



Fiber Optic Video Transmission System

Installation Instructions

Part Numbers:

MT-1U-x

(1-Channel Video Transmitter)

MR-1U-x

(1-Channel Video Receiver)



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MT/MR-1U-x Series

Fiber Optic Video Transmission System

Installation Instructions

1.0 Product Description

Meridian's MT/MR-1U-x products are fiber optic modems that transmit one channel of uni-directional 10-bit 10MHz video over one optical fiber using digital transmission technologies. This series is the stand-alone module. This system is available for use with multimode or single-mode fibers and with CWDM lasers. This product is powered by internal switching power supply and will accept 12-24VAC or DC.

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 while the FC optical interface are available only on single-mode products. Optional conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

The MT/MR-1U-x is a shelf mount module and can be mounted in either a horizontal or vertical configuration. There are two mounting holes for # 8 (maximum) hardware. A 2-pin plug-in connector is located on the side of the module for power. For proper operation of this module Meridian recommends the WP-24 power supply.

3.0 Product Signal Format & Specifications

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 10 MHz @ -3dB
Differential Gain	<0.6%
Differential Phase	<0.3°
SNR	>67 dB (weighted)
Return Loss	>30 dB
Field Tilt	<0.5%

Connectors	
Video	75 Ohm BNC w/gold center pin
Power	2 pin terminal strip
Optical	Singlemode – ST or FC Multimode - ST

3.1 Optical Specifications

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	-3	-22	19	1300	ST	22
Singlemode (FP Laser) 9 / 125	-3	-22	19	1310	ST, FC	22
Singlemode (DFB Laser) 9 / 125	+3	-22	25	1550,1310	ST, FC	22



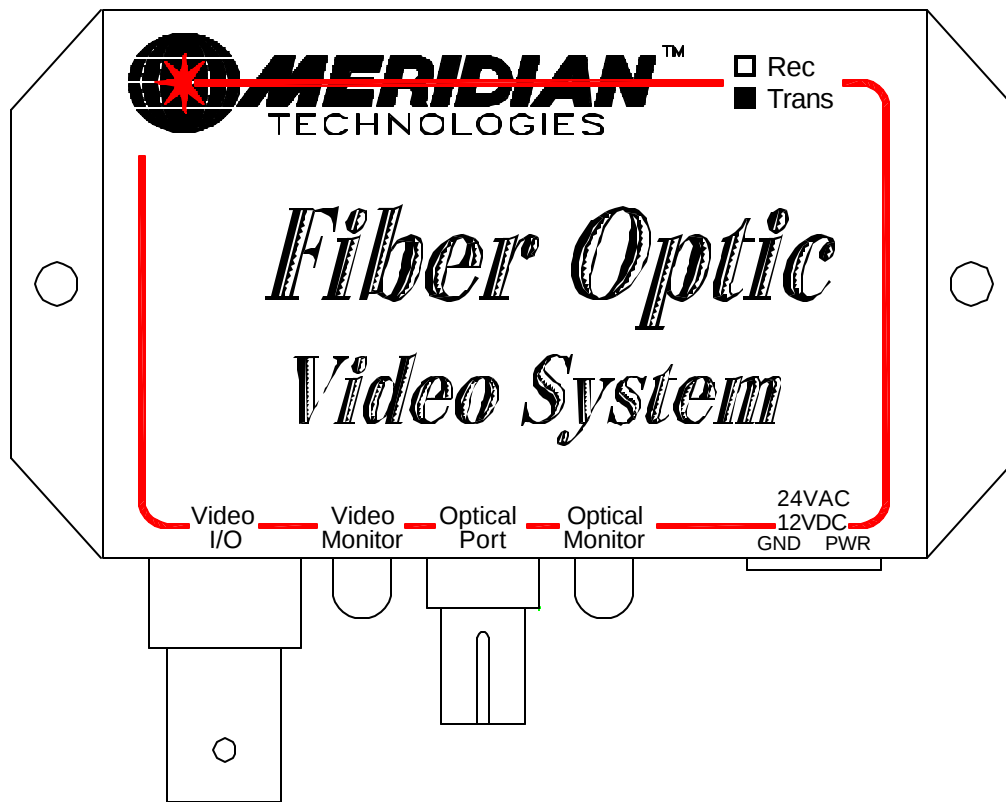
Compliant with Class 1 Laser Safety Rating.

