



Installation/Operation Instructions



Fiber-Optic Transmission Systems

DT/DR-2V2AB8D/2AB8D-x

*2-Channel Video Tx/Rx , 2-Channel Full-Duplex Unbalanced Audio,
8-Channel RS-232 data Transceiver*

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Document Version 1.1
01/2020

Table of Contents

1.0 Product Description	3
2.0 Installation	3
3.0 Product Signal Format & Specifications	3
4.0 Product Operation.....	5
4.1 Video, Audio and Data Status indicators	5
4.2 Audio and Data Connector Pinouts	7
4.3 Audio SIM Jumper Settings	7
5.0 Front Panel Pinout Assignment Diagram	9
6.0 Troubleshooting.....	11

1.0 Product Description

Meridian's product series DT-2V2AB8D/2AB8D-x and DR-2V2AB8D/2AB8D-x are fiber optic modems that transmit two channels of Unidirectional Video, two channels of Bi-directional Unbalanced Audio and two channels of Bi-directional RS-232 signals. Both Multimode and Single-mode fiber versions are available. The digital modules consist of various plug-in personality function cards or SIMs.

The top SIM is the optical card. The second SIM contains the video coaxial interface. The next SIM card in port 2 contains the Bi-directional Unbalanced Audio interface. The bottom SIM cards in ports 3 and 4 contains the bi-directional RS-232 Data transceiver.

Optional conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

Series DT-2V2AB8D/2AB8D-x and DR-2V2AB8D/2AB8D-x products are two-slot wide cards and will occupy two slots in Meridian's standard 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-2V2AB8D/2AB8D-x series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
NTSC/PAL video	2	DT-2V2AB8D/2AB8D-x	DR-2V2AB8D/2AB8D-x
Audio (47K Ohm, Unbalanced)	2	DT-2V2AB8D/2AB8D-x DR-2V2AB8D/2AB8D-x	DT-2V2AB8D/2AB8D-x DR-2V2AB8D/2AB8D-x
RS-232 Data	8	DT-2V2AB8D/2AB8D-x DR-2V2AB8D/2AB8D-x	DT-2V2AB8D/2AB8D-x DR-2V2AB8D/2AB8D-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)						
Differential Gain		<0.6%						
Differential Phase		<0.3°						
SNR		>60dB (weighted)						
Return Loss		>30dB						
Field Tilt		<0.5%						
Audio								
In/Out Impedance		47K Ohm, Unbalanced						
Frequency Response		10 Hz to 20 KHz						
SNR		>90dB (Weighted)@ 1 KHz						
In/Out Level		-8 to +8 dBm (4Vp-p max.)						
THD		<0.01% @ 1KHz						
Digitized Resolution		24 Bit						
Data								
Formats		RS-232						
Date Rate (RS-232)		DC to 125Kb/s						
Bit Error Rate (BER)		Better than 10 ⁻⁹						
Connectors								
Video		75 Ohm BNC w/gold center pin						
Audio		DB9 Female						
Data		DB9 Female						
Optical		ST, FC						
Optical								
Fiber Data Rate		500Mb/s						
Meridian Optical Code	Fiber Type/Size (um)	Optical Output (dBm)	Receiver Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical Connector	Optical Dynamic Range (dB)	Max Distance (Km)
2	Multimode (FP Laser) 62.5 / 125	-3	-24	21	1300 / 850	ST	23	1
5	Single-mode (FP Laser) 9 / 125	-3	-24	21	1310 / 1550	ST, FC	23	60

4.0 Product Operation

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 input and output signals are located on the same channel (location). Connect the input video signal to the appropriate BNC video input connector on the transmitter module (DT-2V2AB8D/2AB8D-x) and the output video connector on the associated port on the receiver module (DR-2V2AB8D/2AB8D-x).

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 channels 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 RS-232 data for each of the data channels to the appropriate data Tx/Rx pins on the connector as shown in section 4.2

4.1 Video, Audio and Data Status indicators

The figures at the end of this document show the connector and LED indicator locations for the various Video, Audio and Data 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 to provide quick visual indication of the channel activity.

Transmitter (DT-2V2AB8D/2AB8D-x) 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	Under video input connectors	Green – Sync received
Video #2	Under video input connectors	Video signal – Green OK, Red – video overload

Receiver (DR-2V2AB8D/2AB8D-x) 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	DT/DR-2V2AB8D/2AB8D-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. Two LEDs are associated with each data input and output channels 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	DT/DR-2V2AB8D/2AB8D-x
1	Input 1 – Green – data present
2	Output1 – Green – data present
3	Input 2 – Green – data present
4	Output2 – Green – data present
5	Input 3 – Green – data present
6	Output 3 – Green – data present
7	Input 4 – Green – data present
8	Output 4 – Green – data present

4.2 Audio and Data Connector Pinouts

The DT/DR-2V2AB8D/2AB8D-x Audio channel connector pinouts are shown in the table below:

Audio Connector	
Pinout	DT/DR-2V2AB8D/2AB8D-x
1	NA
2	Audio Ch 1 Output
3	NA
4	Audio Ch 2 Output
5	GND
6	Audio Ch 1 GND
7	Audio Ch 1 Input
8	Audio Ch 2 GND
9	Audio Ch 2 Input

The audio board (SIM) is inserted in the module at the port 2.

