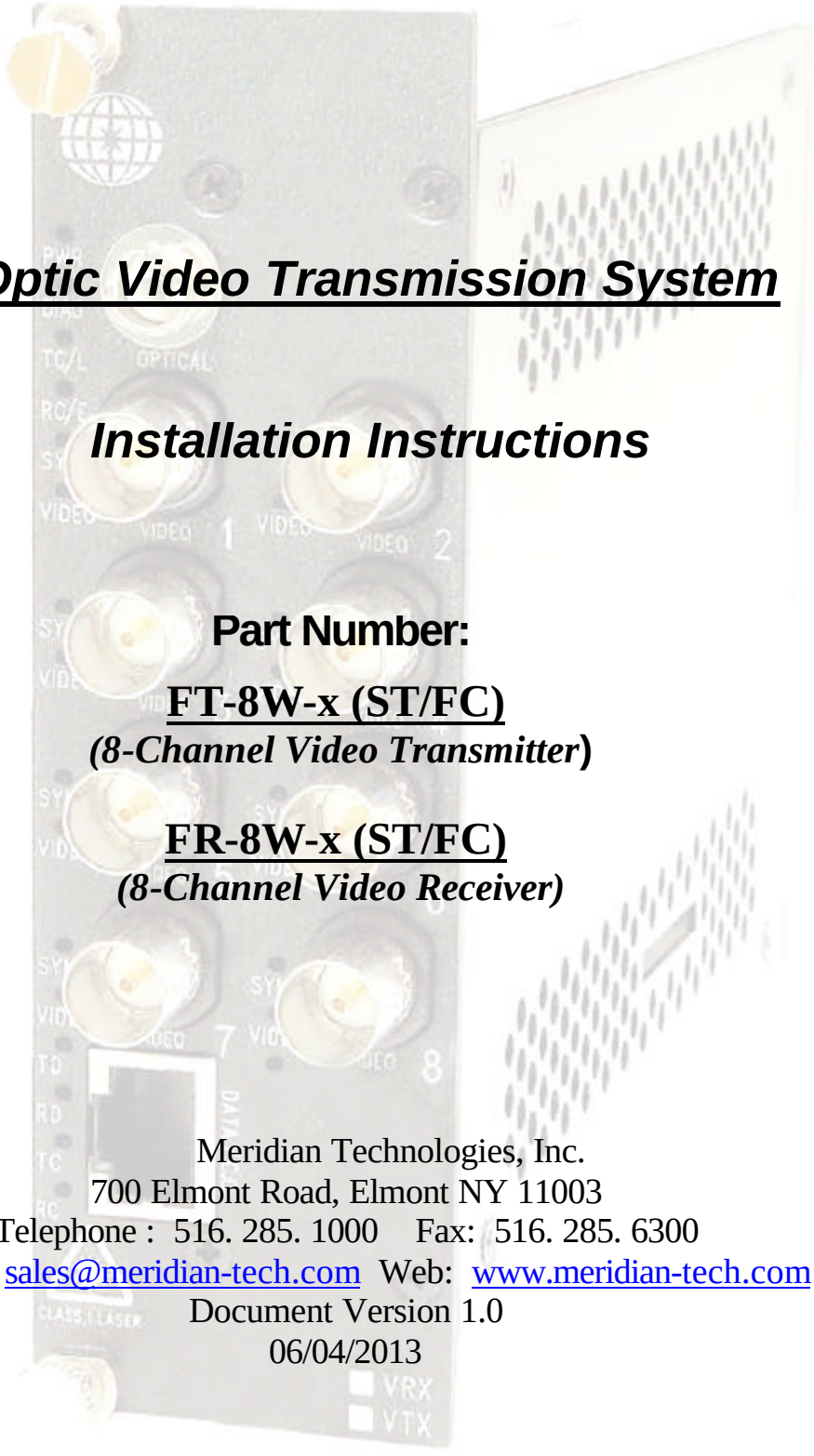

# *Fiber Optic Video Transmission System*

## *Installation Instructions*

**Part Number:**

**FT-8W-x (ST/FC)**
***(8-Channel Video Transmitter)***

**FR-8W-x (ST/FC)**
***(8-Channel Video Receiver)***

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Document Version 1.0
06/04/2013

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# ***FT/FR-8W-x***
# ***Fiber Optic Video/Data Transmission System***
# ***Installation Instructions***

## 1.0 Product Description

Meridian's FT/FR-8W-x products are fiber optic modems that transmit or receive eight channels of 10-bit uni-directional digitized video signals over one optical fiber using digital transmission technologies. This product series uses Meridian's standard 2-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-1001/S, SR-1002/S, SR-1200/S, SR-1500/S, SR-1600/S and SR-2001 & SR-2000 series equipment chassis.

