



Fiber Optic 10/100/1000 Base-T Ethernet With Build-in CDWM Interface

Installation Instructions

Part Number:

CM-1RE-x (ST/FC)

CD-1RE-x (ST/FC)

(10/100/1000 Base-T Ethernet Extender & 4 Port CWDM Interface)

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
Document Version 1
10/05/2014

Table of Contents

1.0	Product Description	3
2.0	Installation	3
3.0	Product Signal Format and Specification	4
3.1	Optical Specifications	4
4.0	Data Connector Pin Assignment	5
5.0	Operation/Front Panel LED Indicators	5
6.0	Signal Conditioning Switch Settings	8
7.0	Troubleshooting	10

CM(D)-1RE-X

10/100/1000 Base-T Ethernet Data Transmission

System and CWDM Interface Installation Instructions

1.0 Product Description

Meridian's CM-1RE-x and CD-1RE-x products are SFP based 10/100/1000 Base-T fiber optic Ethernet extender modems that transmit & receive one channel of bi-directional 10/100/1000 Base-T Ethernet data signal. In addition, built-in CWDM interface make it possible to connect any Meridians card or module with SFP optic, to transmit Video, Audio and Data signals. This CWDM system is available for use with singlemode fiber only and should be used in pairs Mux with Demux. This product series uses Meridian's standard 1-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-500/S, SR-1002/S, SR-1600/S and SR-2001 & SR-2000 series equipment chassis.

Both ST and FC optical connectors are supported, depending on the part number. Optional conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

Series CM-1RE-x and CD-1RE-x products are one-slot wide cards and, as such, occupy one slot in Meridian's standard chassis. To install in these 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 19" 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 tables below identify the specifications for the various signals that these modems transmit/receive.

Data	
Formats	IEEE 802.3 CSMA/CD IEEE 802.3i 10Base-T IEEE 802.3u 100Base-T IEEE 802.3ab 1000Base-T
Date Rate	10/100/1000 Mb/s, Auto select
Bit Error Rate (BER)	Better than 10^{-9}
Fiber data rate	1250 Mb/s

CWDM Interface	
Insertion Loss	1.5 dB
Isolation	>20 dB
Return Loss	>30 dB
Wavelength (optic code 20)	1290/1310/1330/1350 nm
Wavelength (optic code 21)	1510/1530/1550/1570 nm

Connectors	
Data	RJ-45
Optical	Singlemode – ST or FC LC – SFP dependent

3.1 Optical Specifications

The SFP series products are available for single-mode fiber applications and two-fiber version. Recommended optical speed for this product 1.25Gbps. Refer to optical SFP table in 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

Optical Specifications								
Optical Code	Fiber Type/Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)	Approx. Maximum Distance (km)
20	Singlemode (DFB Laser) 9/125	-5	-24	19	1290, 1310, 1330, 1350	ST, FC	24	20
21	Singlemode (DFB Laser) 9/125	-5	-24	19	1510, 1530, 1550, 1570	ST, FC	24	20

For proper operation, it is necessary to match the Mux with the associated Demux module.

4.0 Data Connector Pin Assignment

This product series utilizes an RJ-45 Ethernet data connector with standard pin assignments.

Pin #	Configuration
1	Transmit (+)
2	Transmit (-)
3	Receive (+)
4	N/A
5	N/A
6	Receive (-)
7	N/A
8	N/A

5.0 Operation/Front Panel LED Indicators

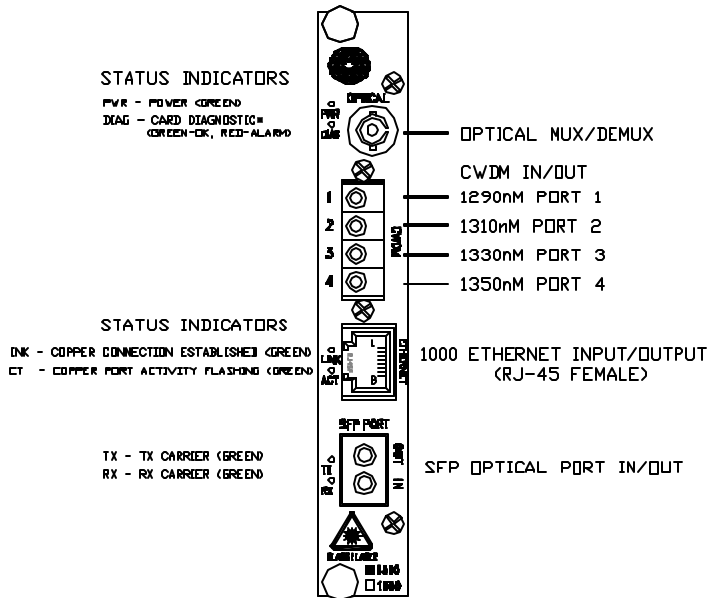
The front panel diagram is shown below. There are a number of indicator lights that provide visual operational status of the modules and link.

