RS-485 Ring FO Converter
User Manual

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1. Overview

1.1 Introduction

The RS-485 HFB-FO series Multi-Drop Self-Healing Ring Fiber Optic Modem interlinks with RS-485 interface devices over a pair of optical fiber cables. This product is intended for self-healing ring topologies. Our Multiple Self-Healing Ring Configuration offers maximum reliability as it can recover simultaneous faults or failures in two different locations. The Self-Healing Ring consists of two data paths, Ring A and Ring B, with each data path running in an opposite direction to the other. Under normal operation, only the primary data path (Ring A) is used, when there is a fault (cable or failed device), the data path will turn around before it reaches the fault or failed unit and use the secondary data path (Ring B) to complete the link. With this process, the data path remains intact. The data communication protocol is transparent and compatible with all the RS-485 upper protocols.

The RS-485 HFB-FO series Fiber Optic Modem can be widely used, such as Industrial Controls, Intelligent Transportation Systems (ITS), Industrial Networking, Supervisory Control and Data (SCADA) and so on.

1.2 Technical Specification

DATA	
Number of Channels	1
Interface	RS-485
Maximum Access Nodes Number	128
RS-485 Working Rate	0 ~ 115.2Kbps
RS-485 Distance	0 ~ 1200m
Connector Type	Terminal

OPTICAL	
Number of Fibers	4
Wavelength	MM:1310nm , SM:1310nm/1550 nm
Fiber Type	MM:62.5/125um, SM:9/125um
Distance	MM:0-2km, SM:0-20km
Connector Type	SC/PC(ST,FC) optional

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GENERAL	
Operating Temperature	-40 ~ 70°C / -40 ~ +158°F
Operating Humidity	0 ~ 95% non-condensing
Mean Time Between Failure (MTBF)	> 70,000hrs
Power Input	24V DC
Enclosure Color	Silver
Dimensions (Wall mount, L×W×H)	125mm×110mm×36mm

1.3 Warranty

■ Repair
  □ Please contact your local distributors when product is defective. Please apply RA in advance and prepay shipping cost when returning the defective product to us. We will pay the cost for sending it back to you.
  □ Please attach a statement clearly describing the problem.
■ We will repair defective product under warranty free of charge to our customer.
■ 3 years warranty for product only.
■ Any unauthorized modification of hardware and software voids the warranty.
■ Warranty does not cover mishandling and/or abuse of the product.

Products comply with the following Safety Label for International Fiber Communication Equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful Interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.
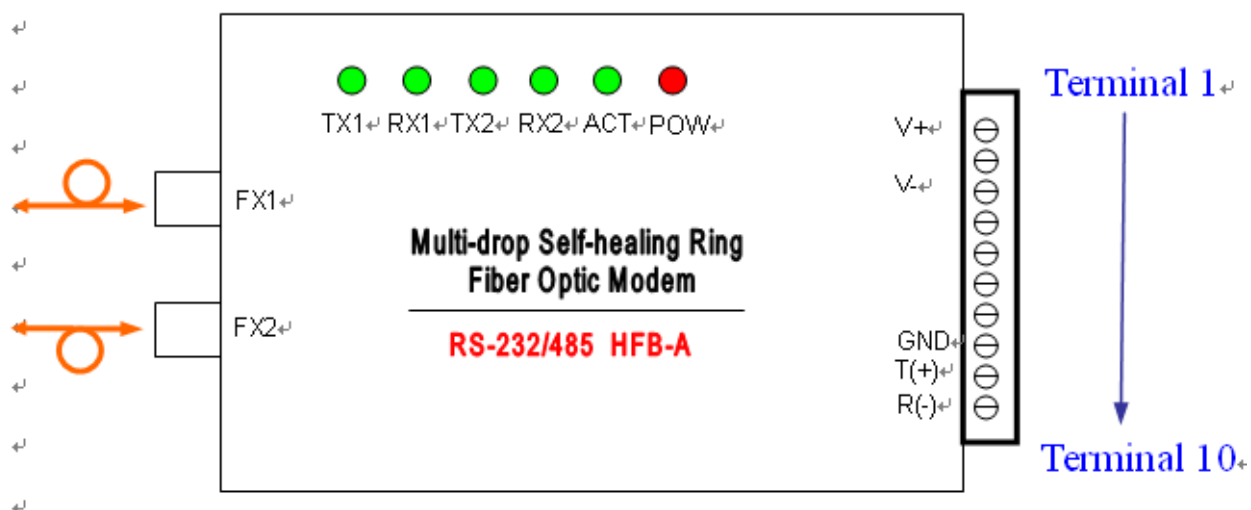
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2 Installation

