



Installation/Operation Instructions

Fiber Optic Video, Audio & Data Transmission System

Part Number:

DXA(B)-2W(V)2A1G-x Series

***(2-Channel Video, 2-Channel Audio & 1-Channel
Multi-Protocol Data bi-directional Transceiver)***



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DXA(B)-2W(V)2A1G-x Series
Fiber Optic Video Transmission System
Installation Instructions

1.0 Product Description

Meridian's product series DXA-2W(V)2A1G-x and DXB-2W(V)2A1G-x are fiber optic modems that transmit and receive 2 channels of bi-directional video, 2 channels of bi-directional audio, and 1 channel of bi-directional RS-232, RS-422, RS-485, Manchester, or bi-phase data channels over one optical fiber using digital-encoding transmission technologies. The video is available in either 8-bit resolution (DXA/DXB-2V2A1G-x) or 10-bit resolution (DXA/DXB-2W2A1G-x) and uses Meridian's standard 2-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-1000, SR-1000/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 optical input & output connector is located on the right side of the module for both units. The second & third SIM cards contain the bi-directional video coaxial interface. The audio input/output connections are located on Port 3 while the data connections are located on the bottom SIM card (port 4).

2.0 Installation

Series DXA-2W(V)2A1G-x and DXB-2W(V)2A1G-x series products are two-slot wide cards and, as such, occupy two slots in Meridian's standard chassis (SR-1000, SR-1000/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 Operation

Video – The BNC video connectors on the video card (Port 1) accept standard NTSC/PAL video input signals (DXA modules). The respective video output signals are located on Port 1 of the associated (DXB) module. Likewise, the video input connections on the DXB unit are located on the second video IM card (Port 2) while the respective video output connections on the DXA unit are also located on the second video SIM card. Connect the input video signals to the appropriate BNC video input connectors on the each unit and the output video connectors on the associated ports on the other module.

Audio - Connect the audio source to one of the channels' input pins as shown in section 3.2. 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.

Data – Connect the data for each of the data channels to the appropriate data Tx/Rx pins on the connector as shown in section 3.4

3.1 Video, Audio, and Data Status indicators

The front panel pinout diagrams in section 5 show the connector and LED indicator locations for the various video & audio status indicators on the unit. 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 (DXA/DXB-2W(V)2A1G-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 input connector	Green – Sync received
Video Input/Output	Under each video input connector	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	DXA/DXB-2W(V)2A2D/2A2D-x
1	Input 1 – Present
2	Input 1 – Overload
3	Input 2 – Present
4	Input 2 – Overload
5	Output 1 – Present
6	Output 1 – Overload
7	Output 2 – Present
8	Output 2 – 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)

Each data input/output channel has two LED status indicators located under the associated data I/O connector. One LED is associated with each data input and output channel to show activity on both the input (transmit) and output (receive) pins. The table below shows the relationship between the connectors (I/O channels) and LEDs.

Data Input/Output Status Indicators	
LED	DXA/DXB-2W(V)2A1G-x
1	Input 1 – Green – data present
2	N/A
3	Output 1 – Green - data present
4	N/A
5	N/A
6	N/A
7	N/A
8	N/A

3.2 Audio Signal Connector Pinouts

The DXA/DXB-2W(V)2A1G-x Audio channel connector pinouts are shown in the table below:

DXA/DXB-2W(V)2A1G-x	
Pinout	
1	Audio Ch 1 Output (-)
2	Audio Ch 1 Output (+)
3	Audio Ch 2 Output (-)
4	Audio Ch 2 Output (+)
5	GND
6	Audio Ch 1 Input (-)
7	Audio Ch 1 Input (+)
8	Audio Ch 2 Input (-)
9	Audio Ch 2 Input (+)

