



Fiber Optic Video/Audio/Data Transmission System Installation Instructions



ST/SR-AiphoneLEF-x

1-ch. Audio & 2-ch. Contact Closure Transceiver

ST-AiphoneLEFV-x

Video Transmitter, 1-ch. Audio & 2-ch. Contact Closure Transceiver

SR- AiphoneLEFV-x

Video Receiver, 1-ch. Audio & 2-ch. Contact Closure Transceiver

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1.0 Product Description

Meridian's product series ST/SR-AipnoneLEF-x and ST/SR-AipnoneLEFV-x are fiber optic modems that transmit & receive one channel of 10-bit NTSC/PAL video channel (one direction) for LEFV series, one bi-directional audio channel and two channels of bi-directional contact closure 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, 1002/S, SR-1600/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 ST/SR-AipnoneLEF(V) products are one-slot wide cards and 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" 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- AipnoneLEF/LEFV series products can transmit and receive the following signals:

Signal Type	Channels
NTSC/PAL Video	1
Audio	1
Contact Mapping	2

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

Video	
Format	NTSC, PAL, SECAM
Voltage/Impedance	1Vp-p, 75 Ohm, 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	8 Ohm Audio
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
Contact Mapping	
Contact type	Relay, normally-open
Contact rating	0.3Amps, 30 VAC/VDC
Contact bounce	5 msec
Max switching rate	10Hz
Connectors	
Video	75 Ohm BNC w/gold center pin
Audio	14 pin terminal strip (one 5 pin connectors)
Contact Mapping	14 pin terminal strip (one 4 pin 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)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)
Multimode (FP Laser) 62.5/125	-5	-26	21	850/1300	ST	24
Single-mode (FP Laser) 9/125	-5	-26	21	1310/1550	ST, FC	24

4.0 Connector Pin Assignment

The one 14-pin screw connectors on the front of the module are used for the Audio interfaces and Contact Closure. The diagrams below indicate the video, audio input/output & contact closure input/output connection terminals.

ST-AiphoneLEFV-XS

PINOUT DIAGRAM

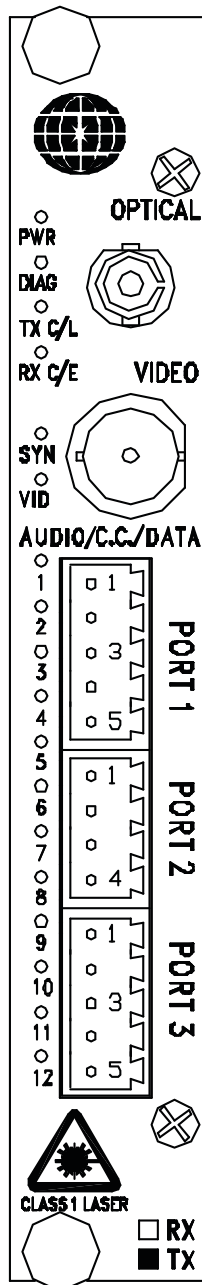
STATUS INDICATORS

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 - NA
- 5 - (CH.1) C/C OUTPUT
- 6 - NA
- 7 - NA
- 8 - NA
- 9 - (CH.1) AUDIO INPUT
- 10 - NA
- 11 - (CH.1) C/C INPUT
- 12 - NA



OPTICAL PORT (ST, FC)

VIDEO INPUT

PORT 1 AUDIO INPUT/OUTPUT

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

PORT 2 CC INPUT/OUTPUT

- 1. (CH.1) CC OUTPUT-
- 2. (CH.1) CC OUTPUT+
- 3. (CH.1) CC INPUT
- 4. (CH.1) GND

PORT 3 N/A

**Figure 4.1 ST-AiphoneLEFV-x
Card Front Panel**

SR-AiphoneLEFV-XS

PINOUT DIAGRAM

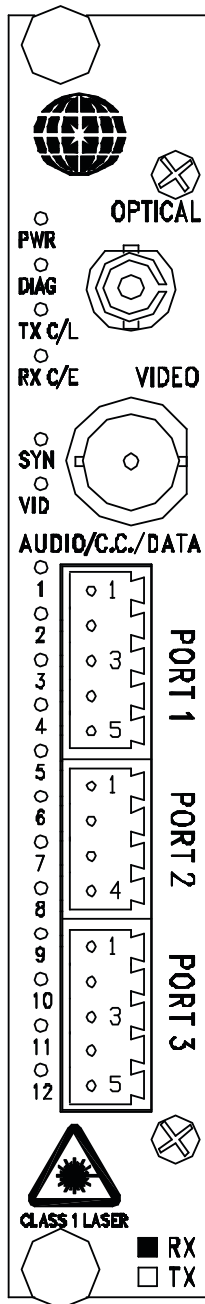
STATUS INDICATORS

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 - NA
- 5 - (CH.1) C/C OUTPUT
- 6 - NA
- 7 - NA
- 8 - NA
- 9 - (CH.1) AUDIO INPUT
- 10 - NA
- 11 - (CH.1) C/C INPUT
- 12 - NA



OPTICAL PORT (ST, FC)

VIDEO OUTPUT

PORT 1 AUDIO INPUT/OUTPUT

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

PORT 2 CC INPUT/OUTPUT

- 1. (CH.1) CC OUTPUT-
- 2. (CH.1) CC OUTPUT+
- 3. (CH.1) CC INPUT
- 4. (CH.1) GND

PORT 3 N/A

**Figure 4.2 SR-AiphoneLEFV-x
Card Front Panel**

ST-AiphoneLEF-XS

PINOUT DIAGRAM

STATUS INDICATORS

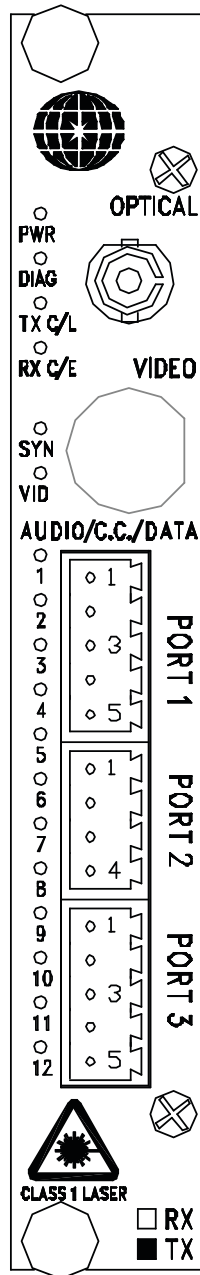
PWR - POWER (GREEN)
 DIAG - CARD DIAGNOSTIC*
 (GREEN-OK, RED-ALARM)
 TX C/L - TX CARRIER (GREEN
 / OVERLOAD (RED)
 RX C/E - RX CARRIER (GREEN)
 / ERROR (RED)

SYN - NA

VID - NA

STATUS INDICATORS

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



OPTICAL PORT (ST, FC)

PORT 1 AUDIO INPUT/OUTPUT

1. (CH.1) AUDIO INPUT / OUTPUT
 2. NA
 3. NA
 4. NA
 5. GND

PORT 2 CC INPUT/OUTPUT

1. (CH.1) CC OUTPUT-
 2. (CH.1) CC OUTPUT+
 3. (CH.1) CC INPUT
 4. (CH.1) GND

PORT 3 N/A

**Figure 4.3 ST-AiphoneLEF-x
Card Front Panel**

SR-AiphoneLEF-XS

PINOUT DIAGRAM

STATUS INDICATORS

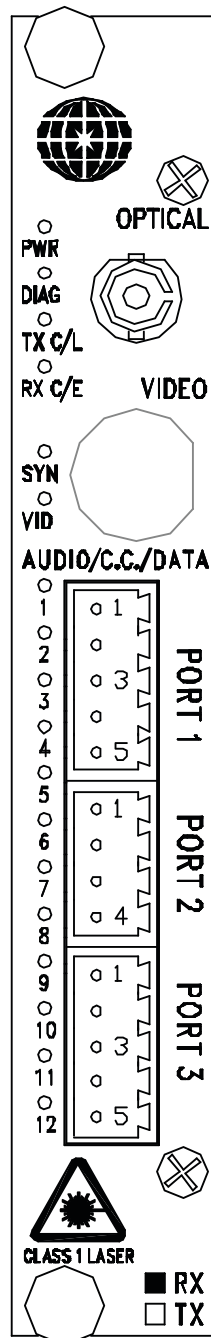
PWR - POWER (GREEN)
 DIAG - CARD DIAGNOSTIC*
 (GREEN-OK, RED-ALARM)
 TX C/L - TX CARRIER (GREEN
 / OVERLOAD (RED)
 RX C/E - RX CARRIER (GREEN)
 / ERROR (RED)

SYN - NA

VID - NA

STATUS INDICATORS

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



OPTICAL PORT (ST, FC)

PORT 1 AUDIO INPUT/OUTPUT

1. (CH.1) AUDIO INPUT / OUTPUT
 2. NA
 3. NA
 4. NA
 5. GND

PORT 2 CC INPUT/OUTPUT

1. (CH.1) CC OUTPUT-
 2. (CH.1) CC OUTPUT+
 3. (CH.1) CC INPUT
 4. (CH.1) GND

PORT 3 N/A

**Figure 4.4 SR-AiphoneLEF-x
Card Front Panel**

ST-AiphoneLEF-XS CONNECTION DIAGRAM TO LE-DA

SR-AiphoneLEF-XS CONNECTION DIAGRAM TO LEF/LEM MASTER

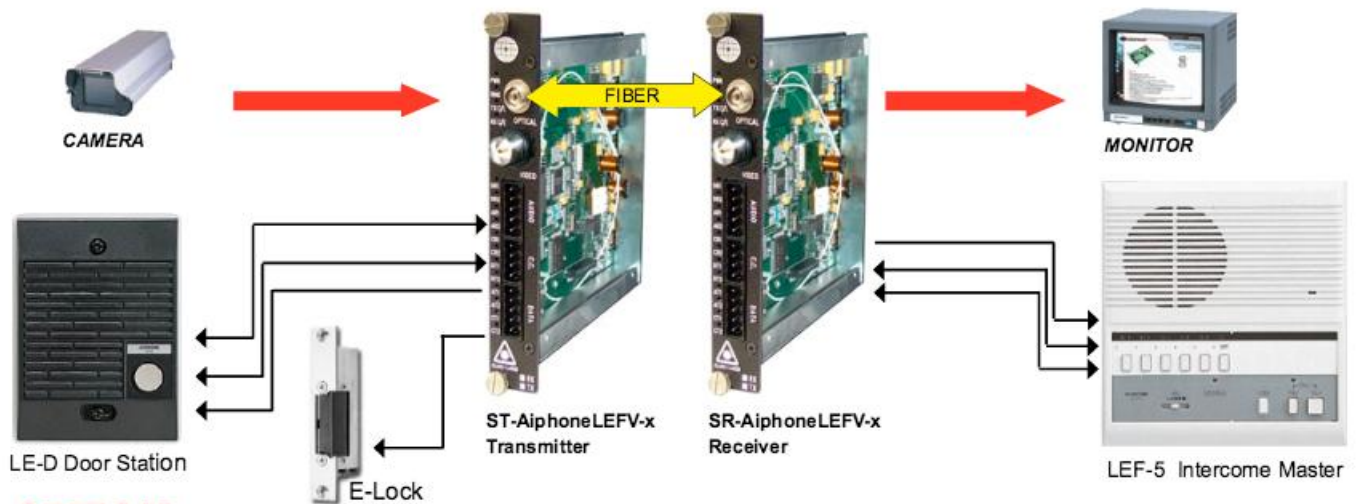
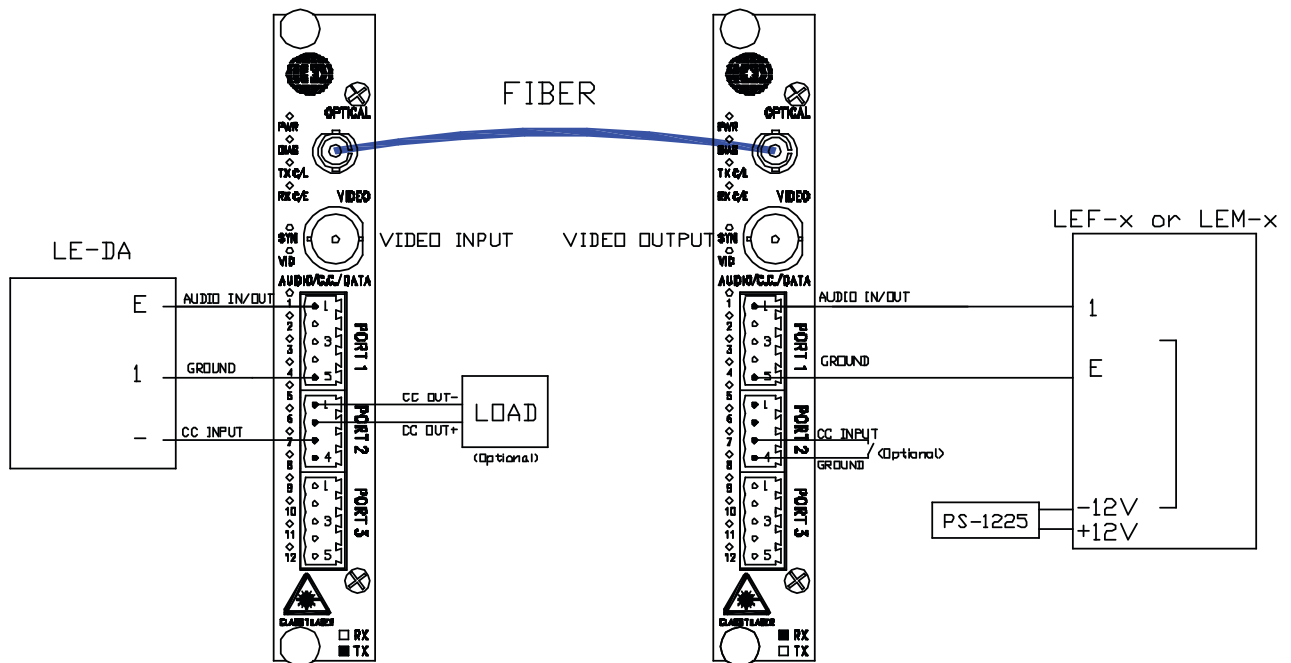


