



***Fiber Optic Data
Transmission System
Installation Instructions***

Part Number:

SXA-2A2G/2A2G-x

(2-channel Audio, 2-channel Data Transceiver)

SXB-2A2G/2A2G-x

(2-channel Audio, 2-channel Data Transceiver)

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SXA/SXB-2A2G/2A2G-x

Fiber Optic Audio/Data Transmission System

Installation Instructions

1.0 Product Description

Meridian's product series SXA/SXB-2A2G/2A2G-x are fiber optic modems that transmit & receive two bi-directional audio channels and two bi-directional, user-selectable RS-232, RS-422 and RS-485 data signals 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, 1000/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 19" equipment chassis.

Refer to Appendix 1 at the back of this manual for the module part numbers applicable in this manual.

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. Optional conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

Series SXA/SXB-2A2G/2A2G-x products are one-slot wide cards and, as such, occupy one slot in Meridian's standard chassis (SR-500/S, SR-1000, SR-1000/S, SR-1200/S, SR-1500/S, and SR-2001 & 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-2A2G/2A2G-x series products can transmit and receive the following signals:

Signal Type	Channels
Audio	2 Bi-directional
Multi-protocol Data	2 Bi-directional

Multi-protocol Data Signal Type	Number of Channels
RS-232 (Tx & Rx data)	2
RS-422 (Tx & Rx data)	2
RS-485 (2-wire)	1
RS-485 (4-wire)	1

Refer to Appendix 1 for the product part number and associated functional description. The above number and type of signals will vary based on the product part number.

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

Audio	
In/Out Impedance	600 Ohm, unbalanced/unbalanced
Frequency Response	10Hz to 20KHz
SNR	>90dB (weighted) @ 1KHz
In/Out Level	-8 to +8 dBm (4Vp-p, max)
THD	<0.01% @ 1KHz
Digitized Resolution	24 bit

Data	
Formats	RS-232
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	
Audio / Data	DB25F (25 pin Female 'D' style connector)
Optical	Single-mode – FC Multimode - ST

4.0 Connector Pin Assignment

The DB-25-pin connector on the front of the module is used for the Audio/Data interfaces. The diagrams below indicate audio, data input/output connection.

SXA/SXB-2A2G/2A2G-x

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

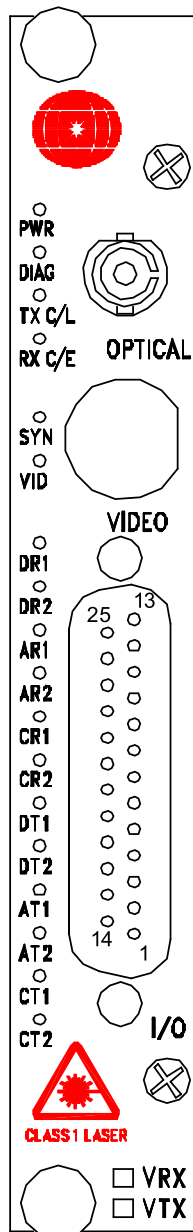
DR1 - (CH.1) DATA OUTPUT
DR2 - (CH.2) DATA OUTPUT
AR1 - (CH.1) AUDIO OUTPUT
AR2 - (CH.2) AUDIO OUTPUT
CR1 - NA
CR2 - NA
DT1 - (CH.1) DATA INPUT
DT2 - (CH.2) DATA INPUT
AT1 - (CH.1) AUDIO INPUT
AT2 - (CH.2) AUDIO INPUT
CT1 - NA
CT2 - NA

OPTICAL PORT (ST, FC)

MULTI-PROTOCOL DATA "G" CONFIGURATION IN DEFAULT SETTING SET TO RS-232 DRIVER

AUDIO/DATA
INPUT/OUTPUT
(DB-25 FEMALE)

