



Fiber Optic Video/Data Transmission System

Installation Instructions



ST-1W1F/1F-xP

Video Transmitter & Bi-directional RS-422 Data with 3-pin Screw Terminal Interface

SR-1W1F/1F-xP

Video Receiver & Bi-directional RS-422 Data with 3-pin Screw Terminal Interface

Ver. 1.2
12/2023

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1.0 Product Description

Meridian's ST/SR-1W1F/1F-xP products are fiber optic modems that transmit one channel of unidirectional 10-bit NTSC/PAL video and one channel of bi-directional RS-422 data signal over one optical fiber using digital transmission technologies.

NTSC, PAL and SECAM video formats are all seamlessly supported.

The 3-pin Screw Terminals are RS-422 Data interface on this product. Standard Terminal blocks are used for easy connection.

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-1600/S and SR-2001 & SR-2000 series equipment chassis.

Both, STTM 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 ST/SR-1W1F/1F-xP 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 it in to the chassis card guides. Press securely on the top and bottom of the module to ensure that it is fully seated and the card 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 over tighten.

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-2000/1 whenever possible.

3.0 Product Signal Format & Specifications

The ST/SR-1W1F/1F-xP series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
NTSC/PAL Video	1 Unidirectional	ST-1W1F/1F-xP	SR-1W1F/1F-xP
RS-422 (Tx & Rx Data)	1 Bi-directional	Yes	Yes

The tables below show the specifications for transmitted/received signals.

Video	
Format	NTSC, PAL, SECAM
Voltage/Impedance	1Vp-p, 75 Ohm, 1.5Vp-p (max)
Differential Gain	<0.6%
Differential Phase	<0.3°
SNR	>67dB (weighted)
Return Loss	>30dB
Field Tilt	<0.5%
Data	
Data Rate (RS-422)	DC to 125Kb/s
Bit Error Rate (BER)	Better than 10^{-9}
Connectors	
Video	75 Ohm BNC w/gold center pin
Data	3-pin Screw Terminals (2 connectors)
Optical	Single-mode – ST or FC; Multimode - ST

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

Optical Specifications							
Fiber Type/Size (um)	Optical Output (dBm)	Receiver Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical Connector	Optical Dynamic Range (dB)	Max Distance (Km)
Multimode (Laser) 62.5 / 125	-5	-26	21	1300/850	ST	24	4
Single-mode (FP Laser) 9 / 125	-5	-26	21	1310/1550	ST, FC	24	60

4.0 Front Panel Indicator Lights

The indicator lights on the left side of the cards front panel (see pinout diagrams). These indicators show the operation status of the module's power, optical carriers, video signal and the various data/audio channels. These indicators can be used for troubleshooting the module, electrical and optical connections.

Not all of the LEDs apply to all versions of these modules. Please refer to the module's part number for the appropriate signals, description.

4.1 Data Connector Pin Assignment

The two 3-pin screw terminal connectors on the front of the module are used for Data In/Out interface.

Pin-out Assignment	
DATA OUTPUT PORT	
Pin #	Description
1	Ch 1 OUTPUT (-)
2	GND
3	Ch 1 OUTPUT (+)
DATA INPUT PORT	
Pin #	Description
1	Ch 1 INPUT (-)
2	GND
3	Ch 1 INPUT (+)

See pin-out below for details.

