

Installation/Operation Instructions

Fiber Optic Video Transmission System



ST/SR-16HD-x

16-Channels HD-SDI Multi-rate Video Transmitter/ Receiver

ST/SR-16HG-x

16-Channels 3G-SDI Multi-rate Video Transmitter/Receiver

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1.0 Product Description

Meridian's product series ST/SR-16HD-x and ST/SR-16HG-x are fiber optic systems that transmit/receive sixteen channels of unidirectional, independent real-time SDI/HD-SDI video for series ST/SR-16HD and 3G-SDI for ST/SR-16HG series, over one optical fiber using digital transmission and coarse wavelength division optical (CWDM) multiplexing technologies.

Each Tx and Rx unit consists of two double-slot wide rack cards.

In case of HD-SDI link:

- On the Tx side: ST-8HD-22X and ST-8HD-23 cards are connected through expansion optical port.
- On the Rx side: SR-8HD-22X and SR-8HD-23 cards are connected through expansion optical port.

This way, full CWDM optical wavelength range achieved.

In case of 3G-SDI link, the same scheme is applied.

Using Coarse Wavelength Division Multiplexing (CWDM) technology, the content details of each video channel are preserved by real-time transmission of each video channel in a compact card format. These serial digital video transmitters & receivers provide broadcast quality transmission of the industry standard range of digital video data rates. No user adjustments are needed, thus ensuring fast deployment and setup with broadcast quality results. Other signal options are available such as bi-directional transmission of HD-SDI and 3G-SDI video over one single-mode fiber.

This CWDM system is available for use with single-mode fiber only.

This product series uses set of two Meridian's standard 2-slot wide cards and plugs into the following Meridian chassis: SR-2001 & SR-2000 series 19" series equipment chassis.

Both ST and FC optical connectors are supported. Optional conformal coating provides an additional level of protection from environments with high moisture and humidity.

2.0 Installation

Series ST/SR-16HD-x and ST/SR-16HG-x products are sets of 2 two-slot wide cards and will occupy 4 slots in Meridian's standard chassis. To install in to 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 overtighten.

Note: A fully loaded 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 is possible.

3.0 Product Signal Format & Specifications

Transmitted / Recieved Signals

Signal Type	Channels	Transmitter	Receiver
HD-SDI video	16	ST-16HD-x	SR-16HD-x
3G-SDI video	16	ST-16HG-x	SR-16HG-x

Video Signals Specifications

Signal	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	Singlemode – ST or FC

Optical Signals Specifications								
Optical Specifications for HD-SDI units								
Meridian optical code	Fiber Type/ Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)	Approx. Maximum Distance (km)
25	Singlemode (DFB Laser) 9/125	+1 per channel	-15	16	1270, 1290, 1310, 1330, 1350, 1370, 1390, 1410, 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	ST, FC	15	42
Optical Specifications for 3G-SDI units								
Meridian optical code	Fiber Type/ Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)	Approx. Maximum Distance (km)
25	Singlemode (DFB Laser) 9/125	+1 per channel	-12	13	1270, 1290, 1310, 1330, 1350, 1370, 1390, 1410, 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	ST, FC	12	35

For proper operation, it is necessary to match the transmitter (Tx) with the associated receiver module (Rx).

4.0 Front Panel Pinout Assignment Diagram

Figures below show the front panel layout, connector locations, pinout assignments for both the Tx & Rx units, as well as Fiber Connection Diagram.

