



Installation/Operation Instructions

Fiber Optic Video /PTZ Control Data & Audio Transmission System

Part Number:

DT/DR-1V4A/1P4A-x Series

(1-Channel Panasonic video/data channel & 4-Channel Audio Transceiver)

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1.0 Product Description

Meridian's product series DT-1V4A/1P4A-x and DR-1V4A/1P4A-x are fiber optic modems that transmit one channel of uni-directional fixed video signal, Panasonic video/data channel and 4 channels of bi-directional audio 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-1000/S, SR-1001/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 19" equipment chassis.

The digital 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 bi-directional optical input/output connector is located on the right side of both the transmitter (DT) and receiver (DR) modules. The second SIM cards contain one channel each of the Panasonic 'up-the-coax' video / data interface. The third (Port 3) & fourth (Port 4) SIM card contains the bi-directional audio signals.

2.0 Installation

Series DT-1V4A/1P4A-x and DR-1V4A/1P4A-x products are two-slot wide cards and, as such, occupy two slots in Meridian's standard chassis (SR-1000/S, SR-1001/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 19" equipment chassis). To install in 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 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 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 DT & DR-1V4A/1P4A-x series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
Panasonic video ~ data	1	DT-1V4A/1P4A	DR-1V4A/1P4A
Audio (600O, unbalanced)	4	Yes	Yes

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)
Differential Gain	<0.6%
Differential Phase	<0.3°
SNR	>60dB (weighted)
Return Loss	>30dB
Field Tilt	<0.5%
Audio	
In/Out Impedance	600 Ohm (bal), unbalanced/unbalanced
Frequency Response	10Hz to 20KHz
SNR	>90dB (weighted) @ 1KHz
In/Out Level	-6 to +6dBm (4Vp-p, max)
THD	<0.01% @ 1KHz
Digitized Resolution	24 bit
Connectors	
Video	75 Ohm BNC w/gold center pin
Audio	DB9 Female
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	-3	-24	21	1300/850	ST	24
Singlemode (FP Laser) 9/125	-3	-24	21	131 0/1 550	ST, FC	24
Singlemode (DFB Laser) 9/125	+3	-24	27	131 0/1 550	ST, FC	24

Note: Because of the characteristics of the Panasonic signal, the maximum operating distance between the camera and controller is approximately 2KM. This distance includes the length of the fiber and coaxial cable length.

4.0 Operating

Video – Each of the two BNC video connectors accepts a standard NTSC/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 module (DT-1V4A/1P4A) and the output video connector on the associated port on the receiver module (DR-1V4A/1P4A).

Audio - Connect the audio source to one of the channels' input pins as shown in section 4.2. 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.

4.1 Video and 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:

Transceiver (DT/DR-1V4A/1P4A-x) Indicators		
Indicator	Location	Function
Power	Left side of module	Green – ON
Tx carrier	Under optical output connector	Optical output (Green – OK, Red – error)
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)
Video Input/Output	Under each video in/out connector	Green – Sync received
Video Input/Output	Under each video in/out connector	Video signal – Green OK, Red – video overload
Data Input/Output	Under each video in/out connector	Data signal - Green (OK) up-the-coax channel

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	DT-1V4A/1P4A (Port 3) DR-1V4A/1P4A (Port 4)	LED	DT-1V4A/1P4A (Port 4) DR-1V4A/1P4A (Port 3)
1	Audio Input 1 Present	1	Audio Output 1 Present
2	Audio Input 1 Overload	2	Audio Output 1 Overload
3	Audio Input 2 Present	3	Audio Output 2 Present
4	Audio Input 2 Overload	4	Audio Output 2 Overload
5	Audio Input 3 Present	5	Audio Output 3 Present
6	Audio Input 3 Overload	6	Audio Output 3 Overload
7	Audio Input 4 Present	7	Audio Output 4 Present
8	Audio Input 4 Overload	8	Audio Output 4 Overload

Audio input PRESENT LEDs – 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 – 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 – This light will turn on when the audio input on the transmit side is present, the DXA & DXB units are powered and the fiber is connected between the two modems.

