



Installation/Operation Instructions

Fiber Optic Data Transmission System

Part Number:

DXA/DXB-8D4F-x Series

(8-Channel RS-232 & 4-Channel RS-422 Data Transceiver)

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DXA/DXB-8D4F-x Series
Fiber Optic Transmission System
Installation Instructions

1.0 Product Description

Meridian's product series DXA-8D4F-x and DXB-8D4F-x are fiber optic modems that transmit and receive eight channels of bi-directional RS-232 signals and four channels of full-duplex RS-422 (4-wire) data channels over one optical fiber using digital-encoding transmission technologies. This product series uses Meridian's standard 2-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-1000/S, SR-1001/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 19" equipment chassis.

The digital modules consist of various plug-in personality function cards or SIMs. The top card is the optical card that contains the fiber optic interface. The bi-directional optical input/output connector is located on the right side of both the transmitter (DXA) and receiver (DXB) modules. The second & third SIM cards contain the bi-directional RS-232 data channels – up to four bi-directional channels in each card slot. The fourth and fifth SIM card contains the two in each card slot, bi-directional RS-422 data channels.

2.0 Installation

Series DXA-8D4F-x and DXB-8D4F-x series products are two-slot wide cards and, as such, occupy two slots in Meridian's standard chassis (SR-1000/S, SR-1001/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 19" equipment chassis). To install in the chassis, orient the card with the Meridian logo at the top of the module and slide onto the top and bottom card guides in the chassis. Press securely on the top and bottom of the module to ensure that it is fully seated in the chassis so that the electrical connector mates with the chassis-mounted motherboard. Once installed, manually tighten the two thumbscrews located at the top and bottom of the card. Do not use tools to secure these and do not over tighten.

Note: A fully loaded subrack should have forced-air cooling to avoid excessive heat generation inside the chassis. A fan assembly tray (P/N FA-2000) with three (3) fans is available and should be installed under the 19" SR-2000/1 whenever possible.

3.0 Product Signal Format & Specifications

The DXA & DXB- series products transmit and receive the following signals:

Signal Type	Qty	Transmit	Receive
RS-232 data	8	Yes	Yes
RS-422 data	4	Yes	Yes

The tables below identify the specifications for the various signals that these modems transmit/receive.

Data RS232	
Formats	RS-232
Date Rate (RS-232)	DC to 125Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

Data RS422	
Formats	RS-422 (bi-directional)
Data Rate (RS-485)	DC to 300Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

Connectors	
Data	DB9 Female
Optical	Singlemode – ST or FC Multimode – ST

Optical Specifications						
Fiber Type/Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)
Multimode (FP Laser) 62.5/125	-3	-24	21	1300/850	ST	24
Singlemode (FP Laser) 9/125	-3	-24	21	1310/1550	ST, FC	24
Singlemode (DFB Laser) 9/125	+3	-24	27	1310/1550	ST, FC	24

4.0 Operation

Data – Connect the RS-232 or RS-422 data for each of the data channels to the appropriate data Tx/Rx pins on the connector as shown in section 4.0

4.1 Status indicators

The front panel pinout diagrams in section 5 show the connector and LED indicator locations for the various status indicators on the unit. There are a number of diagnostic indicators on the front panel of each module. These indicators for each channel are listed below:

Transceiver DXA/DXB-8D4F-x Indicators		
Indicator	Location	Function
Power	Left side of module	Green – ON
Tx carrier	Under optical output connector	Optical output (Green – OK, Red – error)
Rx Optical signal	Under optical output connector	Optical input (Green – OK, Red – error)
Rx Carrier	Under optical output connector	Optical Carrier input (Green – OK, Red – error)

4.2 RS-232 SIM Signal Assignment (Pinouts) & Indicator Lights

The Data RS-232 board (SIM) is inserted in the module at the Port 1 & 2.
The Data channel connector pinouts are shown in the table below:

RS-232 Data Connector	
Pinout	(PORT 1 & 2)
1	Data Ch 4 Input (CD)
2	Data Ch 1 Output (TD)
3	Data Ch 1 Input (RD)
4	Data Ch 2 Input (DTR)
5	GND
6	Data Ch 2 Output (DSR)
7	Data Ch 3 Input (RTS)
8	Data Ch 3 Output (CTS)
9	Data Ch 4 Output (RI)

Each data input/output channel has two LED status indicators located under the associated data I/O connector. One LED is associated with each data input and output channel to show activity on both the input (transmit) and output (receive) pins. The table below shows the relationship between the connectors (I/O channels) and LEDs.

