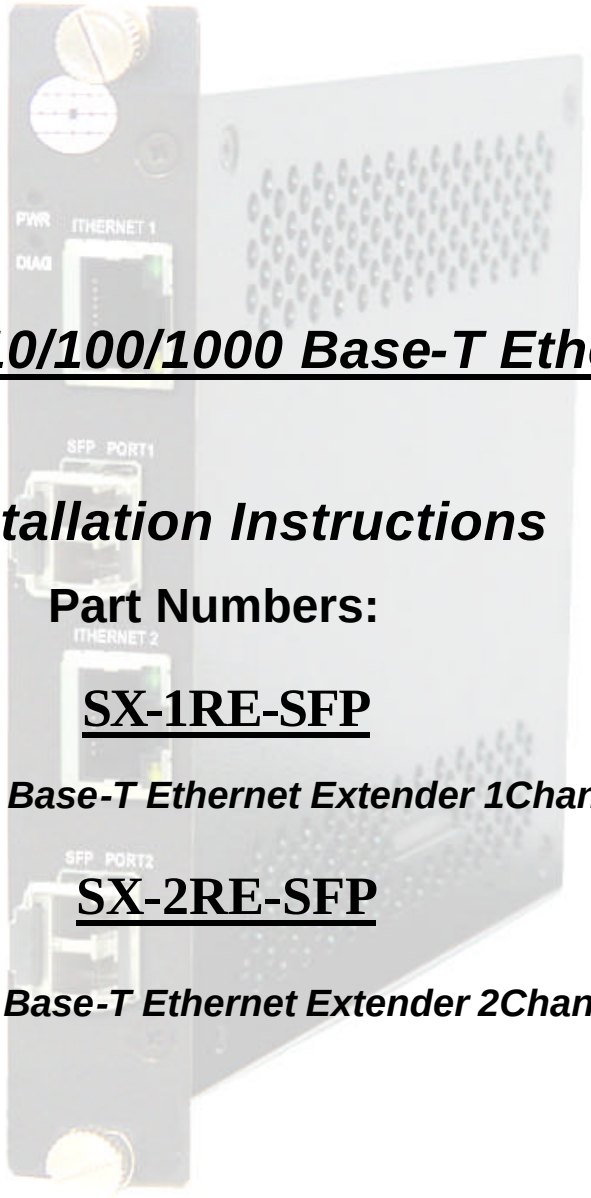

Fiber Optic 10/100/1000 Base-T Ethernet

Installation Instructions

Part Numbers:

SX-1RE-SFP

(10/100/1000 Base-T Ethernet Extender 1Channel)

SX-2RE-SFP

(10/100/1000 Base-T Ethernet Extender 2Channels)

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Table of Contents

1.0 Product Description 3

2.0 Installation 3

3.0 Product Signal Format and Specifications 3

4.0 Data Connector Pin Assignment 4

5.0 Operation/Front Panel LED Indicators 4

6.0 Optical Specifications 7

7.0 Signal Conditioning Switch Settings 7

8.0 Card Status 9

9.0 Troubleshooting 10

SX-1RE-SFP and SX-2RE-SFP
10/100/1000 Base-T Ethernet Data Transmission System
Installation Instructions

1.0 Product Description

Meridian's SX-1RE-SFP and SX-2RE-SFP products are SFP based 10/100/1000 Base-T fiber optic Ethernet extender modems that transmit & receive one or two channels of bi-directional 10/100/1000 Base-T Ethernet data over SFP optical fibers using digital transmission technologies. 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.

SFP optical modules are supported. Optional conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

Series SX-1RE-SFP and SX-2RE-SFP 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 SX-1RE-SFP and SX-2RE-SFP series products are available in ether one or two fiber versions. Refer to optical SFP specification table in section 6.0 for complete part and ordering information.

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
Data Rate	10/100/1000 Mb/s, Auto select
Bit Error Rate (BER)	Better than 10^{-9}
Fiber data rate	1250 Mb/s
Connectors	
Data	RJ-45
Optical	LC, SC – SFP dependent

4.0 Data Connector Pin Assignment

This product series utilizes an RJ-45 Ethernet data connector with standard pin assignments for 100 Base-T and 1000 Base-T data.