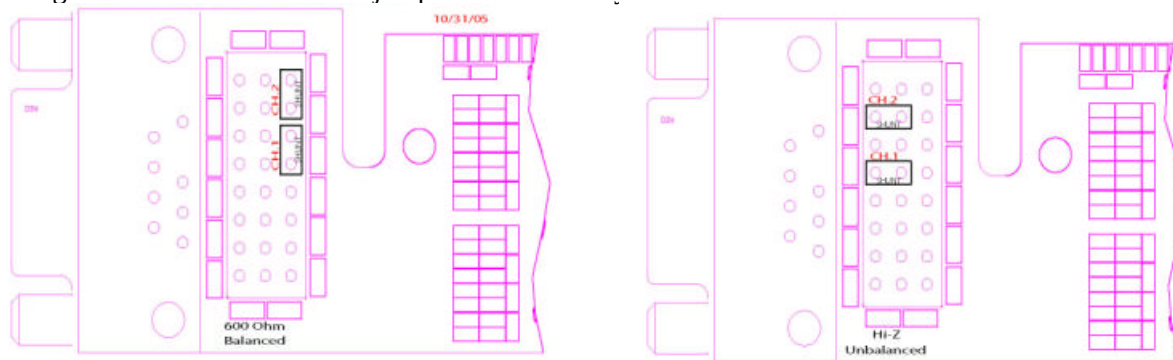
The audio board (SIM) is inserted in the module starting at the bottom (port 4).

The attached figures in section 5 show the module front panel and associated connector location & pinouts

3.3 Audio SIM Jumper Settings

Each audio SIM has 2 jumpers on it (located directly behind the DB9 connector), one 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



Audio jumper settings for 600Ohm
Balanced Input/Output

Audio jumper settings for Hi-Z
Unbalanced Input/Output

3.4 Multi-Protocol SIM Signal Assignment

The multi-protocol SIM can transmit/receive the following data formats:

RS-232 Two full speed, 2-wire channels (Tx/Rx)

RS-422 One channel

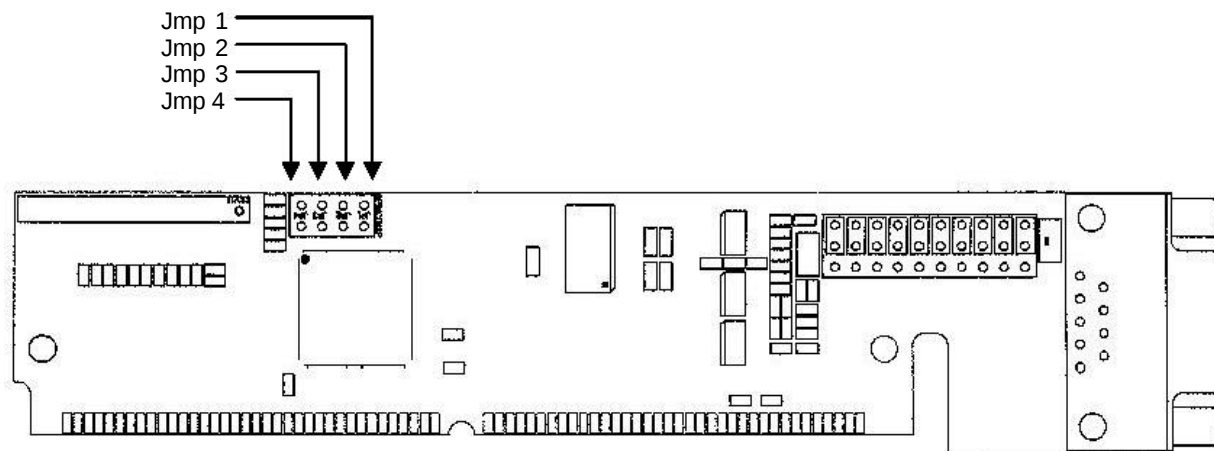
RS-485 One channel (either 2 or 4 wire) The RS-232 channels can be used either for transmitting/receiving two channels of 2-wire RS-232 (Tx/Rx) or one channel of RS-232 (Tx/Rx) with one bi-directional handshake (e.g., RTS & CTS)

In addition to the RS-232, each multi-protocol SIM can transmit/receive either RS-422 or 2 or 4-wire RS-485 signals. The signal pinouts on the female 9-pin DB9 connector are shown in the table below.