2.1 Package Contents

- One RS-485 HFB-FO Multi-Drop Self-Healing Ring Fiber Optic Modem (Wall Mount)
- One User Manual

Please contact dealer or distributor if part is missing or damaged.

2.2 Wall Mount Enclosure

The Top View

LED Indicators:

POW: Power Supply   On if power input is OK.
ACT: The primary data path Fiber link   Off if the link is normal.
TX1:   The secondary data path signal transmit   Flashing if there is activity
RX1:   The secondary data path signal receive   Flashing if there is activity
TX2:   The primary data path signal transmit   Flashing if there is activity
RX2:   The primary data path signal receive   Flashing if there is activity

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Connectors:

Terminal (10 pins) assignment:

1	——————	V+	+24 V DC
2	——————	NC	
3	——————	V-	-24 V DC
4	——————	G+	Alarm node
5	——————	G-	Alarm node
6	——————	GND	Secondary mode
7	——————	ZM	Secondary mode
8	——————	GND	
9	⟷	D+	RS-485 data signal "+"
10	⟷	D-	RS-485 data signal "–"

FX1: Fiber Optical SC of the secondary data path (transmit and receive)

FX2: Fiber Optical SC of the primary data path (transmit and receive)

2.4 Caution

- Switch off all power supply before installation
- Ensure fiber is properly aligned to the receiving connector
- Do NOT stare at the fiber core
- When selecting the Point-to-Point (Trunk Line) / Point-to-Multipoint (Star topology), all the RS-485 HFB-FO Fiber Optic Modem should be set in the primary mode. The secondary Fiber Ring can not be connected without Self-healing.
- When selecting the Multi-Drop Self-healing Ring Mode / Single Ring Mode (without Self-healing), only one RS-485 HFB-FO Fiber Optic Modem should be set in the primary mode, the others are set in the secondary mode. The secondary Fiber Ring can not be connected without Self-healing.
- On the bottom of the product, there is a DIP Switch, the users should setup the DIP Switch according to the selecting mode.

DIP Switch setup table:

The Primary mode:

DIP	D1	D2	D3	D4	D5	D6	D7	D8
STATE	Reserved	Reserved	Reserved	OFF	Reserved	Reserved	Reserved	Reserved

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The Secondary mode:

DIP	D1	D2	D3	D4	D5	D6	D7	D8
STATE	Reserved	Reserved	Reserved	ON	Reserved	Reserved	Reserved	Reserved