The DT/DR-2V2AB8D/2AB8D-x Data channel connector pinouts are shown in the table below:

RS-232 Data Connector	
Pinout	DT/DR-2V2AB8D/2AB8D-x
1	Ch 4 Input (CD)
2	Ch 1 Output (TD)
3	Ch 1 Input (RD)
4	Ch 2 Input (DTR)
5	GND
6	Ch 2 Input (DCR)
7	Ch 3 Output (RTS)
8	Ch 3 Input (CTS)
9	Ch 4 Input (RI)

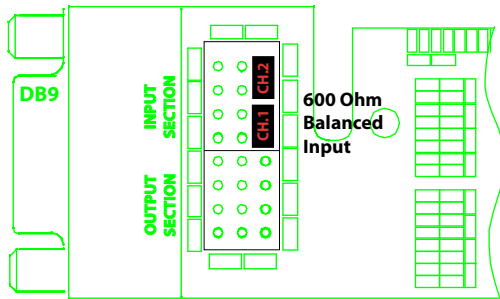
The Data RS-232 board (SIM) is inserted in the module at the port 3 and 4.

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

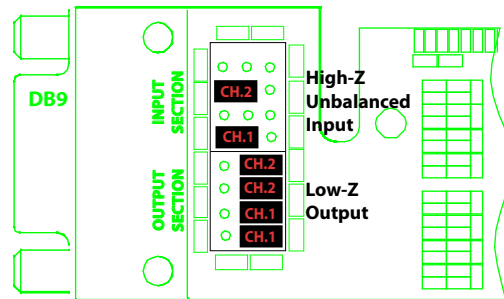
4.3 Audio SIM Jumper Settings

The 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 (Hi-Z). Each audio output channel's impedance can be set to either 600 ohm, balanced or low impedance (Low-Z). 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

