Industrial RS-232/485/422 to Multi-Drop Fiber Optic Converter

(Daisy-Chain or Self-Healing/Redundant Ring Fiber Network)

Part Number: FBR(M)-Serial-2

Single-Mode (25miles/40km) or Multi-Mode (3miles/5km)

Connector types: ST, SC or FC

CE FC

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■ INTRODUCTION

The FBR(M)-Serial-2 is a rugged, industrial-grade, multi-function serial to fiber optic converter that supports asynchronous serial communications (RS-232, RS-485, and RS-422) through multi-drop fiber optic links. The FBR(M)-Serial-2 supports up to 255 fiber nodes, and each fiber node can extend the RS-232/485/422's distance to 25 miles (40km) for single-mode converters and cables, or 3 miles (5km) for multi-mode converters and cables. Depending on the site situation, the FBR(M)-Serial-2 can be configured as a daisy-chain or a self-healing/redundant ring fiber network. When configured as a ring fiber network, the built-in self-healing feature allows the data to be transmitted clockwise or counterclockwise; therefore, failure of any individual converter will not affect other devices located on the same fiber ring, making the entire data network more robust and reliable. The unit also features redundant power supplies and power alarm outputs for uninterrupted system performance and easy maintenance. The FBR(M)-Serial-2 runs on a light-speed fiber backbone inherently resistant to radio and electrical interference, such as EMI/RFI, transient surges and ground loops, and it overcomes the limitations of conventional point-to-point fiber network and dramatically expands the serial data network in terms of distance, flexibility, and reliability.

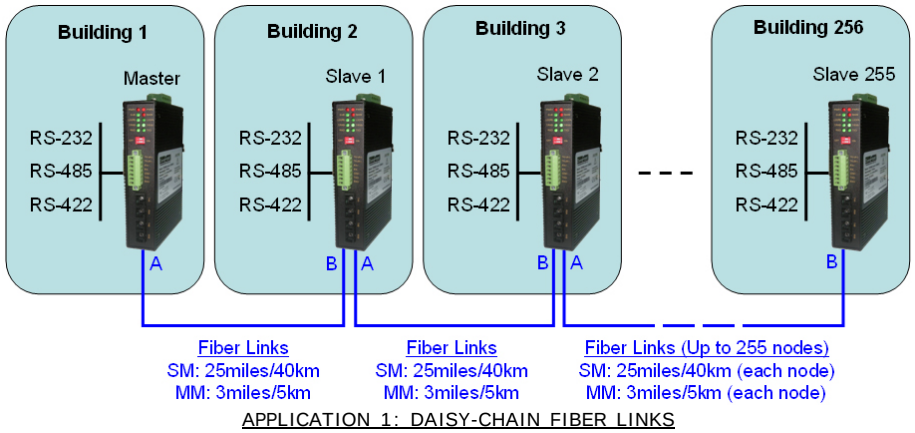
■ FEATURES

- Daisy-chain or self-healing/redundant ring fiber network configurations.
- Extends serial data network uninterruptedly over extremely large areas.
- Designed for harsh industrial environments.
- Direct DIN-Rail mounting without using any unsecured brackets or adapters.
- ST, SC or FC fiber optic connectors.
- Supports up to 255 fiber nodes.
- Supports up to 128 nodes of RS-485/422 devices per fiber node.
- Full redundant power supply and fiber network.
- Power loss alarm relay output.
- Built-in selectable 120-Ohm end-of-line terminator for RS-485/RS-422 busses.
- Built-in 600W surge protection, 15kV ESD and circuit protection.
- Operating temperature: -40ºF to 185ºF (-40ºC to 85ºC).
- Safety: strictly certified by TUV (Cert No. SG-FCC-140002; E8N140387592001).
- Surface Mount Technology manufactured to RoHS and ISO-9001 standards.
- 5-Year manufacturer's warranty.

