



Installation/Operation Instructions

Fiber Optic Data Transmission System

Part Number:

DT-4D6J8L/4D6J-SFP Series

DR-4D6J8L/4D6J-SFP Series

***(4-Channel RS-232 data, 6-Channel RS-485 data
bi-directional Transceiver & 8-Channel TTL Data Tx/Rx)***

Part Number Variations:

***DT/DR-1D6J8L/1D6J-SFP
DT/DR-2D6J8L/2D6J-SFP
DT/DR-4D6J2L/4D6J-SFP
DT/DR-4D6J4L/4D6J-SFP***

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1.0 Product Description

Meridian's product series DT-4D6J8L/4D6J-SFP and DR-4D6J8L/4D6J-SFP are fiber optic modems that transmit and receive four channels of bi-directional RS-232, six channels of bi-directional 2-wire, RS-485 data signals and eight channels of uni-directional TTL data using the industry standard Small Form Pluggable (SFP) optical device using digital-encoding transmission technologies. This product series uses Meridian's standard 2-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-1002/S, SR-1600/S and SR-2000 & SR-2001 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 SIM card located in Port 2 contain the four bi-directional RS-232 data channels. The next two SIM cards in Port 3 and Port 4 contain the six bi-directional channels 2-wire, RS-485 data. The bottom SIM card in port 4 contains the TTL data signals.

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

2.0 Installation

Series DT-4D6J8L/4D6J-SFP and DR-4D6J8L/4D6J-SFP products are two-slot wide cards and 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-4D6J8L/4D6J-SFP series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
RS-232 data	4	Yes	Yes
RS-485 (2-wire) data	6	Yes	Yes
TTL Data	8	Transmit	Receive

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

RS-232 Data	
Formats	RS-232
Date Rate (RS-232)	DC to 125Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

RS-485 Data	
Formats	RS-485 (2-wire)
Date Rate (RS-485, 2-wire)	DC to 250Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

TTL Data	
Formats	TTL
Data Rate	DC to 250Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

Connectors	
RS-232 Data	DB9 Female
RS-485 Data	DB9 Female
TTL Data	High Density DB15 Female
Optical	LC, SC – SFP dependent

3.1 Optical Specifications

The SFP series products are available for both singlemode and multimode fiber applications and ether one or two fiber versions. Recommended optical speed for this product 155Mb/s. Refer to optical SFP table for complete part and ordering information.

For more specifications on a SFP optic devices refer to SFP data sheet on Meridian website:

http://www.meridian-tech.com/downloads/datasheets/datasheet_SFP_optical_devices-x.pdf

4.0 Operating

Data – Connect the RS-232, RS-485 2-wire and TTL data for each of the data channels to the appropriate data Tx/Rx pins on the connector as shown in section 5.0

4.1 Status indicators

The front panel pinout diagrams in section 5 show the connector and LED indicator locations for the various data status indicators on the unit. There are a number of diagnostic indicators on the front panel of each module. These indicators show the operation status of the module's power and optical carriers. These indicators can be used for troubleshooting the module, electrical and optical connections. In addition, each of the input/output channels has indicators associated with them to provide quick visual indications of the channel activity. These indicators for each of the data channels are listed in sections 4.2, 4.3 & 4.4

Transceiver LED Indicators		
Indicator	Location	Function
Power	Left side of module	Green – ON
Card Diagnostic*	Left side of module	Green – OK, Red – Alarm
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)

*Note: The Card Diagnostic is optional and LED present only if applied.

Not all of the LEDs apply to all versions of these modules. Please refer to the module's part number for the appropriate signals, description.

4.2 RS-232 Data SIM Signal Assignment (Pinouts) & Indicator Lights

There is one RS-232 data SIM card in these modules located in Port 1. This data cards transmits/receives up to four RS-232 data channels. The data SIM has a DB9 female connector. The table below shows the appropriate pinout.