TRANSMITTER FRONT PANEL

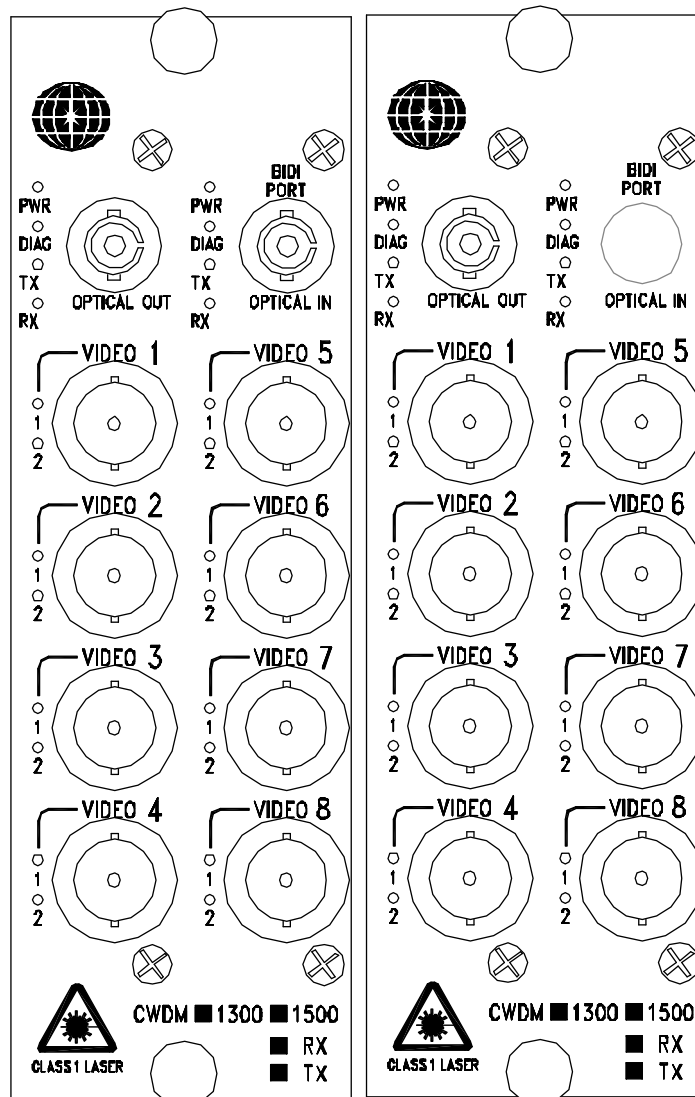
ST-16HD-x ST-16HG-x

OPTICAL PORT COMMON OUT
OPTICAL PORT EXPANSION IN
(ST, FC)

VIDEO INPUT
(CH.1-CH.8)

STATUS INDICATORS

PWR —POWER (GREEN)
 DIAG —NA
 TX —NA
 RX —NA
 1 SIGNAL PRESENT (GREEN)
 2 — LASER ON (GREEN)



OPTICAL PORT OUT
(ST, FC)

VIDEO INPUT
(CH.1-CH.8)

ST-8HD-xX + ST-8HD-x

OR

ST-8HG-xX + ST-8HG-x

RECEIVER FRONT PANEL

SR-16HD-x

SR-16HG-x

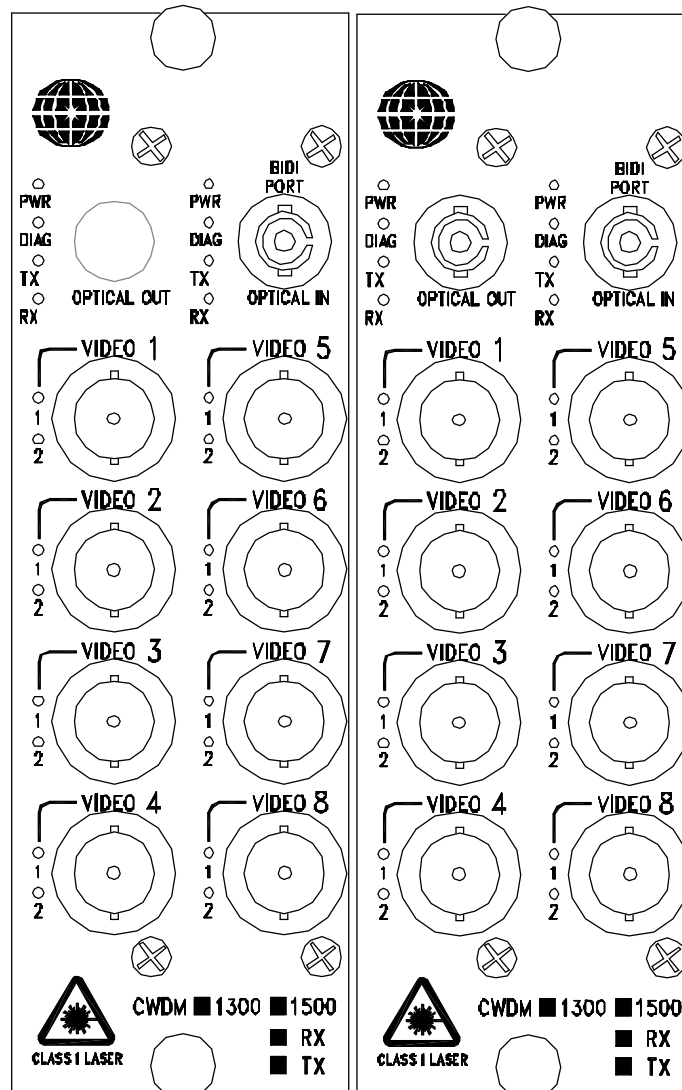
OPTICAL PORT IN
(ST, FC)

VIDEO OUTPUT
(CH.1-CH.8)