Data Connector Pinout Assignment				
Pin #	RS-232	RS-422	RS-485 (2-wire)	RS-485 (4-wire)
1		Ch1 IN (+)	Ch1 IN/OUT (+)	Ch1 IN (+)
2	Ch1 OUT			
3	Ch1 IN			
4		Ch1 IN (-)	Ch1 IN/OUT (-)	Ch1 IN (-)
5	Gnd	Gnd	Gnd	Gnd
6		Ch1 OUT (+)		Ch1 OUT (+)
7	Ch2 IN			
8	Ch2 OUT			
9		Ch1 OUT (-)		Ch1 OUT (-)

There are four (4) jumpers located on the multi-protocol data SIM that must be set properly in order to select the appropriate data format. The figure and table below illustrates these jumper locations on the SIM and how they are configured for the proper data format options. The factory-supplied default setting is for RS-232 data (Jumper #1 ON).

Multi-Protocol SIM Signal Format Jumper Settings				
	Jumper 1	Jumper 2	Jumper 3	Jumper 4
RS-232	ON	OFF	OFF	OFF
RS-422	OFF	ON	OFF	OFF
RS-485 (2-wire)	OFF	OFF	ON	OFF
RS-485 (4-wire)	OFF	OFF	OFF	ON



Multi-Protocol Plug-in SIM

3.5 Changing the multi-protocol SIM jumpers

The jumpers to change the transmitted and received data format can be easily changed as follows:

1. Lay the module on its side with the front panel facing to the left.
2. If there is a side cover on the module, remove the screws in each of the 4 corners of the side cover and carefully remove the cover.
3. The Multi-Protocol (MPS) card is located on the bottom of the module.
4. Refer to the above drawing to locate the 4 jumpers that are located near the rear of the MPS card right at the top edge of the card.
5. Using a small tool, carefully remove the jumper and place it on the appropriate pins to properly select the data format (see table above)
6. Carefully replace the side cover and secure with the screws.
7. Repeat this process for the other module. The jumper selection needs to be the same for both the Tx and Rx units.

4.0 Product Signal Format & Specifications

The DXA & DXB-2W(V)2A1G series products transmit and receive the following signals:

Signal Type	Qty	Transmit	Receive
NTSC/PAL video	2	Yes	Yes
Audio (600O, unbalanced)	2	Yes	Yes
RS-232 (Tx & Rx data)	1	Yes	Yes
RS-422 (Tx & Rx data)	1	Yes	Yes
RS-485 (2 & 4-wire)	1	Yes	Yes

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

Video		
	8-bit	10-bit
	DXA/DXB-1V2A-x	DXA/DXB-1W2A-x
Format	NTSC, PAL, SECAM	NTSC, PAL, SECAM
Voltage/Impedance	1Vp-p, 75O, 1.5Vp-p (max)	1Vp-p, 75O, 1.5Vp-p (max)
Differential Gain	<0.6%	<0.6%
Differential Phase	<0.3°	<0.3°
SNR	>60dB (weighted)	>67dB (weighted)
Return Loss	>30dB	>30dB
Field Tilt	<0.5%	<0.5%

Audio	
In/Out Impedance	600O, 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

