



Fiber Optic Data Transmission System

Installation Instructions



FT-1HD2F/2F-12 (ST/FC)

FR-1HD2F/2F-12 (ST/FC)

1ch. SDI Video, 2ch. Bi-directional RS-422 Data Tx/Rx

VERSION 1.0

06/2022

Table of Contents

1.0 PRODUCT DESCRIPTION	3
2.0 INSTALLATION	3
3.0 PRODUCT SIGNAL FORMAT & SPECIFICATIONS	4
4.0 DATA CONNECTOR PIN ASSIGNMENT AND INDICATOR LIGHTS	5
5.0 PRODUCT PART NUMBER VARIATIONS	8
6.0 TROUBLESHOOTING.....	8

1.0 Product Description

Meridian's FT/FR-1HD2F/2F-12 product is fiber optic modems that able to transmit one SDI/HDSDI Video channel and two RS-422 Data channels over one optical fiber. This product utilizes Meridian's standard 1-slot wide card assembly and fully compatible with all of the Meridian chassis.

Both, ST and FC optical connectors are supported. An ST optical connector is available for both multimode and single-mode fiber applications, while the FC connector is available only for single-mode applications. Optional conformal coating provides an additional level of protection from harsh environments.

2.0 Installation

The FT/FR-1HD2F/2F-12 products are one-slot wide cards and, as such, occupy one slot in Meridian's standard chassis . To install units in these chassis, orient the card with the Meridian logo at the top of the module and slide it into card guides at the top and the bottom of the chassis slot. 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. By hand, tighten two thumbscrews located at the top and bottom of the card.

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 FT/FR-1HD2F/2F-22 series products transmit and receive the following signals:

Signal Type	Channels	Transmitter	Receiver
SDI/HDSOI video	1 UNIDIRECTIONAL	FT-1HD2F/2F-12	FR-1HD2F/2F -12
RS-422 Data	2 BI-DIRECTIONAL	FT-1HD2F/2F -12	FR-1HD2F/2F -12

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

Video SDI/HDSOI	
Format	SMPTE,310M, SMPTE,259M/344M, SMPTE 229M HDTV, DVB-ASI, SMPTE 305M STDI
Nominal Level	0.8Vp-p, 1.0Vp-p (max)
Data Rate	1Vp-p, 75 Ohm, 1.5Vp-p (max)/s – 1.5 Gb/s
Bandwidth	5 Hz to 7 MHz @ -3 dB
Impedance	75 Ohm
Gain	Unity
Input Coupling	AC
Return Loss	>30dB
Jitter	<0.2 UI
Cable Equalization	Automatic 0-70 m @ 1.5 Gb/s
Bit Error Rate (0 to –20dBm)	10 ⁻⁹
Data	
Format	RS-232
Data Rate RS-422 Data	DC to 250 Kb/s
Bit Error Rate (BER)	Better than 10 ⁻⁹
Connectors	
Video	75 Ohm BNC w/gold center pin
Data	Screw Terminals
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								
Meridian Optical Code	Fiber Type/Size (um)	Optical Output (dBm)	Receiver Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical Connector	Optical Dynamic Range (dB)	Max Distance (Km)
12	Single-mode (FP Laser) 9 / 125	-5	-25	20	1310/1490, 1550	FC, ST	25	55

4.0 Data Connector Pin Assignment and Indicator Lights

The Data interface is the 14-pin terminal block connector on the front of the module. This module supports the following data formats:

RS-422 Two Bi-directional channels

Data Connector Pin-out Assignment	
Pin #	PORT 1 RS-422
1	Ch 2 IN (+)
2	Ch 2 IN (-)
3	Ch 2 OUT (+)
4	Ch 2 OUT (-)
5	GND
Pin #	PORT 3 RS-422
1	Ch 1 IN (+)
2	Ch 1 IN (-)
3	Ch 1 OUT (+)
4	Ch 1 OUT (-)
5	GND

The LED lights show the operation status of the module's power, optical carriers, video signal and the Data channels. These indicators can be used for troubleshooting the module, electrical and optical connections.

