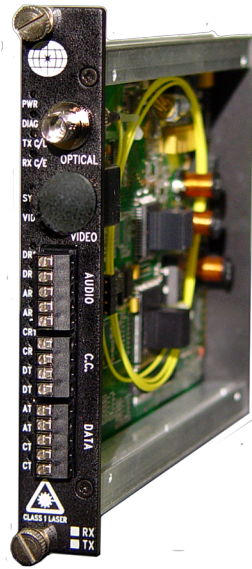




Fiber Optic Audio/Data Transmission System

Installation Instructions



ST-1A1G/1G-x

Audio Transmitter w/bi-directional Multiprotocol Data

SR-1A1G/1G-x

Audio Receiver w/bi-directional Multiprotocol Data

Meridian Technologies, Inc.
700 Elmont Road, Elmont NY 11003
Phone 516. 285. 1000 Fax 516. 285. 6300
E-mail sales@meridian-tech.com Web www.meridian-tech.com
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1.0 Product Description

Meridian's ST/SR-1A1G/1G-x products are fiber optic cards that transmit one unidirectional audio channel, and one bi-directional user-selectable RS-232, RS-422 and RS-485 data signal over one optical fiber using digital transmission technologies. This product series occupies one slot in Meridian's standard chassis.

Both, ST™ and FC optical connectors are supported. 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 elements and environments with high humidity.

2.0 Installation

Series ST/SR-1A1G/1G-x products are one-slot cards and will occupy one slot in Meridian's standard chassis (SR-500/S, SR- 1002/S, SR-200, SR-2000 and other chassis).

To install cards in these chassis, orient the card with the Meridian logo at the top of the front panel and slide it onto the top and bottom card chassis guides. 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 and do not overtighten.

Note: A fully loaded 19" sub-rack 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 chassis whenever is possible.

3.0 Product Signal Format & Specifications

The ST/SR-1A1G/1G-x series products transmit and receive the following signals:

Signal Type	Channels	Transmitter card ST-1A1G/1G-x	Receiver card SR-1A1G/1G-x
Audio	1	Tx	Rx
RS-232 (Tx/Rx Data)	1	Tx/Rx	Tx/Rx
RS-422 (Tx/Rx Data)	1	Tx/Rx	Tx/Rx
RS-485 (2 & 4-wire)	1	Tx/Rx	Tx/Rx

The table below reflect the specifications for the signals 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	14 pin terminal strip (one 5 pin connectors)							
Data	14 pin terminal strip (one 5 pin connectors)							
Optical	Single-mode – ST or FC Multimode - ST							
Optical Specifications								
Meridian Optical Code	Fiber Type/Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)	Max Distance (Km)
2	Multimode (FP Laser) 62.5/125	-5	-26	21	850/1300	ST	26	4
5	Single-mode (FP Laser) 9/125	-5	-26	21	1310/1550	ST, FC	26	60

The 14-pin terminal block connector on the front of the module are used for audio and data interfaces. This card supports the following data formats:

RS-232 One full speed (Tx/Rx)

RS-422 One channel

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

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

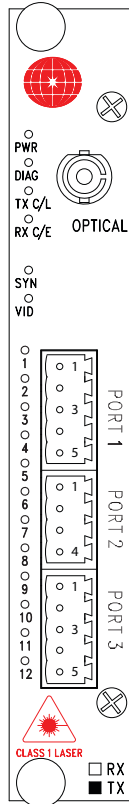
4.0 Connector Pin Assignment

The diagrams below show the Audio and Data pin-out diagram and signal status indicators for Transmitter and Receiver cards.

STATUS INDICATORS

PWR - POWER (GREEN)
DIAG - N/A
TX C/L - TX CARRIER (GREEN)
 / OVERLOAD (RED)
RX C/E - RX CARRIER (GREEN)
 / ERROR (RED)
SYN - N/A
VID - N/A

- 1 - (CH.1) DATA OUTPUT
- 2 - N/A
- 3 -
- 4 - N/A
- 5 - N/A
- 6 - N/A
- 7 - (CH.1) DATA INPUT
- 8 - N/A
- 9 - (CH.1) AUDIO INPUT
- 10 - N/A
- 11 - N/A
- 12 - N/A



ST-1A1G/1G-X

PINOUT DIAGRAM

OPTICAL PORT (ST, FC)

AUDIO INPUT (PORT 1)

- 1. (CH.1) AUDIO INPUT-
- 2. (CH.1) AUDIO INPUT+
- 3. NA
- 4. NA
- 5. GND

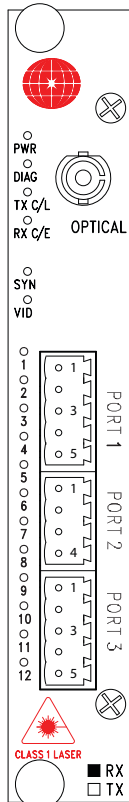
MULTI PROTOCOL DATA (PORT 3)