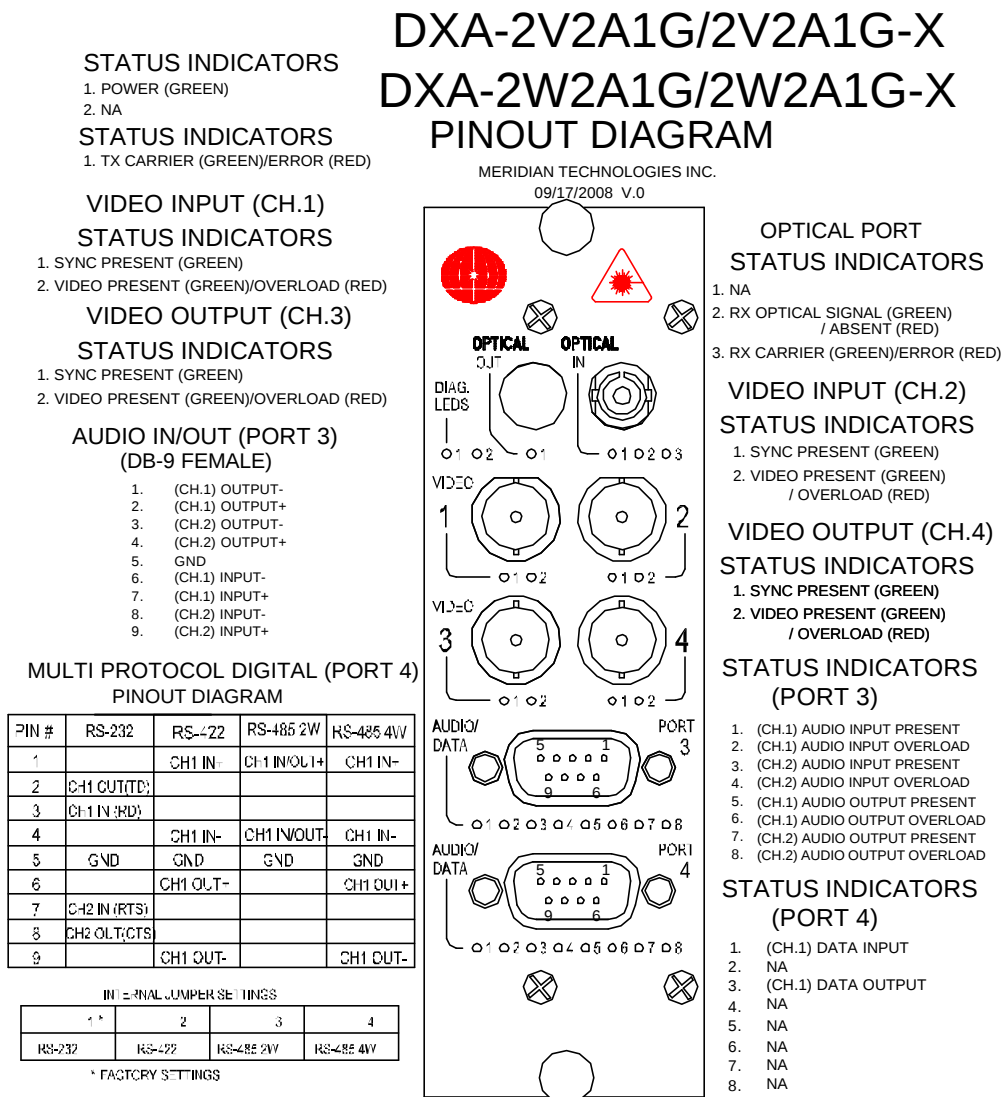
Data	
Formats	RS-232
Date Rate (RS-232)	DC to 125Kb/s
Data Rate (RS-422 & RS-485)	DC to 300Kb/s
Bit Error Rate (BER)	Better than 10 ⁻⁹

Connectors	
Video	75O BNC w/gold center pin
Audio	DB9 Female
Data	DB9 Female
Optical	Singlemode – ST or FC Multimode – ST

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	1310/1550	ST, FC	24
Singlemode (DFB Laser) 9/125	+3	-24	27	1310/1550	ST, FC	24

5.0 Front Panel Diagram and Connector Pinout Assignments

The following front panel diagram shows a layout of the front panel including connector location, status indicators and connector pin-out information.