Audio output OVERLOAD LEDs – 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)

4.2 Audio Signal Connector Pinouts

The DT & DR-1V4A/1P4A-x Audio channel connector pinouts are shown in the table below:

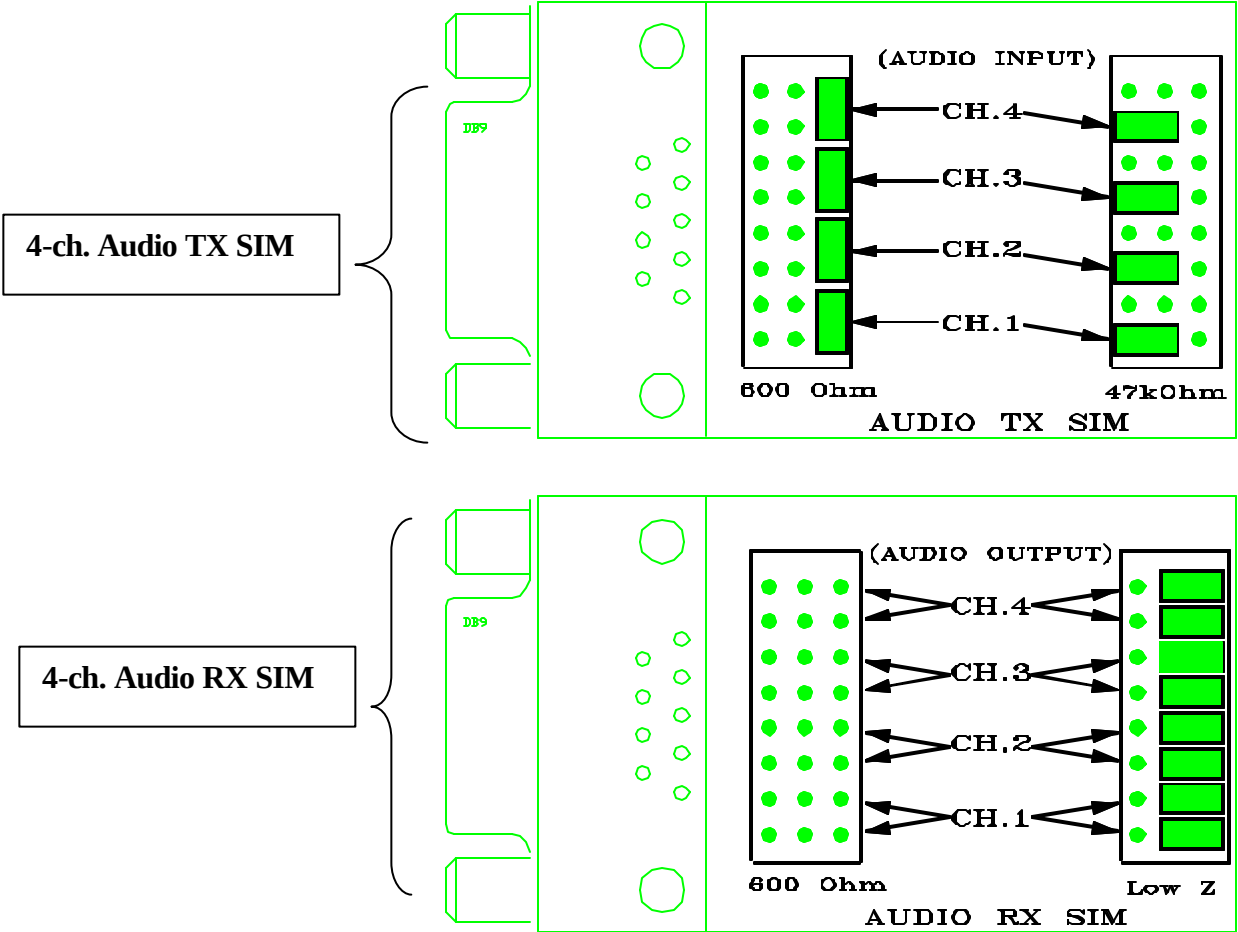
Transmitter Audio		Receiver Audio	
Pinout	DT-1V4A/1P4A (Port 3) DR-1V4A/1P4A (Port 4)	Pinout	DT-1V4A/1P4A (Port 4) DR-1V4A/1P4A (Port 3)
1	Input 1 (-)	1	Output 1 (-)
2	Input 1 (+)	2	Output 1 (+)
3	Input 2 (-)	3	Output 2 (-)
4	Input 2 (+)	4	Output 2 (+)
5	GND	5	GND
6	Input 3 (-)	6	Output 3 (-)
7	Input 3 (+)	7	Output 3 (+)
8	Input 4 (-)	8	Output 4 (-)
9	Input 4 (+)	9	Output 4 (+)

The attached figures in section 5.0 show the module front panel and associated connector location & pinouts.