Pin #	RS-232 Data Connector Pinout Assignment DT/DR (Port 1)
1	Ch 4 INPUT
2	Ch 1 OUTPUT
3	Ch 1 INPUT
4	Ch 2 INPUT
5	Gnd
6	Ch 2 OUTPUT
7	Ch 3 INPUT
8	Ch 3 OUTPUT
9	Ch 4 OUTPUT

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.

RS-232 Data Input/Output Status Indicators Port 1	
LED	Function
1	Input 1 – Green - data present
2	Output 1 – Green - data present
3	Input 2 – Green - data present
4	Output 2 – 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

4.3 RS-485 2W Data SIM Signal Assignment & Indicator Lights

There are two RS-485 data SIM cards in these modules located in Port 2 & 3. This data cards transmit/receive up to six RS-485 (2-wire) data channels. The data SIMs has a DB9 female connector.

RS-485 Data Connector Pinout Assignment		
Pin #	Port 2	Port 3
1	Ch 1 IN/OUT (+)	Ch 5 IN/OUT (+)
2	Ch 1 IN/OUT (-)	Ch 5 IN/OUT (-)
3	Ch 2 IN/OUT (+)	Ch 6 IN/OUT (+)
4	Ch 2 IN/OUT (-)	Ch 6 IN/OUT (-)
5	Gnd	Gnd
6	Ch 3 IN/OUT (+)	NA
7	Ch 3 IN/OUT (-)	NA
8	Ch 4 IN/OUT (+)	NA
9	Ch 4 IN/OUT (-)	NA

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

RS-485 Data Input/Output Status Indicators		
LED	Port 2	Port 3
1	Input 1 – Green - data present	Input 5 – Green - data present
2	Output 1 – Green - data present	Output 5 – Green - data present
3	Input 2 – Green - data present	Input 6 – Green - data present
4	Output 2 – Green - data present	Output 6 – 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	

4.4 TTL Data SIM Signal Assignment (Pinouts) & Indicator Lights

The tables below identify the input or output functions, associated connector pinouts and LED status indicators for 8 channels TTL Data SIM card. The data SIMs has a DB15-HD female connector.

TTL Data Connector Pinout Assignment (PORT 4)		
Pin #	Transmitter	Receiver
1	Ch 1 INPUT	NA
2	Ch 2 INPUT	Ch 1 OUTPUT
3	Ch 3 INPUT	NA
4	Ch 4 INPUT	Ch 2 OUTPUT
5	Ground	Ground
6	Ch 5 INPUT	NA
7	Ch 6 INPUT	Ch 3 OUTPUT
8	Ch 7 INPUT	NA
9	Ch 8 INPUT	Ch 4 OUTPUT
10	NA	NA
11	NA	Ch 5 OUTPUT
12	NA	NA
13	NA	Ch 6 OUTPUT
14	NA	Ch 8 OUTPUT
15	NA	Ch 7 OUTPUT

The table below shows the LED status indicators associated with TTL data

TTL Data LED Status Indicators (PORT 4)			
LED #	Transmitter	LED #	Receiver
1	Ch 1 INPUT PRESENT	1	Ch 1 OUTPUT PRESENT
2	Ch 2 INPUT PRESENT	2	Ch 2 OUTPUT PRESENT
3	Ch 3 INPUT PRESENT	3	Ch 3 OUTPUT PRESENT
4	Ch 4 INPUT PRESENT	4	Ch 4 OUTPUT PRESENT
5	Ch 5 INPUT PRESENT	5	Ch 5 OUTPUT PRESENT
6	Ch 6 INPUT PRESENT	6	Ch 6 OUTPUT PRESENT
7	Ch 7 INPUT PRESENT	7	Ch 7 OUTPUT PRESENT
8	Ch 8 INPUT PRESENT	8	Ch 8 OUTPUT PRESENT

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

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.