4.0 Module Pinout Diagram and LED Status Indicators

There are two indicator lights that provide visual operational status of the modules and link. The function of these LED indicators is as follows:

Video Monitor	Video present - Green (OK), Red (Overload)
Optical Monitor	Tx Carrier present - Green (OK), Red (Alarm)
	Rx Carrier present - Green (OK), Red (Error)

Figure 4.1 and 4.2 below show the connectors and LED status indicators location for both MT and MR-1U-x modules.



MT-1U-X PINOUT DIAGRAM

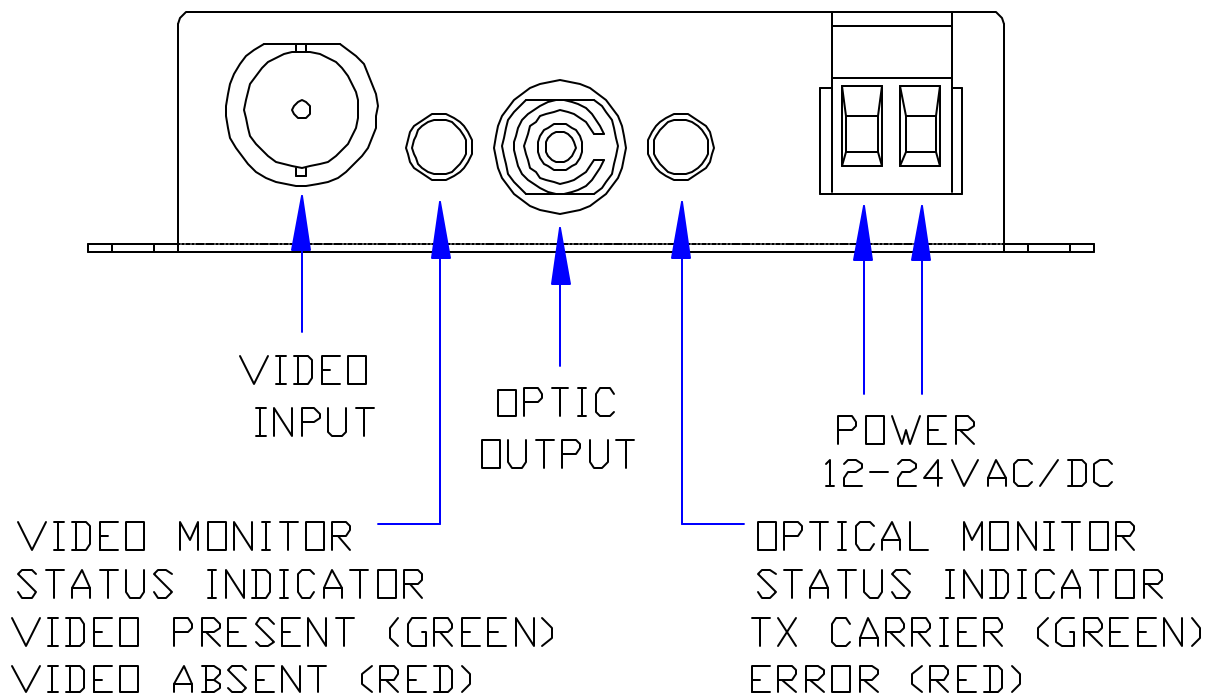
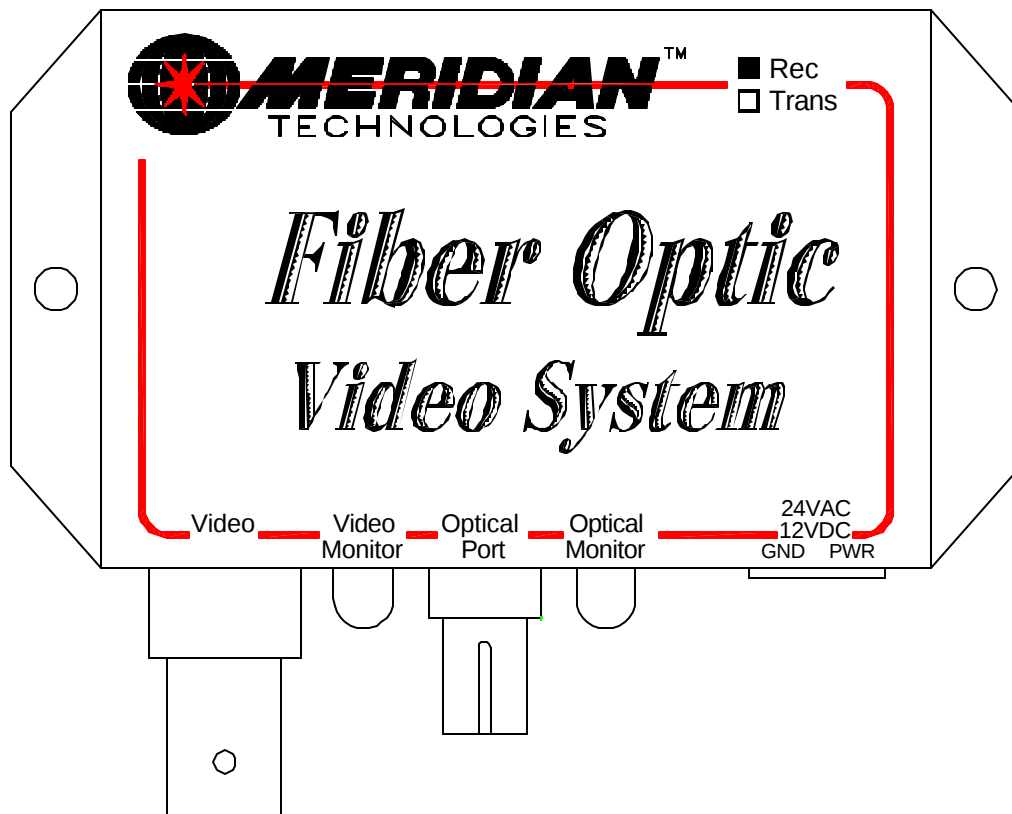