Figure 4.5
LE-DA and LEF/LEM-x w/Video Connection Diagram

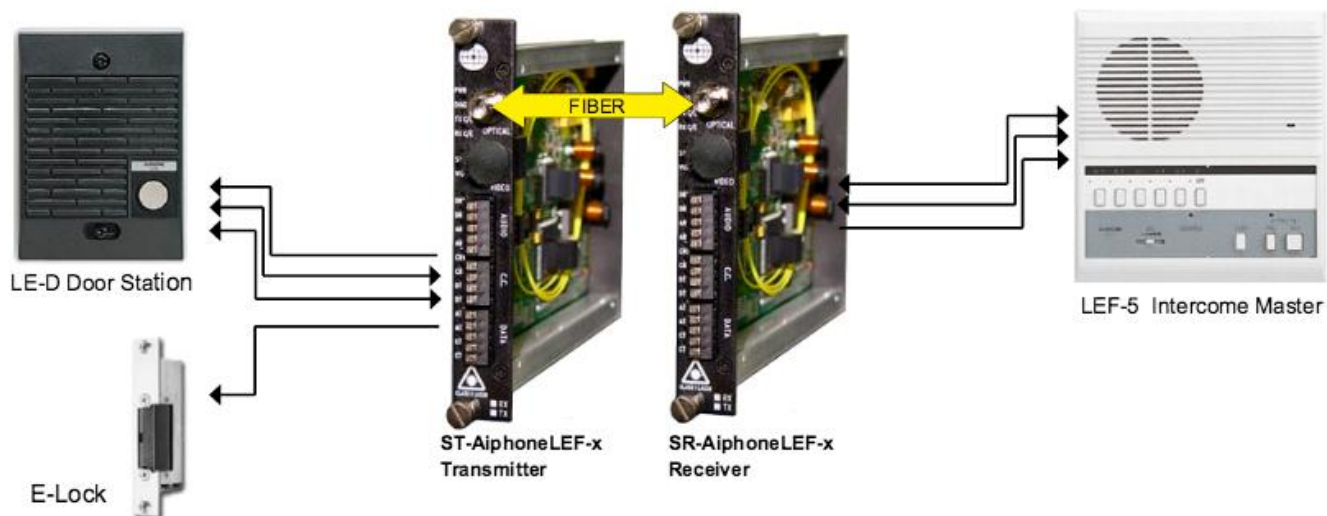


Figure 4.6
LE-DA and LEF/LEM-x w/o Video Connection Diagram

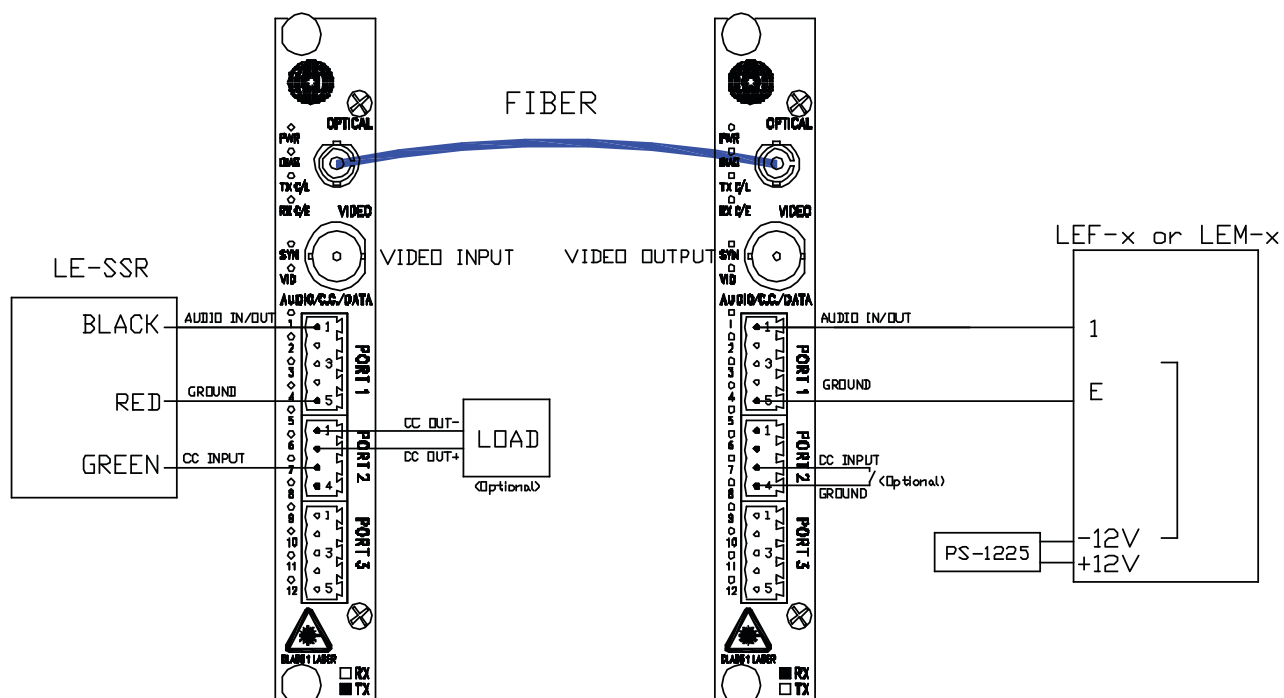


Figure 4.7
LE-SSR and LEF/LEM-x Connection Diagram

5.0 Signal Conditioning Jumper Settings

The sections below illustrate the audio impedance and contact mapping conditions. You don't need to change the factory settings; this is for your reference only.

