



Installation Instructions

Fiber Optic Data Transmission System

SXA/SXB-1G/1G-x

1-Channel Multi-Protocol Data Transceiver

Compatible Part Numbers*:

**SXA/SXB-1D/1D-x, SXA/SXB-1F/1F-x,
SXA/SXB-1K/1K-x, SXA/SXB-1J/1J-x**

09/2020 Ver.1.3

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1.0 Product Description

Meridian's product series SXA-1G/1G-x and SXB-1G/1G-x are fiber optic modems that transmit & receive one channel of bi-directional, user-selectable RS-232, RS-422 or RS-485 data signal over one optical fiber using digital transmission technologies. This product series uses Meridian's standard 1-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-500/S, SR-1000/S, SR-1001/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 19" equipment chassis.

Both ST and FC optical connectors are supported, depending on the part number. An ST optical interface is available for both multimode and Single-mode fiber applications. The FC optical interface is available only for Single-mode products. Conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

Series SXA/SXB-1G/1G products are one-slot wide cards and, as such, occupy one slots in

Meridian's standard chassis (SR-500/S, SR- 1000, SR- 1000/S, SR- 1200/S, SR- 1500/S, and SR2001 & SR-2000 series 19" equipment chassis). To install in these 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 19" 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 SXA/SXB-1G/1G series products transmit and receive one of the following signals:

Variation	Signal Type	Channels
1	RS-232 (Tx & Rx data)	1
2	RS-422 (Tx & Rx data)	1
3	RS-485 (2-wire)	1
4	RS-485 (4-wire)	1

NOTE: These modems will not support Pelco D protocol. When interfacing to a Pelco CCTV with RS-422 or "D" protocol, use the SXA/SXB-1F-x modems .

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

Data	
Formats	RS-232, RS-422, RS-485, Manchester, Bi-Phase
Date Rate (RS-232)	DC to 125Kb/s
Data Rate (RS-422 & RS-485)	DC to 300Kb/s
Bit Error Rate (BER)	Better than 10^{-9}
Connectors	
Video	75 Ohm BNC w/gold center pin
Data	Two 3-pin screw terminal connectors
Optical	Single-mode – ST or FC Multimode - ST

4.0 Data Interface.

The two 3-pin terminal connectors on the front of the module is used for all data interfaces. This module supports the following data formats:

RS-232 One full speed channel (Tx/Rx)