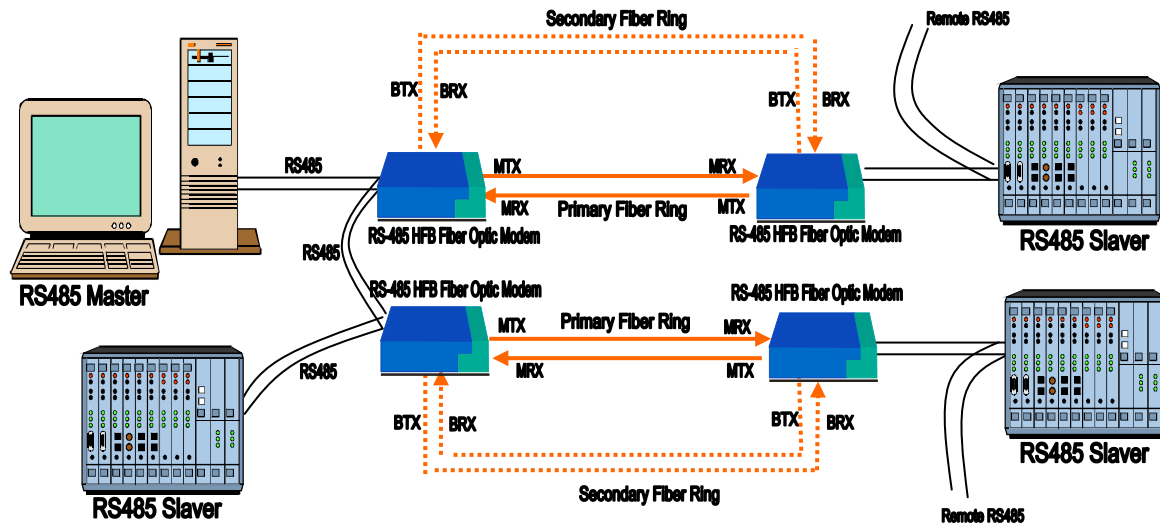## 2.4 Install Application

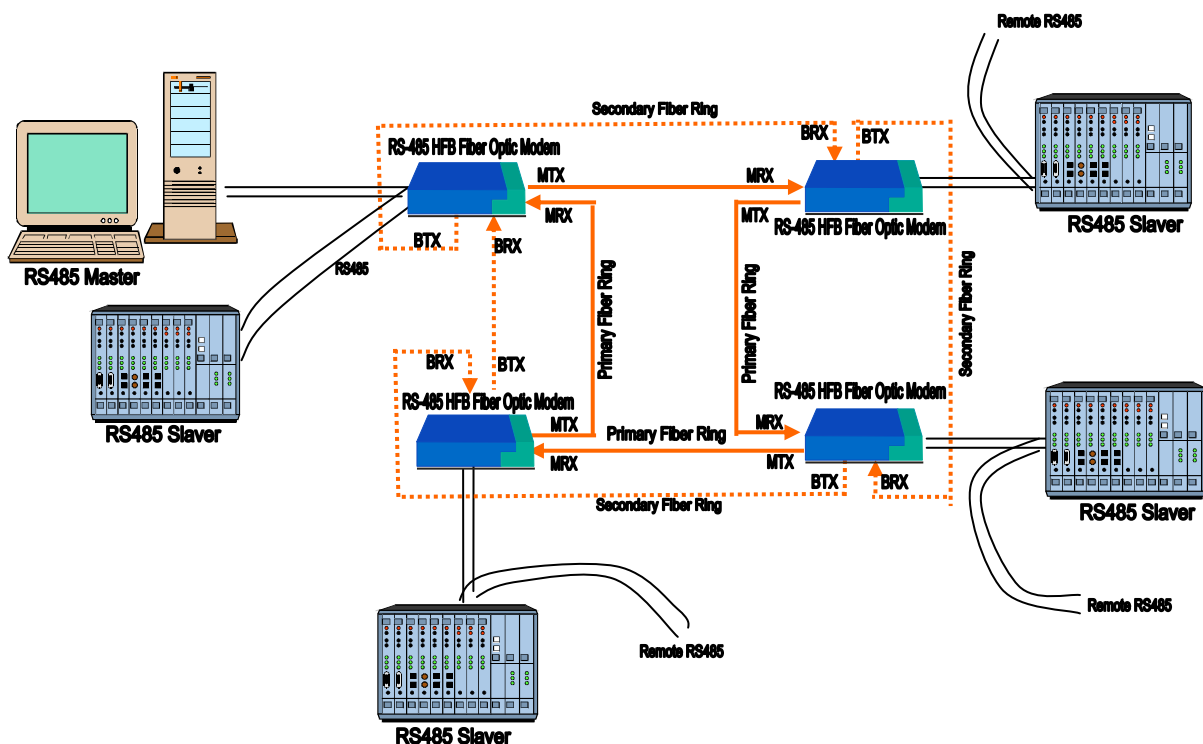# Figure 1. Point-to-Point (Trunk Line) / Point-to-Multipoint (Star topology)

Figure 2. Multi-Drop Self-healing Ring Mode / Single Ring Mode (without Self-healing)

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Application   Diagram

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3 Dimensions (mm)

Wall Mount: