



## Fiber Optic Video/Audio Transmission Systems



### ST-1W2A-x, SR-1W2A-x (1-ch. Video & 2-ch. Audio Transmitter/Receiver)

Document Version 3.1

05/05/2020

# Table of Contents

1.0 Product Description ..... 3

2.0 Installation ..... 3

3.0 Product Signal Format & Specifications ..... 4

4.0 Optical Specifications ..... 5

5.0 Connector Pin Assignment..... 6

6.0 Signal Conditioning Switch/Jumper Settings ..... 9

6.1 Audio Impedance Selection jumpers..... 9

7.0 SpectraView™ Network Diagnostics ..... 10

8.0 Product Part Numbers ..... 10

9.0 Troubleshooting ..... 11

## 1.0 Product Description

Meridian's product series ST/SR-1W2A-x are fiber optic modems that transmit & receive one channel of 10-bit NTSC/PAL video channel (one direction) and two uni-directional audio channels 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-1002/S, SR-1200/S, SR-1500/S, SR-1600/S and SR-2001 & SR-2000 series 19" equipment chassis.

Refer to Part Numbers section of this manual for the cards part numbers applicable to 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 ST/SR-1W2A products are one-slot wide cards and, as such, occupy one slot in Meridian's standard 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 ST/SR-1W2A series products can transmit and receive the following signals:

| Signal Type    | Channels |
|----------------|----------|
| NTSC/PAL Video | 1        |
| Audio          | 2        |

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.

| Video              |                            |
|--------------------|----------------------------|
| Format             | NTSC, PAL, SECAM           |
| Voltage/Impedance  | 1Vp-p, 75Ω, 1 .5Vp-p (max) |
| Differential Gain  | <1 %                       |
| Differential Phase | <0.7°                      |
| SNR                | >67dB (weighted)           |
| Return Loss        | >30dB                      |
| Field Tilt         | <0.5%                      |

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

| Connectors |                                              |
|------------|----------------------------------------------|
| Video      | 75 Ohm BNC w/gold center pin                 |
| Audio      | 14 pin terminal strip (one 5 pin connectors) |
| Optical    | Single-mode – ST or FC<br>Multimode - ST     |