5.1 Audio Impedance & Contact Mapping Selection Jumpers

Audio Impedance - The input/Output impedance of each of the audio channels set for 47K Ohm unbalanced. This is default setting for this system.

Contact Mapping - The output state of each of the contacts can be changed from Normally-Open (NO) to Normally-Closed (NC) by properly selecting the jumpers. A NO contact (output side) closes when the contact input on the input module's side is closed to ground. The default contact setting is NO (normally-open) for this system. There are sixteen (16) 3-pin jumpers located directly behind the 14-pin screw terminal front-panel mounted connector. The top 10 jumpers are used to select the Input/Output Audio Impedance and the power-on state of the contacts (NO or NC). The illustration below describes the function of each of these 16 jumpers. The jumpers are shown in their default condition.

JUMPER SETTINGS

		Pos.1/Pos.2		
AUDIO	Jumper 1			Audio Ch 1 (-) (OUT) - Low Z
	Jumper 2			Audio Ch 1 (+) (OUT) - Low Z
	Jumper 3			Audio Ch 2 (-) (OUT) - Low Z
	Jumper 4			Audio Ch 2 (+) (OUT) - Low Z
	Jumper 5			Audio Ch 2 (+) (IN) - 47K Ohm
	Jumper 6			Audio Ch 2 (-) (IN) - 47K Ohm
	Jumper 7			Audio Ch 1 (+) (IN) - 47K Ohm
	Jumper 8			Audio Ch 1 (-) (IN) - 47K Ohm
C.C.	Jumper 9			Contact Ch 2 (OUT) - Normally Open (NO) - default
	Jumper 10			Contact Ch 1 (OUT) - Normally Open (NO) - default
	Jumper 11			NA
	Jumper 12			NA
	Jumper 13			NA
	Jumper 14			NA
	Jumper 15			NA
	Jumper 16			NA

