



Installation/Operation Instructions

Fiber Optic Video & Audio Transmission System

DT -8V(W)8A Series

DR-8V(W)8A Series

***(8-Channel Video, 8-Channel Audio
Transmitter/Receiver)***

Meridian Technologies, Inc.
700 Elmont Road, Elmont NY 11003
Telephone: 516. 285. 1000 Fax: 516. 285. 6300
E-mail: sales@meridian-tech.com
Web: www.meridian-tech.com
Document Version 2
02/02/2009

Table of Contents

1.0	Product Description.....	3
2.0	Installation	3
3.0	Operation	4
3.1	Video & Audio Status indicators	4
4.0	Audio Signal Connector Pinouts	6
5.0	Specifications.....	6
6.0	Audio SIM Jumper Settings.....	8
7.0	Front Panel Pinout Assignment Diagram	9
8.0	Troubleshooting	13
	Appendix 1 – Applicable Product Part Number Variations	14
	Appendix 2 – System Module Components	14

1.0 Product Description

Meridian's product series DT/DR-8V(W)8A are fiber optic modems that transmit and receive 8 8-bit (or 10-bit) Video channels and 8 uni-directional audio channels over one optical fiber using digital transmission technologies (the exact type and number of channels is determined by the part number guide in Appendix 1). This product series requires 5 standard slots and can be housed in following Meridian chassis: SR- 1500/S 7-slot and SR-2001 & SR-2000 series 19" equipment chassis.

This system consists of one 8-ch video, one 8-ch audio transmitter/receiver modules and one 2-ch optical multiplexer/demultiplexer pair. Audio modules transmits at 850nm and Video 1300nm (multimode or singlemode, respectively). The two channel optical multiplexer combines the optical output of each of these transmitter modules and transmit the signal down one multimode or singlemode fiber. At the receiver location, the two channel optical demultiplexer separates the two different wavelengths and sends them to the Video and Audio receiver modules for signal detection.

Each of the digital video modules consist of various plug-in personality function cards or SIMs. The top card is the optical card that contains the fiber optic interface. The optical output (Tx) connector is located on the left side of the module while the optical input (Rx) connector is located on the right side of the module. The next four SIM cards each contain 2 video channels. Each of the digital audio modules consist of various plug-in personality function cards or SIMs. The top card is the optical card that contains the fiber optic interface. The optical output (Tx) connector is located on the left side of the module while the optical input (Rx) connector is located on the right side of the module. The last two SIM cards contains 4 uni-directional audio channels. The 2-channel optical mux has 3 optical ports. The top port is the common port (input/output) for both wavelengths and is connected to the optical transmission cable between the transmit and receive system. The middle or 2nd port in the input/output port for either the 850 or 1310nm transmitter/receiver modules (multimode or singlemode, respectively). The bottom (3rd) port carries the 1300 or 1550nm optical signal (multimode or singlemode, respectively) from the respective transmitter and to the associated receiver.

2.0 Installation

Series DT/DR-8V(W)8A products occupy five (5) slots in Meridian's standard chassis (SR-1500/S, and SR-2001 & SR-2000 series 19" equipment chassis). To install in the chassis, orient each of the card withs 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 populated 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 Operation

Video – Each of the BNC video connectors accepts a standard NTS C/PAL video input signal (DT module) and transmits these signals to the receive unit (DR module). The respective video output signal is located on the same channel (location) as the input video signal. Connect the input video signal to the appropriate BNC video input connector on the transmitter modules (DT-8V) and the output video connector on the associated port on the receiver module (DR-8V).

Audio - Connect the audio source to one of the channels' input pins as shown in section 4.0. Connect an audio output device to the associated channel's output pins on the other module. To obtain optimal performance, the audio input level should be set to 0dB. The audio output level will track the input level. Once proper operation is verified, the other channels can be connected per the pinout diagram in this manual.