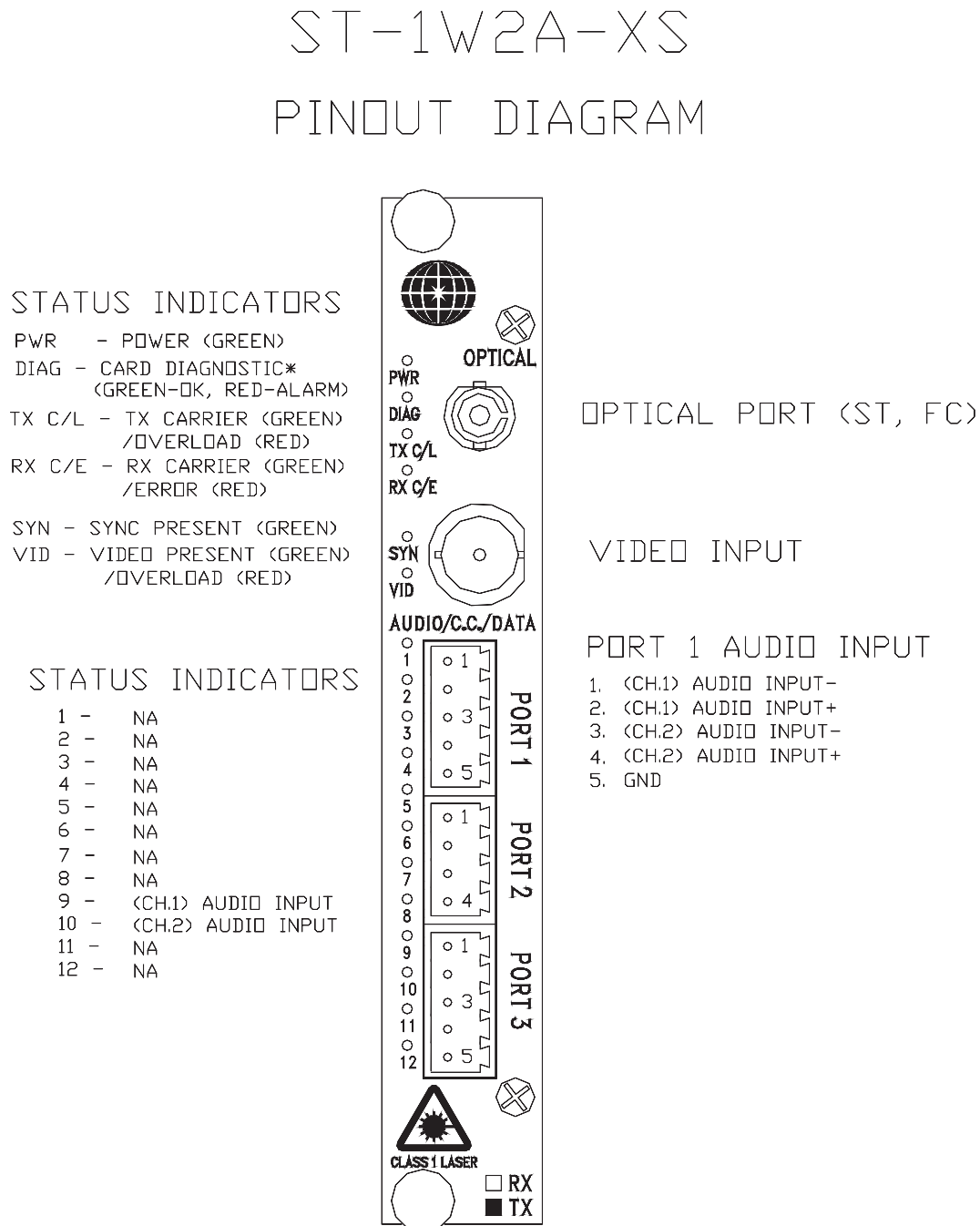
## 4.0 Optical Specifications

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

| <b>Optical Specifications</b>    |                         |                            |                           |                    |                      |                                  |
|----------------------------------|-------------------------|----------------------------|---------------------------|--------------------|----------------------|----------------------------------|
| Fiber Type/Size<br>(um)          | Optical Output<br>(dBm) | Rx<br>Sensitivity<br>(dBm) | Optical<br>Budget<br>(dB) | Wavelength<br>(nm) | Optical<br>connector | Optical<br>Dynamic<br>Range (dB) |
| Multimode (FP Laser)<br>62.5/125 | -5                      | -26                        | 21                        | 1300               | ST                   | 24                               |
| Single-mode (FP Laser)<br>9/125  | -5                      | -26                        | 21                        | 1310               | ST, FC               | 24                               |

## 5.0 Connector Pin Assignment

The one 5-pin screw connectors on the front of the module are used for the Audio interfaces. The diagrams below indicate the video & audio input/output connection terminals.



**Figure 6.1**  
**ST-2A-x Card Front Panel**

# SR-1W2A-XS

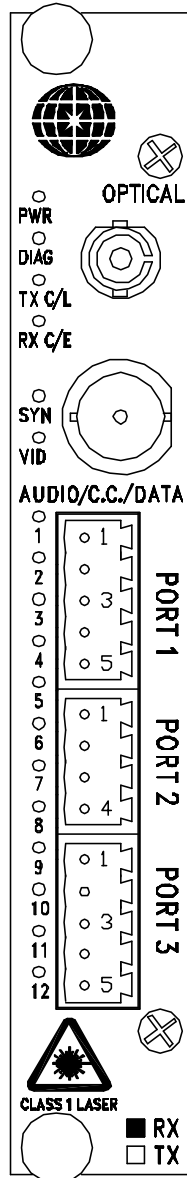
## PINOUT DIAGRAM

### STATUS INDICATORS

PWR - POWER (GREEN)  
 DIAG - CARD DIAGNOSTIC\*  
           (GREEN-OK, RED-ALARM)  
 TX C/L - TX CARRIER (GREEN)  
           /OVERLOAD (RED)  
 RX C/E - RX CARRIER (GREEN)  
           /ERROR (RED)  
  