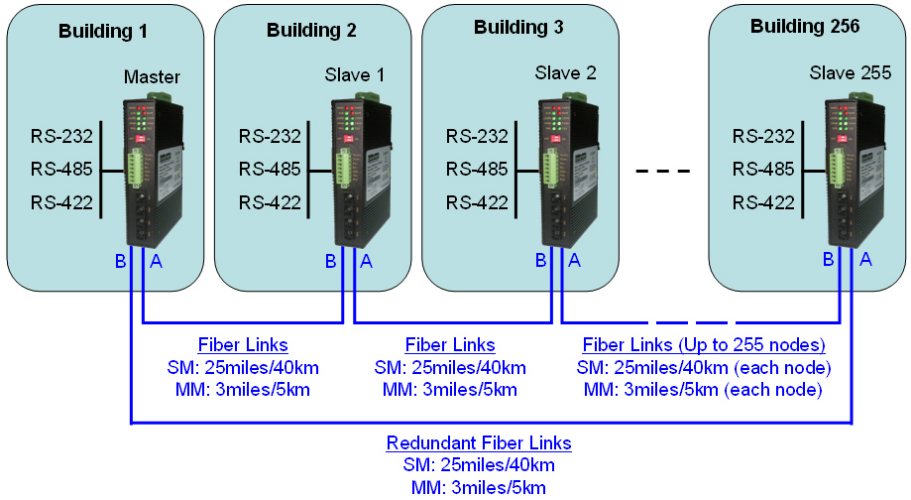
■ SPECIFICATIONS

Compatibility:	EIA/TIA RS-232C, RS-485, and RS-422 standards
Power Source/Consumption:	12 to 48 VDC/Less than 5W
Wavelength:	1310nm
Output Power (Fiber):	Single-Mode: -8dBm(Min); -7dBm(Typ); -5dBm(Max) Multi-Mode: -15dBm(Min): -10dBm(Typ); -8dBm(Max)
Sensitivity (Fiber):	Single-Mode: -35dBm; Multi-Mode: -34dBm
Usable Fiber Optic Cables:	Single-mode: 8.3/125, 8.7/125, 9/125, 10/125µm Multi-mode: 50/125, 62.5/125µm
Number of Maximum Nodes:	Fiber: 255 nodes; RS-485/422: 128 nodes
Distance (Fiber):	Single-mode: 25 miles (40km); Multi-mode: 3 miles (5km)
Distance (Serial Port):	RS-232: 16ft (5m); RS-485/422: 4000ft (1.2km)
Connectors (Fiber Links):	4x ST, 4x SC, or 4x FC connectors
Connectors (Serial Ports):	7-way terminal block (1x RS-232, 1x RS-485, 1x RS-422)
Connectors (Power):	6-way terminal block (1x V1 power, 1x V2 power, 1x Alarm)
Serial Data Rates:	300 to 115,200 bps (auto-sensing and self-adjusting)
Surge and ESD protection:	600W / 15KV
Dimensions (H x W x D):	5.7x3.8x1.3 in (144x97x33 mm) - excluding connectors
Weight:	1 lb (460 g)
Operating Temperature:	-40ºF to 185ºF (-40ºC to 85ºC)
Operating Humidity:	0 to 90% Non-condensing