3.1 Video & Audio Status indicators

The figures at the end of this document show the connector and LED indicator locations for the various video & audio status indicators on the transmitter and receiver modules. There are a number of diagnostic indicators on the front panel of each module. In addition, each of the video input/output channels has indicators associated with them to provide quick visual indications of the channel activity. These indicators for each of the video & audio channels are listed below:

Transmitter (DT-8V) Indicators		
Indicator	Location	Function
Tx carrier	Under optical output connector	Optical output (Green – OK, Red – error)
Power	Left side of module	Green – ON
Video #1 (each input)	Under video input connectors	Green – Sync received
Video #2 (each input)	Under video input connectors	Video signal – Green OK, Red – video overload

Receiver (DR-8V) Indicators		
Indicator	Location	Function
Rx Optical signal	Under optical output connector	Optical input (Green – OK, Red – error)
Rx Carrier	Under optical output connector	Optical Carrier input (Green – OK, Red – error)
Power	Left side of module	Green – ON
Video #1 (each input)	Under video input connectors	Green – Sync received
Video #2 (each input)	Under video input connectors	Video signal – Green OK, Red – video overload

Each audio input/output channel has four LED status indicators located under the associated audio I/O connector. Two adjacent LEDs are associated with each audio input channel and two are associated with the respective audio output channel. The table below shows the relationship between the connectors (I/O channels) and LEDs.

Audio Input / Output Status Indicators			
LED	Port 3/4 (DT-8A)	LED	Port 3/4 (DR-8A)
1	In 1 Present	1	Out 1 Present
2	In 1 Overload	2	Out 1 Overload
3	In 2 Present	3	Out 2 Present
4	In 2 Overload	4	Out 2 Overload
5	In 3 Present	5	Out 3 Present
6	In 3 Overload	6	Out 3 Overload
7	In 4 Present	7	Out 4 Present
8	In 4 Overload	8	Out 4 Overload

Audio input PRESENT LEDs (DT-8V8A units) – Each of the LEDs associated with a specific audio input channel will light when the audio input source is connected and has a signal level greater than -8dB

Audio input OVERLOAD LEDs (DT-8V8A units) – when the audio input level of any channel exceeds +8dB, the associated audio channel input Overload LED will turn on indicating that the audio input level is too high and distortion on the output may result.

Audio output PRESENT LEDs (DR-8V8A units)– This light will turn on when the audio input on the transmit side is present, the DT & DR units are powered and the fiber is connected between the two modems.

Audio output OVERLOAD LEDs (DR-8V8A units) – These lights will light when the respective audio input on the transmit side is over +8dB. Since the audio output level will track the audio input level, this light should not illuminate when the audio input is below the overload condition (+8dB)

4.0 Audio Signal Connector Pinouts

The DT/DR-8V8A Audio channel connector pinouts are shown in the table below:

Transmitter (DT) Module		Receiver (DR) Module	
Pinout	Port 3/4 (DT-8A)	Pinout	Port 3/4 (DR-8A)
1	In 1 (-)	1	Out 1 (-)
2	In 1 (+)	2	Out 1 (+)
3	In 2 (-)	3	Out 2 (-)
4	In 2 (+)	4	Out 2 (+)
5	GND	5	GND
6	In 3 (-)	6	Out 3 (-)
7	In 3 (+)	7	Out 3 (+)
8	In 4 (-)	8	Out 4 (-)
9	In 4 (+)	9	Out 4 (+)

The attached figures in section 7 show the module front panel and associated connector locations.

5.0 Specifications

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

The DT & DR-8V8A series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
NTSC/PAL video	8	DT-8V8A	DR-8V8A
600 Ohm Audio	8		

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

Video	DT/DR-8W8A	DT/DR-8V8A
	10-bit Video	8-bit Video
Format	NTSC, PAL, SECAM	NTSC, PAL, SECAM
Voltage/Impedance	1Vp-p, 75 Ohm, 1 .5Vp-p	1Vp-p, 75 Ohm, 1 .5Vp-p (max)
Differential Gain	<0.6%	<0.6%
Differential Phase	<0.3°	<0.3°
SNR	>67dB (weighted)	>60dB (weighted)
Return Loss	>30dB	>30dB
Field Tilt	<0.5%	<0.5%

Audio	
In/Out Impedance	600 Ω , balanced/unbalanced
Frequency Response	10Hz to 20KHz
SNR	>90dB (weighted) @ 1KHz
In/Out Level	-8 to ~8dBm (4Vp-p, max)
THD	<0.01% @ 1KHz
Digitized Resolution	24 bit

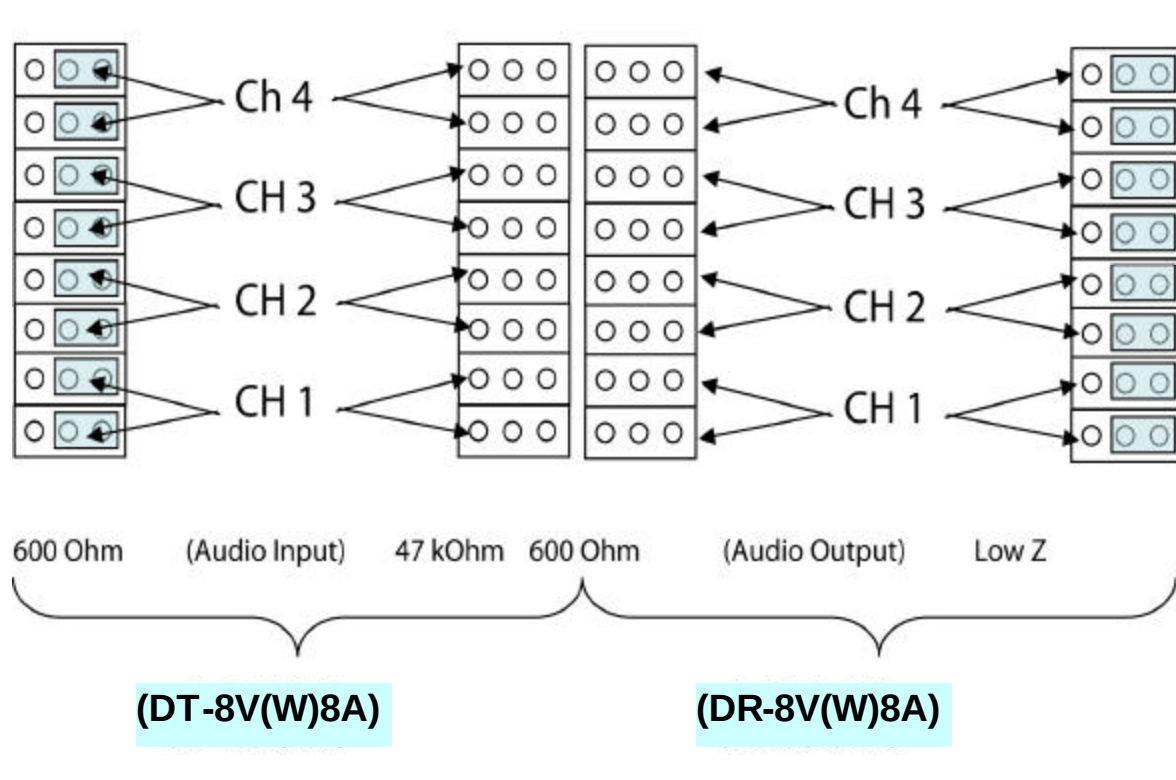
Connectors	
Video	BNC connector (one per channel)
Audio	DB9 Female (one for each 4 audio channels)
Optical	Singlemode – ST or FC Multimode – ST

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	850/1300	ST	24
Singlemode (FP Laser) 9/125	-5	-22	17	1310/1550	ST, FC	24
Singlemode (DFB Laser) 9/125	~1	-22	23	1310/1550	ST, FC	24

6.0 Audio SIM Jumper Settings

Each audio SIM has 8 jumpers on it (located directly behind the DB9 connector). There are two jumpers for each channel. These jumpers are used to set the input/output impedance of the audio channels. Each audio input channel can be set to either 600ohm (balanced) or 47kohm (unbalanced) input impedance. Each audio output channel's impedance can be set to either 600 ohm, balanced or low impedance. The default setting is 600 ohm, balanced.

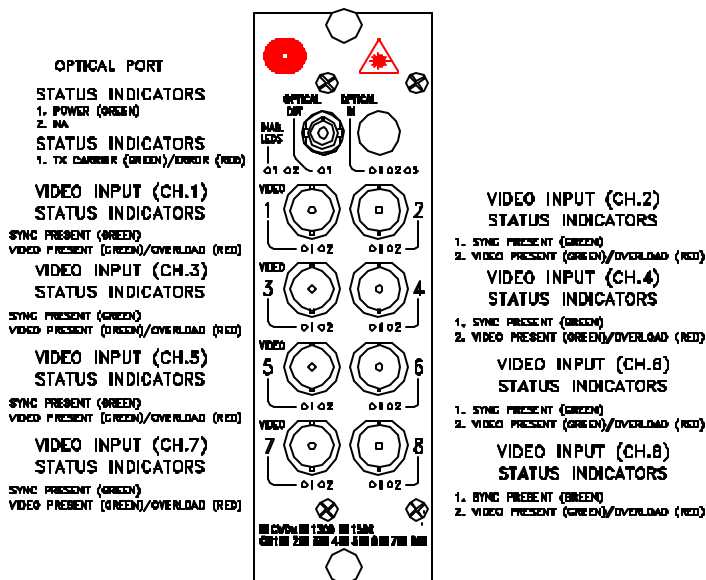
The figures below illustrate these jumpers and how they are configured



7.0 Front Panel Pinout Assignment Diagram

Figures 7.1 and 7.2 below show the front panel layout, connector location and pinout assignment for both the DT & DR modules.

DT-8V-X
DT-8W-X
PINOUT DIAGRAM



DR-8V-X
DR-8W-X
PINOUT DIAGRAM

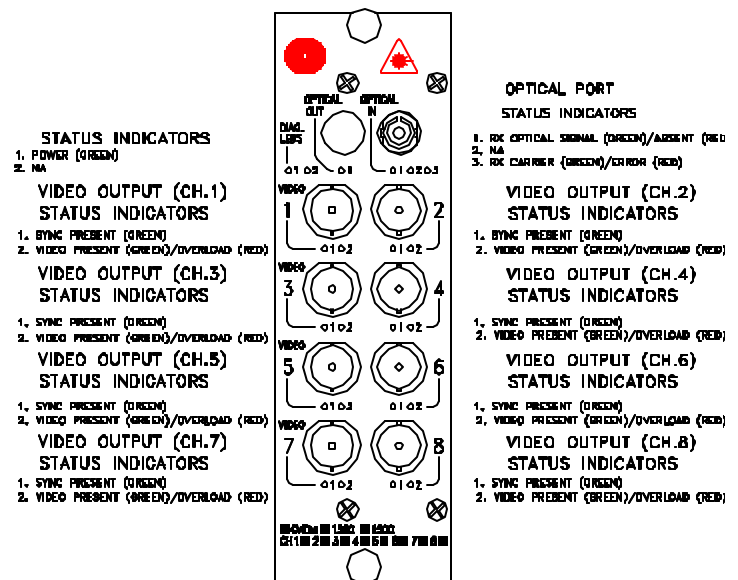
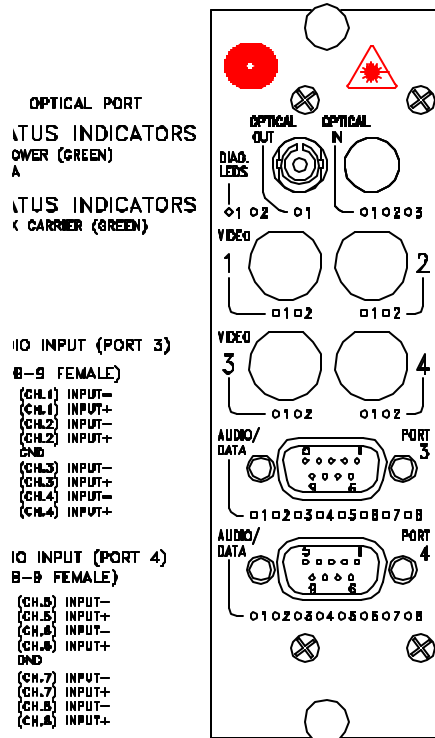


Figure 7.1 DT/DR-8V Front Panel Pinout Diagram

DT-8A-X PINOUT DIAGRAM



DR-8A-X PINOUT DIAGRAM

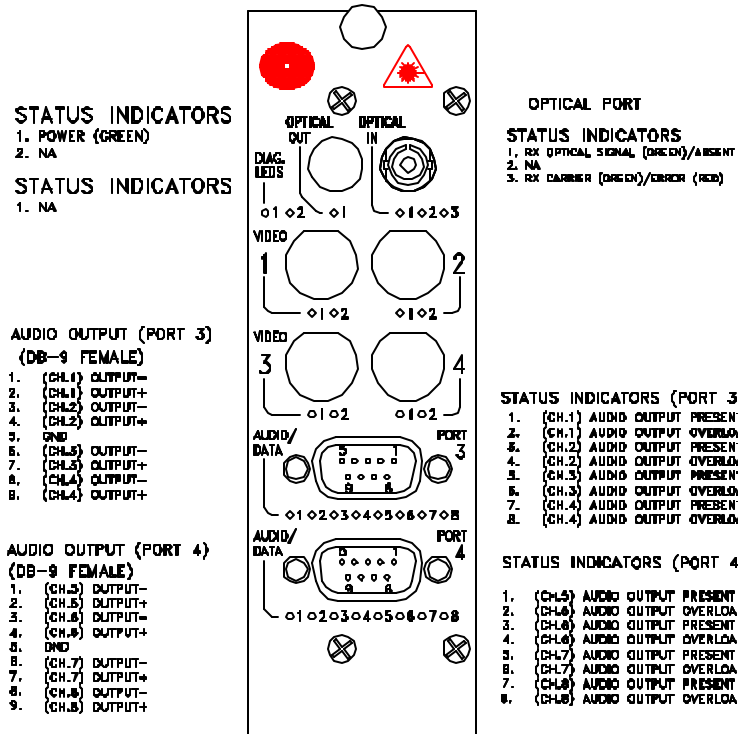
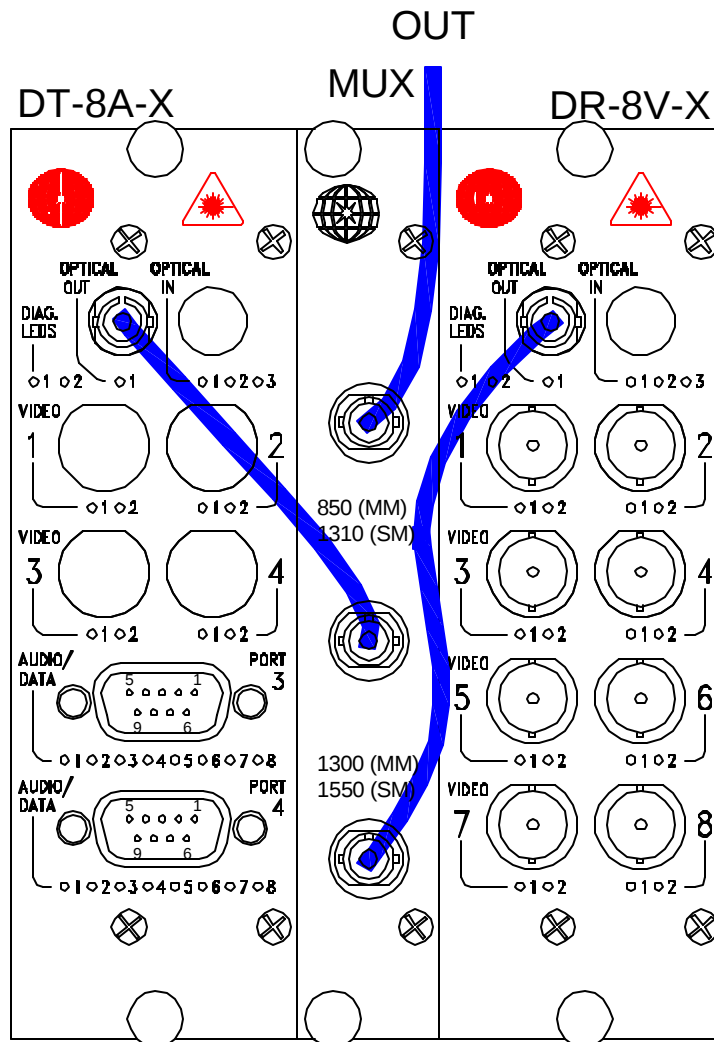