Both ST and FC optical connectors are supported, depending on the part number. An ST optical interface is available for both multimode and singlemode fiber applications. The FC optical interface is available only for singlemode products. Conformal coating provides an additional level of protection from environments with high humidity.

## 2.0 Installation

Series FT/FR-8W-x products are two-slot wide cards and, as such, occupy two 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" 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-8W-x series products transmit and receive the following signals:

| Signal Type | Channels | Transmit | Receive |
|---|---|---|---|
| NTSC/PAL/SECAM video | 8 | FT-8W-x | FR-8W-x |

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) |
| Bandwidth | 5 Hz to 7 MHz @ -3 dB |
| Differential Gain | <0.6% |
| Differential Phase | $<0.3^{o}$ |
| SNR | >67dB (weighted) |
| Return Loss | >30dB |
| Field Tilt | <0.5% |

| Connectors | |
|---|---|
| Video | 75 Ohm BNC w/gold center pin |
| Optical | Singlemode – ST or FC<br>Multimode - ST |

# 3.1 Optical Specifications

The table below lists the optical specifications for both singlemode 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 | -22 | 17 | 1300/850 | ST | 25 |
| Singlemode (FP Laser) 9 / 125 | -5 | -22 | 17 | 1310/1550 | ST, FC | 25 |
| Singlemode (DFB Laser) 9 / 125 | +1 | -22 | 23 | 1270/1610 | ST, FC | 25 |

## 4.0 Front Panel Pinout Assignment Diagram

FT-8W-X

PINOUT DIAGRAM

OPTICAL PORT OUTPUT
(ST, FC)

STATUS INDICATORS

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

VIDEO INPUT (CH.1)

STATUS INDICATORS CH.1

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)

VIDEO INPUT (CH.2)

STATUS INDICATORS CH.2

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)

VIDEO INPUT (CH.3)

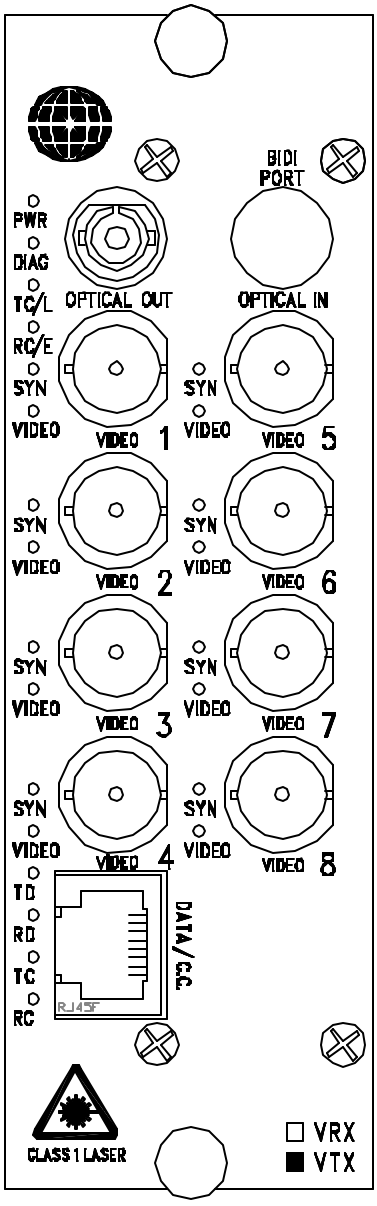
STATUS INDICATORS CH.3

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)

VIDEO INPUT (CH.4)

STATUS INDICATORS CH.4

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)




VIDEO INPUT (CH.5)

STATUS INDICATORS CH.5

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)

VIDEO INPUT (CH.6)

STATUS INDICATORS CH.6

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)

VIDEO INPUT (CH.7)

STATUS INDICATORS CH.7

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)

VIDEO INPUT (CH.8)

STATUS INDICATORS CH.8

SYN -SYNC PRESENT (GREEN)
/ LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN)
/OVERLOAD (RED)