PIN #	RS-232	RS-422	RS-485 2W	RS-485 4W
1	CH1 IN (RD)	CH1 IN-	CH1 IN/OUT-	CH1 IN-
2		CH1 IN+	CH1 IN/OUT+	CH1 IN+
	CH1 OUT (TD)	CH1 OUT-		CH1 OUT-
4		CH1 OUT+		CH1 OUT+
5	GND	GND	GND	GND

STATUS INDICATORS

PWR - POWER (GREEN)
DIAG - N/A
TX C/L - TX CARRIER (GREEN)
 / OVERLOAD (RED)
RX C/E - RX CARRIER (GREEN)
 / ERROR (RED)
SYN - N/A
VID - N/A

- 1 - (CH.1) DATA OUTPUT
- 2 - N/A
- 3 - (CH.1) AUDIO OUTPUT
- 4 - N/A
- 5 - N/A
- 6 - N/A
- 7 - (CH.1) DATA INPUT
- 8 - N/A
- 9 - N/A
- 10 - N/A
- 11 - N/A
- 12 - N/A



SR-1A1G/1G-X

PINOUT DIAGRAM

OPTICAL PORT (ST, FC)

AUDIO OUTPUT (PORT 1)

- 1. (CH.1) AUDIO OUTPUT-
- 2. (CH.1) AUDIO OUTPUT+
- 3. NA
- 4. NA
- 5. GND

MULTI PROTOCOL DATA (PORT 3)

PIN #	RS-232	RS-422	RS-485 2W	RS-485 4W
1	CH1 IN (RD)	CH1 IN-	CH1 IN/OUT-	CH1 IN-
2		CH1 IN+	CH1 IN/OUT+	CH1 IN+
3	CH1 OUT (TD)	CH1 OUT-		CH1 OUT-
4		CH1 OUT+		CH1 OUT+
5	GND	GND	GND	GND

5.0 Signal Conditioning Switch/Jumper Settings

This chapter illustrates how to change the Audio and Data jumpers and switch selection.

5.1 Audio Impedance & Data Selection jumpers

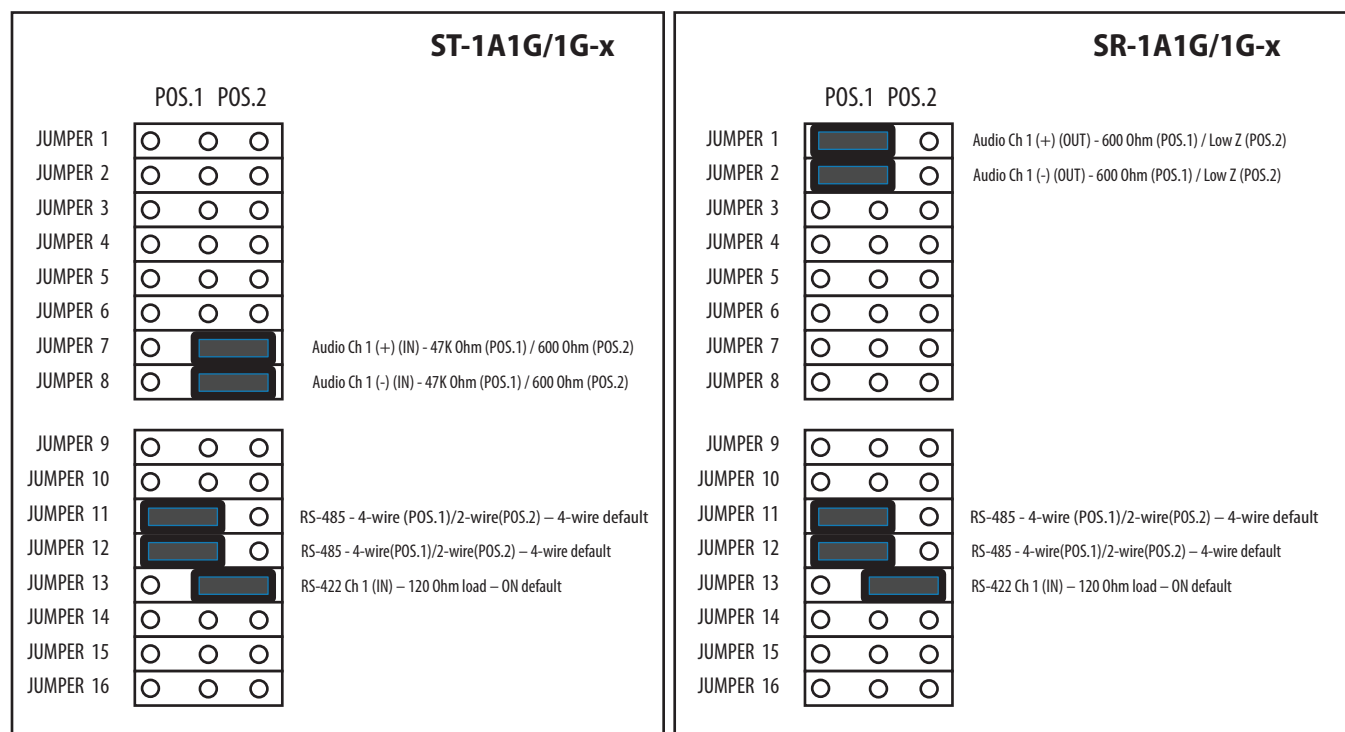
The input/Output impedance of the audio channels can be changed between 600 Ohm Balanced and 47K Ohm Unbalanced.

