

FTDR-S2-WSB User Manual

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1. Overview

1.1 Introduction

The FTDR-S2-WSB series Multi-Drop Self-Healing Ring Fiber Optic Modem interlinks with RS232/RS422/2 wires RS485/4 wires RS485 interface devices over 2 single-mode 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 RS232/RS422/2 wires RS485/4 wires RS485 upper protocols.

The FTDR-S2-WSB 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.

DATA	
Number of Channels	1
Interface	RS232/RS422/2 wires RS485/4 wires RS485
Maximum Access Nodes Number	128
RS-232 Data Rate	300 bps - 115.2kbps
RS-422/485 Data Rate	300 bps – 230kbps
RS-422/485 Distance	0 – 1200m
Connector Type	Terminal

1.2 Technical Specification

OPTICAL			
Number of Fibers	2		
Wavelength	1310nm		
Fiber Type	9/125µm(SM)		
Distance	0 ~ 25km		
Connector Type	ST/PC		

GENERAL	
Operating Temperature	-40 ~ 70°C / -40 ~ +158ºF
Operating Humidity	0 ~ 95% non-condensing
Mean Time Between Failure (MTBF) > 70,000hrs	
Power Supply Adaptors	Input: 100~240VAC, 30W,50/60Hz
Power Supply Adaptors	Output: +12VDC, 1A
Enclosure Color	Silver
Dimensions (L $ imes$ W $ imes$ H)	77mm×70mm×44mm/3.03"×2.76"×1.73"

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.
- 5 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.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

1.4 Instruction of Disassembly

Instruction of Disassembly of KBC Product (For EU Directive 2002/95/EEC—WEEE)

Tools Required:

- 1) 5 mm flat tip screwdriver
- 2) Φ3 cross tip screwdriver
- 3) Φ5 cross tip screwdriver
- 4) Size small snip nose pliers
- 5) 15 mm spanner

Steps for Disassembly:

- 1) Remove tightening screws of box cover (1 or 4-8 screws in general);
- 2) Remove lock nut for BNC with spanner;
- 3) Remove cover plate;
- 4) Remove tightening screws for printed circuit board (PCB);
- 5) In case the assembly has more than one PCB then continue removing the remain tightening screws until none left;
- 6) Use snip nose pliers to loose the nut of flange and then remove optic cable connector (jump wire);
- 7) Snip off power conducting cable and remove power switch /jack/etc.;
- 8) Take out all PCBs;
- 9) Disassembly of product completed.

Notice: When a product reaches the end of it's life-return to KBC

2 Installation

2.1 Package Contents

- One FTDR-S2-WSB Multi-Drop Self-Healing Ring Fiber Optic Modem
- One power supply adaptor
- One User Manual

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

2.2 FTDR-S2-WSB Enclosure



Connectors:

- FTX1: Fiber Optical ST of the primary ring (transmit)
- FRX1: Fiber Optical ST of the primary ring (receive)
- **FTX2:** Fiber Optical ST of the secondary ring (transmit)
- **FRX2:** Fiber Optical ST of the secondary ring (receive)

DATA: RS232/RS422/2 wires RS485/4 wires RS485 compatible Terminal pins assignment:

Pin Name					
	1	2	3	4	
Data					
	TXD	RXD	CND		
R\$232	Data transmit signal;	Data receive signal;	GND CND of DS222 data	NC (not connected)	
	input	output	GND of RS232 data		
	TXD+	TXD-	RXD+	RXD-	
RS422	Data transmit signal "+",	Data transmit signal "–",	Data receive signal "+",	Data receive signal "-",	
	input	input	output	output	
4. wires	485 TX+	485TX-	485RX+	485RX-	
4 wires	Data transmit signal "+",	Data transmit signal "–",	Data receive signal "+",	Data receive signal "-",	
K3403	input	input	output	output	
2 wires	NC (not connected)	NC (not connected)	485+	485-	
RS485	NC (not connected)	NC (not connected)	Data signal "+"	Data signal "−"	

DIP1 Switch setup table:

DIP Switch pin name	RS-232	RS-422	4wire RS-485	2wire RS-485
D1(RS422/4 wires RS485 input terminator 120Ω)	OFF	on/off 2	on/off (2)	OFF
D2(2 wires RS485, RS422/4 wires RS485 output terminator 120Ω)	OFF	on/off 2	on/off (2)	ON/OFF 2
D3(2 wires RS485/4 wires RS485 output Pull-up/Pull-down resistance	OFF	OFF	on/off 1	ON/OFF 1
D4(RS232/RS422/2 wires RS485/4 wires RS485 select	OFF	OFF	ON	ON
D5(RS232/RS422/2 wires RS485/4 wires RS485 select	ON	OFF	OFF	ON

1 The 2 wires RS485/4 wires RS485 output bus pull-up and pull-down resistance usually should be

switched on. But if there are several fiber transmitters or receivers, 2 wires RS485/4 wires RS485 output interfaces are connected together, only one of the 2 wires RS485/4 wires RS485 output Pull-up and Pull-down resistance should be switched on, the others should be switched off.

(2) The terminators can be switched on or off according to the RS485 bus connection. When the fiber

transmitter or receiver is placed at the end point of bus, the terminators are usually switched on, but

not be must, so the same as RS422.

GND: Grounded pin





C1: alarm drying contact closure of the primary ring

C2: alarm drying contact closure of the secondary ring

Terminal pins assignment:

1	 C1A
2	 C1B
2	 C2A
3	C2B
4	NC
5	NC
6	 NC

alarm drying contact closure of the primary ring alarm drying contact closure of the primary ring alarm drying contact closure of the secondary ring alarm drying contact closure of the secondary ring

Alarm out:

C1A and C1B are alarming output nodes for the drying contact closure of the primary ring.



1A	Situation 1:	S1 is off \longrightarrow C1A and C1B are open, if the
		primary ring is normal.
	Situation 2:	S1 is on \longrightarrow C1A and C1B are short circuit, if
1 B		the primary ring is failure or the
		power is off.

C2A and C2B are alarming output nodes for the drying contact closure of the secondary ring.



DIP2 Switch setup table:

DIP	D1	D2
The Master mode	OFF	NC
The Slave mode	ON	NC

The master is typically the unit that is connected to the host computer/equipment. The master switch determines the point in the ring where the data loop ends and is not re-repeated around the ring. For example in a camera/telemetry scenario, the master would be the unit connecting to the Matrix. The remaining nodes in the ring, with keyboards for example, would be slaves.

DC or AC Power Supply between 12V and 24V can be used on this product.

- DC:
 - +: +12VDC~+24VDC
 - -: Power Supply Ground
- AC:

There is no difference between +/-; the power supply can be connected into the device directly.

LEDs Definition:

POW:	Power Supply	On if power input is OK.
FRX1:	The primary ring Fiber Link.	Off if the fiber link is normal.
FRX2:	The secondary ring Fiber Link .	Off if the fiber link is normal.
C1:	contact closure of the primary ring .	On if the contact node is closed.
C2:	contact closure of the secondary ring.	On if the contact node is closed.
TXD:	2 wires RS485/ 4 wires RS485 Transmit Data	a. Flash if there is activity.
	RS232/RS422 Transmit Data.	Flash if there is activity.
RXD:	RS232/RS422 Receive Data.	Flash if there is activity.

2.3 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 FTDR-S2-WSB Fiber Optic Modem should be set in the primary mode.
- When selecting the Multi-Drop Self-healing Ring Mode, only one FTDR-S2-WSB Fiber Optic Modem should be set in the primary mode, the others are set in the secondary mode.



2.4 Install Application

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

Notice:

In figure1, all the FTDR-S2-WSB Fiber Optic Modem should be set in the primary mode.

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Figure 2. Multi-Drop Self-healing Ring Mode

The primary fiber ring loop (inside loop) be made up of:

A-FTX1 \longrightarrow B-FRX1 \longrightarrow B-FTX1 \longrightarrow C-FRX1 \longrightarrow C-FTX1 \longrightarrow D-FRX1 \longrightarrow D-FTX1 \longrightarrow A-FRX1 The primary fiber ring loop direction is clockwise

The secondary fiber ring loop (outside loop) be made up of:

A-FTX2 \longrightarrow D-FRX2 \longrightarrow D-FTX2 \longrightarrow C-FRX2 \longrightarrow B-FRX2 \longrightarrow B-FTX2 \longrightarrow A-FRX2 The secondary fiber ring loop direction is anti-clockwise

3 Dimensions (mm)