STATUS INDICATORS

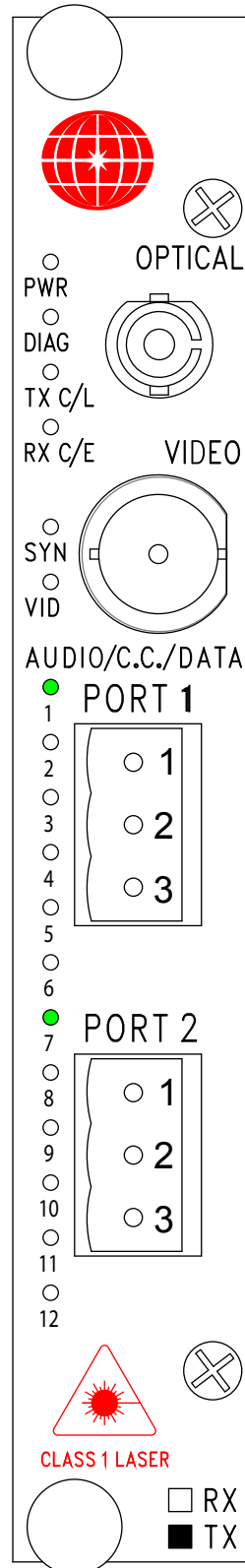
PWR - POWER (GREEN)
DIAG - N/A

TX C/L - TX CARRIER (GREEN) / OVERLOAD (RED)
RX C/E - RX CARRIER (GREEN) / ERROR (RED)

SYN - SYNC PRESENT (GREEN)
VID - VIDEO PRESENT (GREEN) / OVERLOAD (RED)

1. DATA OUTPUT

7. DATA INPUT



OPTICAL PORT (ST, FC)

VIDEO IN

DATA OUT

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

DATA IN

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

ST-1W1F/1F-xP pinout diagram

STATUS INDICATORS

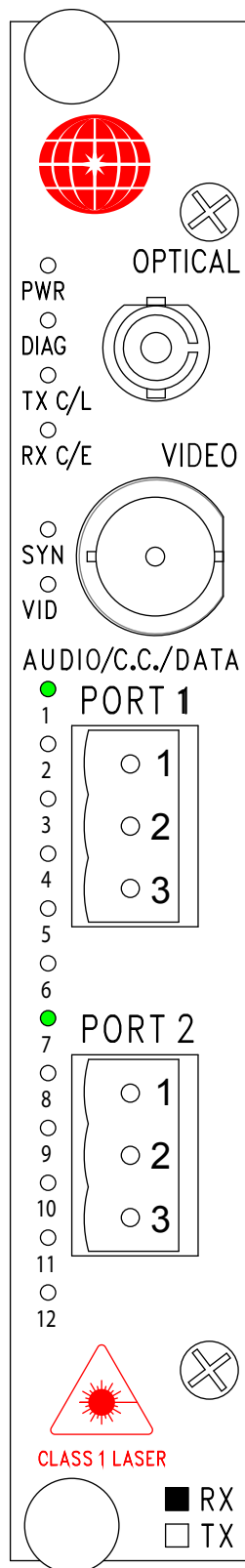
PWR - POWER (GREEN)
DIAG - N/A

TX C/L - TX CARRIER (GREEN) / OVERLOAD (RED)
RX C/E - RX CARRIER (GREEN) / ERROR (RED)

SYN - SYNC PRESENT (GREEN)
VID - VIDEO PRESENT (GREEN) / OVERLOAD (RED)

1. DATA OUTPUT

7. DATA INPUT



OPTICAL PORT (ST, FC)

VIDEO OUT

DATA OUT

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

DATA IN

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

SR-1W1F/1F-xP pinout diagram

5.0 Signal Conditioning Switch/Jumper Settings

The sections below illustrate the Data format jumper settings.
This product Data interface is factory pre-set for RS-422 Data.

5.1 Data Selection jumpers

There are sixteen (16) 3-pin jumpers located directly behind the Data connectors.
Not all of the jumpers apply to this version of the product.
The jumper 13 is for disabling the default 120 Ohm load on the RS-422 Data input.
The illustration below shows the function of 3 jumpers that apply for RS-422 Data.
The jumpers are shown in their default positions (see figure 5.1).

