



Installation/Operation Instructions

Fiber Optic Video & Data Transmission System

Part Number:

DT/DR-4V(W)3C/4F-x Series

***(4-Channel Video, 3-Channel bi-directional Contact Closure &
4-Channel RS-422 Data Tx/Rx)***

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
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1.0 Product Description

Meridian's product series DT-4V(W)3C/4F-x and DR-4V(W)3C/4F-x are fiber optic modems that transmit four channels of uni-directional digitized video, three channels of uni-directional contact closure and four channels of uni-directional RS-422 data signals over one optical fiber using digital-encoding transmission techniques. 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-1002/S SR-1200/S, SR-1500/S, SR-1600/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 connectors are located on the right side of the module. The second and third SIMs contains the video coaxial interface (either one or two channels of uni-directional video). The next SIM card in port 3 contains the uni-directional Contact Closure. The bottom SIM card in port 4 contains the uni-directional RS-422 data signals.

2.0 Installation

Series DT-4V(W)3C/4F-x and DR-4V(W)3C/4F-x products are two-slot wide cards and, as such, 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-4V(W)/4F-X series products transmit and receive the following signals:

Signal Type	Channels	DT-4V(W)/4F-x	DR-4V(W)/4F-x
NTSC/PAL video	4	Transmit	Receive
Dry contact closure	3	Transmit	Receive
RS-422	4	Receive	Transmit

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

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

Video		
	8-bit Video	10-bit Video
Format	NTSC, PAL, SECAM	NTSC, PAL, SECAM
Voltage/Impedance	1Vp-p, 75Ω, 1.5Vp-p (max)	1Vp-p, 75Ω, 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%

Contact Mapping	
Input	Contact closure to ground
Output	Isolated contact closure outputs
Output Contact Rating	0.3A @ 30VAC/DC
Contact bounce time	5msec
Connectors	High Density DB15 Female

Data	
Formats	RS-422
Data Rate	DC to 300Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

Connectors	
Video	75 Ohm BNC w/gold center pin
Dry contact closure	DB15 Female
Data	DB9 Female
Optical	Singlemode – ST or FC Multimode – ST

3.1 Video Status indicators

The figures at the end of this document show the connector and LED indicator locations for the various video & 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 associated with them to provide quick visual indications of the channel activity. These indicators for each of the video & data channels are listed below:

Transmitter DT-4V(W)3C/4F-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 input connector	Optical input (Green – OK, Red – error)
Rx Carrier	Under optical input connector	Optical Carrier input (Green – OK, Red – error)
Video #1-4 (each input)	Under video input connectors	Green – Sync received
Video #1-4 (each input)	Under video input connectors	Video signal – Green OK, Red – video overload
Receiver DR-4V(W)3C/4F-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 input connector	Optical input (Green – OK, Red – error)
Rx Carrier	Under optical input connector	Optical Carrier input (Green – OK, Red – error)
Video #1-4 (each output)	Under video output connectors	Green – Sync received
Video #1-4 (each output)	Under video output connectors	Video signal – Green OK, Red – video overload

3.2 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 and the output video connector on the associated port on the receiver module.

Data – Connect the data for each of the data channels to the appropriate data Tx/Rx pins on the connector as shown in section 4.0

4.0 Contact Mapping SIM Signal Assignment (Pinouts) & Indicator Lights

The Contact Mapping boards (SIM) is inserted in the module at the (port 3).

The DT & DR Contact Mapping channel connector pinouts are shown in the table below:

Contact Mapping Connector Pinout		
	INPUT	OUTPUT
Pin #	DT-Port 3	DR-Port 3
1	Ch 1 Input	Ch 1 Output
2	Ch 2 Input	Ch 1 Output
3	Ch 3 Input	Ch 2 Output
4	NA	Ch 2 Output
5	GND	GND
6	NA	Ch 3 Output
7	NA	Ch 3 Output
8	NA	NA
9	NA	NA
10	NA	NA
11	NA	NA
12	NA	NA
13	NA	NA
14	NA	NA
15	NA	NA

The table below identifies the input/output functions LED status indicators for contact SIM card.

