1786-RPA/B ControlNet Modular Repeater Adapter

The 1786-RPA/B repeater adapter can be used with the following modules to build a ControlNet network repeater:

- 1786-RPCD repeater dual-copper module
- 1786-RPFS repeater short-distance fiber module
- 1786-RPFM repeater medium-distance fiber module
- 1786-RPFRL fiber ring repeater module
- 1786-RPFRXL fiber ring repeater module

A repeater extends the length of a network; creates a star, ring, or point-to-point topology; and performs network media conversion from copper to fiber, and from fiber to copper. You can place a maximum of 20 repeater adapters in a series.

TIP
- If the 1786-RPA/B repeater adapter is used with the 1786-RPCD, 1786-RPFS, and 1786-RPFM repeater modules, you can attach as many as four repeaters to the repeater adapter.
- If the 1786-RPA/B repeater adapter is used with the 1786-RPFRL and 1786-RPFRXL repeater modules, you can attach as many as two repeaters to the repeater adapter.

The repeater adapter also provides:

- Digital retiming of ControlNet network data
- Power to repeater modules
- One coax channel
- Status indicators
- 24V DC, removable power supply

The repeater adapter ships with the following items:

- One removable terminal block (power connector) attached to the repeater adapter.
- One 75 Ω terminator for terminating an unused port.
- Two DIN rail locks.

The illustration shows the components that comprise the 1786-RPA/B repeater adapter.

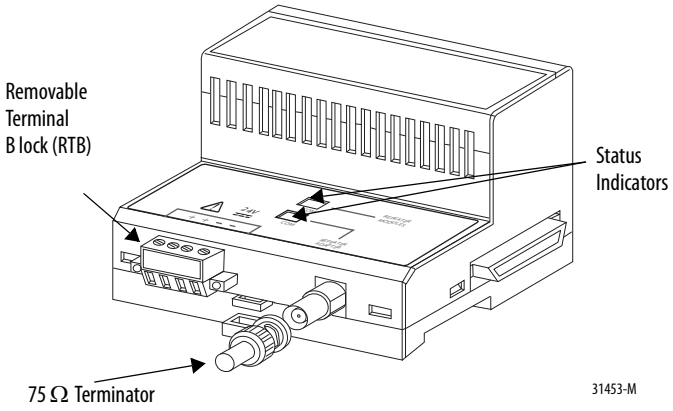


Table 9 - Certifications[1]

Certification	1786-RPCD
UL	UL Listed Industrial Control Equipment. See UL File E65584.
CSA	Certified Process Control Equipment. See CSA File LR54689C. Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Location. See CSA File LR69960C.
CE[2]	European Union 89/336/EEC 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[2]	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T5 Gc • SIRA14ATEX4171X
IECEx	IECEx System, compliant with: • IEC 60079-0; General Requirements • IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" • II 3 G Ex nA IIC T5 Gc • IECExSIR14.0048X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation
CI	ControlNet International conformance tested to ControlNet specifications

(1) When product is marked.

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

1786-RPFM ControlNet Modular Repeater Medium-distance Fiber Module

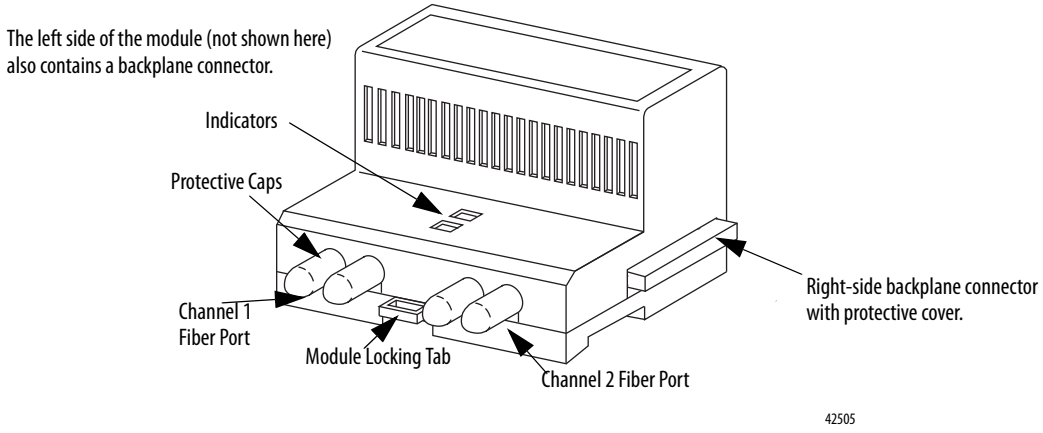
Use the 1786-RPFM module when you need a medium-distance fiber link between two ControlNet products. Maximum distance is 3000 m (9843 ft). The fiber link provides ground isolation between nodes and is less susceptible to noisy environments than copper media.