22. (CH.1) AUDIO INPUT-
10. (CH.1) AUDIO INPUT+
12. (CH.1) AUDIO OUTPUT-
24. (CH.1) AUDIO OUTPUT+
23. (CH.2) AUDIO INPUT-
11. (CH.2) AUDIO INPUT+
13. (CH.2) AUDIO OUTPUT-
25. (CH.2) AUDIO OUTPUT+
4. (CH.1) RS232 INPUT / RS422 INPUT- / RS485 (4W) INPUT- / (CH.1) RS485 (2W) INPUT/OUTPUT-
16. (CH.1) RS422 INPUT+ / RS485 (4W) INPUT+ / (CH.1) RS485 (2W) INPUT/OUTPUT+
2. (CH.2) RS232 INPUT / RS422 INPUT-
14. (CH.2) RS422 INPUT+
5. (CH.1) RS232 OUTPUT / RS422 OUTPUT- / RS485 (4W) OUTPUT- / (CH.2) RS485 (2W) INPUT/OUTPUT-
17. (CH.1) RS422 OUTPUT+ / RS485 OUTPUT+(4W) / (CH.2) RS485 (2W) INPUT/OUTPUT+
3. (CH.2) RS232 OUTPUT / RS422 OUTPUT-
15. (CH.2) RS422 OUTPUT+
19. +5V
1. GND
7. GND



5.0 Signal Conditioning Switch/Jumper Settings

The sections below illustrate how to change the various data format and audio impedance.

5.1 Data Format Selection

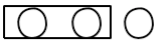
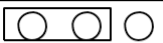
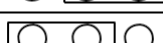
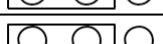
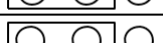
A group of 10 switches is located on the bottom center of the module's circuit card (see figure below). The left three (3) switches control the data format that is transmitted/received. These switches on both the ST & SR modules must be set the same in order to have proper data communications format between them. The figure and table below illustrates 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 for both data channels (Switches #1-3 set in the UP (or "1") position).

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)

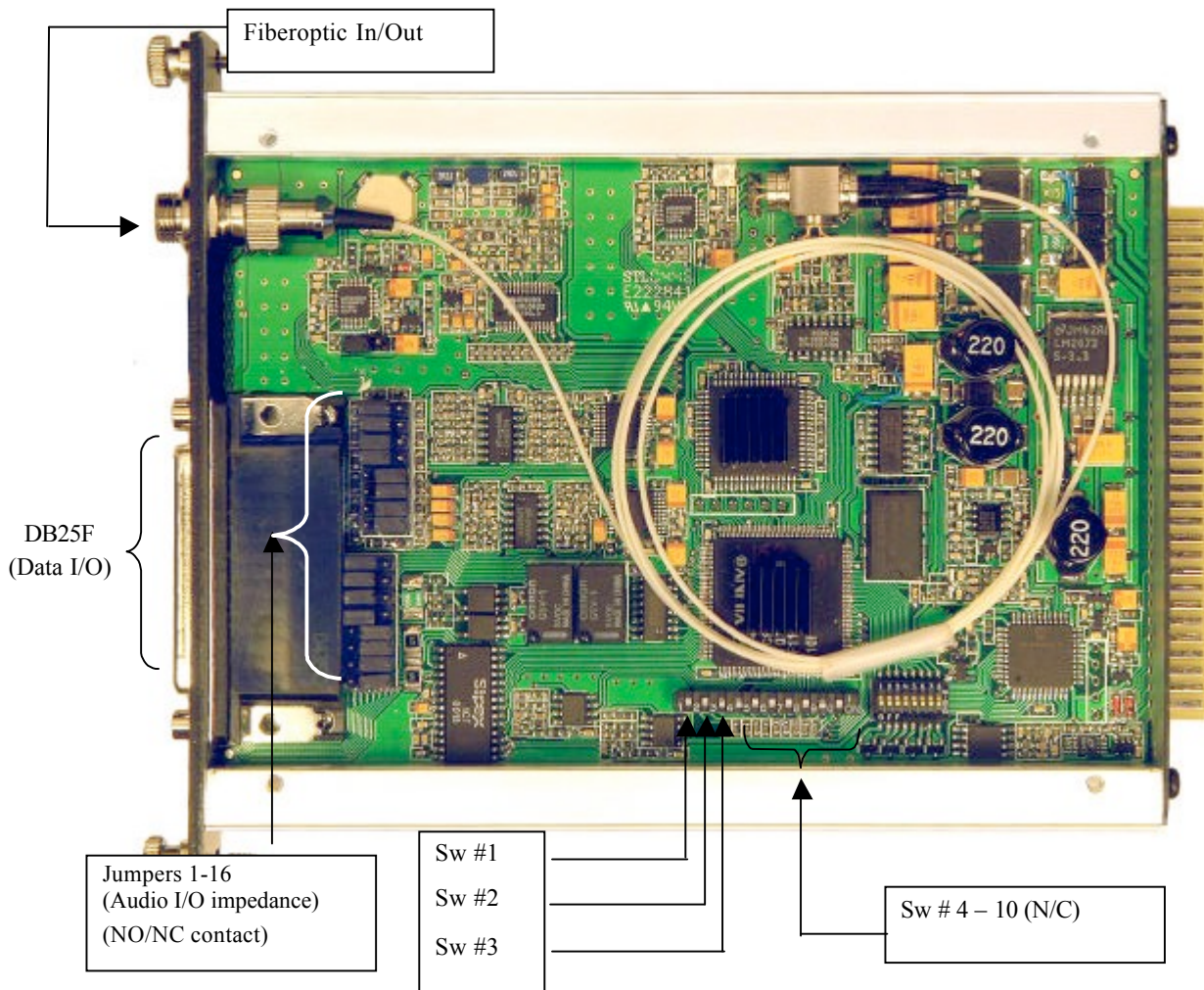
5.2 Audio Impedance, Data Selection jumpers

