
IS Module Type	Ex ib IIB/IIC T4, AEx ib IIC T4, Class I Division 1 Groups A to D T4
Communication Rate	5 Mbit/s
Approximate Fiber Media Length	3 km
Fiber Type	62.5...125 mm
Fiber Termination Type	ST (plastic or ceramic)
Fiber Operating Wavelength	1300 nm
Optical Power Budget	13.3 dB
Fiber Optic Transmitter Ch1 and Ch2	Optical peak output power $P_{\text{optical}} \leq 1 \text{ mW}$
Indicators	Channel 1 status - green Channel 2 status - green
Input (Intrinsically Safe) (30 Pin Female TTL Bus Connector)	$U_i \leq 5.4\text{V}$ $I_i \leq 201 \text{ mA}$ $P_i \leq 1.1 \text{ W}$ $L_i \leq 15 \mu\text{H}$ $C_i \leq 41 \mu\text{F}$
Output (Intrinsically Safe) (30 Pin Male TTL Bus Connector)	$U_o \leq 5.4\text{V}$ $I_o \leq 201 \text{ mA}$ $P_o \leq 1.1 \text{ W}$ $L_o \leq 0.45 \text{ mH}$ $C_o \leq 71 \mu\text{F}$
Isolation Path Bus to ControlNet	Galvanic to DIN EN 60079-11
Power Consumption	Included in 1797-RPA
Power Dissipation	Included in 1797-RPA
Thermal Dissipation	Included in 1797-RPA
Weight	Approximately 100 g
Dimensions	Metric Imperial
	94 mm x 94 mm x 91 mm (3.7 in. x 3.7 in. x 3.58 in.)

### 30 ControlNet Ex Modular Repeater Adapter & Fiber Repeater Module

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	Tested 15 g peak acceleration, 11 (±1) ms pulse width
	Nonoperating	Tested 15 g peak acceleration, 11 (±1) ms pulse width
Vibration	Tested 2 g @ 10...500Hz per IEC 68-2-6	
Agency Certification		
CENELEC	II (1) 2G ib[ia] IIC T4	
UL, C-UL	Class I Division 1 Groups A-D T4	
	Class I Zone 1 AEx ib [ia] IIC T4	
FM	Class I Division 1 Groups A-D T4	
	Class I Zone 1 AEx ib IIC T4	
INMETRO	BR-Ex ia/ib IIB/IIC T4	
IECEX	Ex ib IIC T4 and Ex ib[ia] IIC T4	
Certificates		
CENELEC	DMT 99 ATEX E011 X 	
UL, C-UL	UL File Number E197983	
	 Class I Division 1 Hazardous	
FM	FM Certificate Number 3009806 	
INMETRO	05/UL-BRAE-0011X	
		
IECEX	IECEX BVS 09.0021X	

## Mounting Dimensions



mm (in.)

41426

## 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.

Allen-Bradley, Rockwell Automation, ControlLogix, RSLogix, TechConnect, and FLEX I/O are trademarks of Rockwell Automation, Inc.

Trademarks not belonging to Rockwell Automation are property of their respective companies.

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](http://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

Publication 1797-IN015G-EN-P - August 2017

PN-455768

Supersedes Publication 1797-5.15 - June 2010

Copyright © 2017 Rockwell Automation, Inc. All rights reserved. Printed in the U.S.A.