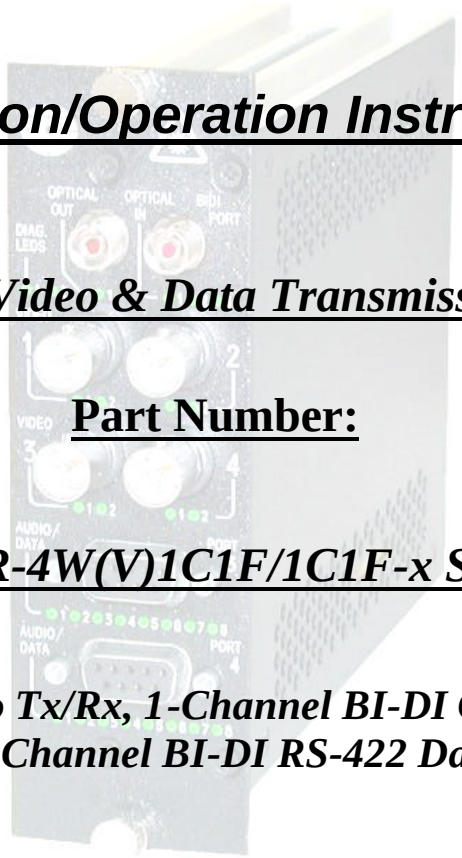
Installation/Operation Instructions

Fiber Optic Video & Data Transmission System

Part Number:

DT/DR-4W(V)1C1F/1C1F-x Series

(4-Channel Video Tx/Rx, 1-Channel BI-DI Contact Closure & 1-Channel BI-DI RS-422 Data)



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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Table of Contents

1.0 Product Description

Meridian's product series DT-4W(V)1C1F/1C1F and DR-4W(V)1C1F/1C1F are fiber optic modems that transmit four channels of uni-directional digitized video, one channel of bi-directional contact closure and one channel of bi-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-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 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 fourth SIM card contains the bi-directional Contact Closure. The bottom SIM card contains the bi-directional RS-422 data signals.

2.0 Installation

Series -4W(V)1C1F/1C1F and DR-4W(V)1C1F/1C1F 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-4W(V)1C1F/1C1F-X series products transmit and receive the following signals:

Signal Type	Channels	DT-4W(V)1C1F/1C1F-x	DR-4W(V)1C1F/1C1F-x
NTSC/PAL video	4	Transmit	Receive
RS-422	1/1	Transmit/ Receive	Transmit/ Receive
Dry contact closure	1/1	Transmit/ Receive	Transmit/ Receive

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

Video		
	8-bit Video	**10-bit Video**
Format	NTSC, PAL, SECAM	NTSC, PAL, SECAM
Voltage/Impedance	1Vp-p, 75Ohm, 1.5Vp-p (max)	1Vp-p, 75 Ohm, 1.5Vp-p (max)
Differential Gain	<0.6%	<0.6%
Differential Phase	$<0.3^{o}$	$<0.3^{o}$
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

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

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-4W(V)1C1F/1C1F-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 #1-4 (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)1C1F/1C1F-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 #1-4 (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

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.

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

The tables below identify the input/output functions, associated connector pinouts and LED status indicators for contact SIM card.

Contact Mapping Connector Pinout Assignment (PORT 3)			Contact Mapping LED Status Indicators (PORT 3)
Pin #	**DT-4V1C1F/1C1F / DR-4V1C1F/1C1F**	**LED #**	**DT-4V1C1F/1C1F / DR-4V1C1F/1C1F**
1	Ch1 INPUT	1	Ch1 INPUT PRESENT
2	NA	2	Ch1 OUTPUT PRESENT
3	NA	3	NA
4	NA	4	NA
5	NA	5	NA
6	Ch1 OUTPUT	6	NA
7	Ch1 OUTPUT	7	NA
8 - 15	NA	8	NA