FT-1HD2F/2F-12

COMMON STATUS INDICATORS

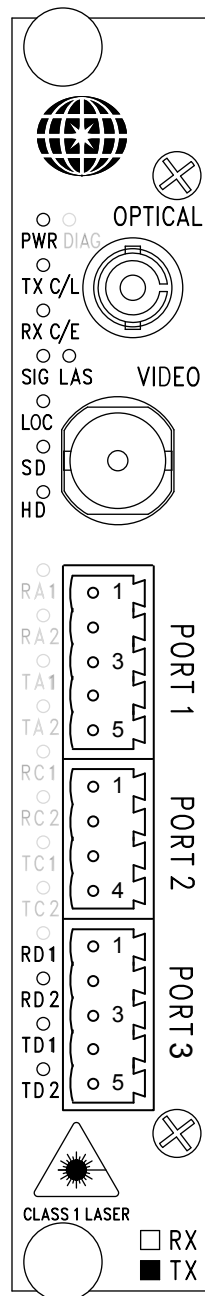
PWR - POWER (GREEN)
TX C/L - TX CARRIER (GREEN) / ERROR (RED)
RX C/E - RX CARRIER (GREEN) / ERROR (RED)

VIDEO STATUS INDICATORS

SIG - SDI SIGNAL PRESENT (GREEN)
LAS - SDI LASER (GREEN) / FAIL (RED)
LOC - SDI SIGNAL LOCK (GREEN)
SD - SDI PRESENT (GREEN)
HD - HDSDI PRESENT (GREEN)

DATA STATUS INDICATORS

RD1 - (CH.1) DATA INPUT
RD2 - (CH.2) DATA INPUT
TD1 - (CH.1) DATA OUTPUT
TD2 - (CH.2) DATA OUTPUT



OPTICAL PORT (ST, FC)

SDI VIDEO INPUT

PORT 1 RS-422 DATA

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

PORT 2 N/A

PORT 3 RS-422 DATA

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

FR-1HD2F/2F-12

COMMON STATUS INDICATORS

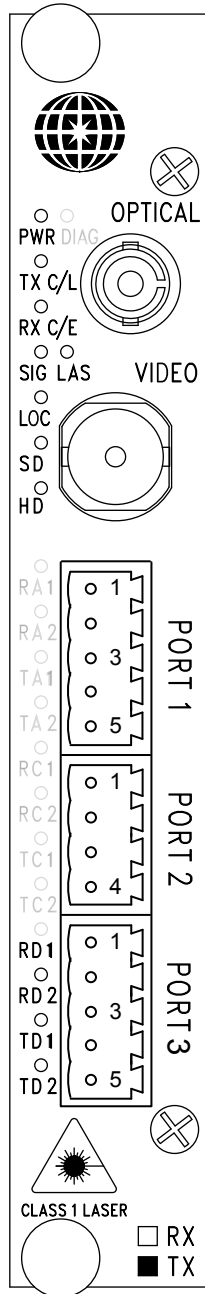
PWR - POWER (GREEN)
TX C/L - TX CARRIER (GREEN) / ERROR (RED)
RX C/E - RX CARRIER (GREEN) / ERROR (RED)

VIDEO STATUS INDICATORS

SIG - SDI SIGNAL PRESENT (GREEN)
LAS - SDI LASER (GREEN) / FAIL (RED)
LOC - SDI SIGNAL LOCK (GREEN)
SD - SDI PRESENT (GREEN)
HD - HDSDI PRESENT (GREEN)

DATA STATUS INDICATORS

RD1 - (CH.1) DATA INPUT
RD2 - (CH.2) DATA INPUT
TD1 - (CH.1) DATA OUTPUT
TD2 - (CH.2) DATA OUTPUT



OPTICAL PORT (ST, FC)

SDI VIDEO OUTPUT

PORT 1 RS-422 DATA

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

PORT 2 N/A

PORT 3 RS-422 DATA

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

5.0 Product Part Number Variations

The table below lists the various part numbers and description that are available for this series of product.

Product Part Number Guide			
Part Number	Matching Part #	Fiber Interface	Optical Connector
FT-1HD2F/2F-12/FC	FXA-1HD2F/2F-12/FC	Single-mode	FC
FT-1HD2F/2F-12/ST	FXA-1HD2F/2F-12/ST	Single-mode	ST

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 lit or flashing when the power is applied*

Action: Check power supply to ensure that it is plugged in and turned on. If flashing continues, move module to another chassis or other slot in the same chassis.

Problem: *No video output*

Action: Make sure that video monitor is ON and the video cable is connected to the correct video port on the Rx module. Ensure that the video LEDs are in ON position (Green). Check that the optical LEDs are ON.

Check the SpectraView diagnostics for an indication of what the problem may be.

Problem: *Video image is dark*

Action: Adjust aperture settings on the camera.

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 aperture settings on the camera should be adjusted.

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).

Verify that the PWR, Tx C/L and Rx C/L lights on both modems are on GREEN. Confirm that the data pinouts/connections are correct (see section 4.0 for data pinout connections).

Verify that the DT1 light flashes when transmitting data and that the corresponding DR1 light on the other modem is flashing. Confirm that the data connections are correct (Check to ensure that the data source is operating properly). The front panel lights located next to the 14-pin connector should be flashing as data is being sent to the transmit side. Check to ensure that data is being transmitted to the unit.

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