RS-232 Data Input/Output Status Indicators	
LED	(PORT 1 & 2)
1	Input 1 – Green – data present
2	Output1 – Green - data present
3	Input 2 – Green - data present
4	Output2 – Green - data present
5	Input 3 – Green - data present
6	Output3 – Green - data present
7	Input 4 – Green - data present
8	Output4 – Green - data present

4.3 RS-422 SIM Signal Assignment (Pinouts) & Indicator Lights

There is two data SIM card located in Port 3 & 4. This data cards transmits/receives two RS-485 (4-wire) data channels. The data SIM has a DB9 female connector.

The table below shows the appropriate pinout for each of the connectors in port 3/4

RS-422 Data Connector Pinout Assignment (PORT 3 & 4)		
Pin #	DXA-8D4F-x	DXB-8D4F-x
1	Ch1 IN (+)	Ch1 OUT (+)
2	Ch1 IN (-)	Ch1 OUT (-)
3	Ch 2 IN (+)	Ch2 OUT (+)
4	Ch 2 IN (-)	Ch2 OUT (-)
5	Gnd	Gnd
6	Ch 1 OUT (+)	Ch1 IN (+)
7	Ch 1 OUT (-)	Ch1 IN (-)
8	Ch 2 OUT (+)	Ch2 IN (+)
9	Ch 2 OUT (-)	Ch2 IN (-)

The table below shows the LED status indicators associated with each data SIM

RS-422 Data Input/Output Status Indicators (PORT 3 & 4)		
LED #	DXA-8D4F-x	DXB-8D4F-x
1	Ch1 Data Input	N/A
2	N/A	Ch 1 Data Output
3	Ch 2 Data Input	N/A
4	N/A	Ch 2 Data Output
5	N/A	Ch1 Data Input
6	Ch 1 Data Output	N/A
7	N/A	Ch 2 Data Input
8	Ch 2 Data Output	N/A

5.0 Front Panel Diagram and Connector Pinout Assignments

The following front panel diagram shows a layout of the front panel including connector location, status indicators and connector pin-out information.

DXA-8D4F/8D4F-X PINOUT DIAGRAM

STATUS INDICATORS

1. POWER (GREEN)
2. NA

STATUS INDICATORS

1. TX CARRIER (GREEN)/ERROR (RED)

DATA RS232 IN/OUT(PORT 1) (DB-9 FEMALE)

1. {CH.4} INPUT (CD)
2. {CH.1} OUTPUT (TD)
3. {CH.1} INPUT (RD)
4. {CH.2} INPUT (DTR)
5. GND
6. {CH.2} OUTPUT (DSR)
7. {CH.3} INPUT (RTS)
8. {CH.3} OUTPUT (CTS)
9. {CH.4} OUTPUT (RI)

DATA RS232 IN/OUT(PORT 2) (DB-9 FEMALE)

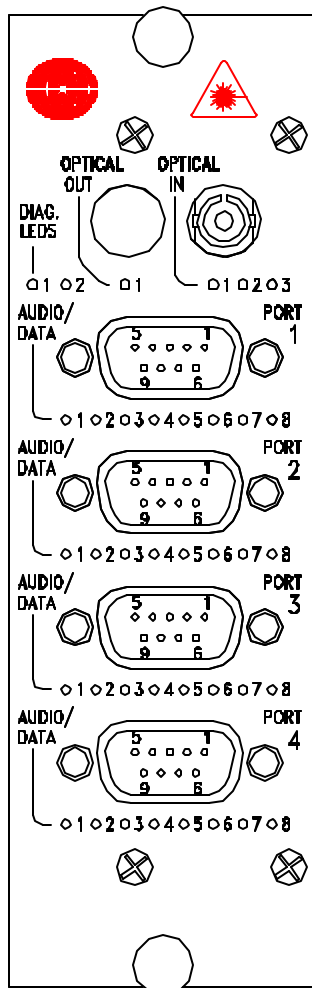
1. {CH.8} INPUT (CD)
2. {CH.5} OUTPUT (TD)
3. {CH.5} INPUT (RD)
4. {CH.6} INPUT (DTR)
5. GND
6. {CH.7} OUTPUT (DSR)
7. {CH.7} INPUT (RTS)
8. {CH.6} OUTPUT (CTS)
9. {CH.8} OUTPUT (RI)

DATA RS422 IN/OUT (PORT 3) (DB-9 FEMALE)