Figure 4.1
MT-1U-x Module Layout Diagram



MR-1U-X PINOUT DIAGRAM

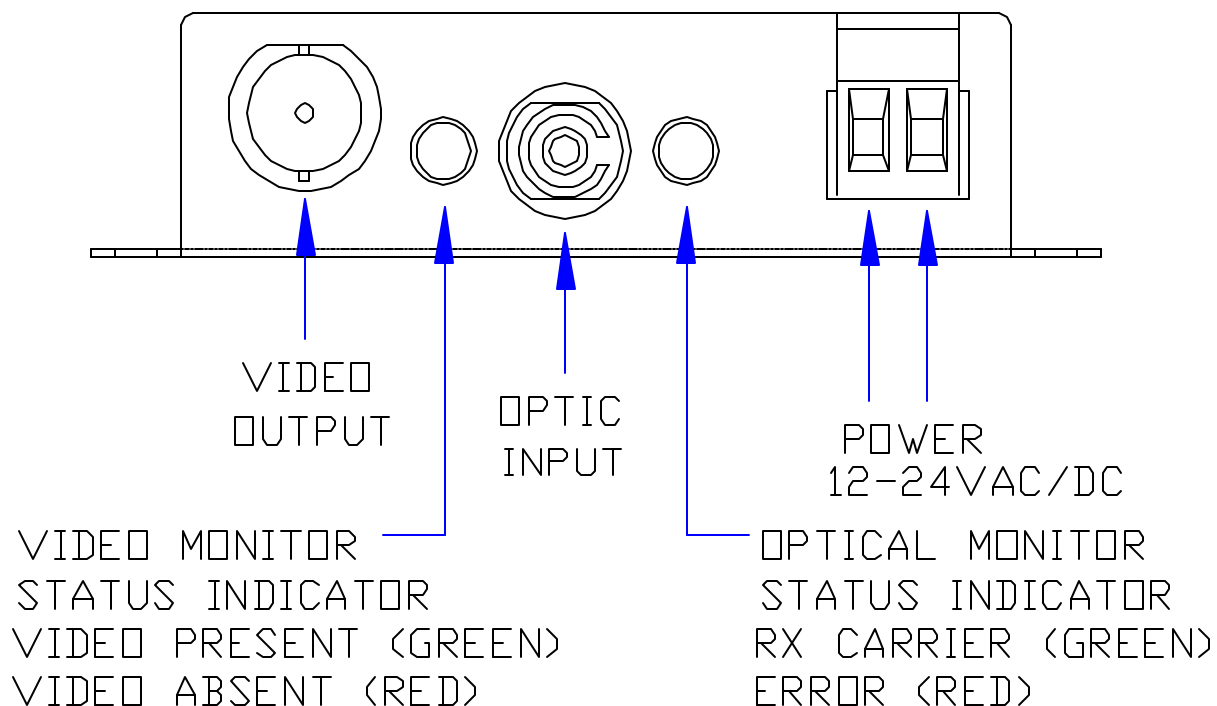


Figure 4.2
MR-1U-x Module Layout Diagram

5.0 Connection Diagram

Figure 5.1 below show the video and fiber connections for both the MT and MR-1U-x modules.

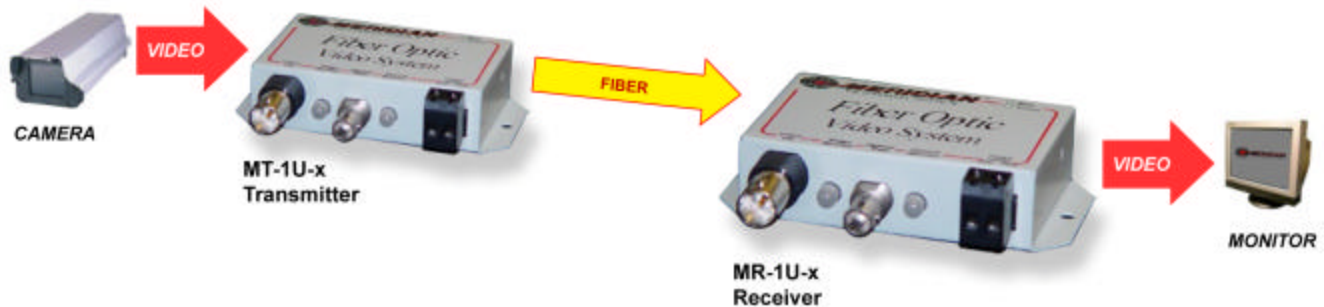


Figure 5.1
MT/MR-1U-x Module Connection Diagram

6.0 Mechanical Dimensions

Module physical dimensions: Length – 3.35”(86mm), Width – 1.8” (46mm), Height – 0.78” (20mm). Module weight: 0.22 Lb (100g)

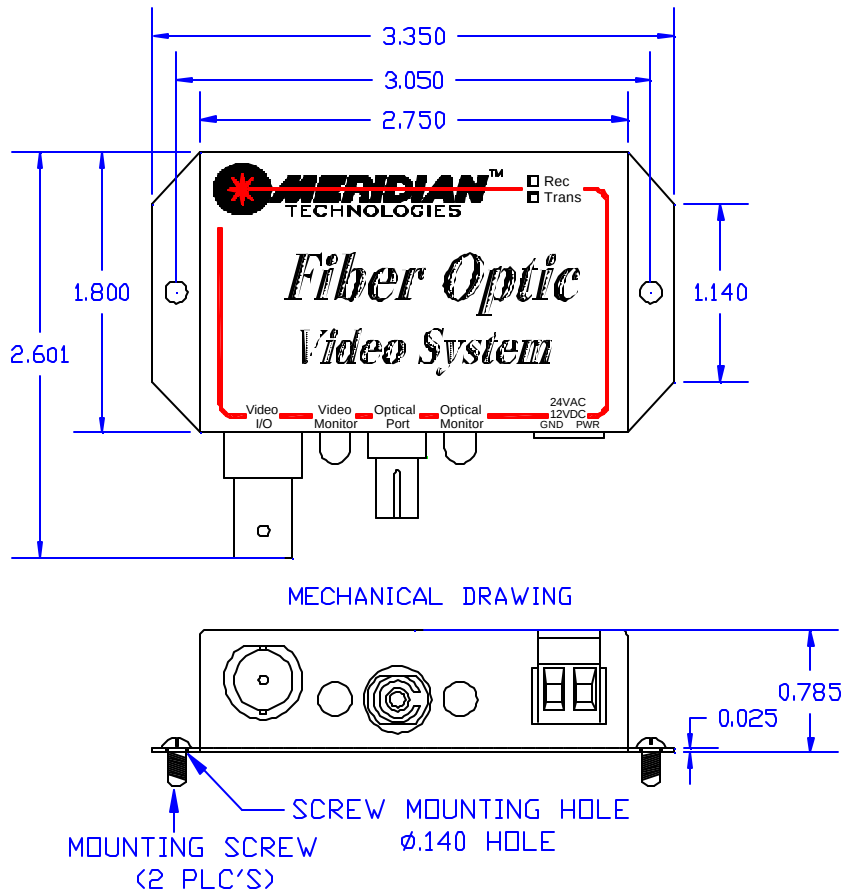


Figure 5.1
MT/MR-1U-x
Module Mechanical Dimensions

7.0 CWDM Option

These modules are also available with a CWDM option. The MT unit will transmit on one unique CWDM wavelength and receive on the complementary wavelength. The table below shows these various wavelength combinations for this particular unit.

Please consult the part number for the transmitter unit to properly identify the wavelength for your specific module. Matching part number for receiver will be MR-1U-3

Part #	Transmit Wavelength
MT-1U-27	1270nm
MT-1U-29	1290nm
MT-1U-31	1310nm
MT-1U-33	1330nm
MT-1U-35	1350nm
MT-1U-37	1370nm
MT-1U-39	1390nm
MT-1U-41	1410nm
MT-1U-47	1470nm
MT-1U-49	1490nm
MT-1U-51	1510nm
MT-1U-53	1530nm
MT-1U-55	1550nm
MT-1U-57	1570nm
MT-1U-59	1590nm
MT-1U-61	1610nm

Figure 7.1
Wavelength Configuration

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 3dB minimum is required when performing short distance testing to eliminate optical overload at the Rx unit.

8.0 SpectraView™ Monitoring

This module series is equipped with Meridian's SpectraView monitoring that continuously monitors the fiber system and associated equipment to provide real-time information regarding the integrity of the system.

SpectraView 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.

9.0 Signal Conditioning Switch Settings

A group of 4 switches is located on the lower left side of the module's circuit card (see figure 9.1 below). The first switch is used for video test signal and the second switch is for Spectra View monitoring. The figure and table below illustrates these switch locations on the board and how they are configured. The factory-supplied default setting is Switch #1-4 OFF position.

MT/MR-1U-x MODULE SWITCH SETTINGS

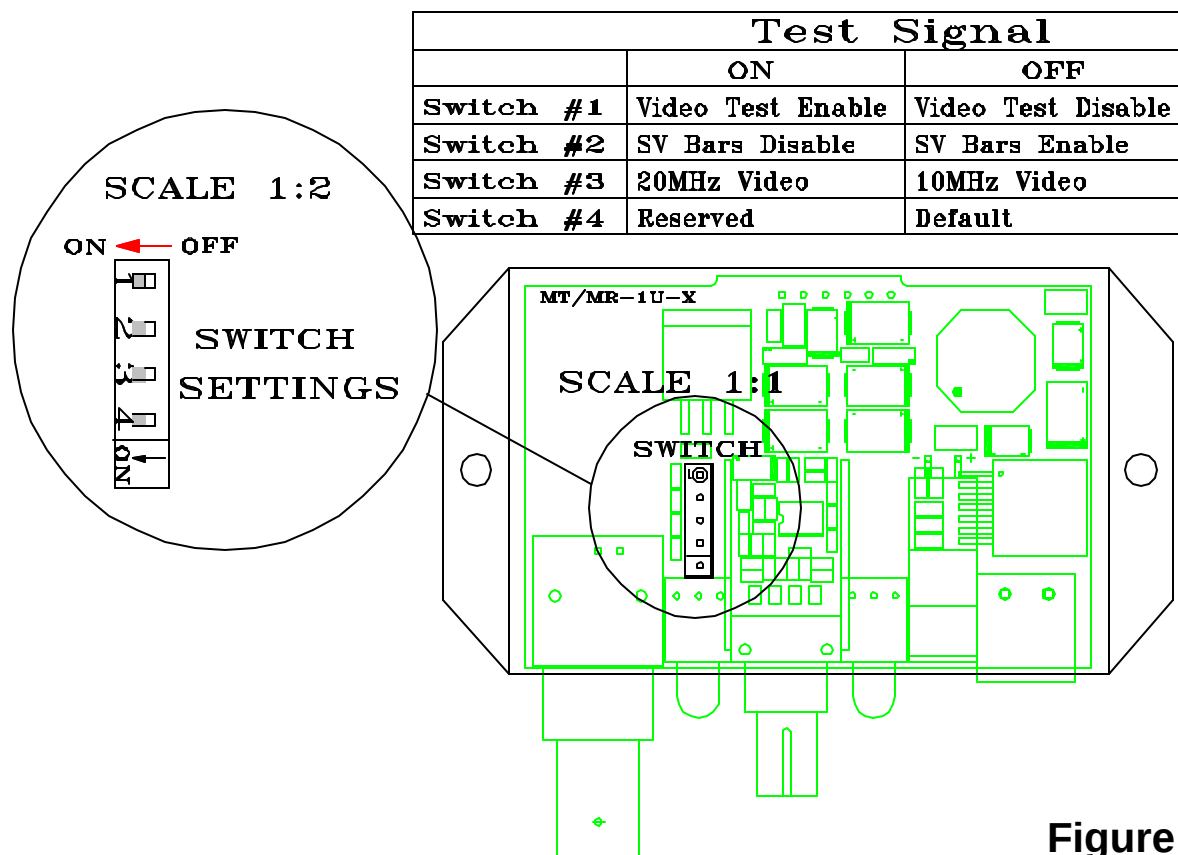


Figure 9.1
Module Switch
Location

9.1 Changing Default Switch Settings

The factory switch settings can be easily changed as follows:

1. Position the module as shown in the above photograph and remove 4 screws from the corners of the bottom cover.
2. Locate the switch. It will be near BNC connector.
3. Change switch settings according to table in figure 9.1
4. Replace side cover and secure with the 4 screws.
5. Repeat, as required, with the other unit.

10 Product Part Number Variations

These series products are available in one fiber version. In addition, both singlemode and multimode fiber are supported. The table below lists the various part numbers and their optical transmission characteristics:

Module Part #		Wavelength (nm)	Fiber Type	Optical Connector
MT-1U-1	MR-1U-1	1300	Multimode	ST
MT-1U-3	MR-1U-3	1310	Singlemode	FC
MT-1U-3/ST	MR-1U-3/ST	1310	Singlemode	ST

Transmitter unit available with two additional options:

1. MT-1U-xE – features High efficiency, low power consumption isolated power supply
2. MT-1U-xA – features 5VDC power supply.

11 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: *Tx signal light*

Action: Red - Check fiber connection.

Problem: *Rx signal light*

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 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: +1-516-285-1000 / support@meridian-tech.com

Notes:



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