The default impedance is 600 Ohm Balanced.

There are sixteen (16) 3-pin jumpers located directly behind the 14-pin screw terminal front-panel mounted connector. The top 8 jumpers are used to select the Input/Output Audio Impedance.

The bottom 6 jumpers are used for 2 & 4-wire RS-485 selection and for removing the default 120 Ohm load on the RS-422 input channels.

The figure below shows the configuration jumpers. The jumpers are shown in their default positions.



¹ To convert RS-485 from 4-wire to 2-wire move Jumper 11 & Jumper 12 from Pos.1 to Pos.2

² FACTORY SETTINGS NOTE: The setting can be preconfigured to any data configuration on the customer request.

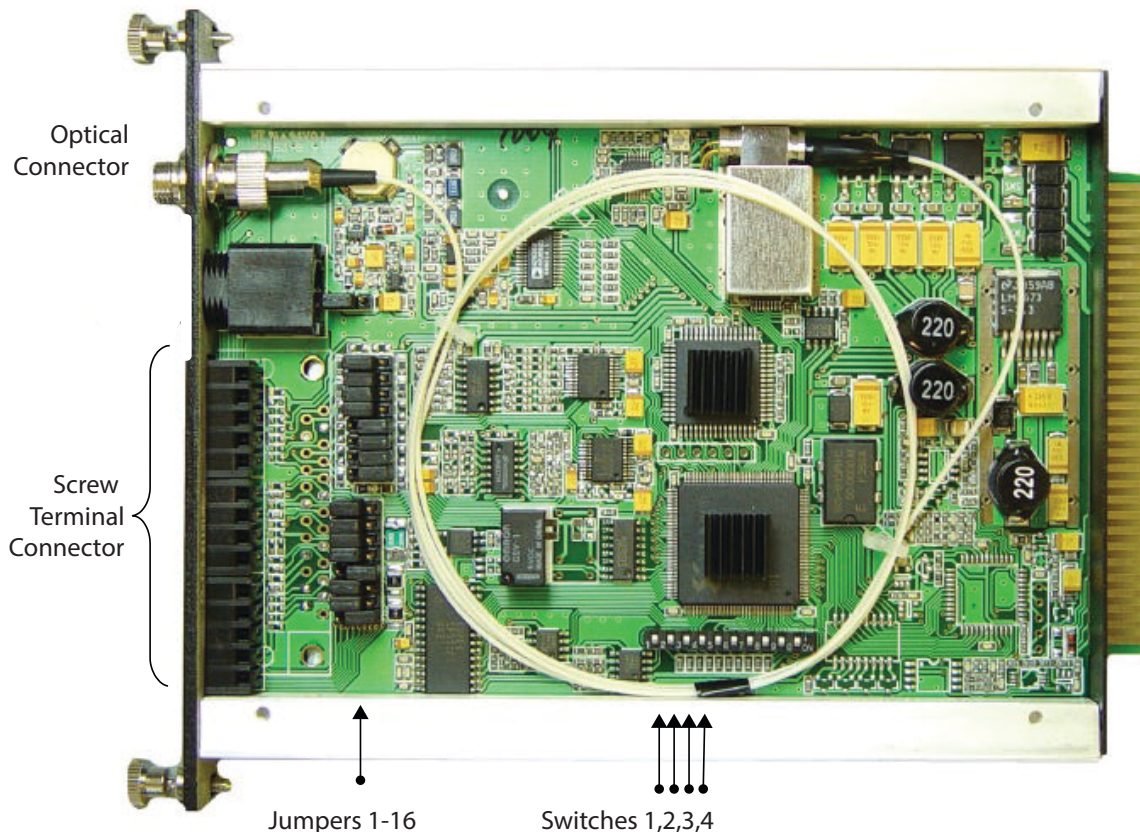
5.2 Data Format Selection

The panel of 10 switches is located on the bottom center of the card (see figure below).

The left four (4) of the switches are controlling the format of transmitted/received Data. These switches on both the transmitter and receiver cards must be set identically in order to have proper data communications between them. The figure and table below illustrate switch locations and configurations options.

The factory default is set to 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.

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 of the module. Make sure the card guides in the chassis are aligned with the extrusion on the module

Problem: *When power is applied to the module/sub-rack the Power LED on the card does not light 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 transmit and receive 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 pinout connections). Check to ensure that the data source is operating properly.

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



Meridian Technologies, Inc.
700 Elmont Road, Elmont NY 11003
Phone 516. 285. 1000 Fax 516. 285. 6300
E-mail sales@meridian-tech.com Web www.meridian-tech.com