DATA/CC N/A

**Figure 4.1**
**FT-8W-x Front Panel Layout Diagram**

# FR-8W-X

## PINOUT DIAGRAM

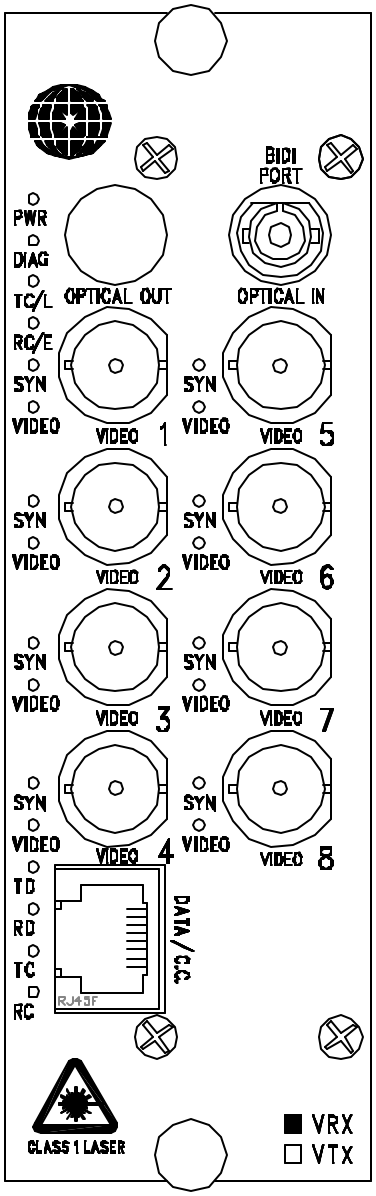
STATUS INDICATORS
PWR -POWER (GREEN)
DIAG -CARD DIAGNOSTIC* (GREEN-OK, RED-ALARM)
TX C/L -NA
RX C/E -RX CARRIER (GREEN) /ERROR (RED)

VIDEO OUTPUT (CH.1)
STATUS INDICATORS CH.1
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)

VIDEO OUTPUT (CH.2)
STATUS INDICATORS CH.2
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)

VIDEO OUTPUT (CH.3)
STATUS INDICATORS CH.3
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)

VIDEO OUTPUT (CH.4)
STATUS INDICATORS CH.4
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)




OPTICAL PORT INPUT (ST, FC)

VIDEO OUTPUT (CH.5)
STATUS INDICATORS CH.5
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)

VIDEO OUTPUT (CH.6)
STATUS INDICATORS CH.6
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)

VIDEO OUTPUT (CH.7)
STATUS INDICATORS CH.7
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)

VIDEO OUTPUT (CH.8)
STATUS INDICATORS CH.8
SYN -SYNC PRESENT (GREEN) / LOAD ABSENT (RED)
VIDEO -VIDEO PRESENT (GREEN) /OVERLOAD (RED)

DATA/CC N/A

**Figure 4.2**
**FR-8W-x Front Panel Layout Diagram**

# 5.0 SpectraView™ Network Monitoring

The table below lists the function of each of these switches (numbered from left to right) and identifies how to set the various diagnostic test modes.

| Test / Switch | Local Loop Back | Remote Loop Back | Transmit Test | Receive Test | Spectra View Enabled | Reserved |
|---|---|---|---|---|---|---|
| SW1 – SW2 – Data format selection switches | | | | | | |
| | | | | | | |
| SW5 | **ON** | OFF | OFF | OFF | OFF | OFF |
| SW6 | OFF | **ON** | OFF | OFF | OFF | OFF |
| SW7 | OFF | OFF | **ON** | OFF | OFF | OFF |
| SW8 | OFF | OFF | OFF | **ON** | OFF | OFF |
| SW9 | OFF | OFF | OFF | OFF | **ON** | OFF |
| SW10 | OFF | OFF | OFF | OFF | OFF | **OFF** |

Note: To turn a switch "ON", move the switch in the down position. Likewise, to turn a switch "OFF", move it in the up position.

In order to enter the test modes on the module, it is necessary to actuate one of the above switches as described below:

Local Loopback test (SW5) – N/A
Remote Loopback Tests (SW6) – N/A

Data/Contact Transmit Test (SW7) – N/A

Data/Contact Receive Test (SW8) – N/A

**Video Test** – (Applicable to one-way transmission modules (FT & FR units). This video test mode will allow the user to test the video transmission channel without the use of an external camera to generate a video signal.

There are two video tests available – Transmit video & Receive video. The following describes the test setup for each:

Transmit video test – This test injects a 4-bar video test pattern into the video transmitter and sends this signal over fiber to the associated receiver module.