DT-4D6J8L/4D6J-SFP

PINOUT DIAGRAM

STATUS INDICATORS

1. POWER (GREEN)
2. CARD DIAGNOSTIC*
(GREEN-OK, RED-ALARM)

DATA RS232 IN/OUT (PORT 1) (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 RS485 IN/OUT (PORT 2) (DB-9 FEMALE)

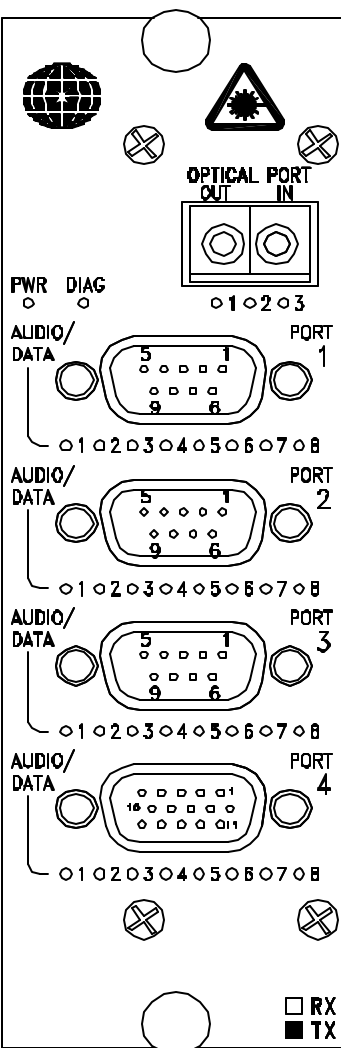
1. (CH.1) INPUT/OUTPUT +
2. (CH.1) INPUT/OUTPUT -
3. (CH.2) INPUT/OUTPUT +
4. (CH.2) INPUT/OUTPUT -
5. GND
6. (CH.3) INPUT/OUTPUT +
7. (CH.3) INPUT/OUTPUT -
8. (CH.4) INPUT/OUTPUT +
9. (CH.4) INPUT/OUTPUT -

DATA RS485 IN/OUT (PORT 3) (DB-9 FEMALE)

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

TTL INPUT (PORT 4) (HD-15 FEMALE)

1. (CH.1) INPUT
2. (CH.2) INPUT
3. (CH.3) INPUT
4. (CH.4) INPUT
5. GROUND
6. (CH.5) INPUT
7. (CH.6) INPUT
8. (CH.7) INPUT
9. (CH.8) INPUT
- 10.-15. NA



SFP OPTICAL PORT STATUS INDICATORS

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

STATUS INDICATORS (PORT 1)

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 2)

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 3)

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

STATUS INDICATORS (PORT 4)

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

Figure 5.1
DT-4D6J8L/4D6J-x Front Panel Diagram

DR-4D6J8L/4D6J-SFP

PINOUT DIAGRAM

STATUS INDICATORS

1. POWER (GREEN)
2. CARD DIAGNOSTIC*
(GREEN=OK, RED=ALARM)

DATA RS232 IN/OUT (PORT 1) (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 RS485 IN/OUT (PORT 2) (DB-9 FEMALE)