Audio Impedance - The input/Output impedance of each of the audio channels can be changed between 600 Ohm balanced and 47K Ohm unbalanced. The default impedance is 600 Ohm.

There are sixteen (16) 3-pin jumpers located directly behind the DB-25 pin front-panel mounted connector. The top 8 jumpers are used to select the Input/Output Audio Impedance. The illustration below describes the function of each of these 16 jumpers. The jumpers are shown in their default condition.

Jumper 1		Audio Ch 1 (-) (OUT) – 600 Ohm / Low Z
Jumper 2		Audio Ch 1 (+) (OUT) – 600 Ohm / Low Z
Jumper 3		Audio Ch 2 (-) (OUT) – 600 Ohm / Low Z
Jumper 4		Audio Ch 2 (+) (OUT) – 600 Ohm / Low Z
Jumper 5		Audio Ch 2 (+) (IN) – 47KOhm / 600Ohm
Jumper 6		Audio Ch 2 (-) (IN) – 47KOhm / 600Ohm
Jumper 7		Audio Ch 1 (+) (IN) – 47KOhm / 600Ohm
Jumper 8		Audio Ch 1 (-) (IN) – 47KOhm / 600Ohm
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

1-Slot Module Data Format Selection Switch & Jumper Location



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	-6	-26	20	1300	ST	24
Single-mode (FP Laser) 9/125	-6	-26	20	1310	ST, FC	24

7.0 Product Part Numbers

See Appendix 1 for a listing of the product part numbers and their description that pertain to this document.

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 or distorted Audio*

Action: Check to ensure that the audio input/output connections are correct and that the Input/Output impedance jumpers are set correctly. The I/O impedance of each audio channel can be set independently so be sure to check that the appropriate channel is configured properly.

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). Confirm that the data connections are correct (see section 4.0 for data pin-out connections). Check to ensure that the data source is operating properly. The front panel lights located next to the DB25 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 (516-285-1000).

Appendix 1 – Applicable Part Number Variations

Transmitter Part #	Receiver Part #	# of Audio Channels	Optical Connector	Description
SXA-2A2G/2A2G-2	SXB-2A2G/2A2G-2	2	ST	Tx/Rx, multimode, rack mount
SXA-2A2G/2A2G-5	SXB-2A2G/2A2G-5	2	FC	Tx/Rx, Single-mode, rack mount