STATUS INDICATORS

PWR -POWER (GREEN)
 DIAG -NA
 TX -NA
 RX -NA

1-LEVEL 0/-10dBm (GREEN)
 2-LEVEL -10/-20dBm (GREEN)



OPTICAL PORT COMMON IN
OPTICAL PORT EXPANSION OUT
(ST, FC)

VIDEO OUTPUT
(CH.1-CH.8)

SR-8HD-x + SR-8HD-xX

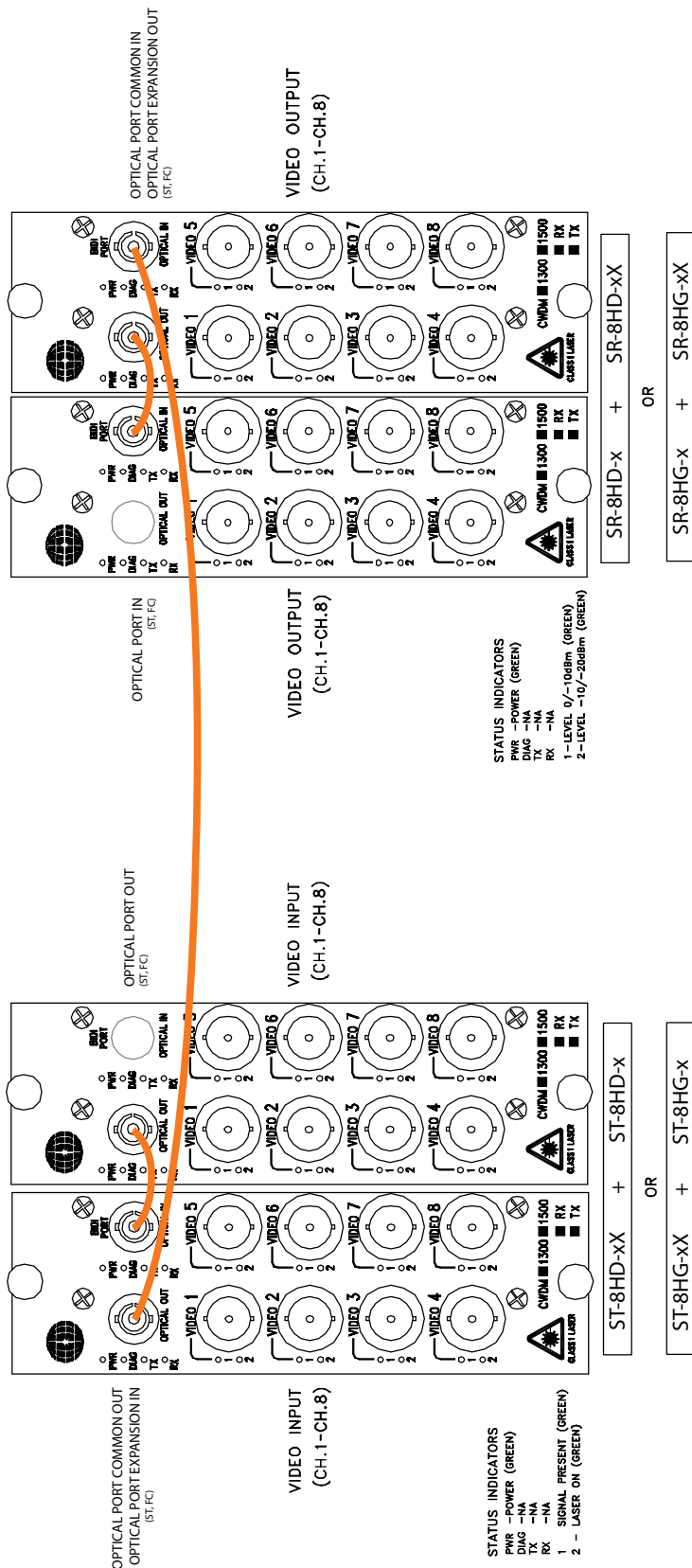
OR

SR-8HG-x + SR-8HG-xX

Connection Diagram

ST-16HD-x
ST-16HG-x

SR-16HD-x
SR-16HG-x



5.0 Troubleshooting

Below is a listing of several main problems that may take place during the installation or operation of the modules.

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|----------|--|
| 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 (SR unit). |
| Problem: | Tx Laser light is off. |
| Action: | Optical module is defective, return to factory for repair. |
| Problem: | Rx Level is off. |
| Action: | Received optical signal absent or low. Check fiber connection and optical power at receiver. |
| Problem: | Tx signal light is off. |
| Action: | Check SDI input signal. |

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

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