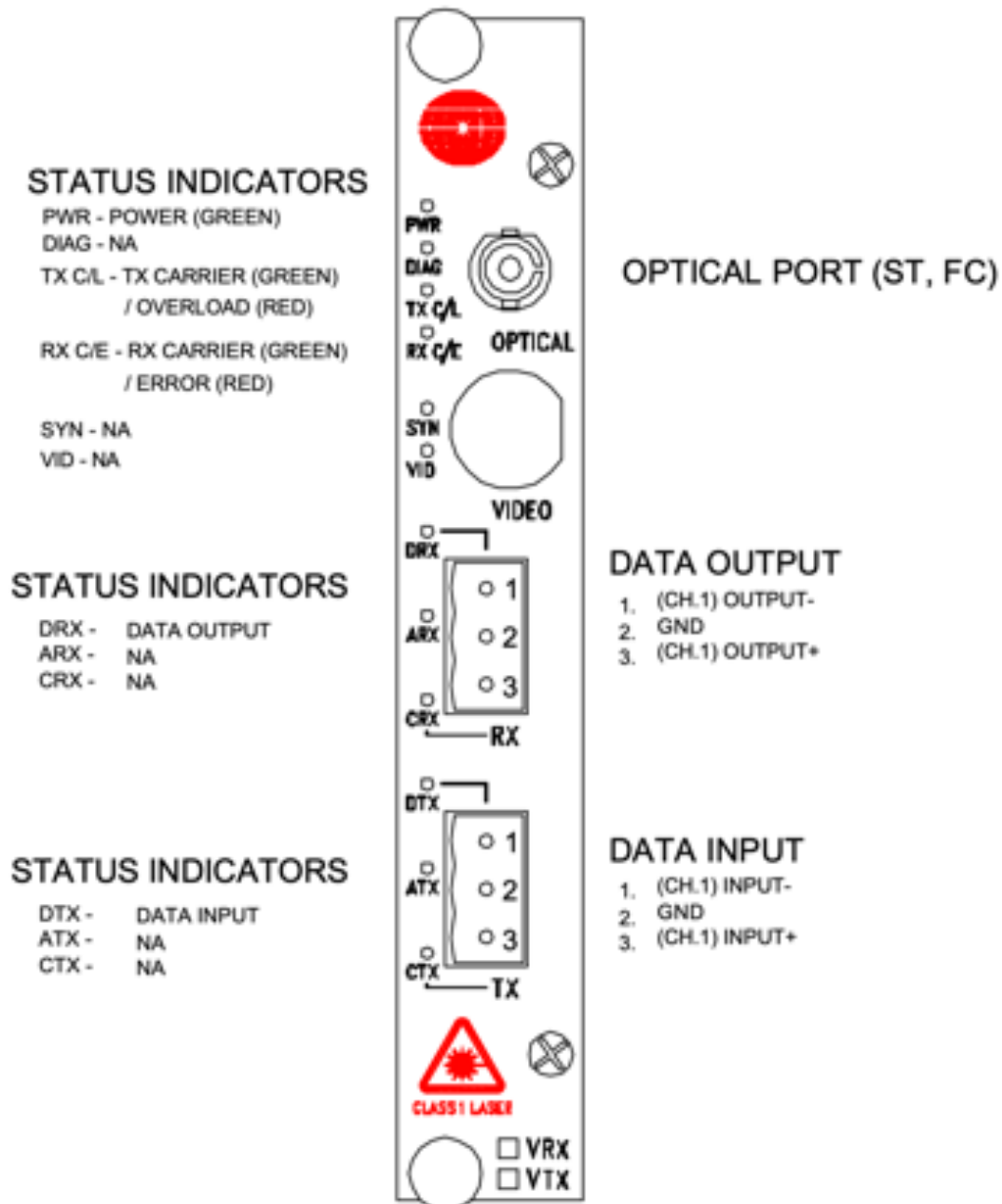
RS-422 One channels

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

User-settable switches on the module's motherboard are used to select the appropriate data format as required.

4.1 Front Panel Pinout Diagram

Front panel version 1 (legacy)



Front panel version 2 (current)

STATUS INDICATORS

PWR - POWER (GREEN)

DIAG - NA

TX C/L - TX CARRIER (GREEN) / OVERLOAD (RED)

RX C/E - RX CARRIER (GREEN) / ERROR (RED)

SYN - NA

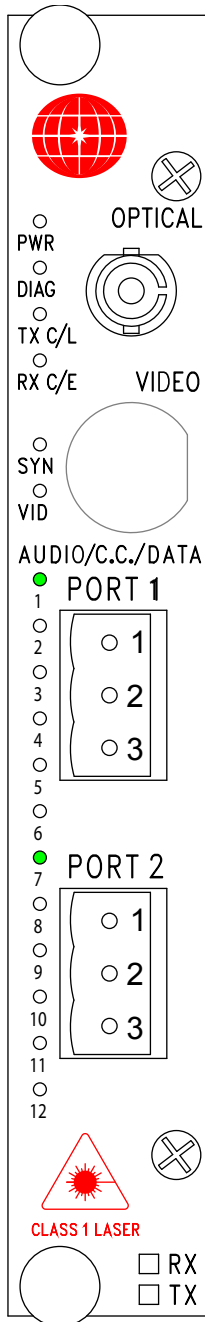
VID - NA

PORT 1

- ## 1. DATA OUTPUT LED

PORT 2

- ## 7. DATA INPUT LED



OPTICAL PORT (ST, FC)

PIN ASSIGNMENT

PORT 1 DATA OUTPUT

1. (CH.1) OUTPUT -
2. GND
3. (CH.1) OUTPUT +

PORT 2 DATA INPUT

1. (CH.1) INPUT -
2. GND
3. (CH.1) INPUT +

The RS-232 channel is used for transmitting/receiving one channel of 2-wire RS-232 (Tx/Rx). In addition to the RS-232, this module supports both RS-422 and 2 or 4-wire RS-485 signals. User-settable switches on the module's motherboard are used to select the appropriate data format as required.