DXB-2V2A1G/2V2A1G-X DXB-2W2A1G/2W2A1G-X

PINOUT DIAGRAM

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STATUS INDICATORS

1. POWER (GREEN)
2. NA

STATUS INDICATORS

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

VIDEO OUTPUT (CH.1)

STATUS INDICATORS

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

VIDEO INPUT (CH.3)

STATUS INDICATORS

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

AUDIO IN/OUT (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.1) INPUT-
7. (CH.1) INPUT+
8. (CH.2) INPUT-
9. (CH.2) INPUT+

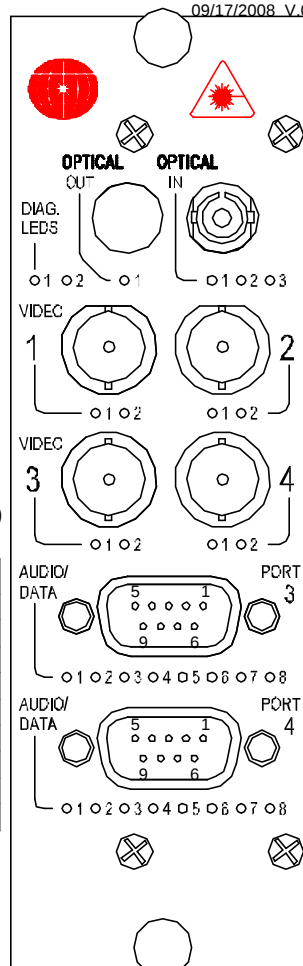
MULTI PROTOCOL DIGITAL (PORT 4) PINOUT DIAGRAM

PIN #	RS-232	RS-422	RS-485 2W	RS-485 4W
1		CH1 N+	CH1 IN/OUT+	CH1 IN+
2	CH1 OUT1 (ID)			
3	CH1 IN (RD)			
4		CH1 IN-	CH1 IN/OUT-	CH1 IN-
5	GND	GND	GND	GND
6		CH1 OUT-		CH1 OUT-
7	CH2 IN (RTS)			
8	CH2 OUT (CTS)			
9		CH1 OUT-		CH1 OUT-

INTERNAL JUMPER SETTINGS

1	2	3	4
RS-232	RS-422	RS-485 2W	RS-485 4W

* FACTORY SETTINGS



OPTICAL PORT

STATUS INDICATORS

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

VIDEO OUTPUT (CH.2)

STATUS INDICATORS

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

VIDEO INPUT (CH.4)

STATUS INDICATORS

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

STATUS INDICATORS (PORT 3)

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

STATUS INDICATORS (PORT 4)

1. (CH.1) DATA INPUT
2. NA
3. (CH.1) DATA OUTPUT
4. NA
5. NA
6. NA
7. NA
8. NA

6.0 Product Part Number Variations

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

Basic module description:

Video: 2-channels, bi-directional
Audio: 2-channels, bi-directional
Data: 1-channels, RS-232 or RS-422 or RS-485 bi-directional

Side "A"	Side "B"	Video Resolution	# Fibers & Type	Wavelength
DXA-2W2A1G-2	DXB-2W2A1G-2	10-bit	1 (MM)	1300/850nm
DXA-2W2A1G-5	DXB-2W2A1G-5	10-bit	1 (SM)	1310/1550nm
DXA-2V2A1G-2	DXB-2V2A1G-2	8-bit	1 (MM)	1300/850nm
DXA-2V2A1G-5	DXB-2V2A1G-5	8-bit	1 (SM)	1310/1550nm

For proper operation, it is necessary to match the side “A” unit (DXA) with the associated side “B” unit.

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
- Problem:** *Card power LED does not light when power to the module/subrack is applied or power indicator turns on and off*
Action: Make sure the card guides in the chassis are aligned with the extrusion on the module. 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 Audio*
Action: Check the audio input status indicator lights (5 & 6) on the transmit module to ensure that they are on (indicating an audio input signal). Also check the audio output status indicator lights (1 & 2) 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:** *No Data*
Action: Check the data input status indicator light #1 on the transmit module to ensure it is on (indicating a data input signal). Also check the data output status indicator light #2 on the corresponding receiver module to ensure that the signal is being transmitted and received. If not, please check the data input/output and fiber connections. Ensure that the jumpers on the data Multi-protocol SIM are programmed properly to match the data format

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