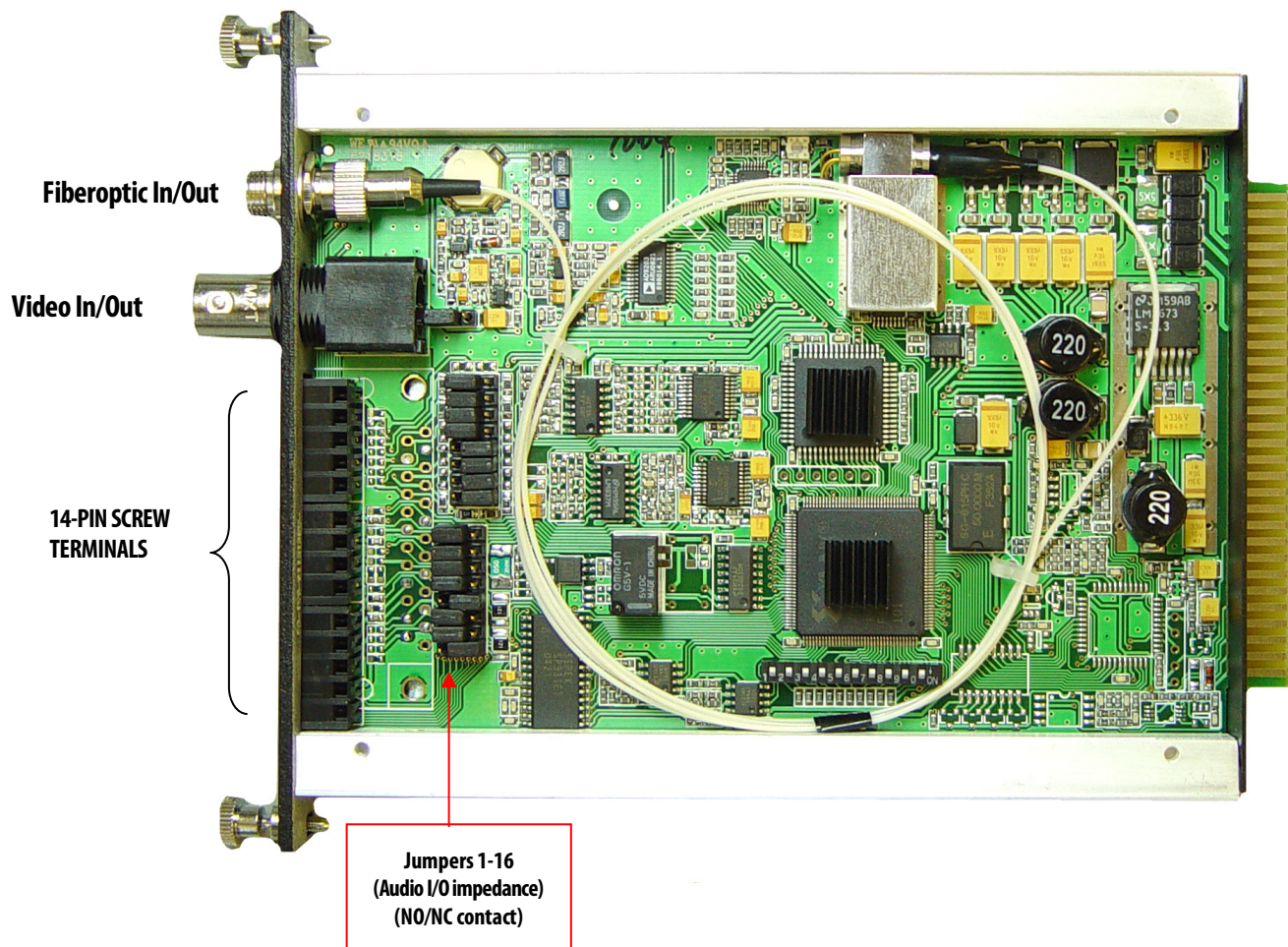


Figure 5.2
1-Slot Module Audio/C.C. Format Selection Jumpers Location

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
Broken optical fiber between Tx & Rx units	8 vertical gray-scale bars across the monitor screen
Loss of video signal at CCTV (Tx) side	4 vertical gray-scale bars across the monitor screen

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 Product Part Numbers

Transmitter Part #	Receiver Part #	# of Video Channels	# of Audio Channels	# of Contact Channels	Optical Connector	Description
ST-AiphoneLEF-2	SR- AiphoneLEF-2	0	1	2	ST	Tx/Rx, multimode
ST- AiphoneLEF-5	SR- AiphoneLEF-5	0	1	2	FC	Tx/Rx, single-mode
ST- AiphoneLEF-5ST	SR AiphoneLEF-5ST	0	1	2	ST	Tx/Rx, single-mode
ST-AiphoneLEFV-2	SR- AiphoneLEFV-2	1	1	2	ST	Tx/Rx, multimode
ST- AiphoneLEFV-5	SR- AiphoneLEFV-5	1	1	2	FC	Tx/Rx, single-mode
ST- AiphoneLEFV-5ST	SR AiphoneLEFV-5ST	1	1	2	ST	Tx/Rx, single-mode

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: *Tx signal light*

Action: Red - Optical module is defective, return to factory for repair.

Problem: *Rx signal*

Action: Red - Received optical signal absent or low. Check fiber connection and optical power at receiver.

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.

Problem: *Contact closure not working*

Action: Input side – Ensure that the input contact is connected between the appropriate input connection and ground
Output side – Ensure that the terminal device is connected to the proper output contact pinouts and that the individual contact channel jumpers are set to the appropriate normally-open or normally-closed position

If the problem still persists after reviewing the above items, please contact Meridian technical support (+1-516-285-1000).

Notes:



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