The function of these LED indicators is as follows:

- PWR - Green (normal) - when power is applied to the module*
- DIAG - Green Card diagnostic ok, Red alarm
- LINK - Green – Copper connection established
- ACT - Green – Copper port activity flashing
- TX - Green – Optical carrier output
- RX - Green – Optical carrier input

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

CD-1RE-20 PINOUT DIAGRAM



CM-1RE-20 PINOUT DIAGRAM

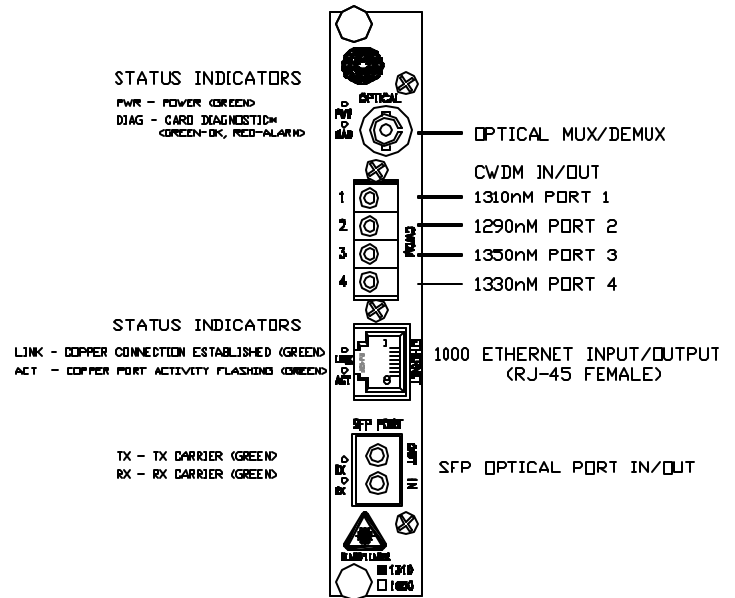
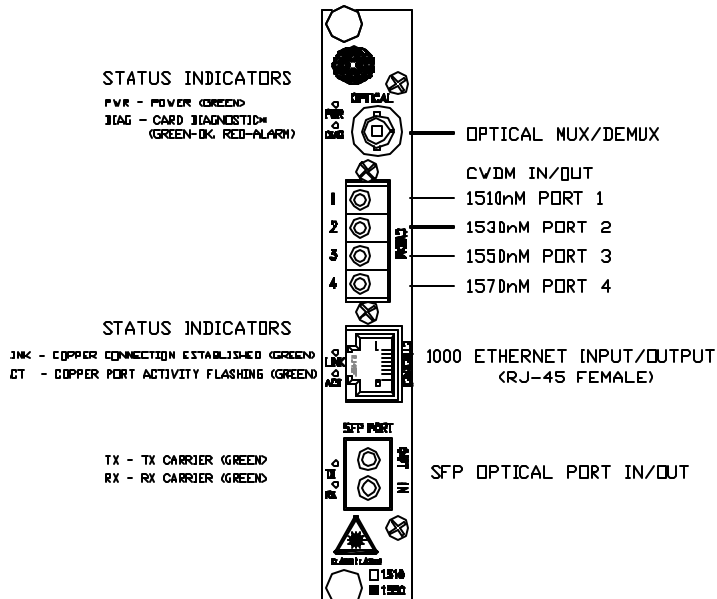