1. {CH.1} INPUT +
2. {CH.1} INPUT -
3. {CH.2} INPUT +
4. {CH.2} INPUT -
5. GND
6. {CH.1} OUTPUT +
7. {CH.1} OUTPUT -
8. {CH.2} OUTPUT +
9. {CH.2} OUTPUT -

DATA RS422 IN/OUT (PORT 4) (DB-9 FEMALE)

1. {CH.1} INPUT +
2. {CH.1} INPUT -
3. {CH.2} INPUT +
4. {CH.2} INPUT -
5. GND
6. {CH.1} OUTPUT +
7. {CH.1} OUTPUT -
8. {CH.2} OUTPUT +
9. {CH.2} OUTPUT -



OPTICAL PORT STATUS INDICATORS

1. NA
2. RX OPTICAL SIGNAL (GREEN)/ABSENT (RED)
3. RX CARRIER (GREEN)/ERROR (RED)

STATUS INDICATORS (PORT 1)

1. {CH.1} DATA INPUT
2. {CH.1} DATA OUTPUT
3. {CH.2} DATA INPUT
4. {CH.2} DATA OUTPUT
5. {CH.3} DATA INPUT
6. {CH.3} DATA OUTPUT
7. {CH.4} DATA INPUT
8. {CH.4} DATA OUTPUT

STATUS INDICATORS (PORT 2)

1. {CH.5} DATA INPUT
2. {CH.5} DATA OUTPUT
3. {CH.6} DATA INPUT
4. {CH.6} DATA OUTPUT
5. {CH.7} DATA INPUT
6. {CH.7} DATA OUTPUT
7. {CH.8} DATA INPUT
8. {CH.8} DATA OUTPUT

STATUS INDICATORS (PORT 3)

1. {CH.1} DATA INPUT
2. NA
3. {CH.2} DATA INPUT
4. NA
5. NA
6. {CH.1} DATA OUTPUT
7. NA
8. {CH.2} DATA OUTPUT

STATUS INDICATORS (PORT 4)

1. {CH.1} DATA INPUT
2. NA
3. {CH.2} DATA INPUT
4. NA
5. NA
6. {CH.1} DATA OUTPUT
7. NA
8. {CH.2} DATA OUTPUT

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Figure 5.1
DXA-8D4F-x Front Panel Layout/Pinout Diagrams

DXB-8D4F/8D4F-X

PINOUT DIAGRAM

STATUS INDICATORS

1. POWER (GREEN)
2. NA

STATUS INDICATORS

1. TX CARRIER (GREEN)/ERROR (RED)

DATA RS232 IN/OUT(PORT 1) (DB-9 FEMALE)

1. (CH.4) INPUT (CD)
2. (CH.1) OUTPUT (TD)
3. (CH.1) INPUT (RD)
4. (CH.2) INPUT (DTR)
5. GND
6. (CH.2) OUTPUT (DSR)
7. (CH.3) INPUT (RTS)
8. (CH.3) OUTPUT (CTS)
9. (CH.4) OUTPUT (RI)

DATA RS232 IN/OUT(PORT 2) (DB-9 FEMALE)

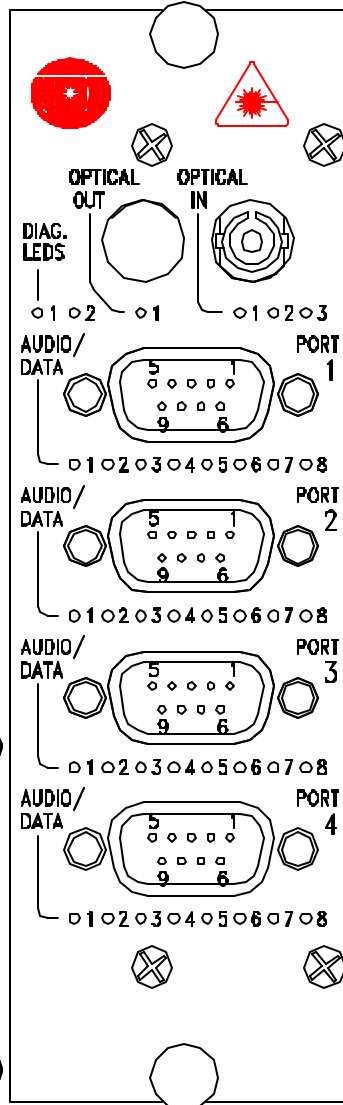
1. (CH.8) INPUT (CD)
2. (CH.5) OUTPUT (TD)
3. (CH.5) INPUT (RD)
4. (CH.6) INPUT (DTR)
5. GND
6. (CH.7) OUTPUT (DSR)
7. (CH.7) INPUT (RTS)
8. (CH.6) OUTPUT (CTS)
9. (CH.8) OUTPUT (RI)