4.3 Audio SIM Jumper Settings

Each audio SIM has 4 jumpers for TX and 8 jumpers for RX on it (located directly behind the DB9 connector). There are two jumpers for each channel on RX and one jumper for each channel on TX. 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

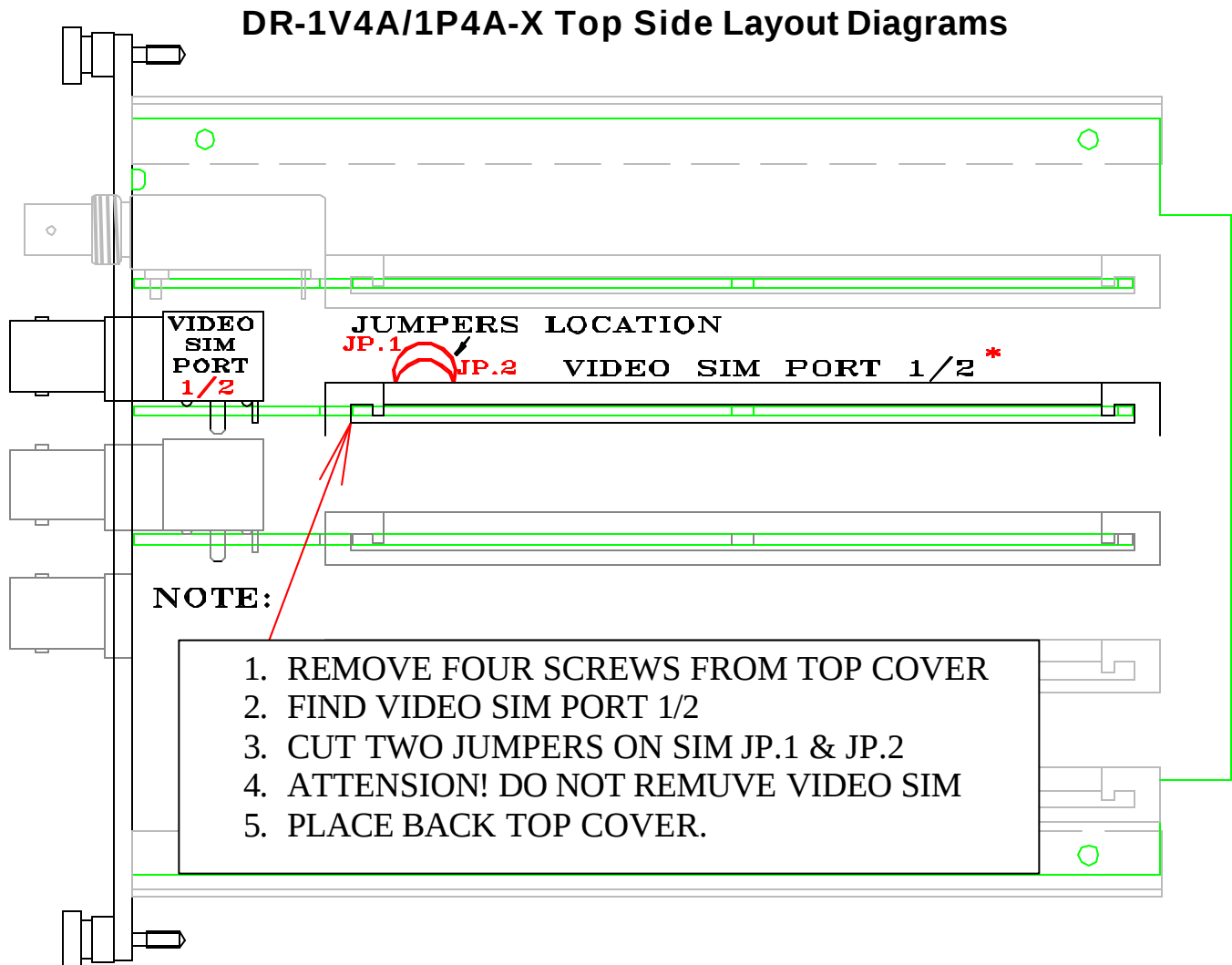
The figures below illustrate these jumpers and how they are configured



4.4 Video SIM Settings

Standard configuration for DR-1V/1P-X is with DC-Coupled. To change settings for AC-Coupled follow instruction shown in Figure 4.1

Figure 4.1



5.0 Front Panel Pinout Assignment Diagram

Figures 5.1 and 5.2 below show the front panel layout, connector location and pinout assignment for both the DT & DR modules.