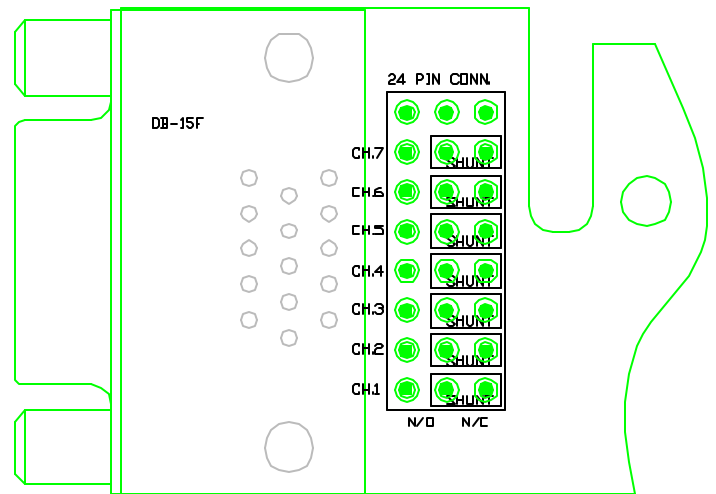
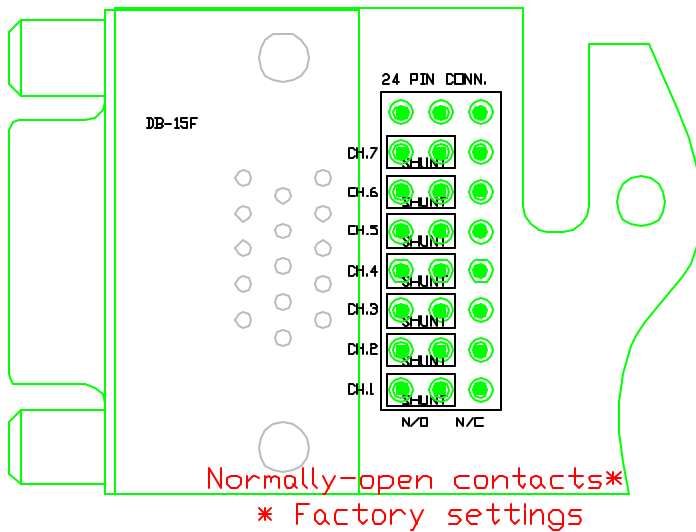
Contact Mapping Input/Output Status indicators		
LED #	DT-Port 3	DR-Port 3
1	Channel 1 - input present	Channel 1 - output present
2	Channel 2 - input present	Channel 2 - output present
3	Channel 3 - input present	Channel 3 - output present
4	NA	NA
5	NA	NA
6	NA	NA
7	NA	NA
8	NA	NA

4.1 Contact Mapping SIM Jumper Settings

The Contact Closure SIM has 7 jumpers on it (located directly behind the DB15 connector), one for each channel. These jumpers are used to set the output Contact Mapping settings for Normally-Open or Normally-Close contacts.

The default setting is Normally-Open.

The figures below illustrate these jumpers and how they are configured:



Contact Mapping jumper settings for
Normally-Open Output
Contacts
***Factory Settings**

Contact Mapping jumper settings
for Normally-Closed Output
Contacts

4.4 Changing the SIM jumpers

The jumpers to change the data from Normally-Open to Normally-Closed 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 Contact Closure (C) card is located on the bottom of the module port 3.
4. Refer to the above drawing to locate the 7 jumpers that are located near the DB-15 connector.
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.

5.0 RS-422 SIM Signal Assignment (Pinouts) & Indicator Lights

There is one data SIM card, that transmits or receives four RS-485 (4-wire) data channels. The data SIM has a DB9 female connector.

The table below shows the appropriate pinout for each of the connectors

RS-422 Data Connector Pinout Assignment (PORT 4)		
Pin #	DT-4V(W)3C/4F-X (PORT 4)	DR-4V(W)3C/4F-X (PORT 4)
1	Ch1 OUT (+)	Ch1 IN (+)
2	Ch1 OUT (-)	Ch1 IN (-)
3	Ch2 OUT (+)	Ch2 IN (+)
4	Ch2 OUT (-)	Ch2 IN (-)
5	Gnd	Gnd
6	Ch3 OUT (+)	Ch3 IN (+)
7	Ch3 OUT (-)	Ch3 IN (-)
8	Ch4 OUT (+)	Ch4 IN (+)
9	Ch4 OUT (-)	Ch4 IN (-)

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 channel on the DR unit while the second LED is associated with the respective data output channel on the DT unit. The table below shows the relationship between the connectors (I/O channels) and LEDs. The table below shows the LED status indicators associated with each data SIM

RS-422 Data Connector Status Indicators (PORT 4)		
LED #	DT-4V(W)3C/4F-X	DR-4V(W)3C/4F-X
1	N/A	Ch1 Data Input
2	Ch 1 Data Output	N/A
3	N/A	Ch 2 Data Input
4	Ch 2 Data Output	N/A
5	N/A	Ch 3 Data Input
6	Ch 3 Data Output	N/A
7	N/A	Ch 4 Data Input
8	Ch 4 Data Output	N/A

The data SIM can transmit or receive 4 channels of RS-422 data. The pinouts are shown in the table below. There are no jumpers or switches for the user to configure for this data card.