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

There are one data SIM cards, one transmits & one receives one 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-4V1C1F/1C1F (PORT 4)**	**DR-4V1C1F/1C1F (PORT 4)**
1	Ch1 OUT (+)	Ch1 IN (+)
2	Ch1 OUT (-)	Ch1 IN (-)
3	NA	NA
4	NA	NA
5	Gnd	Gnd
6	Ch 1 IN (+)	Ch1 OUT (+)
7	Ch 1 IN (-)	Ch1 OUT (-)
8	NA	NA
9	NA	NA

The table below shows the LED status indicators associated with each data SIM

RS-422 Data Connector Status Indicators (PORT 4)		
LED #	**DT-4V1C1F/1C1F (PORT 4)**	**DR-4V1C1F/1C1F (PORT 4)**
1	Ch1 Data Input	N/A
2	N/A	Ch 1 Data Output
3	NA	N/A
4	N/A	N/A
5	N/A	Ch 1 Data Input
6	Ch1 Data Output	N/A
7	N/A	N/A
8	N/A	N/A

There are no jumpers or switches for the user to configure for this data card.

4.0 Front Panel Pinout Assignment Diagram

DT-4V1C1F/1C1F-X

PINOUT DIAGRAM

STATUS INDICATORS
1. POWER (GREEN)
2. NA

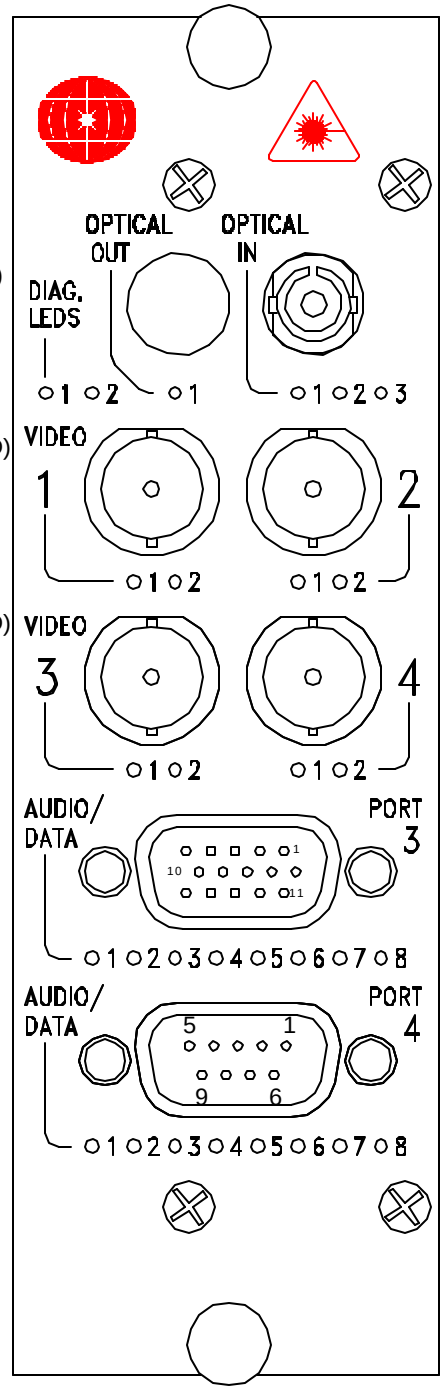
STATUS INDICATORS
1. TX CARRIER (GREEN) / ERROR (RED)

VIDEO INPUT (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)

DATA IN/OUT (PORT 3)
(DE-15 FEMALE)
1. (CH.1) INPUT
2. NA
3. NA
4. NA
5. GND
6. (CH.1) OUTPUT
7. (CH.1) OUTPUT
8.-15. NA

DATA RS422 IN/OUT (PORT 4)
(DB-9 FEMALE)
1. (CH.1) INPUT +
2. (CH.1) INPUT -
3. NA
4. NA
5. GND
6. (CH.1) OUTPUT +
7. (CH.1) OUTPUT -
8. NA
9. NA



