



Installation/Operation Instructions

Fiber Optic Data Transmission System

Part Number:

DX(A/B)-xG-x Series

(Multi-channel, Multi-Protocol Data Transceiver)

1 to 4 channels

Table of Contents

1.0	Product Description	3
2.0	Installation	3
3.0	Product Signal Format & Specifications	3
4.0	Multi-Protocol SIM Signal Assignment	4
4.1	Changing the multi-protocol SIM jumpers	6
5.0	Front Panel Pinout Assignment Diagram	7
5.1	Status Indicators.....	8
6.0	Troubleshooting.....	8
	Appendix 1 – Applicable Part Number Variations	9

1.0 Product Description

Meridian's DXA-xG and DXB-xG series products are fiber optic modems that transmit either two, three or four user-selectable, bi-directional RS-232, RS-422, RS-485, Manchester, or bi-phase data channels over one optical fiber using digital 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-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. On the one fiber units (DXA/DXB) the optical Input/Output (TRx) connector is located on the right side of each of the modules. The two fiber units (DX) have two optical ports. The port on the left of side of the front panel is the transmit port while the optical port on the right side of the module's front panel is the optical receive port. It is important that, when connecting these modules together, it is necessary that that the transmit port of one of the modules optically connects to the receive port of the other module. Then next four SIM card locations will accommodate up to 4 bi-directional, multi-protocol data channels – one in each card slot. Each data channel SIM is installed starting at the bottom of the module. For example, with only one data channel, the bottom SIM card location will be populated while a full 4-channel module will utilize all of the data ports

2.0 Installation

Series DXA-xG and DXB-xG products are two-slot wide cards and, as such, occupy two slots in Meridian's standard chassis (SR-1000/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 populated 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 from Meridian and should be installed under the 19" SR-2000/1 whenever possible.

3.0 Product Signal Format & Specifications

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

Signal Type	# of bi-directional Data Channels		
	DXA/DXB-2G-x	DXA/DXB-3G-x	DXA/DXB-4G-x
RS-232 (Tx & Rx data)	4	6	8
RS-422 (Tx & Rx data)	2	3	4
RS-485 (2 & 4-wire)	2	3	4

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

Data	
Formats	RS-232
Date Rate (RS-232)	DC to 125Kb/s
Data Rate (RS-422 & RS-485)	DC to 1mb/s
Bit Error Rate (BER)	Better than 10^{-9}

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

4.0 Multi-Protocol SIM Signal Assignment

Each of the multi-protocol data SIMs can transmit/receive the following data formats:

RS-232 Two full speed, 2-wire channels (Tx/Rx)

RS-422 One channel

RS-485 One channel (either 2 or 4 wire)

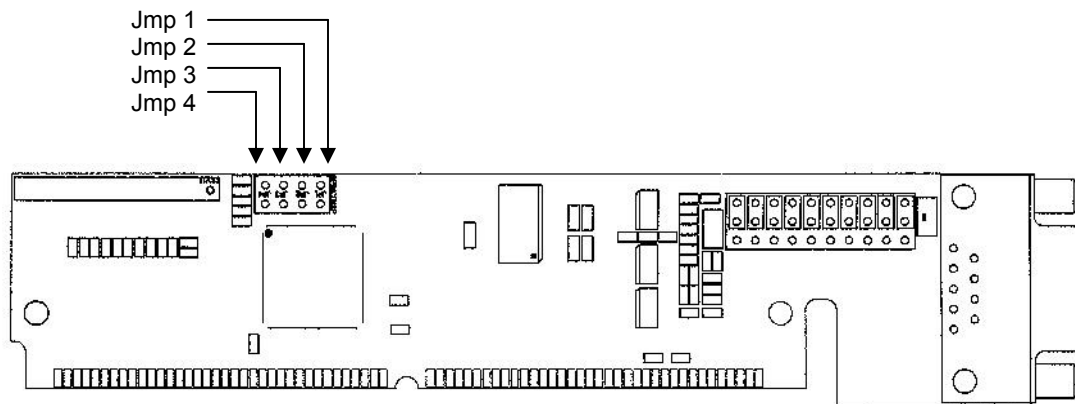
The RS-232 channels can be used either for transmitting/receiving two channels of 2-wire RS-232 (Tx/Rx) or one channel of RS-232 (Tx/Rx) with one bi-directional handshake (e.g., RTS & CTS)

In addition to the RS-232, each multi-protocol SIM can transmit/receive either RS-422 or 2 or 4-wire RS-485 signals. The signal pinouts on the female 9-pin DB9 connector are shown in the table below.