A maximum of four modules can attach to the 1786-RPA/B repeater adapter, and the total power consumption of the modules cannot exceed 1.6 A @ 5V DC, whichever comes first.

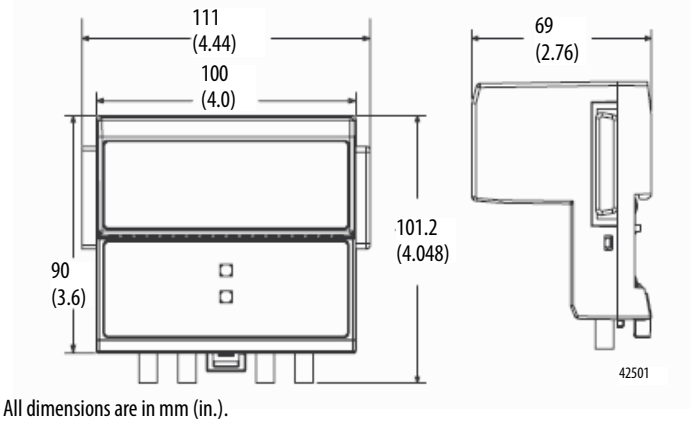
IMPORTANT
- If you exceed the module or power limit, you can damage the repeater adapter and modules.
- The supported distance depends on the quality of the fiber, number of splices, and connectors. The total light loss through the fiber link must be less than 13.3 dB.

Module Components

The illustration shows the components that comprise the 1786-RPFM module.



Mounting Dimensions



All dimensions are in mm (in.).

Specifications

Table 13 - Technical Specifications - 1786-RPFM

Attribute	1786-RPFM
Voltage and current ratings	Backplane: 400 mA @ 5V DC max
Power Consumption	2 W max
Power Dissipation	2 W max
Communication rate	5 Mbps
Mounting orientation	Any mounting orientation
Minimum enclosure size (HxWxD), approx	304.8 x 196.8 x 101.6 mm (12 x 7.75 x 4 in.)
Fiber type	62.5/125 Micron multimode OM-1 fiber
Power level TX power, min RX responsivity, min	 (-16 dBm) @ 25 °C (77 °F) into 62.5/125 µm Micron multimode fiber (-19.5 dBm) @ 25 °C (77 °F) into 50/125 µm Micron multimode fiber -32.8 dBm @ 25 °C (77 °F)
Fiber termination type ST	Plastic or ceramic
Fiber operation wavelength	1300 nm
Optical power budget	13.3 dB (1)
Transmitter output	<5 mW/mm^2
Enclosure type rating	None (open-style)
North American temp code	T5
ATEX temp code	T5
IECEx temp code	T5

(1) Includes all loss that is associated with the fiber link, including splices, fiber attenuation, bulkhead connectors, and the ST terminations.

Table 14 - Environmental Specifications - 1786-RPFM

Attribute	1786-RPFM
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 Damp Heat)	5...95% noncondensing
Vibration IEC60068-2-6 (Test Fc, Operating)	5 g @ 10...500 Hz

Table 14 - Environmental Specifications - 1786-RPFM

Attribute	1786-RPFM
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…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz and 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz

Table 15 - Certifications(1) - 1786-RPFM

Certification(2)	1786-RPFM
UL	UL Listed Industrial Control Equipment. See UL File E65584.
CSA	CSA Certified Process Control Equipment. See CSA File LR54689C. CSA Certified Process Control Equipment for Class I, Division 2 Group A, B, C, D Hazardous Locations. See CSA File LR69960C.
FM	FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations
CE	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)
C-Tick	Australian Radiocommunications Act, compliant with: • AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection “n” • EN 60079-28; Explosive atmospheres, Protection of equipment and transmission systems using optical radiation • II 3 G Ex nA op is IIC T5 Gc • SIRA14ATEX4171X
IECEx	IECEx System, compliant with: • EN 60079-0; General Requirements • EN 60079-15; Potentially Explosive Atmospheres, Protection “n” • EN 60079-28; Explosive atmospheres, Protection of equipment and transmission systems using optical radiation • II 3 G Ex nA op is IIC T5 Gc • IECExSIR14.0048X
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
EAC	Russian Customs Union TR CU 020/2011 EMC Technical Regulation Russian Customs Union TR CU 004/2011 LV Technical Regulation

(1) When product is marked.

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