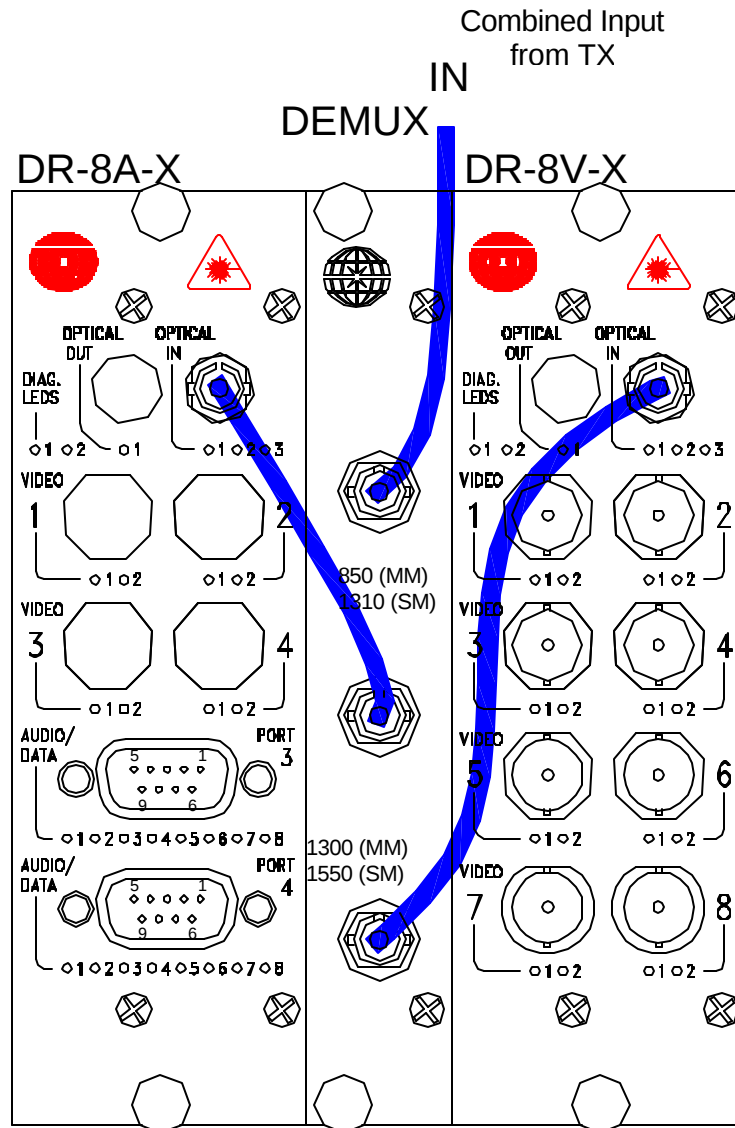
Figure 7.2
DT/DR-8A Front Panel
Pinout Diagram