Data Connector Pinout Assignment				
Pin #	RS-232	RS-422	RS-485 (2-wire)	RS-485 (4-wire)
1	-----	Ch1 IN (+)	Ch1 IN/OUT (+)	Ch1 IN (+)
2	Ch1 OUT	-----	-----	-----
3	Ch1 IN	-----	-----	-----
4	-----	Ch1 IN (-)	Ch1 IN/OUT (-)	Ch1 IN (-)
5	Gnd	Gnd	Gnd	Gnd
6	-----	Ch1 OUT (+)	-----	Ch1 OUT (+)
7	Ch2 IN	-----	-----	-----
8	Ch2 OUT	-----	-----	-----
9	-----	Ch1 OUT (-)	-----	Ch1 OUT (-)

There are four (4) jumpers located on the multi-protocol data SIM that must be set properly in order to select the appropriate data format. The figure and table below illustrates these jumper locations on the SIM and how they are configured for the proper data format options. The factory-supplied default setting is for RS-232 data (Jumper #1 ON).

Multi-Protocol SIM Signal Format Jumper Settings				
	Jumper 1	Jumper 2	Jumper 3	Jumper 4
RS-232	ON	OFF	OFF	OFF
RS-422	OFF	ON	OFF	OFF
RS-485 (2-wire)	OFF	OFF	ON	OFF
RS-485 (4-wire)	OFF	OFF	OFF	ON



Multi-Protocol Plug-in SIM

4.1 Changing the multi-protocol SIM jumpers

The jumpers to change the transmitted and received data format can be easily changed as follows:

1. Lay the module on its side with the front panel facing to the left.
2. If there is a side cover on the module, remove the screws in each of the 4 corners of the side cover and carefully remove the cover.
3. The Multi-Protocol (MPS) card is located on the bottom of the module.
4. Refer to the above drawing to locate the 4 jumpers that are located near the rear of the MPS card right at the top edge of the card.
5. Using a small tool, carefully remove the jumper and place it on the appropriate pins to properly select the data format (see table above)
6. Carefully replace the side cover and secure with the screws.
7. Repeat this process for the other module. The jumper selection needs to be the same for both the Tx and Rx units.

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

5.0 Front Panel Pinout Assignment Diagram

Figure 5.1 below shows the front panel layout, connector location, indicator location and pinout assignment for both the DXA & DXB modules.