 SYN - SYNC PRESENT (GREEN)  
 VID - VIDEO PRESENT (GREEN)  
       /OVERLOAD (RED)

### STATUS INDICATORS

1 - NA  
 2 - NA  
 3 - (CH.1) AUDIO OUTPUT  
 4 - (CH.2) AUDIO OUTPUT  
 5 - NA  
 6 - NA  
 7 - NA  
 8 - NA  
 9 - NA  
 10 - NA  
 11 - NA  
 12 - NA



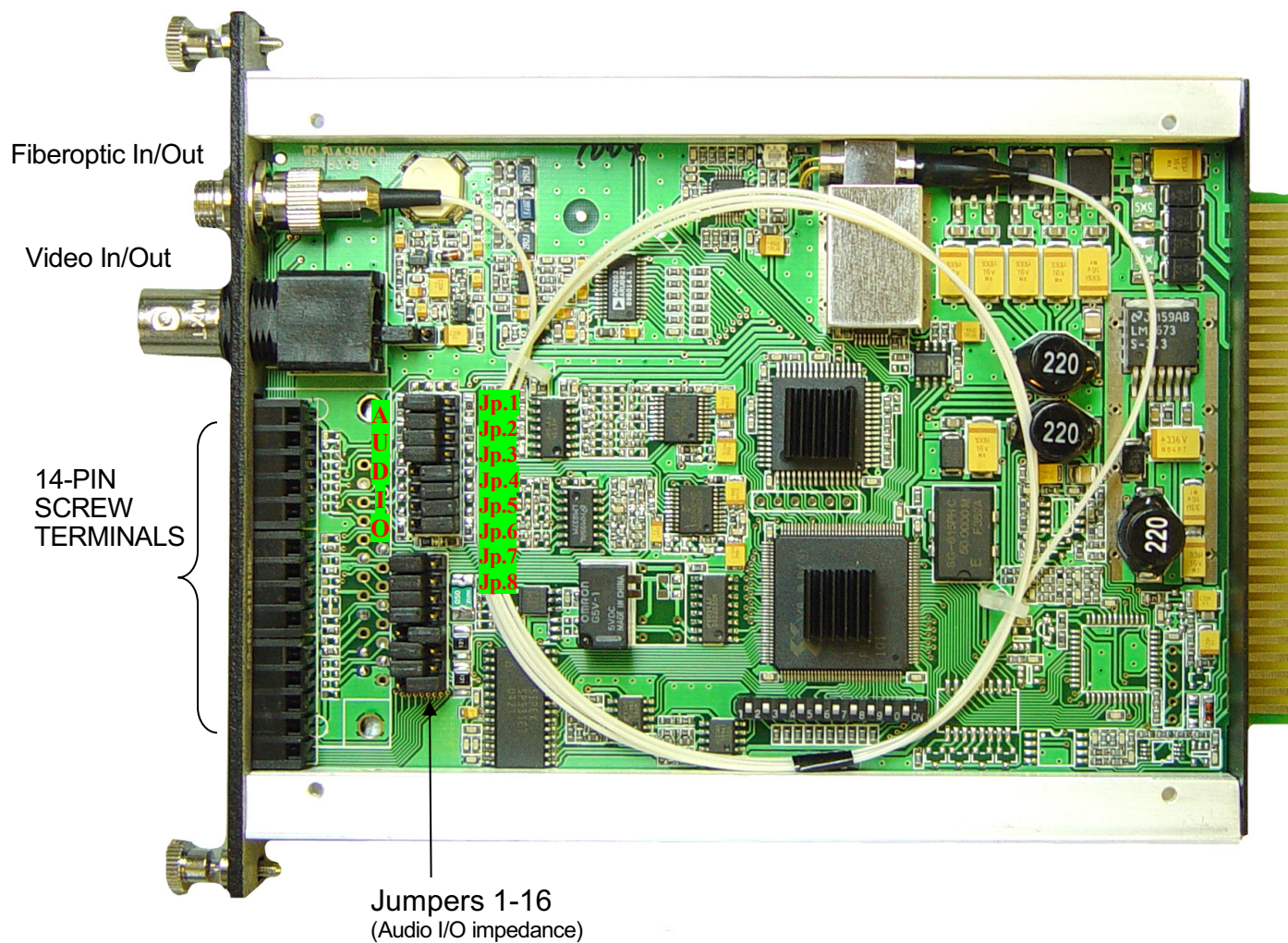
OPTICAL PORT (ST, FC)