Figure 5.1
CM(D)-1RE-20 Front Panel Layout Diagram

CD-1RE-21 PINOUT DIAGRAM



CM-1RE-21 PINOUT DIAGRAM

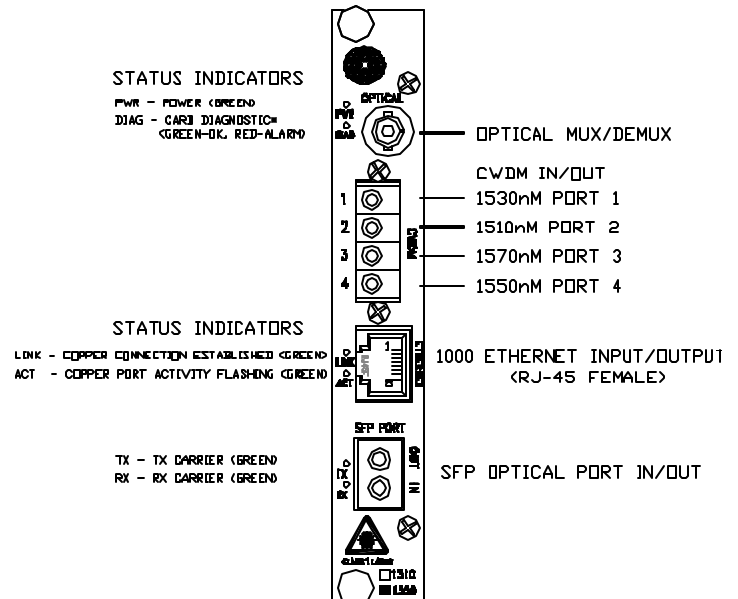


Figure 5.2
CM(D)-1RE-21 Front Panel Layout Diagram

GigE CWDM INTERFACE CONNECTION DIAGRAM

CM-1RE-21

CD-1RE-21

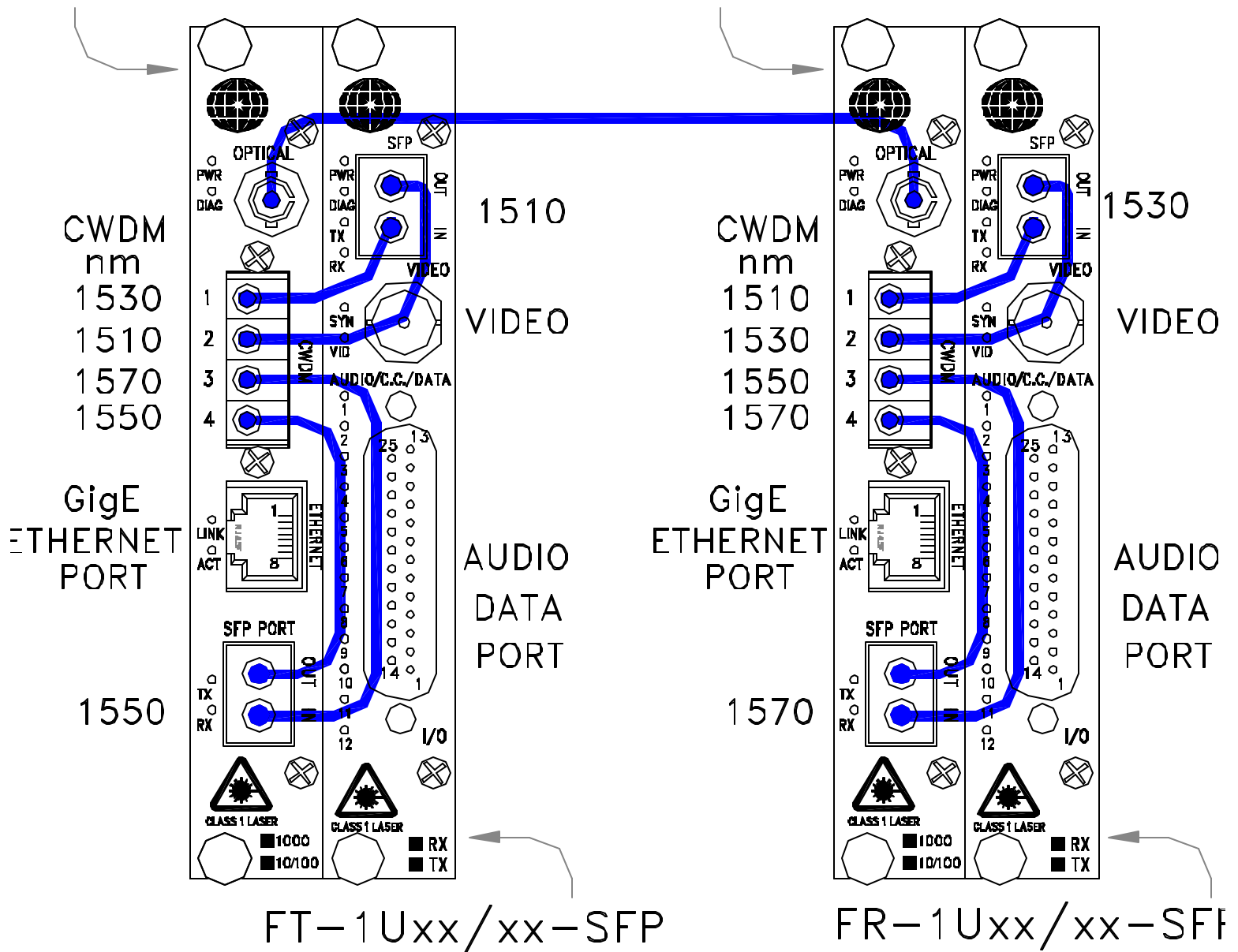


Figure 5.3
CM(D)-1RE-21 Connection Diagram

6.0 Signal Conditioning Switch Settings

A group of 10 switches is located on the bottom center of the module's circuit card (see figure 6 below). The switch #2 is used to control the LFPT format for Ethernet data.

The LFPT (Link Fault Pass Through) means the link fault on the one side (local side) media converter will be passed to the media converter on the other side (remote side). For example, if the media converter on side A (local side) has the copper link loss, the media converter will disable fiber port. The media converter on the side B (remote side) will know there is the link error and will also disconnect copper port. The LFP function can immediately alarm network administrators about link loss problem and provide efficient solution to monitor the network.

The factory-supplied setting is LFPT Enable. (Switches #2 set in the OFF ("UP") position).

The figure and table below illustrates these switch locations on the board and how they are configured for the proper format options.

<i>Format Selection Switch Settings</i>		
	ON (down)	OFF (up)
Switch #2	LFPT Disable	LFPT Enable
Switch #5	CWDM 1510-1570 nm	CWDM 1290-1350 nm
Switch #6	CWDM Demux	CWDM Mux
Switch #7	CWDM Present	No CWDM

Meridian technician must set switches #5-7. The remaining switches should be in the OFF (up) position.

Notes:

CARD SWITCH SETTINGS

Card Test Signal		
	Down Position(ON)	Up Position(OFF)*
Switch #1	NA	NA
Switch #2	0-LFPT Disable	1-LFPT Enable
Switch #3	Reserved	Reserved
Switch #4	Reserved	Reserved
Switch #5	0-CWDM 1510-1570	1-CWDM 1290-1350
Switch #6	0-Demux	1-Mux
Switch #7	0-CWDM present	1-No CWDM
Switch #8	Reserved	Reserved
Switch #9	Reserved	Reserved
Switch #10	Reserved	Reserved

*Default switch settings all up-off(1).