100 Base-T Pin Assignment	
Pin #	***Configuration***
1	Transmit (+)_D1
2	Transmit (-)_D1
3	Receive (+)_D2
4	N/A
5	N/A
6	Receive (-)_D2
7	N/A
8	N/A

1000 Base-T Pin Assignment	
Pin #	***Configuration***
1	Bi-directional (+)_D1
2	Bi-directional (-)_D1
3	Bi-directional (+)_D2
4	Bi-directional (+)_D3
5	Bi-directional (-)_D3
6	Bi-directional (-)_D2
7	Bi-directional (+)_D4
8	Bi-directional (-)_D4

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

1/LINK - Green – Copper connection established
2/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.

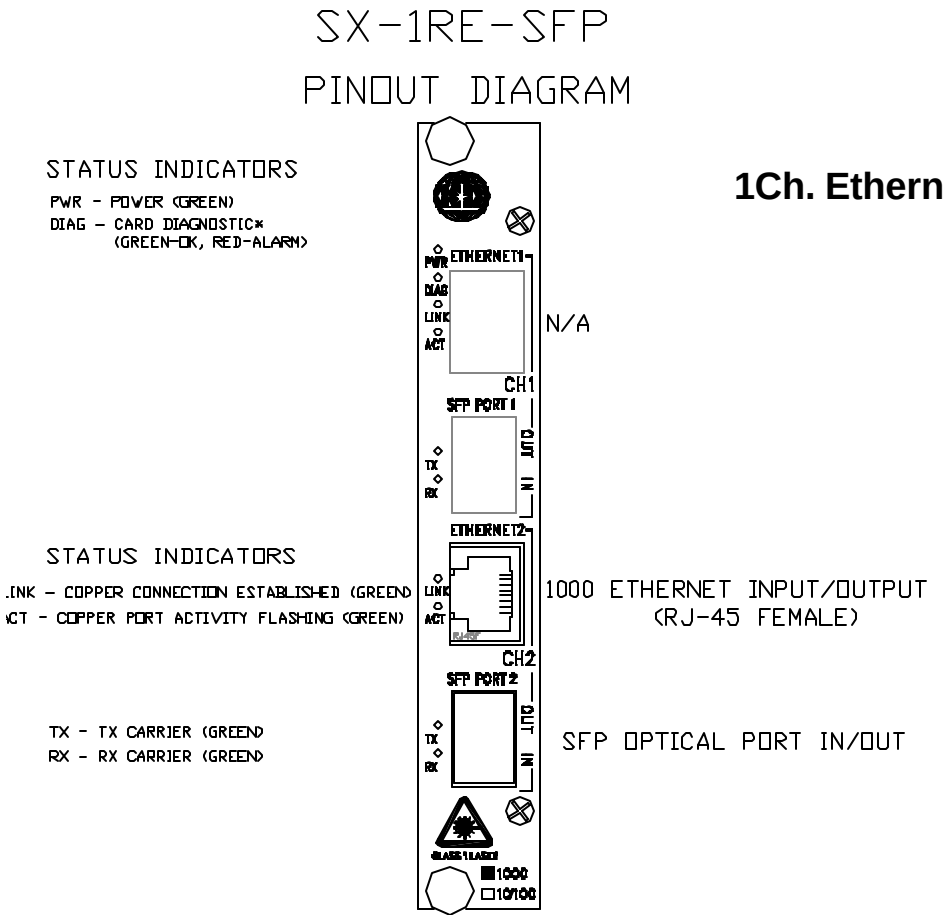

Figure 5.0
1Ch. Ethernet Module Front Panel Rev.2

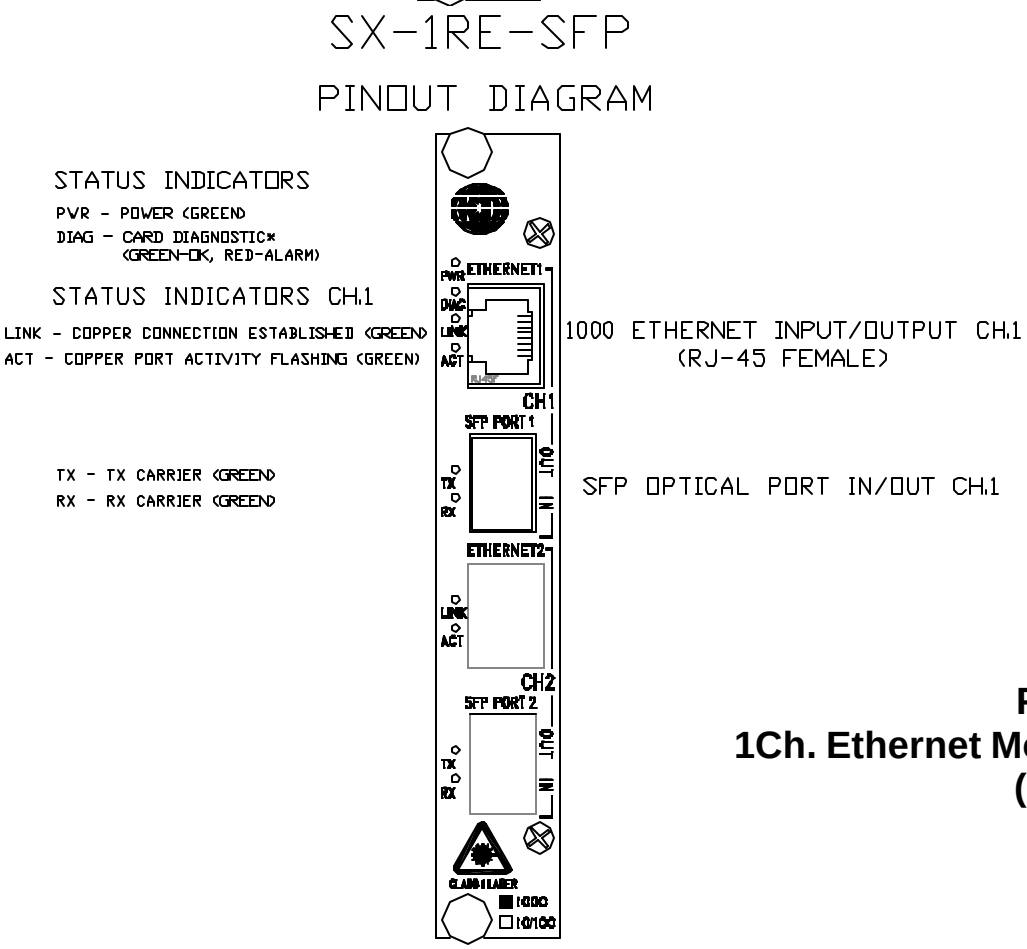

Figure 5.1
1Ch. Ethernet Module Front Panel Rev.1.2
(LEGACY)