Data Connector Pinout Assignment				
Terminal Block #1	RS-232	RS-422	RS-485 (2-wire)	RS-485 (4-wire)
1	Ch 1 Rx (Out)	Ch1 Out (-)	Ch1 IN/OUT (-)	Ch1 Out (-)
2	GND	GND	GND	GND
3	N/C	Ch 1 Out (+)	Ch1 IN/OUT (+)	Ch 1 Out (+)
Terminal Block #2				
1	Ch 1 Tx (In)	Ch1 IN (-)		Ch1 IN (-)
2	GND	GND	GND	GND
3	N/C	Ch1 IN (+)		Ch1 IN (+)

5.0 Signal Conditioning Switch/Jumper Settings

The sections below illustrate how to change the various data conditions.

5.1 Data Selection jumpers

There are sixteen (16) jumpers located directly behind the 3-pin front-panel connectors.

The Jumpers 11 to 12 are used for 2 or 4-wire RS-485 selection.

Jumper 13 the default 120 Ohm load on the RS-422 Data channel.

The illustration below describes the function of each of these 16 jumpers. The jumpers are shown in their default positions.

POS.1 / POS.2

JUMPER 1		N/A
JUMPER 2		N/A
JUMPER 3		N/A
JUMPER 4		N/A
JUMPER 5		N/A
JUMPER 6		N/A
JUMPER 7		N/A
JUMPER 8		N/A
JUMPER 9		N/A
JUMPER 10		N/A
JUMPER 11		RS-485 (4-WIRE/2-WIRE SELECTION) - 4-WIRE (default)*
JUMPER 12		RS-485 (4-WIRE/2-WIRE SELECTION) - 4-WIRE (default)*
JUMPER 13		RS-422 CH. 1 (IN) - 120 OHM LOAD - ON (default)
JUMPER 14		RESERVED
JUMPER 15		RESERVED
JUMPER 16		RS-422 CH. 2 (IN) - 120 OHM LOAD - ON (default)

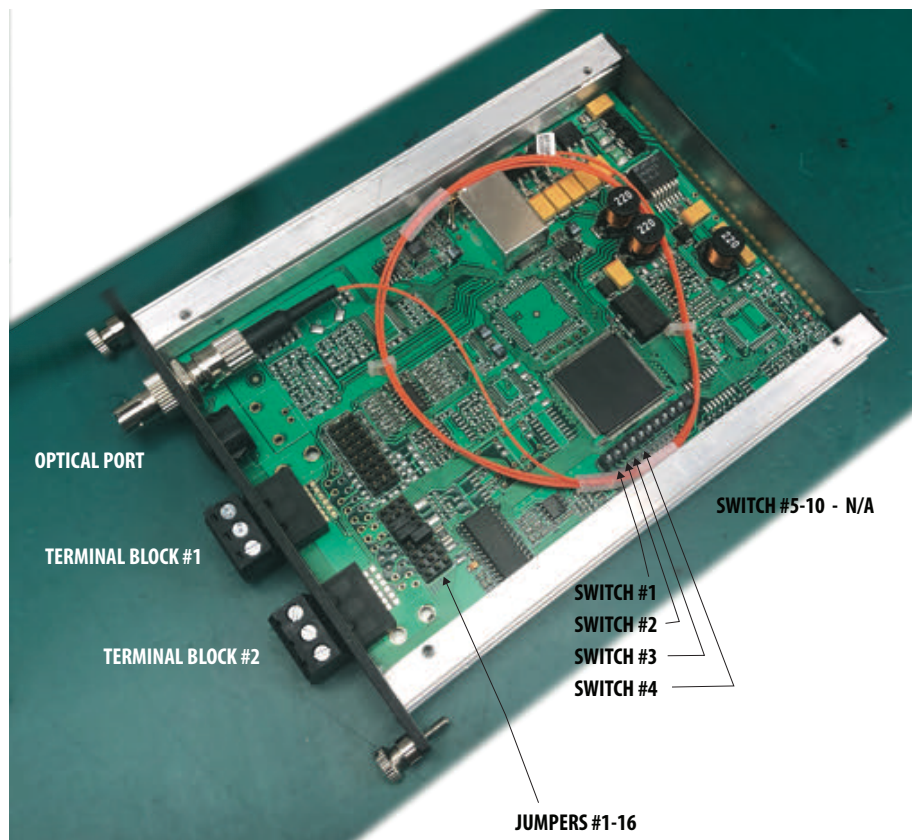
* To convert RS-485 Data Channel from 4-wire to 2-wire configuration, move Jumper 11 and 12 from POS.1 to POS.2

5.2 Data Format Selection

A group of 10 switches is located on the bottom center of the module's circuit card (see figure below). The left four (4) of these switches control the data format that is transmitted/received. These switches on both the transmitter and receiver must be set the same in order to have proper data communications format between them. The figure and table below show these switch locations on the board and how they are configured for the proper data format options. The factory-supplied default setting is for RS-232 data (Switch #1-4 OFF (up)).