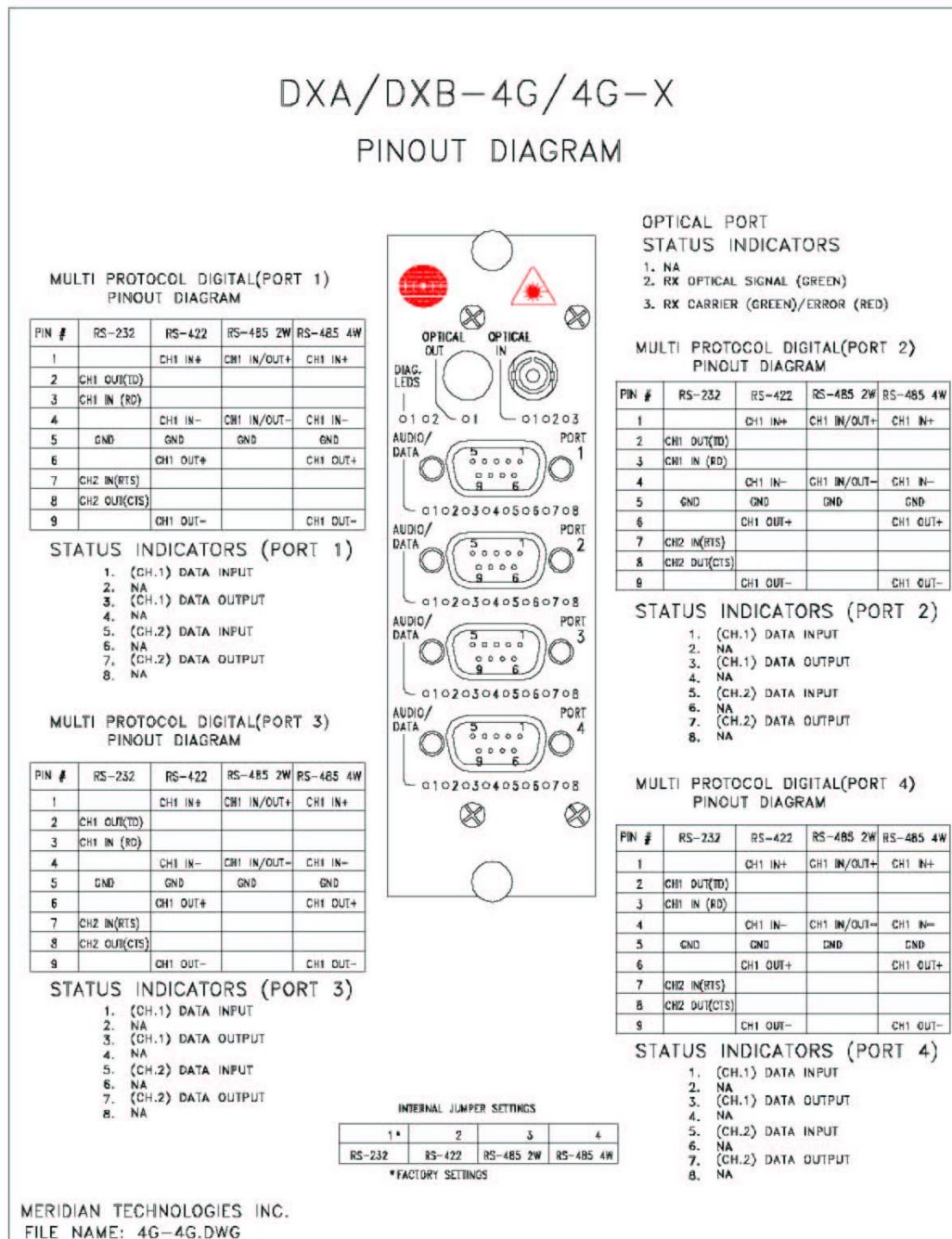


Figure 5.1
DXA/DXB-xG-x Front Panel Layout Diagrams

5.1 Status Indicators

There are status indicator lights associated with each data connectors. The transceiver indicators are as follows:

Power: Green (ON)
Rx Optical Signal: Green (Present)
Rx Carrier Signal: Green (Present)/Red (Error)

Below each DB9 data connector are 8 LED indicator lights. A description of their function is below:

Indicator #	Data Channel		
	RS-232	RS-422	RS-485
1	Ch 1 – Input	Data Input	Data Input
2	N/A	N/A	N/A
3	Ch 1 – Output	Data Output	Data Output
4	N/A	N/A	N/A
5	Ch 2 – Input	N/A	N/A
6	N/A	N/A	N/A
7	Ch 2 - Output	N/A	N/A
8	N/A	N/A	N/A

Note: Since the input/output data is asynchronous, the only time the LED indicators will light (flash) is when data is actually being input (transmitted) and output (received) to and from the respective modules. These lights can be used to diagnose and connectivity and transmission problems that may occur.

6.0 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).

Appendix 1 – Applicable Part Number Variations

The table below indicates the part numbers and product description that are included in this manual. The pinout diagram in section 4.0 shows the connector pinouts (input/output connections) for each of the data channel SIM cards.

Transceiver Side 'A' Part #	Transceiver Side 'B' Part #	# of Data Channels	Description
DXA-2G-2M DXA-2G-2R	DXB-2G-2M DXB-2G-2R	2	2-Ch, bi-directional data transceiver, multimode, shelf mount 2-Ch, bi-directional data transceiver, multimode, rack mount
DXA-2G-5M DXA-2G-5R	DXB-2G-5M DXB-2G-5R	2	2-Ch, bi-directional data transceiver, singlemode, shelf mount 2-Ch, bi-directional data transceiver, singlemode, rack mount
DXA-3G-2M DXA-3G-2R	DXB-3G-2M DXB-3G-2R	3	3-Ch, bi-directional data transceiver, multimode, shelf mount 3-Ch, bi-directional data transceiver, multimode, rack mount
DXA-3G-5M DXA-3G-5R	DXB-3G-5M DXB-3G-5R	3	3-Ch, bi-directional data transceiver, singlemode, shelf mount 3-Ch, bi-directional data transceiver, singlemode, rack mount
DXA-4G-2M DXA-4G-2R	DXB-4G-2M DXB-4G-2R	4	4-Ch, bi-directional data transceiver, multimode, shelf mount 4-Ch, bi-directional data transceiver, multimode, rack mount
DXA-4G-5M DXA-4G-5R	DXB-4G-5M DXB-4G-5R	4	4-Ch, bi-directional data transceiver, singlemode, shelf mount 4-Ch, bi-directional data transceiver, singlemode, rack mount

Note: Shelf mount ("M") and rack mount ("R") units can communicate with each other. It is necessary that a DXA & DXB are connected together. Connecting either two DXA or two DXB units together will not work.