SX-2RE-SFP

PINOUT DIAGRAM

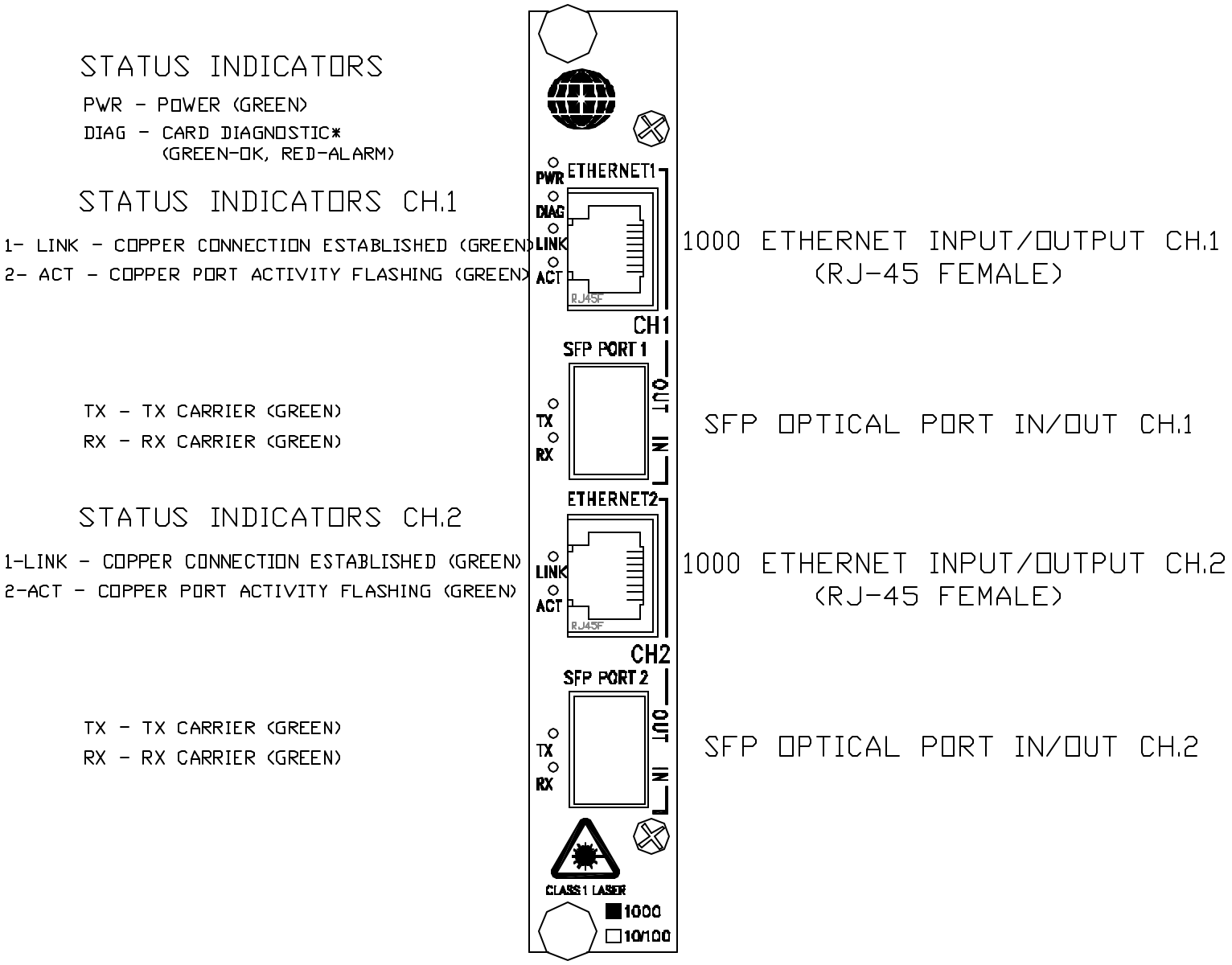

Figure 5.2
2Ch. Ethernet Module Front Panel

6.0 Optical Specifications

The SFP series products are available for both single-mode and multimode fiber applications and ether one or two fiber versions. 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

7.0 Signal Conditioning Switch Settings

A group of 10 switches is located on the bottom center of the module's circuit card
(See figure 7.1)
The left two (2) of these switches control the LFPT format for channel one and cannel two. 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.

The switches 3 & 4 control the optical port speed for channel one and two. In auto position speed is set by 155Mbps SFP for 100 Base-T or 1.25Gbps SFP for 1000 Base-T. In force position (ON (down)) optical data rate locks on 155Mbps SFP for 100 Base-T, regardless of SFP ratings. The factory-supplied setting is Auto select data rate speed.
(Switches #1-4 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.

Format Selection Switch Settings		
	Down Position ON	***Up Position OFF***
Switch #1	LFPT for ch.1 Disable - ON (down)	*LFPT for ch.1 Enable - OFF (up)*
Switch #2	LFPT for ch.2 Disable - ON (down)	*LFPT for ch.2 Enable - OFF (up)*
Switch #3	155Mbs force for ch.1 Enable - ON	*Auto Select Speed for ch.1 - OFF (up)*
Switch #4	155Mbs force for ch.2 Enable - ON	*Auto Select Speed for ch.2 - OFF (up)*

Figure 7.0

All switch settings must be set the same for local side A and remote side B.
*The remaining switches should be in the OFF (up) position.

