



Installation/Operation Instructions

Fiber Optic Video Transmission System

Part Numbers:

SX-1HD-SFP

(1-Channel Bi-directional HD-SDI Multi-rate Video Transceiver)

SX-1HG-SFP

(1-Channel Bi-directional 3G-SDI Multi-rate Video Transceiver)

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1.0 Product Description

Meridian's product series SX-1HD-SFP and SX-1HG-SFP are fiber optic modems that transmit one channel of bi-directional, independent real-time video SDI/HD-SDI for series SX-1HD and 3G-SDI for SX-1HG series, over Video SFP transceiver using digital transmission technologies. These are Meridian's standard 1-slot wide chassis mount card assembly and housed in the following Meridian chassis: SR-500/S, SR-1002/S, SR-1600/S, and SR-2001 & SR-2000 series 19" equipment chassis.

SFP optical modules are supported. This Video SFP transceiver gives you the option for either singlemode, multimode or CWDM wavelength selections by simply plugging in the appropriate SFP module.

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

2.0 Installation

Series SX-1HD-SFP and SX-1HG-SFP products are one-slot wide cards and occupy one slot in Meridian's standard chassis. To install in the 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 and 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 populated subrack should have forced-air cooling to avoid excessive heat build-up 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 SX-1HD-SFP and SX-1HG-SFP series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
HD/3G-SDI video	1	Yes	Yes

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

Video		
	HD-SDI	3G-SDI
Formats	19.4 Mbps (SMPTE 310M) 143 To 540 Mbps SMPTE 259M/344M 1.485 Gbps SMPTE 292M HDTV DVB-ASI at 270 Mbps SMPTE 305M SDTI Rates	19.4 Mbps (SMPTE 310M) 143 To 540 Mbps SMPTE 259M/344M 1.485 Gbps SMPTE 292M HDTV DVB-ASI at 270 Mbps 2.97 Gbps SMPTE 424M SMPTE 305M SDTI Rates
Nominal Level	0.8 Vp-p, 1.0 Vp-p (max)	0.8 Vp-p, 1.0 Vp-p (max)
Data Rate	19Mb/s - 1.5Gb/s per channel	19Mb/s - 3Gb/s per channel
Impedance	75 Ohm	75 Ohm
Gain	Unity	Unity
Input Coupling	AC	AC
Return Loss	>15dB	>15dB
Jitter (Pathological Data Pattern)	<0.2UI	<0.2UI
Cable Equalization	Automatic 0-200m @ 1.5Gb/s	Automatic 0-70m @ 3Gb/s
Bit-Error Rate (0 to -20dBm)	10^{-12}	10^{-12}

Connectors	
Video	75 Ohm BNC w/gold center pin
Optical	LC, SC – SFP dependent

3.1 Optical Specifications

The SFP series products are available for both single-mode and multimode fiber applications and either one or two fiber versions. Recommended optical SFP device is Video SFP transceiver. Both MSA and non-MSA devices are supported. Refer to optical SFP table in for complete part and ordering information.

For more specifications on a SFP optic devices refer to SFP data sheet on Meridian website:

http://www.meridian-tech.com/downloads/datasheets/datasheet_SFP_optical_devices-x.pdf

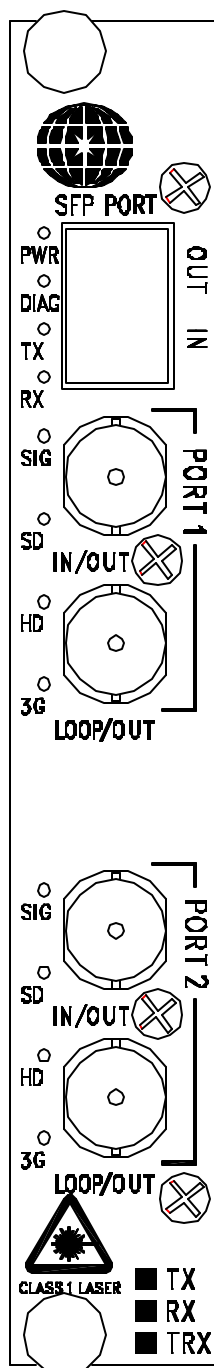
4.0 Front Panel Pinout Assignment Diagram

In addition, the transmitter also has a loop-thru video output to allow the user to locally monitor the signal being transmitted over the fiber link. Likewise, the receiver has an additional buffered output for local monitoring or recording of the received signal. Figures 4.1 below show the front panel layout, connector location and pinout assignment for both the SX-1HD-SFP and SX-1HG-SFP cards.