■ APPLICATIONS

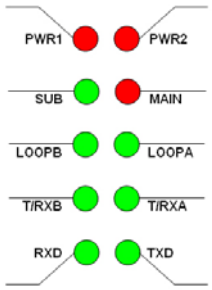


APPLICATION 1: DAISY-CHAIN FIBER LINKS



APPLICATION 2: SELF-HEALING/REDUNDANT RING FIBER LINKS

■ LED INDICATIONS



PWR1 Indicator
ON: Power supply 1 on
OFF: Power supply 1 off

PWR2 Indicator
ON: Power supply 2 on
OFF: Power supply 2 off

SUB Indicator
ON: The unit is set as a salve

MAIN Indicator
ON: The unit is set as a master

LOOPB Indicator
ON: Fiber loop B is in working condition

LOOPA Indicator
ON: Fiber loop A is in working condition

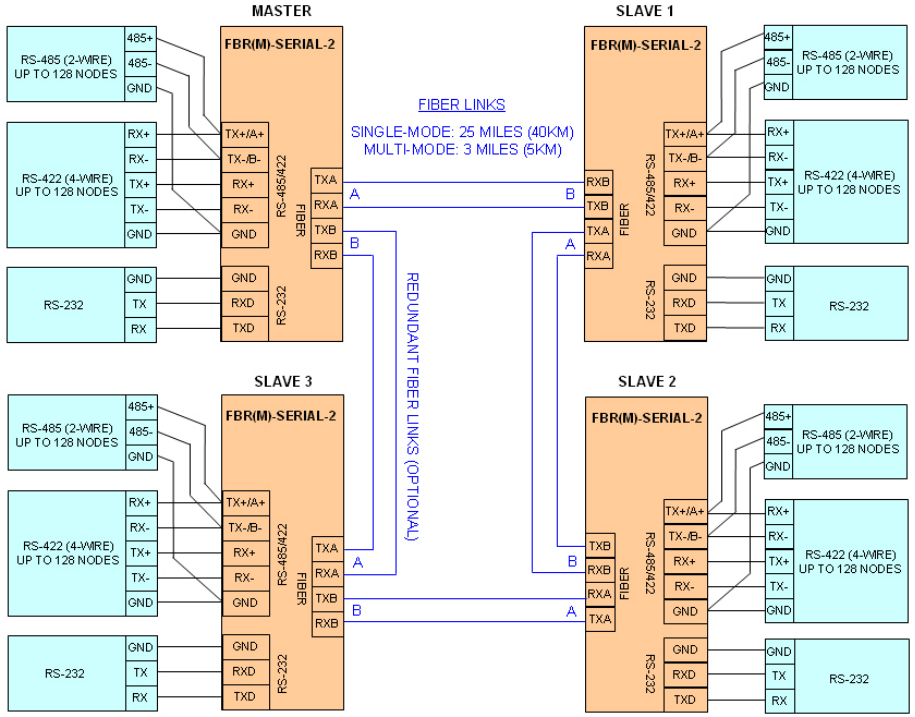
T/RXB Indicator
Flashing: Fiber port B is transmitting/receiving data

T/RXA Indicator
Flashing: Fiber port A is transmitting/receiving data

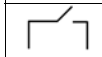
RXD Indicator
Flashing: Serial port is receiving data

TXD Indicator
Flashing: Serial port is transmitting data

■ CONNECTIONS



■ SETTINGS / INPUTS / OUTPUTS

Master / Slave and 120-Ohm Settings		
	DIP SW 1	ON: Master; OFF: Slave
	DIP SW 2	ON: 120-Ohm RS-485/422 End-of-Line Resistor Terminated OFF: 120-Ohm RS-485/422 End-of-Line Resistor Removed
Power 1 & 2 Inputs		
V1+/V1-: Power Supply 1 Input (12 to 48VDC) V2+/V2-: Power Supply 2 Input (12 to 48VDC)		
Power Alarm Output		
	Normally-Open Relay Alarm Output (Maximum Load: 1A/24VDC)	

■ TROUBLESHOOTING

- Make sure the power is ON and there is only 1 master station in the system.
- Check the connections according to the above CONNECTIONS diagram.
- Check LEDs to confirm power, settings, and connections are correct.
- Perform a loopback test by using CommFront's 232Analyzer software:
  1) Connect two of your PC's COM ports to the FBR(M)-Serial-2's COM ports.
  2) Run two instances of the 232Analyzer software on your PC.
  3) Send commands from the 232Analyzer software, and you should receive an echo of the commands sent.