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
POS.1 / POS.2			
JUMPER 9	☐	☐	N/A
JUMPER 10	☐	☐	N/A
JUMPER 11	☒	☐	Default
JUMPER 12	☒	☐	Default
JUMPER 13	☐	☒	RS-422 CH. 1 (IN) - 120 OHM LOAD - ON (default)
JUMPER 14	☐	☐	RESERVED
JUMPER 15	☐	☐	RESERVED
JUMPER 16	☐	☐	N/A

Figure 5.1

5.2 Data Format Selection

A group of 10 switches is located on the bottom center of the module's circuit card (see figure 5.2). 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 illustrate these switch locations on the board and how they are configured for the proper data format options. The factory-supplied setting is for RS-422 Data.

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

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

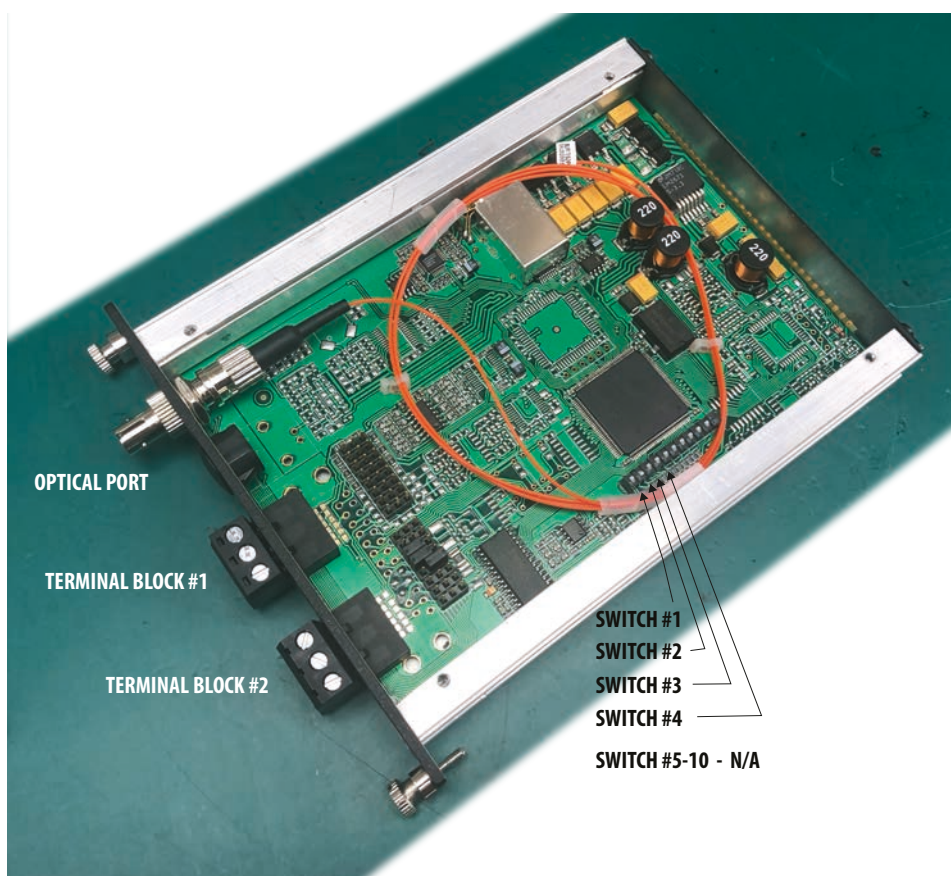


Figure 5.2

6.0 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 1.0 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:

Fault	Video Display Message
Loss of video signal at CCTV (Tx) side	"4 vertical gray-scale bars"
Broken optical fiber between Tx & Rx units	"8 vertical gray-scale bars"

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.

7.0 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 side of the module
Make sure the card guides in the chassis are aligned with the cards extrusions.

Problem: *Card power LED does not lit when power is applied to the module/sub-rack or power indicator is blinking.*

Action: Check power supply to ensure that it is plugged in and turned on.
In case of blinking, 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 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 items, please contact Meridian technical support (516-285-1000).