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

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

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

05/20/2008 V.0

DR-4V1C1F/1C1F-X
PINOUT DIAGRAM

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

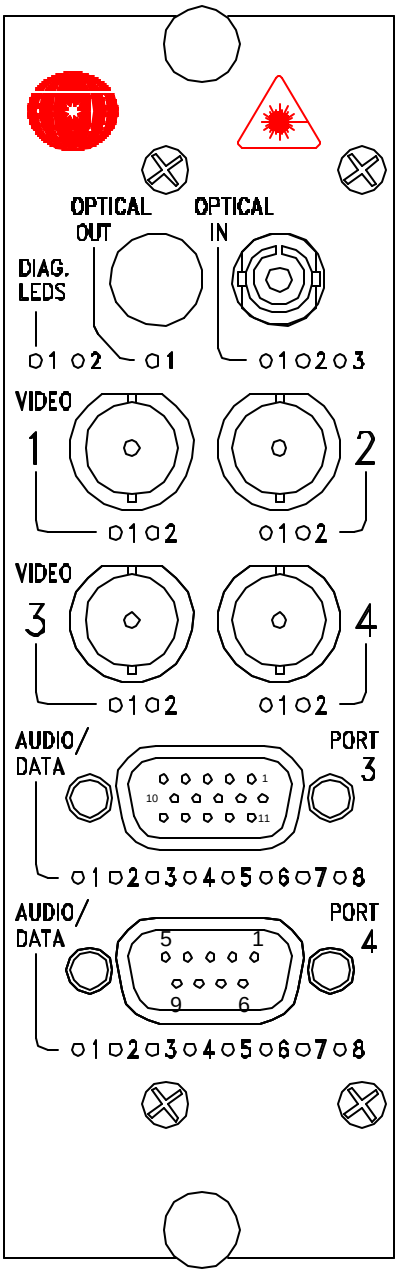
STATUS INDICATORS
1. TX CARRIER (GREEN) / ERROR (RED)

VIDEO OUTPUT (CH.1)
STATUS INDICATORS
1. SYNC PRESENT (GREEN)
2. VIDEO PRESENT (GREEN) / OVERLOAD (RED)

VIDEO OUTPUT (CH.3)
STATUS INDICATORS
1. SYNC PRESENT (GREEN)
2. VIDEO PRESENT (GREEN) / OVERLOAD (RED)

DATA IN/OUT (PORT 3)
(DE-15 FEMALE)
1. (CH.1) INPUT
2. NA
3. NA
4. NA
5. GND
6. (CH.1) OUTPUT
7. (CH.1) OUTPUT
8.-15. NA

DATA RS422 IN/OUT (PORT 4)
(DB-9 FEMALE)
1. (CH.1) OUTPUT +
2. (CH.1) OUTPUT -
3. NA
4. NA
5. GND
6. (CH.1) INPUT +
7. (CH.1) INPUT -
8. NA
9. NA



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 OUTPUT (CH.4)
STATUS INDICATORS
1. SYNC PRESENT (GREEN)
2. VIDEO PRESENT (GREEN) / OVERLOAD (RED)

STATUS INDICATORS (PORT 3)
1. (CH.1) INPUT PRESENT
2. (CH.1) OUTPUT PRESENT
3. NA
4. NA
5. NA
6. NA
7. NA
8. NA

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

05/20/2008 V.0

6.0 Product Part Number Variations

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

Basic module description:
Video: 4-channels, one way
Contact Closure: 1-channel, bi-directional Contact Closure
Data: 1-channel, bi-directional RS-422 data

Transmitter	Receiver	Video Resolution	# Fibers & Type	Wavelength
DT-4W1C1F/1C1F-2	DR-4W1C1F/1C1F -2	10-bit	1 (MM)	1310/850nm
DT-4W1C1F/1C1F -5	DR-4W1C1F/1C1F 5	10-bit	1 (SM)	1310/1550nm
DT-4V1C1F/1C1F -2	DR-4V1C1F/1C1F -2	8-bit	1 (MM)	1310/850nm
DT-4V1C1F/1C1F -5	DR-4V1C1F/1C1F -5	8-bit	1 (SM)	1310/1550nm

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 Contact Closure transmission*
Action: Check the individual contact closure channel input status indicator lights #1 through 7 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 (#2 through 7) 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).