VIDEO OUTPUT

POTR 1 AUDIO OUTPUT

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

**Figure 6.2**  
**SR-2A-x Card Front Panel**



### 1-Slot Module Audio Format Selection Jumpers Location

## 6.0 Signal Conditioning Switch/Jumper Settings

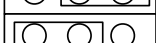
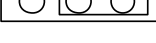
The sections below illustrate how to change the various audio impedance and contact mapping conditions.

### 6.1 Audio Impedance 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 14 pin screw terminal front-panel mounted connector. The top 8 jumpers are used to select the Input/Output Audio.

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  |  | N/A                                    |
| Jumper 4  |  | N/A                                    |
| Jumper 5  |  | N/A                                    |
| Jumper 6  |  | N/A                                    |
| 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 |  | N/A                                    |
| Jumper 12 |  | N/A                                    |
| Jumper 13 |  | N/A                                    |
| Jumper 14 |  | Reserved                               |
| Jumper 15 |  | Reserved                               |
| Jumper 16 |  | N/A                                    |

## 7.0 SpectraView™ Network Diagnostics

This module series is equipped with Meridian's SpectraView network diagnostics that continuously monitors the fiber system and associated equipment to provide real-time information regarding the integrity of the system.

SpectraView supports the following diagnostic functions:

1. Fiber continuity
2. Presence/loss of video

Notification and identification of faults for the above conditions is automatically displayed on the monitor connected to the video output on the receiver module.

The table below lists the detected faults and associated alert messages that are displayed on the monitor:

| <b>Fault</b>                               | <b>Video Display Message</b> |
|--------------------------------------------|------------------------------|
| Broken optical fiber between Tx & Rx units | "Fiber Broken"               |
| Loss of video signal at CCTV (Tx) side     | "Video Lost"                 |

In addition to the loss of video on the monitor, these messages alert the operator as to the cause of the associated video loss. Upon receiving one of these messages, the operator should inform their technical service center to remedy the situation.

## 8.0 Product Part Numbers

| <b>Transmitter Part #</b> | <b>Receiver Part #</b> | <b># of Video Channels</b> | <b># of Audio Channels</b> | <b>Optical Connector</b> | <b>Description</b>                         |
|---------------------------|------------------------|----------------------------|----------------------------|--------------------------|--------------------------------------------|
| ST-1W2A-1                 | SR-1W2A-1R             | 1                          | 2                          | ST                       | 2-Ch, Audio Tx/Rx, multimode, rack mount   |
| ST-1W2A-3                 | SR-1W2A-3R             | 1                          | 2                          | FC                       | 2-Ch, Audio Tx/Rx, single-mode, rack mount |
| ST-1W2A-3ST               | SR-1W2A-3RST           | 1                          | 2                          | ST                       | 2-Ch, Audio Tx/Rx, single-mode, rack mount |

## 9.0 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 video at output of module*

**Action:** Check the SpectraView display on the monitor for an indication of what the problem may be. Also, check to ensure that the video channel-specific LEDs are on (Green). Also, check to ensure that the optical LEDs are ON. If no video is still present, check to ensure that the monitor is ON and the video cable is connected to the correct video port on the Rx module.

**Problem:** *Video image is dark*

**Action:** Check the iris control on the camera to ensure that it is open to the proper amount for the conditions.

**Problem:** *Video image is too bright and appears overexposed*

**Action:** Check the Video overload indicator on the Rx module. If it is Red, the video signal level is too high and the CCTV iris should be checked to ensure that it is open properly for the conditions.

**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.

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

**Notes:**

|  |
|--|
|  |
|  |
|  |
|  |
|  |
|  |
|  |



Meridian Technologies, Inc  
700 Elmont Road, Elmont, NY 11003, USA  
Tel: 516-285-1000 Fax: 516-285-6300  
E-mail: [support@meridian-tech.com](mailto:support@meridian-tech.com)  
[www.meridian-tech.com](http://www.meridian-tech.com)