Combined Output
to RX



DT-8A-0 (MM) DT-8A-3 (SM) (850/1310nm)	WDM-2-1 (MM) WDM-2-3 (SM)	DT-8V-1 (MM) DT-8V-7 (SM) (1300/1550nm)
--	------------------------------	---

Figure 7.1
DT-8V(W)8A System Front Panel
& Fiber Connection Diagram



DR-8A-0 (MM)
DR-8A-3 (SM)
(850/1310nm)

WDM-2-1 (MM)
WDM-2-3 (SM)

DR-8V-1 (MM)
DR-8V-7 (SM)
(1300/1550nm)

Figure 7.2
DR-8V(W)8A System Front Panel
& Fiber Connection Diagram

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 to ensure that the video channel-specific LEDs are on (Green). Also, check to ensure that the optical LEDs are ON (Green). 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: *No Video or Audio at output of module*

Action: Check to ensure that the optical ports are connected correctly (See Figures 7.1 & 7.2 for proper optical interfaces)

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.

Problem: *No Audio*

Action: Check the audio input status indicator lights on the transmit module to ensure that they are on (indicating an audio input signal). Also check the audio output status indicator lights on the corresponding receiver module to ensure that the signal is being transmitted and received. If not, please check the audio input/output and fiber connections.

Problem: *Low/High Audio output*

Action: Check to ensure that the input/output impedance properly matches the impedance of the audio input source and output device.

Problem: *Audio distortion on output*

Action: Check the status of the associated channel input/output Overload LEDs. If they are on, reduce the audio input level at the source to bring it below the overload condition. This should resolve problem.

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

Appendix 1 – Applicable Product Part Number Variations

The table below indicates the part numbers and product description that are included in this manual. The pinout diagram in section 4.0 shows the connector pinouts (input/output connections) for the all-inclusive product. The appropriate modules consist of various combinations of 8 uni-directional Audio channels. Please use this table to determine the exact pinout and port location of the particular model of interest.

Product Part Number		# Video Channels & Type		# of Audio Channels	Optical Connector	Fiber Type
Transmitter System	Receiver System	10-bit	8-bit			
DT-8A-0	DR-8A-0	--	--	8	ST	Multimode
DT-8A-3	DR-8A-3	--	--	8	FC	Singlemode
DT-8A-3ST	DR-8A-3ST	--	--	8	ST	Singlemode
DT-8V-0	DR-8V-0	--	8	--	ST	Multimode
DT-8V8A-3	DR-8V-3	--	8	--	FC	Singlemode
DT-8V8A-3ST	DR-8V-3ST	--	8	--	ST	Singlemode
DT-8W-0	DR-8W-0	8	--	--	ST	Multimode
DT-8W8A-3	DR-8W-3	8	--	--	FC	Singlemode
DT-8W8A-3ST	DR-8W-3ST	8	--	--	ST	Singlemode

Appendix 2 – System Module Components

Each of the transmitter/receiver systems consists of 3 separate modules – 2 transmitter/receiver modules and 1 optical (WDM) mux/demux module. The table below identifies the individual module part numbers associated with each of the transmitter/receiver subsystems.

Transmission System (multimode)	
DT/DR-8A-0	850nm Tx
DT/DR-8V-1	1300nm Tx
WDM-2-1	850/1300nm Mux/Demux
Transmission System (singlemode)	
DT/DR-8A-3	1310nm Tx
DT/DR-8V-7	1550nm Tx
WDM-2-3	1310/1550nm Mux/Demux

The receiver modules for each of the transmission systems are identical and can be used in either of the wavelength positions.