SX-2RE-SFP SWITCH SETTINGS ETHERNET CARD

Ethernet Test Signal		
	Down Position(ON)	Up Position(OFF)
Switch #1	Ch.1 LFPT Disable	LFPT Enable
Switch #2	Ch.2 LFPT Disable	LFPT Enable
Switch #3	Ch.1 100Mbs Force	Auto select speed
Switch #4	Ch.2 100Mbs Force	Auto select speed

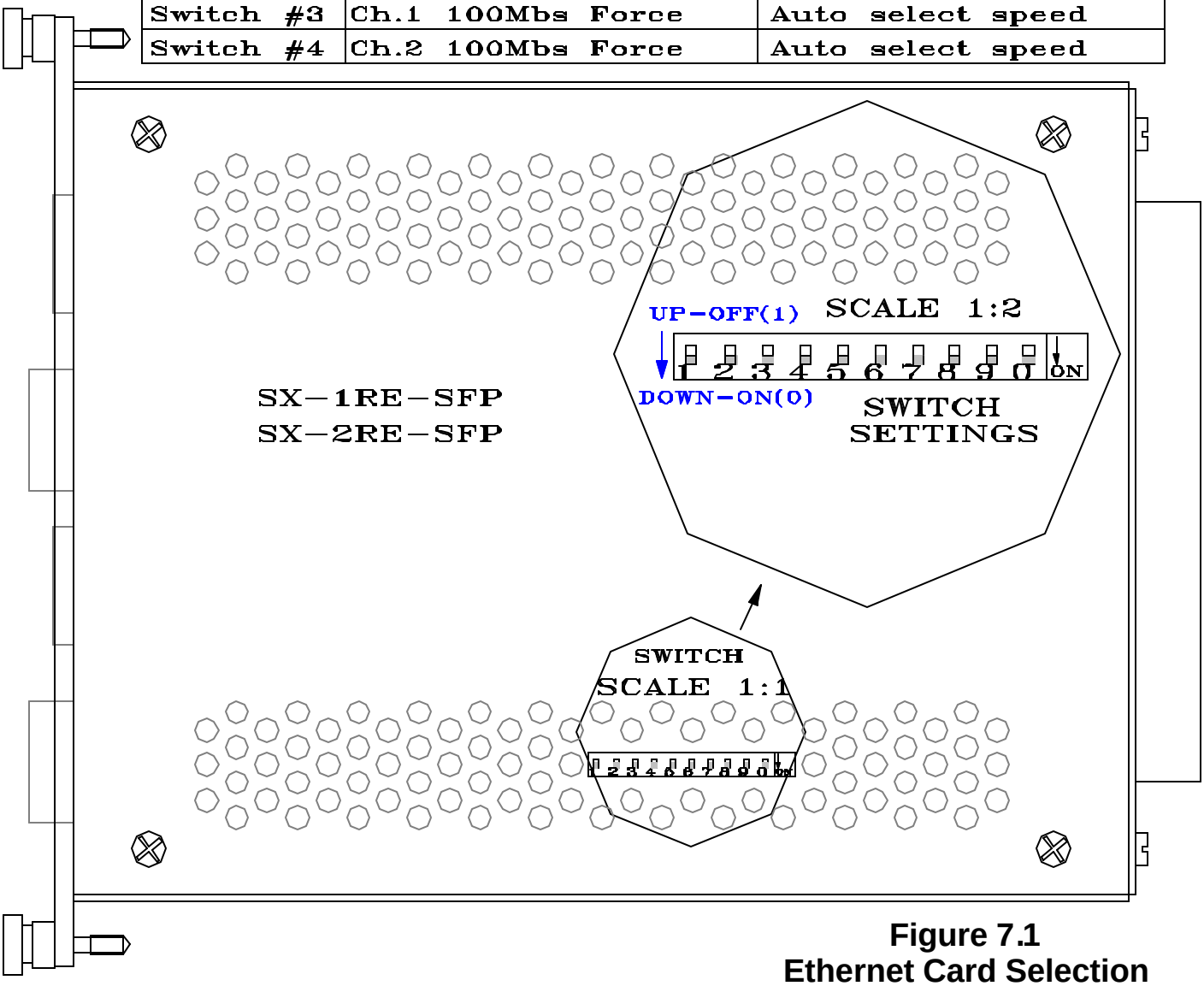

Figure 7.1
Ethernet Card Selection
Switch Location

7.1 Changing Default Switch Settings

The factories switch settings from OFF to ON can be easily changed as follows:

1. Position the module as shown in the above photograph.
2. Locate the Switch. It will be on the lower side of the circuit board in the cutout on the top cover.
3. Configured the proper format options according to the table in Figure 7.0
4. Repeat, as required, with the other unit.