Data Format Selection Switch Settings				
	Switch #1	Switch #2	Switch #3	Switch #4
RS-232	OFF (up)	OFF (up)	OFF (up)	OFF (up)
RS-422	ON (down)	ON (down)	OFF (up)	OFF (up)
RS-485 (2-wire)	OFF (up)	ON (down)	ON (down)	OFF (up)
RS-485 (4-wire)	OFF (up)	ON (down)	OFF (up)	OFF (up)

The remaining Switches 5 through 10 should be in the OFF (up) position.



Data Format Selection Switch Locations

6.0 Optical Specifications

The table below lists the optical specifications for both Single-mode and multimode fiber applications.

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	-5	-26	21	1300/850	ST	26
Single-mode (FP Laser) 9/125	-5	-26	21	1310/1 550	ST, FC	26
Single-mode (DFB Laser) 9/125	+1	-26	27	1310/1550	ST, FC	26

7.0 Product Part Numbers

The table below lists the various part numbers and description that are available for this series of product.

Product Part Number Guide				
Part #	Matching Part #	Description	Fiber Interface	Optical Connector
SXA-1G/1G-2	SXB-1G/1G-2	1-ch. Multi-protocol Data Bi-di	Multimode	ST
SXA-1G/1G-5	SXB-1G/1G-5	1-ch. Multi-protocol Data Bi-di	Single-mode	FC
SXA-1G/1G-5ST	SXB-1G/1G-5ST	1-ch. Multi-protocol Data Bi-di	Single-mode	ST
SXA-1D/1D-2	SXB-1D/1D-2	1-ch. RS-232 Data Bi-di	Multimode	ST
SXA-1D/1D-5	SXB-1D/1D-5	1-ch. RS-232 Data Bi-di	Single-mode	FC
SXA-1D/1D-5ST	SXB-1D/1D-5ST	1-ch. RS-232 Data Bi-di	Single-mode	ST
SXA-1J/1J-2	SXB-1J/1J-2	1-ch. RS-485 Data (2-WIRE) Bi-di	Multimode	ST
SXA-1J/1J-5	SXB-1J/1J-5	1-ch. RS-485 Data (2-WIRE) Bi-di	Single-mode	FC
SXA-1J/1J-5ST	SXB-1J/1J-5ST	1-ch. RS-485 Data (2-WIRE) Bi-di	Single-mode	ST
SXA-1K/1K-2	SXB-1K/1K-2	1-ch. RS-485 Data (4-WIRE) Bi-di	Multimode	ST
SXA-1K/1K-5	SXB-1K/1K-5	1-ch. RS-485 Data (4-WIRE) Bi-di	Single-mode	FC
SXA-1K/1K-5ST	SXB-1K/1K-5ST	1-ch. RS-485 Data (4-WIRE) Bi-di	Single-mode	ST
SXA-1F/1F-2	SXB-1F/1F-2	1-ch. RS-422 Data Bi-di	Multimode	ST
SXA-1F/1F-5	SXB-1F/1F-5	1-ch. RS-422 Data Bi-di	Single-mode	FC
SXA-1F/1F-5ST	SXB-1F/1F-5ST	1-ch. RS-422 Data Bi-di	Single-mode	ST

8.0 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 that both the SXA & SXB modules are set to transmit/receive the same data format (see section 5.0 for switch settings).

Verify that the PWR, Tx C/L and Rx C/L lights on both modems are on GREEN. Confirm that the data pinouts/connections are correct (see section 4.0 for data pinout connections).

Confirm the internal DIP switch and jumpers are set correctly for the data protocol. Verify that the DT1 light flashes when transmitting data and that the corresponding DR1 light on the other modem is flashing.

Confirm that the data connections are correct (Check to ensure that the data source is operating properly). The front panel lights located next to the 14 pin connector should be flashing as data is being sent to the transmit side. Check to ensure that data is being transmitted to the unit.

If the problem still persists after reviewing the above items, please contact Meridian technical support (5 16- 285-1000).