6.0 Front Panel Pinout Assignment Diagram

DT-4V(W)3C/4F-X

PINOUT DIAGRAM

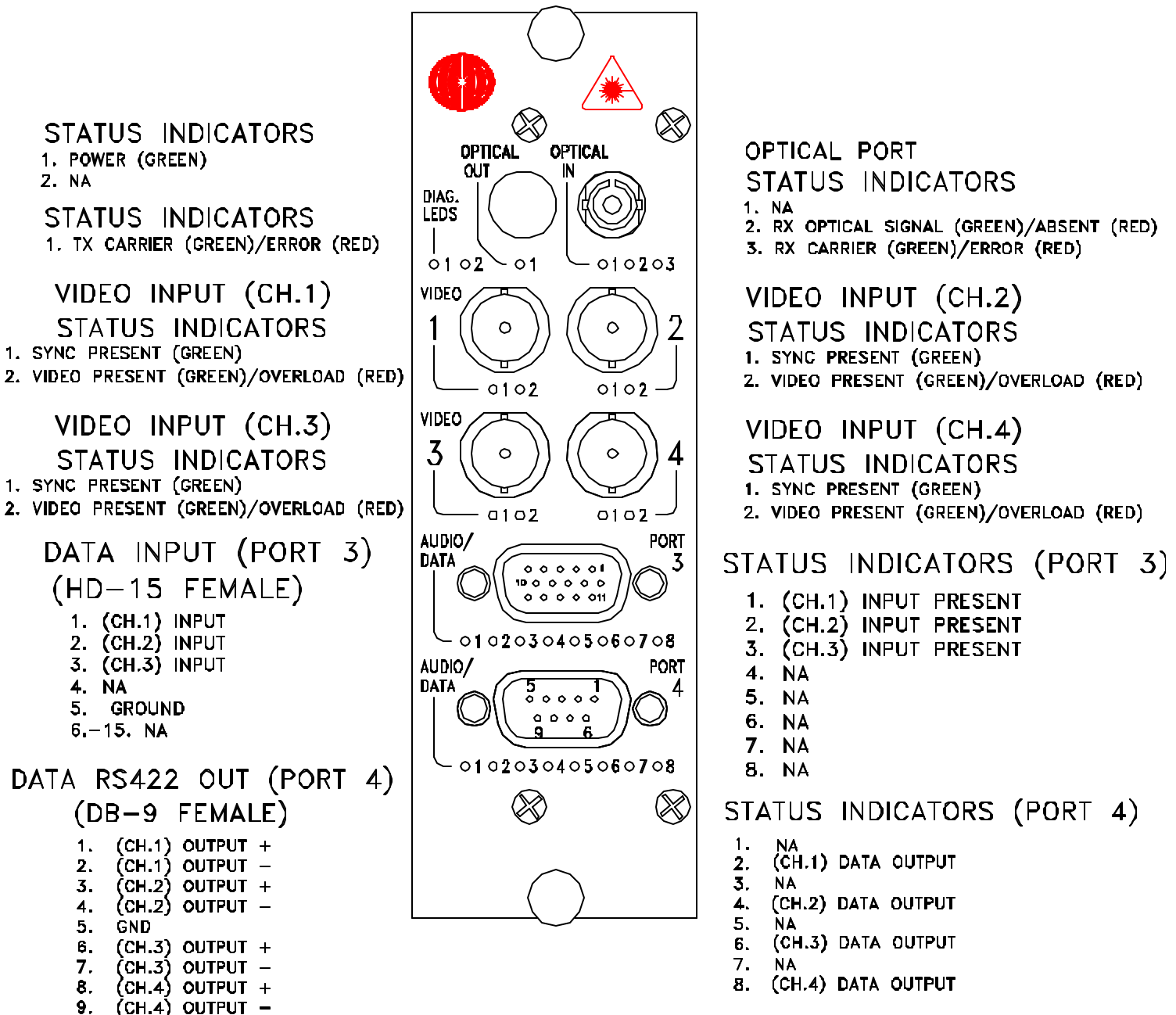


Figure 6.1
DT-4V(W)3C/4F-X Front Panel Pinout Diagram

DR-4V(W)3C/4F-X

PINOUT DIAGRAM

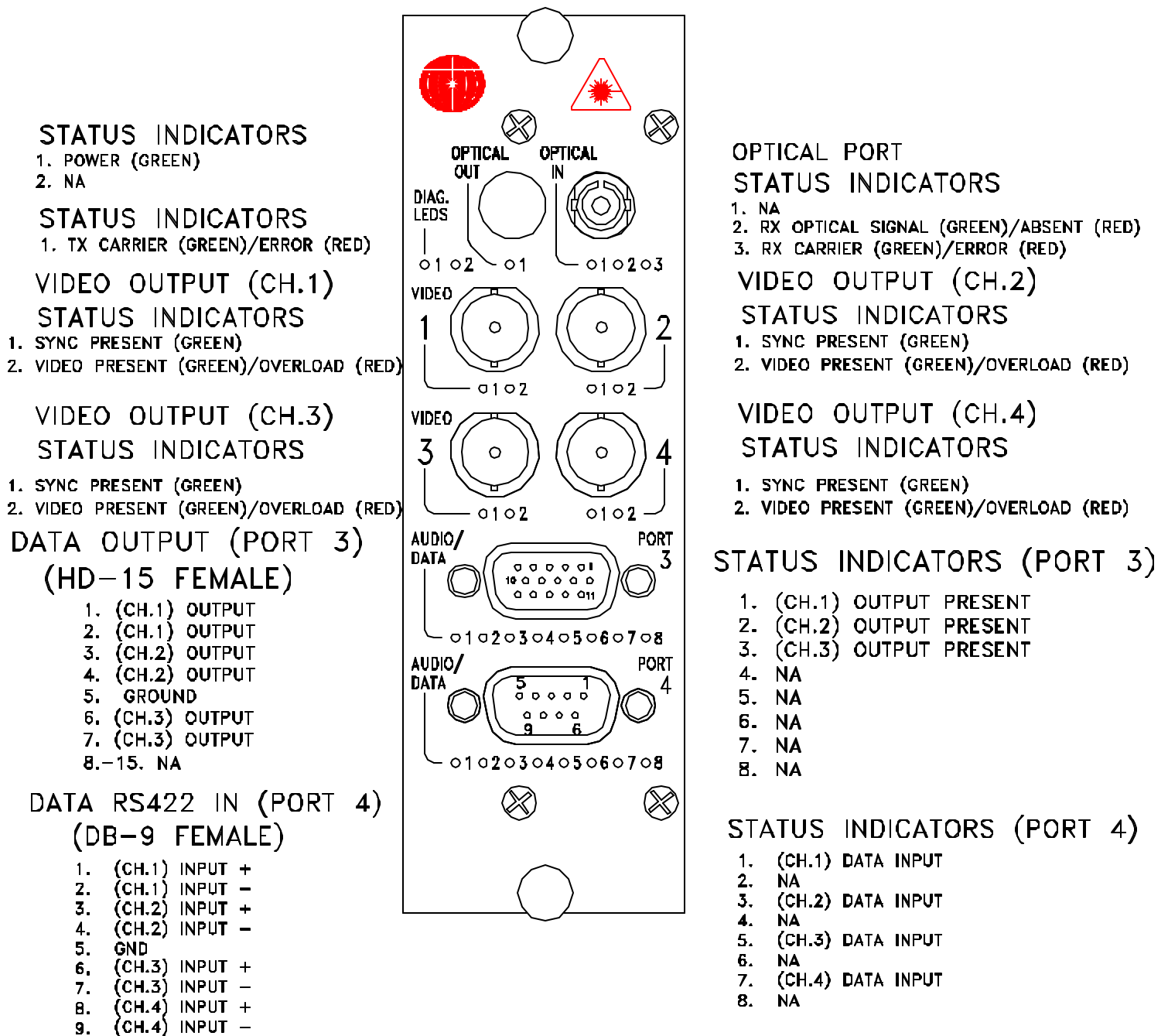


Figure 6.2
DR-4V(W)3C/4F-X Front Panel Pinout Diagram

7.0 Product Part Number Variations

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

Transmitter	Receiver	Video Resolution	# Fibers & Type	Wavelength
DT-4W3C/4F-2	DR-4W3C/4F-2	10-bit	1 (MM)	1310/850nm
DT-4W3C/4F-5	DR-4W3C/4F-5	10-bit	1 (SM)	1310/1550nm
DT-4V3C/4F-2	DR-4V3C/4F-2	8-bit	1 (MM)	1310/850nm
DT-4V3C/4F-5	DR-4V3C/4F-5	8-bit	1 (SM)	1310/1550nm

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

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. 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 Contact Closure transmission*
- Action:** Check the individual contact closure channel input status indicator lights #1 through 3 to ensure that the lights toggle on and off as the contact is closed and opened. These lights are located below the corresponding DB15. Also check the corresponding contact closure output lights (#1 through 3) on the receiver module to see if the corresponding lights are activated when the corresponding input contact is closed. If not, please check the data 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).

Notes:

Meridian Technologies, Inc.
 700 Elmont Road, Elmont NY 11003
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 E-mail: support@meridian-tech.com
 Web: www.meridian-tech.com
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