STATUS INDICATORS

- PWR - POWER (GREEN)
- DIAG - CARD DIAGNOSTIC (GREEN-OK/RED-ALARM)
- TX - TX SFP PRESENT (GREEN) /FAIL (RED)
- RX - RX OPTICAL SIGNAL (GREEN) /LOSS (RED)
- SIG - TX SIGNAL PRESENT (GREEN)
- SD - TX SDI LOCK (GREEN)
- HD - TX HDSDI LOCK (GREEN)
- 3G - TX 3GSDI LOCK (GREEN)

- SIG - RX SIGNAL PRESENT (GREEN)
- SD - RX SDI LOCK (GREEN)
- HD - RX HDSDI LOCK (GREEN)
- 3G - RX 3GSDI LOCK (GREEN)



SX-1HD-SFP
SX-1HG-SFP
PINOUT DIAGRAM

SFP OPTICAL PORT IN/OUT

VIDEO INPUT

LOOP-THRU VIDEO OUTPUT

VIDEO OUTPUT #1

VIDEO OUTPUT #2

Figure 4.1
SX-1HD(HG)-SFP
Front Panel Layout Diagram

4.1 Operation/Front Panel LED Indicators

The front panel diagram is shown Figure 4.1 there are a number of indicator lights that provide visual operational status of the modules and link.

The function of these LED indicators is as follows:

PWR - Green (normal) - when power is applied to the module
DIAG - Card Diagnostic Green OK, Red alarm

TX - Green TX SFP Present, Red Fail
RX - Green RX Optical Signal, Red Loss

SIG - Green TX Signal Present
SD - Green TX SDI Lock
HD - Green TX HDSDI Lock
3G - Green TX 3GSDI Lock

SIG - Green RX Signal Present
SD - Green RX SDI Lock
HD - Green RX HDSDI Lock
3G - Green RX 3GSDI Lock

5.0 Signal Conditioning Switch & Jumper Settings

5.1 MSA and Non-MSA Selection jumpers

MSA and Non-MSA These settings can be changed between MSA and Non-MSA.

The factory default settings are for MSA video SFP.

There is one 4-pin jumper located directly behind the SFP optical connector (see figure 5.1)

The jumpers are shown in their default condition.

5.2 Test Signal Switch Settings

A group of 10 switches is located on the bottom center of the module's circuit card (see figure 5.1) The figure and table below illustrates these switch locations on the board and how they are configured for the proper SDI format options.

Switches #1-10 factory-supplied default settings are OFF (up).

SX-1HG-SFP SDI Test Signal			
	Down Position	Up Position	
Switch #1	0-Bypass	1-Reclock	TX/RX
Switch #2	0-Reclock	1-Auto Bypass	TX/RX
Switch #3	0-Low BW	1-Hi PLL BW	TX/RX
Switch #4	0-SDI, 270MB/s	1-Auto Rate	TX/RX
Switch #5	0-HD SDI, 1.5GB/s	1-Auto Rate	TX/RX
Switch #6	0-3G SDI, 3.0GB/s*	1-Auto Rate	TX/RX
Switch #7	0-CLK Out	1-Data Out	RX
Switch #8	0-Sp.View Enable	1-Sp.View Disable	TX
Switch #9	0-Disable	1-EQ Enable	TX
Switch #10	0-Mute	1-Disable	RX

3G SDI, 3.0GB/s*- apply only for HG product
 *Default switch settings all up-off(1).