8.0 Card Status

If this card has Small–Form Pluggable /SFP/ optical transceiver module with build in digital diagnostic you can see critical parameters and card status monitoring interface by using SpectraSmart PC management system as shown in Figure 8.0

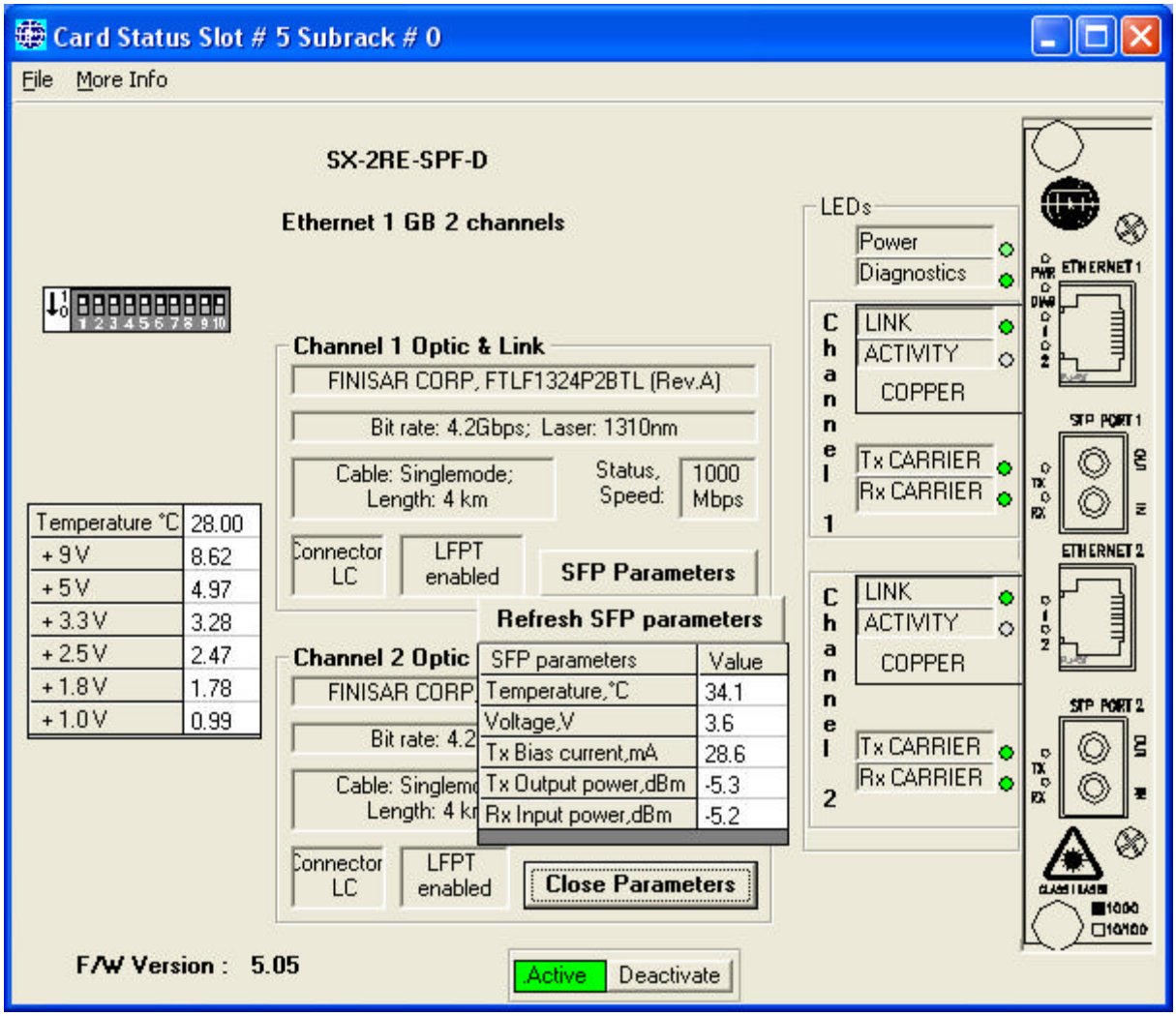

Figure 8.0

Click button “SFP Parameters”.
To renew parameters click “Refresh SFP parameters” button.

9.0 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 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)
Check connection to a copper port.

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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