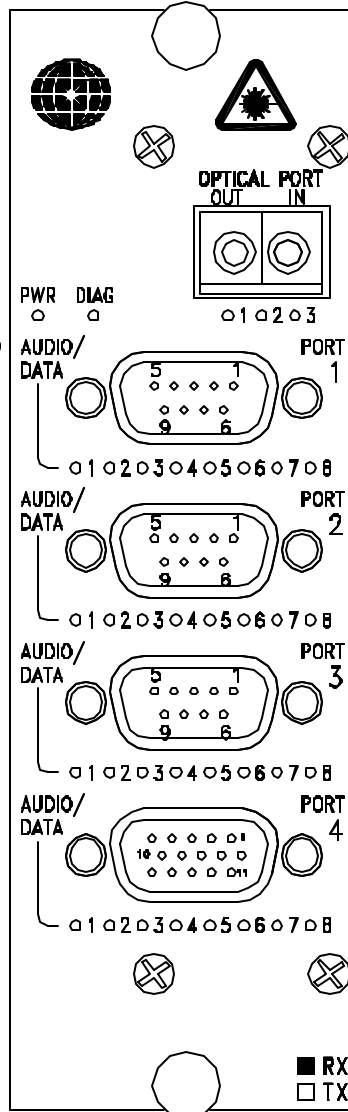
1. (CH.1) INPUT/OUTPUT +
2. (CH.1) INPUT/OUTPUT -
3. (CH.2) INPUT/OUTPUT +
4. (CH.2) INPUT/OUTPUT -
5. GND
6. (CH.3) INPUT/OUTPUT +
7. (CH.3) INPUT/OUTPUT -
8. (CH.4) INPUT/OUTPUT +
9. (CH.4) INPUT/OUTPUT -

DATA RS485 IN/OUT (PORT 3) (DB-9 FEMALE)

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

TTL OUTPUT (PORT 4) (HD-15 FEMALE)

1. NA
2. (CH.1) OUTPUT
3. NA
4. (CH.2) OUTPUT
5. GROUND
6. NA
7. (CH.3) OUTPUT
8. NA
9. (CH.4) OUTPUT
10. NA
11. (CH.5) OUTPUT
12. NA
13. (CH.6) OUTPUT
14. (CH.8) OUTPUT
15. (CH.7) OUTPUT



SFP OPTICAL PORT

STATUS INDICATORS

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

STATUS INDICATORS (PORT 1)

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 2)

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 3)

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

STATUS INDICATORS (PORT 4)

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

Figure 5.2
DR-4D6J8L/4D6J-x Front Panel Diagram

6.0 Product Part Number Variations

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

Basic module description:

Data: 1 to 4 channels, RS-232 bi-directional

Data: 5 to 6 channels, RS-485 2W bi-directional

Data: 1 to 8 channels, TTL uni-directional

The table below indicates the part numbers and product description that are included in this manual. The pinout diagram in section 5.0 shows the connectors pinout (input/output connections) for the all-inclusive product. The appropriate modules consist of various combinations of bi-directional and uni-directional Data SIMs. Please use this table to determine the exact pinout of the particular model of interest. Note that if there is only one data channel, the pinouts for “Ch1” are used.

Part Numbers Transmitter Side	Part Numbers Receiver Side	Description
DT-1D6J8L/1D6J-SFP	DR-1D6J8L/1D6J-SFP	1Ch. RS-232 Data & 6Ch. RS-485 (2W) Data bi-directional, 8Ch. TTL Data uni-directional
DT-2D6J8L/2D6J-SFP	DR-2D6J8L/2D6J-SFP	2Ch. RS-232 Data & 6Ch. RS-485 (2W) Data bi-directional, 8Ch. TTL Data uni-directional
DT-4D6J2L/4D6J-SFP	DR-4D6J2L/4D6J-SFP	4Ch. RS-232 Data & 6Ch. RS-485 (2W) Data bi-directional, 2Ch. TTL Data uni-directional
DT-4D6J4L/4D6J-SFP	DR-4D6J4L/4D6J-SFP	4Ch. RS-232 Data & 6Ch. RS-485 (2W) Data bi-directional, 4Ch. TTL Data uni-directional

For proper operation, it is necessary to match the DT unit with the associated side DR 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
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 Tx Carrier light*

Action: Check to see that the correct SFP module properly installed into socket.

Problem: *No Rx Carrier light*

Action: Received optical signal absent or low. Check fiber connection and optical power at receiver.

Problem: *No Data*

Action: Check the channel data input status indicator lights on the transmit module to ensure it is on (indicating a data input signal). Also check the associated channel data output status indicator lights 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.

If the problem still persists after reviewing the above items, please contact Meridian technical support: +1-516-285-0570 / support@meridian-tech.com

Notes:



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