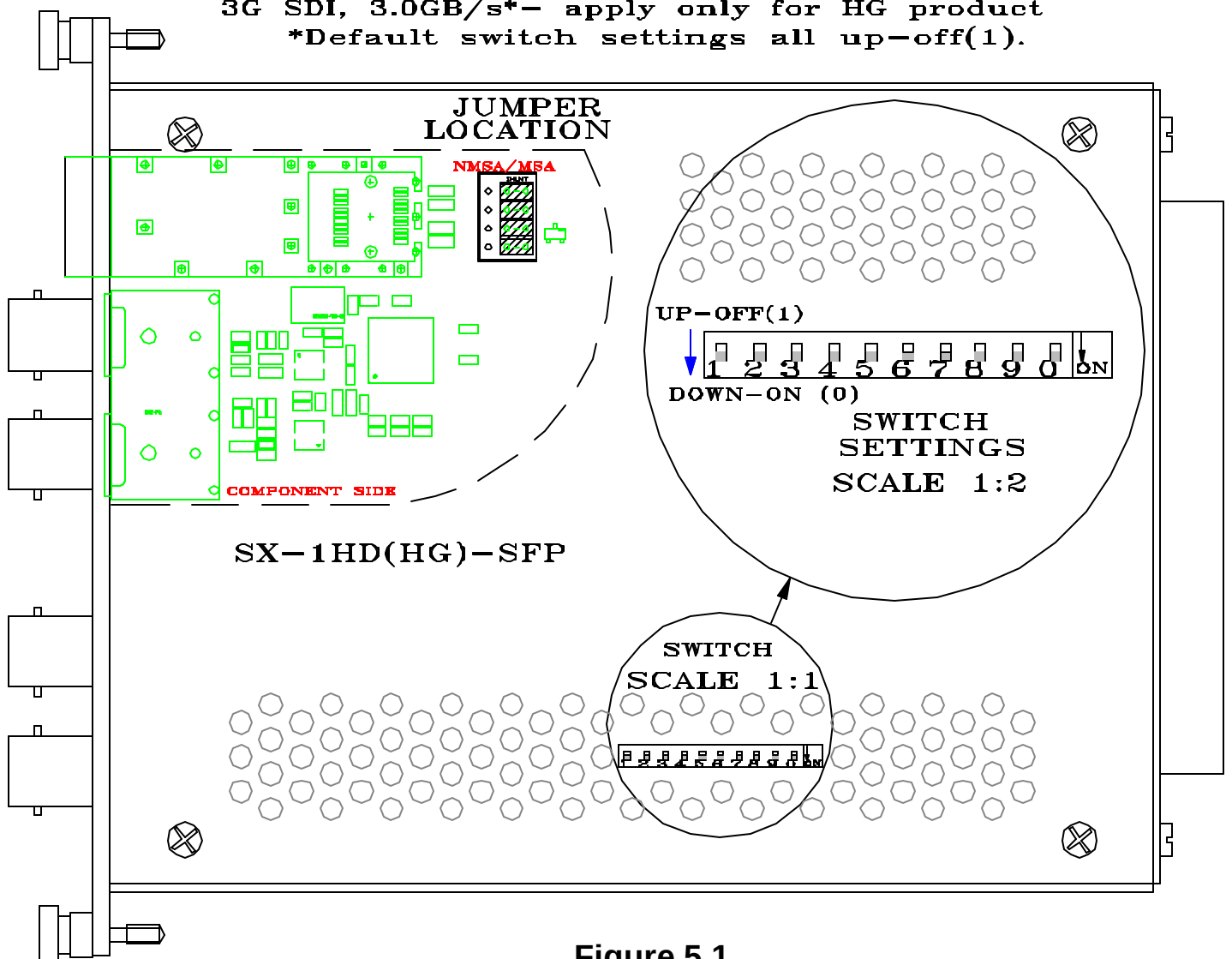


Figure 5.1
SX-1HD(HG)-SFP Switch and Jumper Settings

5.3 Changing default jumpers settings

The jumpers for the Video SFP transceiver can be easily changed as follows:

1. Lay the module on its side with the front panel facing to the left.
2. Remove the screws in each of the 4 corners of the top cover and carefully remove the cover.
3. The Jumpers are located on the top left connector of the module.
4. Refer to the above drawing to locate the jumpers that are located near the SFP connector.
5. Using a small tool, carefully remove the jumper and place it on the appropriate pins to properly select the MSA format (see Figure 5.2)
6. Carefully place the top cover and secure with the screws.

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 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*

Action: Check power supply to ensure that it is plugged in and turned on. If symptom continues, move module to another chassis or location in the same chassis, if available.

Problem: *No video at output of module*

Action: Check to ensure that the monitor is ON and the video cable is connected to the correct video port on the Rx module. Check to ensure that video input to the channels is working and that you have the associated receive channel is being monitored. With an optical power meter, verify that the wavelength for the suspect optical channel is working properly at the input to the receiver unit.

Problem: *Tx SFP light*

Action: Off - Optical module is absent. Red – Optical module Failed, 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: *Tx signal light*

Action: Off - Check SDI input signal

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

Notes:



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