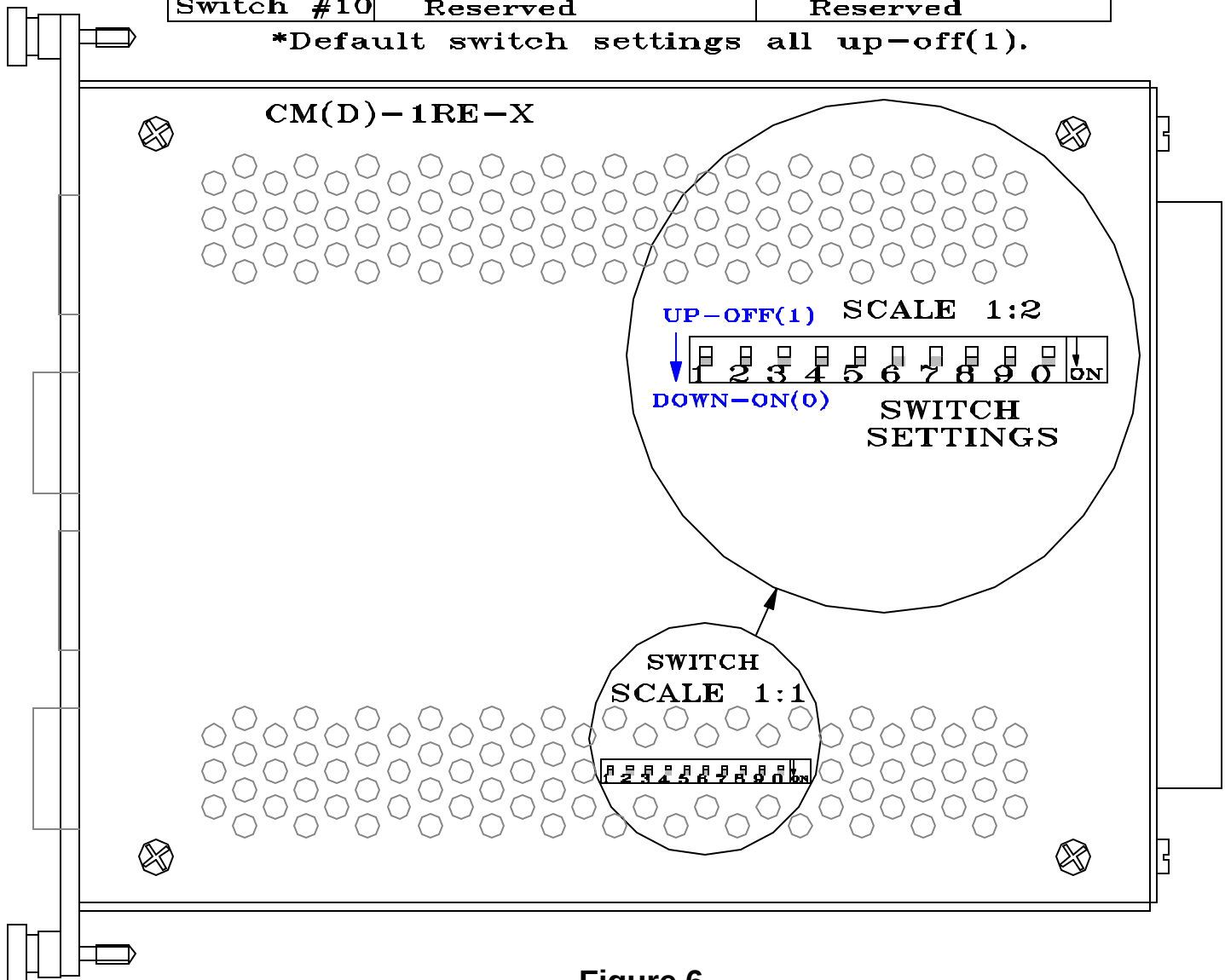


Figure 6
Ethernet Card Selection Switch Location

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: Optical module is defective, return to factory for repair.

Problem: *No Rx Carrier light*

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

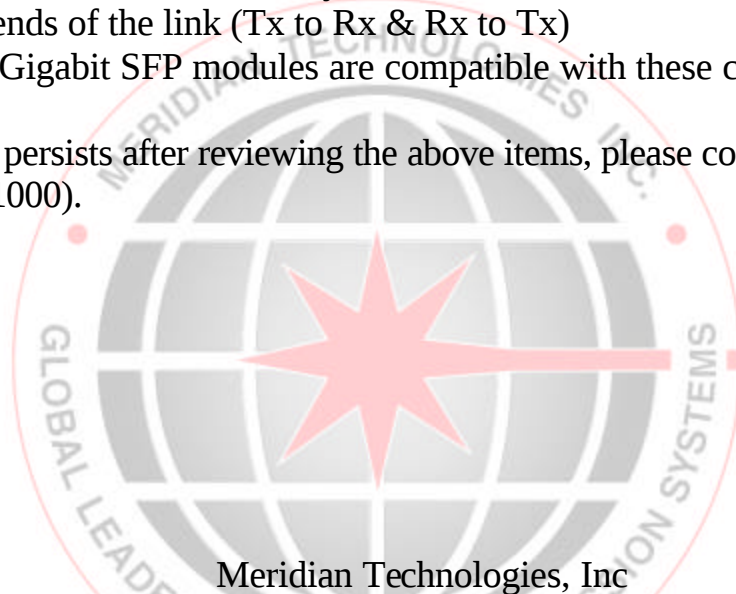
Problem: *No Data*

Action: Check to see that the correct SFP modules are installed properly into their sockets.

With a two-fiber SFP, verify that the Tx and Rx fibers are connected correctly at both ends of the link (Tx to Rx & Rx to Tx)

Only Gigabit SFP modules are compatible with these cards.

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



Meridian Technologies, Inc

700 Elmont Road, Elmont, NY 11003, USA

Telephone: 516. 285. 1000 Fax: 516. 285. 6300

E-mail: support@meridian-tech.com Web: www.meridian-tech.com

Document Version 1

10/05/2014