In order to initiate the internal transmit video test it is necessary to configure the modules as follows:

- SW7 on the FT video Tx module must be set to the ON (down) position.
- SW8 on the FR video Rx module must be set to the OFF (up) position.
- The optical fiber between the FT & FR modules must be connected together
- Connect a standard video monitor to the output of the FR (Video Receiver) module
- 4 grey-scale vertical bars will be displayed on the monitor
- Receiver module LEDs – If a video monitor is not available, the activity of the

transmit video test can be monitored on the receiver's front panel LEDs. When this test is activated, the receiver modules Video Sync & Video Present green LEDs (SYN & VIDEO) will light.

Receive video test – This test injects an 8-bar video test pattern into the video receiver and sends it to the receiver output BNC for display on a video monitor.

In order to initiate the internal receive video test it is necessary to configure the modules as follows:

- SW7 on the FT video Tx module must be set to the OFF (up) position.
- SW8 on the FR video Rx module must be set to the ON (down) position.
- The optical fiber between the FT & FR modules must be connected together
- Connect a standard video monitor to the output of the SR (Video Receiver) module
- 8 grey-scale vertical bars will be displayed on the monitor

**SpectraView Enabled (SW9)** - (Applicable to one-way transmission modules with video (FT & FR units). This video mode will enable the vertical video bars to be displayed in the event that either the incoming video signal has been removed or if the optical signal from the transmitter has been interrupted.

To enable this video bars feature it is necessary to configure the modules as follow:

- SW 9 on the FR (video Receiver) module must be set to the ON (down) position
- SW 9 on the FT (video Transmitter) module must be set to the ON (down) position

Under normal operation, the video from the CCTV camera will be displayed on the respective monitor at the receive side. There are two 'alarm' modes - one for loss of video sync and one for loss of optical signal. When one or the other of these alarm modes is present, the monitor will display the following:

Loss of video sync - 4 vertical gray-scale bars across the monitor screen
Loss of optical signal - 8 vertical gray-scale bars across the monitor screen

Note: Modules equipment with Meridian's SpectraSmart Network Diagnostic System option will have a slightly different video display. Instead of the vertical bars, the monitor will actually display a text message (as described below):

Loss of video sync error: will display the message "No Video Sync"
Loss of Optional signal error: will display – "No Optical Fiber"

---

This procedure concludes the testing of the video/data/contact channels within Meridian's DigiCool fiber optic digitally-encoded transmission modules.

# 6.0 Product Part Numbers

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-8W-1 | FR-8W-1 | Multimode | ST |
| FT-8W-3 | FR-8W-3 | Singlemode | FC |
| FT-8W-3ST | FR-8W-3ST | Singlemode | ST |

***Note: This FT & FR series cards are not compatible with the other 1-slot ST, SR & 2-slot DT, DR cards.***

# 7.0 CWDM Option

These cards are also available with a CWDM option. In this configuration, 1 fiber on each unit are used for transmission of the uni-directional signals. The FT unit will transmit on one unique CWDM wavelength and receive on a FR unit on the complementary wavelengths. The table below shows these various wavelength combinations for this particular unit. Please consult the part number label on the rear of the unit to properly identify the wavelengths for your specific cards.

| TX Part # | RX Part # | Transmit Wavelength |
|---|---|---|
| FT-8W-27 | FR-8W-3 | 1270nm |
| FT-8W-29 | | 1290nm |
| FT-8W-31 | | 1310nm |
| FT-8W-33 | | 1330nm |
| FT-8W-35 | | 1350nm |
| FT-8W-37 | | 1370nm |
| FT-8W-39 | | 1390nm |
| FT-8W-41 | | 1410nm |
| FT-8W-47 | | 1470nm |
| FT-8W-49 | | 1490nm |
| FT-8W-51 | | 1510nm |
| FT-8W-53 | | 1530nm |
| FT-8W-55 | | 1550nm |
| FT-8W-57 | | 1570nm |
| FT-8W-59 | | 1590nm |
| FT-8W-61 | | 1610nm |

When using in a system with a CWDM multiplexer/demultiplexer, it is essential that the specific wavelengths to and from these units be connected to the corresponding input/output wavelengths on the CWDM mux/demux units. Otherwise, the individual wavelengths will not pass through the CWMD mux/demux device.

When using higher power CWDM lasers, an external attenuator of 5dB minimum is required when performing short distance testing to eliminate optical overload at the Rx card.

# 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:** *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.

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

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Document Version 1.0