DT-1V4A/1P4A-X

PINOUT DIAGRAM

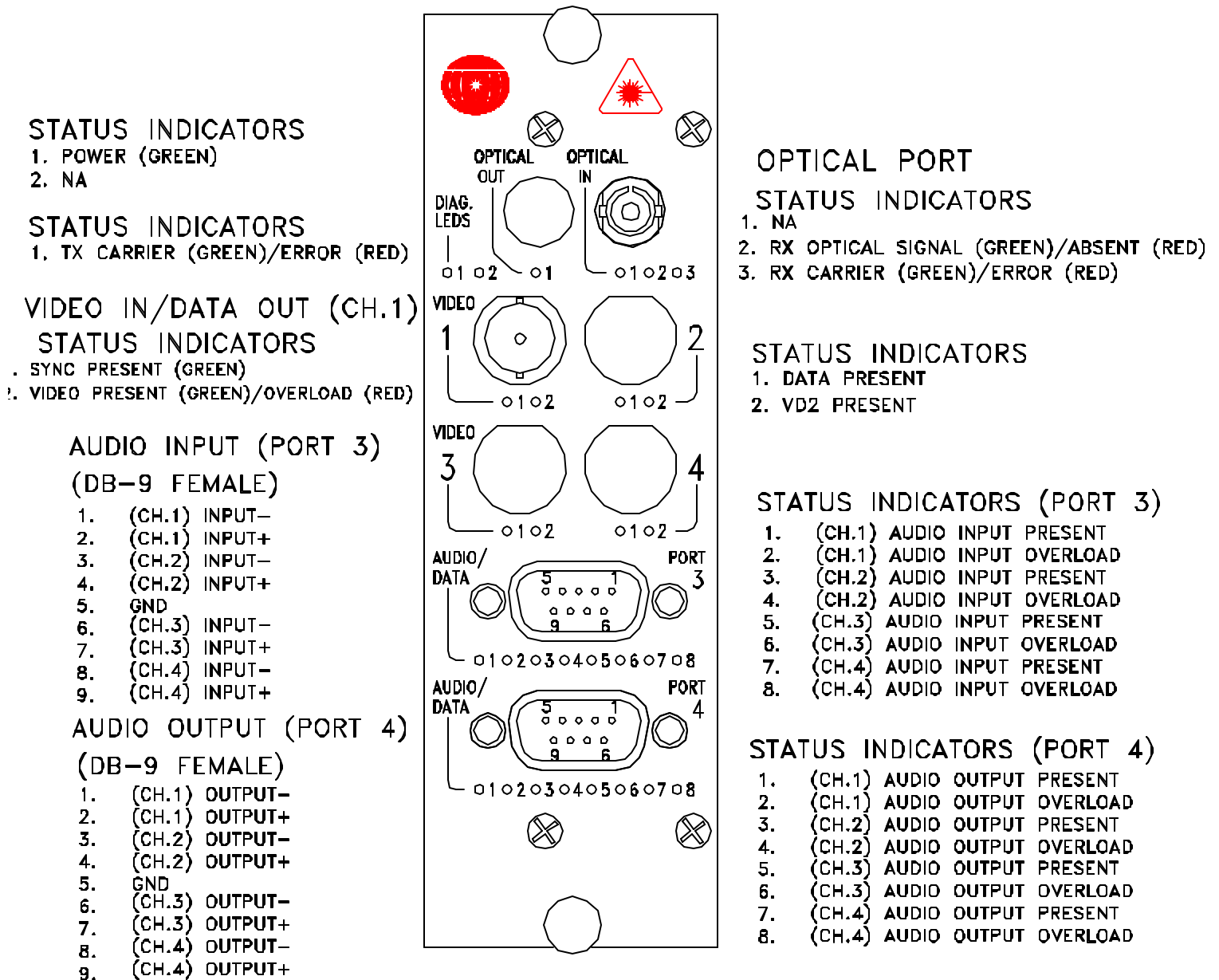


Figure 5.1

DT-1V4A/1P4A-X Front Panel Layout Diagrams

DR-1V4A/1P4A-X

PINOUT DIAGRAM

STATUS INDICATORS

1. POWER (GREEN)
2. NA

STATUS INDICATORS

1. TX CARRIER (GREEN)/ERROR (RED)

VIDEO OUT/DATA IN (CH.1)