DATA RS422 IN/OUT (PORT 3) (DB-9 FEMALE)

1. (CH.1) OUTPUT +
2. (CH.1) OUTPUT -
3. (CH.2) OUTPUT +
4. (CH.2) OUTPUT -
5. GND
6. (CH.1) INPUT +
7. (CH.1) INPUT -
8. (CH.2) INPUT +
9. (CH.2) INPUT -

DATA RS422 IN/OUT (PORT 4) (DB-9 FEMALE)

1. (CH.1) OUTPUT +
2. (CH.1) OUTPUT -
3. (CH.2) OUTPUT +
4. (CH.2) OUTPUT -
5. GND
6. (CH.1) INPUT +
7. (CH.1) INPUT -
8. (CH.2) INPUT +
9. (CH.2) INPUT -



OPTICAL PORT STATUS INDICATORS

1. NA
2. RX OPTICAL SIGNAL (GREEN)/ABSENT (RED)
3. RX CARRIER (GREEN)/ERROR (RED)

STATUS INDICATORS (PORT 1)

1. (CH.1) DATA INPUT
2. (CH.1) DATA OUTPUT
3. (CH.2) DATA INPUT
4. (CH.2) DATA OUTPUT
5. (CH.3) DATA INPUT
6. (CH.3) DATA OUTPUT
7. (CH.4) DATA INPUT
8. (CH.4) DATA OUTPUT

STATUS INDICATORS (PORT 2)

1. (CH.5) DATA INPUT
2. (CH.5) DATA OUTPUT
3. (CH.6) DATA INPUT
4. (CH.6) DATA OUTPUT
5. (CH.7) DATA INPUT
6. (CH.7) DATA OUTPUT
7. (CH.8) DATA INPUT
8. (CH.8) DATA OUTPUT

STATUS INDICATORS (PORT 3)

1. NA
2. (CH.1) DATA OUTPUT
3. NA
4. (CH.2) DATA OUTPUT
5. (CH.1) DATA INPUT
6. NA
7. (CH.2) DATA INPUT
8. NA

STATUS INDICATORS (PORT 4)

1. NA
2. (CH.1) DATA OUTPUT
3. NA
4. (CH.2) DATA OUTPUT
5. (CH.1) DATA INPUT
6. NA
7. (CH.2) DATA INPUT
8. NA

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Figure 5.2
DXB-8D4F-x Front Panel Layout/Pinout Diagrams

6.0 Product Part Number Variations

The table below lists the various part numbers associated with different module types:

Basic module description:

Data: 8 channels, RS-232 bi-directional

Data: 4 channels, RS-422 bi-directional

Side "A"	Side "B"	x-Channels	# Fibers & Type	Wavelength
DXA-8D4F-2	DXB-8D4F-2	1 to 16	1 (MM)	1300/850nm
DXA-8D4F-5	DXB-8D4F-5	1 to 16	1 (SM)	1310/1550nm

For proper operation, it is necessary to match the side "A" unit (DXA) with the associated side "B" (DXB) unit.

7.0 Troubleshooting

Below is a listing of several problems that may arise during the installation & operation of the modules. If you are having difficulty installing or operating the modules please refer to this list below.

Problem: *Module does not fit in chassis slots*

Action: Check module orientation. Meridian "Globe" must be oriented on the top left hand side of the module
Make sure the card guides in the chassis are aligned with the extrusion on the module

Problem: *Card power LED does not light when power to the module/subrack is applied or power indicator turns on and off*

Action: Check power supply to ensure that it is plugged in and turned on. If flashing continues, move module to another chassis or location in the same chassis, if available.

Problem: *No Data*

Action: Check the data input status indicator light #1 on the transmit module to ensure it is on (indicating a data input signal). Also check the data output status indicator light #2 on the corresponding receiver module to ensure that the signal is being transmitted and received. If not, please check the data input/output and fiber connections. Ensure that the jumpers on the data Multi-protocol SIM are programmed properly to match the data format

If the problem still persists after reviewing the above items, please contact Meridian technical support (516-285-1000).



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