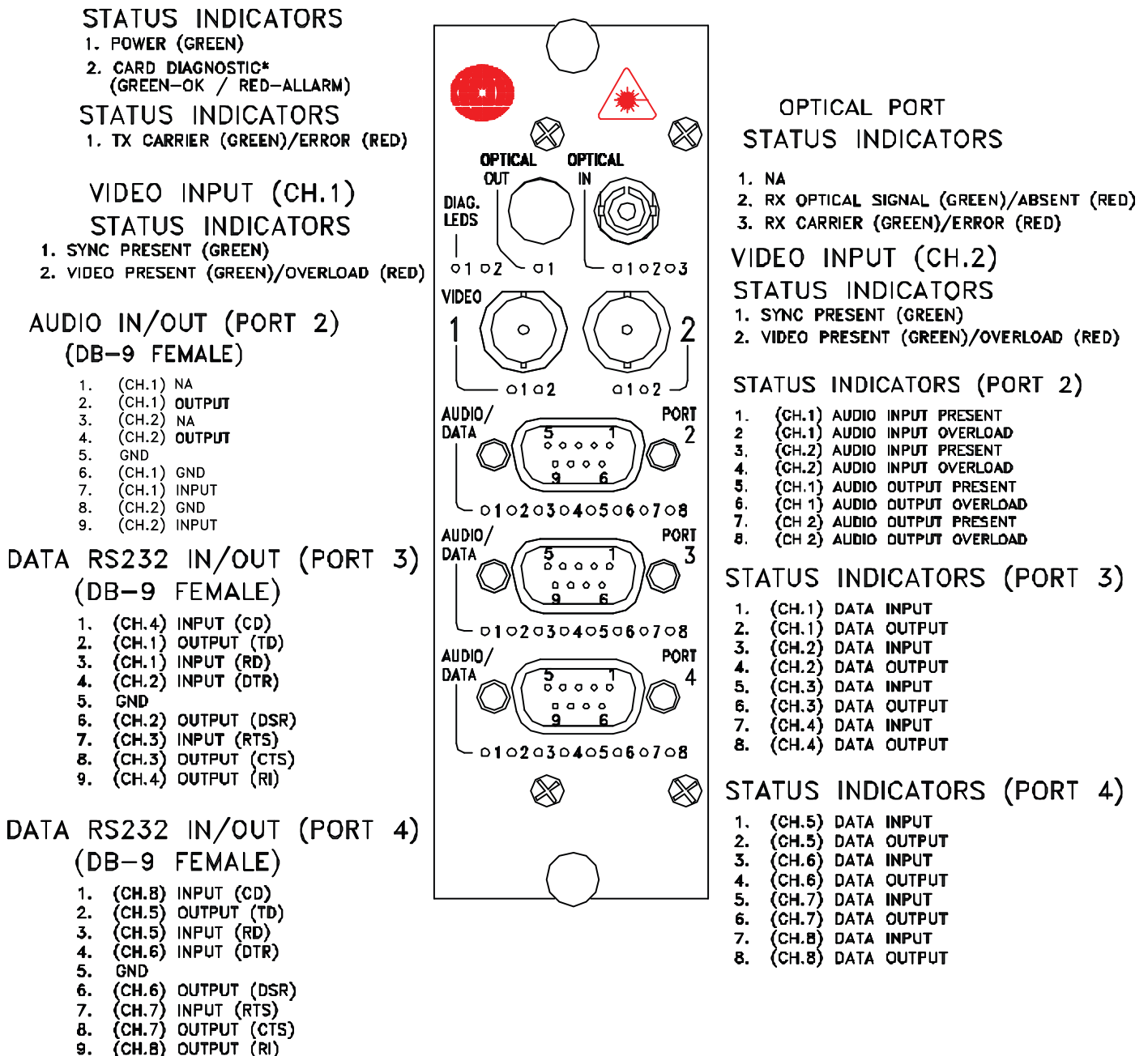


Audio jumper settings for Hi-Z Unbalanced or
Low-Z Input/Output

5.0 Front Panel Pinout Assignment Diagram

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

DT-2V2AB8D/2AB8D-x



DR-2V2AB8D/2AB8D-x

STATUS INDICATORS

1. POWER (GREEN)
2. CARD DIAGNOSTIC*
(GREEN-OK / RED-ALLARM)

STATUS INDICATORS

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

VIDEO OUTPUT (CH.1)

STATUS INDICATORS

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

AUDIO IN/OUT (PORT 2) (DB-9 FEMALE)

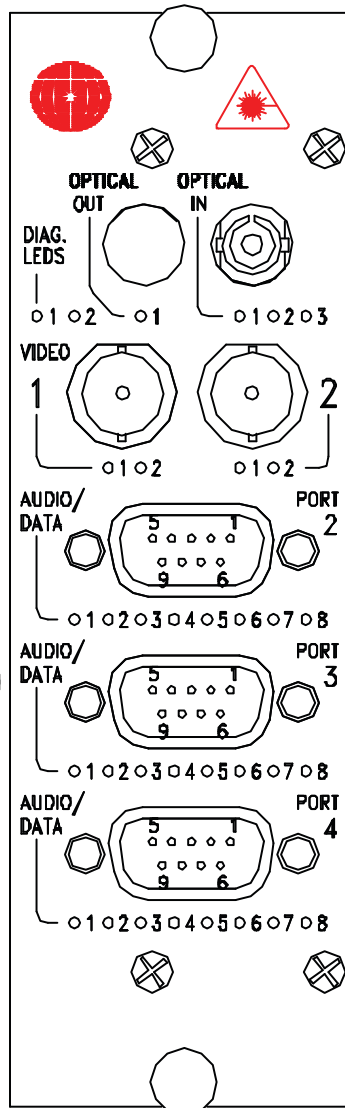
1. (CH.1) NA
2. (CH.1) OUTPUT
3. (CH.2) NA
4. (CH.2) OUTPUT
5. GND
6. (CH.1) GND
7. (CH.1) INPUT
8. (CH.2) GND
9. (CH.2) INPUT

DATA RS232 IN/OUT (PORT 3) (DB-9 FEMALE)

1. (CH.4) INPUT (CD)
2. (CH.1) OUTPUT (TD)
3. (CH.1) INPUT (RD)
4. (CH.2) INPUT (DTR)
5. GND
6. (CH.2) OUTPUT (DSR)
7. (CH.3) INPUT (RTS)
8. (CH.3) OUTPUT (CTS)
9. (CH.4) OUTPUT (RI)

DATA RS232 IN/OUT (PORT 4) (DB-9 FEMALE)

1. (CH.8) INPUT (CD)
2. (CH.5) OUTPUT (TD)
3. (CH.5) INPUT (RD)
4. (CH.6) INPUT (DTR)
5. GND
6. (CH.6) OUTPUT (DSR)
7. (CH.7) INPUT (RTS)
8. (CH.7) OUTPUT (CTS)
9. (CH.8) OUTPUT (PI)



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)

STATUS INDICATORS (PORT 2)

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 3)

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

STATUS INDICATORS (PORT 4)

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

6.0 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 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.

Problem: *No Data*

Action: Check the channel data input status indicator lights #1, 3 in the transmit module to ensure it is on (indicating a data input signal). Also check the associated channel data output status indicator lights #2, 4 in 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.

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

Notes:



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