STATUS INDICATORS

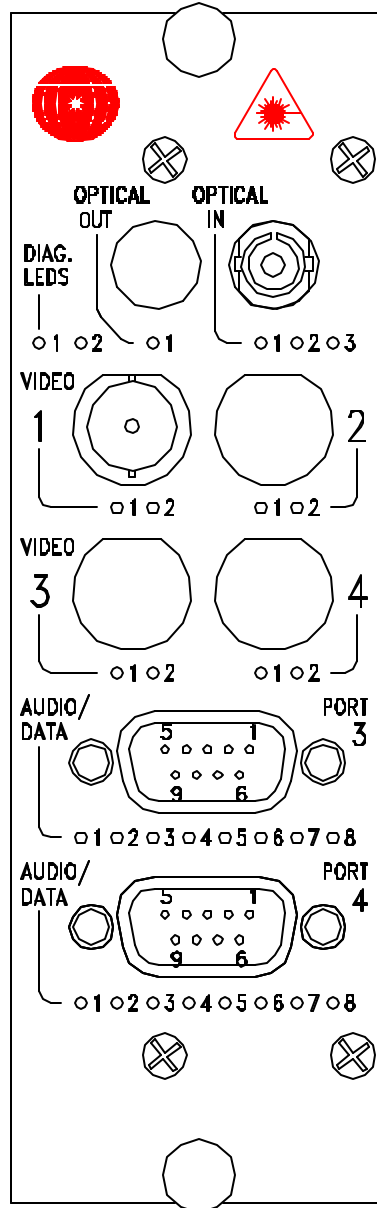
1. SYNC PRESENT (GREEN)
2. VIDEO PRESENT (GREEN)/OVERLOAD (RED)

AUDIO OUTPUT (PORT 3) (DB-9 FEMALE)

1. (CH.1) OUTPUT-
2. (CH.1) OUTPUT+
3. (CH.2) OUTPUT-
4. (CH.2) OUTPUT+
5. GND
6. (CH.3) OUTPUT-
7. (CH.3) OUTPUT+
8. (CH.4) OUTPUT-
9. (CH.4) OUTPUT+

AUDIO INPUT (PORT 4) (DB-9 FEMALE)

1. (CH.1) INPUT-
2. (CH.1) INPUT+
3. (CH.2) INPUT-
4. (CH.2) INPUT+
5. GND
6. (CH.3) INPUT-
7. (CH.3) INPUT+
8. (CH.4) INPUT-
9. (CH.4) INPUT+



OPTICAL PORT

STATUS INDICATORS

1. NA
2. RX OPTICAL SIGNAL (GREEN)/ABSENT (RED)
3. RX CARRIER (GREEN)/ERROR (RED)

STATUS INDICATORS

1. DATA PRESENT
2. VD2 PRESENT

STATUS INDICATORS (PORT 3)

1. (CH.1) AUDIO OUTPUT PRESENT
2. (CH.1) AUDIO OUTPUT OVERLOAD
3. (CH.2) AUDIO OUTPUT PRESENT
4. (CH.2) AUDIO OUTPUT OVERLOAD
5. (CH.3) AUDIO OUTPUT PRESENT
6. (CH.3) AUDIO OUTPUT OVERLOAD
7. (CH.4) AUDIO OUTPUT PRESENT
8. (CH.4) AUDIO OUTPUT OVERLOAD

STATUS INDICATORS (PORT 4)

1. (CH.1) AUDIO INPUT PRESENT
2. (CH.1) AUDIO INPUT OVERLOAD
3. (CH.2) AUDIO INPUT PRESENT
4. (CH.2) AUDIO INPUT OVERLOAD
5. (CH.3) AUDIO INPUT PRESENT
6. (CH.3) AUDIO INPUT OVERLOAD
7. (CH.4) AUDIO INPUT PRESENT
8. (CH.4) AUDIO INPUT OVERLOAD

Figure 5.2

DR-1V4A/1P4A-X Front Panel Layout Diagrams

6.0 Product Part Number Variations

The table below lists the various part numbers associated with different module types:

Basic module description:

Video: 1-channel Panasonic video/data
Audio: 4-channels, bi-directional

Transmitter	Receiver	Video Resolution	# Fibers & Type	Wavelength	Optical Connector
DT-1V4A/1P4A-2	DR-1V4A/1P4A-2	8-bit	1 (MM)	1310/850nm	ST
DR-1V4A/1P4A-5	DR-1V4A/1P4A-5	8-bit	1 (SM)	1310/1550nm	FC
DR-1V4A/1P4A-5ST	DR-1V4A/1P4A-5ST	8-bit	1 (SM)	1310/1550nm	ST

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

7.0 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. 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.

Problem: *No up-the-coax control*

Action: Check to ensure that the up-the-coax video cables are connected to the appropriate input/output BNC connectors. Check to ensure that the proper connections are made to the PTZ controller.

Check to ensure that the total camera to controller distance has not exceeded to 2km maximum distance. If longer than 2km, the video will still work but the camera control may not function or the operation may be erratic.

As you move the camera using the controller, check to see if the 'Data Present' lights associated with each of the up-the-coax channels (DR unit) is blinking. If not, check the data connections to the controller.

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).

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