



Installation/Operation Instructions

Part Number:

SX-4FX-x

(1x4 All-Optical Fiber Switch)



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Table of Contents

- 1.0 Product Description.....3
- 2.0 Installation.....3
 - 2.1 Fiber connections.....4
- 3.0 Local/Remote Control.4
- 4.0 USB 2.0 Control.....4
- 5.0 SpectraSmart Software Control.....9
- 6.0 Front Panel Pinout Assignment Diagram.....12
- 7.0 Status Indicators.....14
- 8.0 Specifications.....14
- 9.0 Troubleshooting.....15
- 10 Appendix 1. Product Part Numbers.....15

1.0 Product Description

The SX-4FX, 4 channel fiber switch is part of Meridian's continuing expansion of fiber transport products to provide improved fiber network security and reliability. This card is designed to provide the ability to selectively switch the single-mode fiber optical input to any one or all of the switched outputs. As an all-optical switch, this device is data type and rate agnostic and can switch video, audio or data signals via input single-mode optical fiber. Each port of the switch can be controlled either locally, using the front-panel mounted DIP switch, or remotely, using the USB interface or Meridian's SpectraSmart network management system. Front panel mounted indicator lights show the status of each output port (on or off) as well indicating the mode of operation (local/remote). The switch is not latching so it will not retain its state during a loss of electrical power. This card can also be used with bi-directional information such as camera PTZ control and video conferencing systems, but only one output port can be selected.

The functionality of this card is enhanced by its compatibility with Meridian's PC based SpectraSmart network Management and remote diagnostic software system. SpectraSmart monitors the operating parameters of the card and allows the user to remotely select the optical transmission path. See SpectraSmart brochure for additional details.

Optional GPI control port is available, by adding "J" on the end of part number. And optional conformal coating provides an additional level of protection from environments with high humidity and condensation.

2.0 Installation

The SX-4FX series products are Meridian's standard one-slot wide, 3RU cards and occupy one slot in Meridian's standard chassis (SR-500/S, SR-1002/S, SR-1600/R and SR2001 & 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 populated subrack should have forced-air cooling to avoid excessive heat buildup inside the chassis. A fan assembly tray (P/N FA-2000/1) with three (3) fans is available from Meridian and should be installed under the 19" SR-2000/1 whenever possible.

2.1 Fiber connections

These cards are designed for singlemode fiber and are available with either FC or ST optical connectors. See part # selection guide in appendix for ordering details.

3.0 Local/Remote Control

The card has one optical input port and four optical output ports with green-color LED associated with each output port. The green LED, associated with each output port, shows which port is currently active.

There is the “Port Control”, five position DIP switch located directly below the front panel mounted optical output connector 4. The four top switches select the input ports activities and, the bottom switch select the “Local or Remote”. In the Local position port activity can be controlled by switches position 1 to 4. In the Remote position port activity can be control by USB interface connection to PC or SpectraSmart network management system (SSPC). Input optic signal can be bidirectional when only one output port selected.

Optional GPI control port is available via RJ-11 connector. Five Contact Closure GPI inputs can be used to control switch by closing inputs to ground. The table below illustrates how they are configured.

Control Port RJ-11		
	<i>OPEN</i>	<i>CLOSED</i>
Pin 1	Port 1 Disable	Port 1 Active
Pin 2	Port 2 Disable	Port 2 Active
Pin 3	Port 3 Disable	Port 3 Active
Pin 4	Port 4 Disable	Port 4 Active
Pin 5	Local	Remote

4.0 USB Interface Control

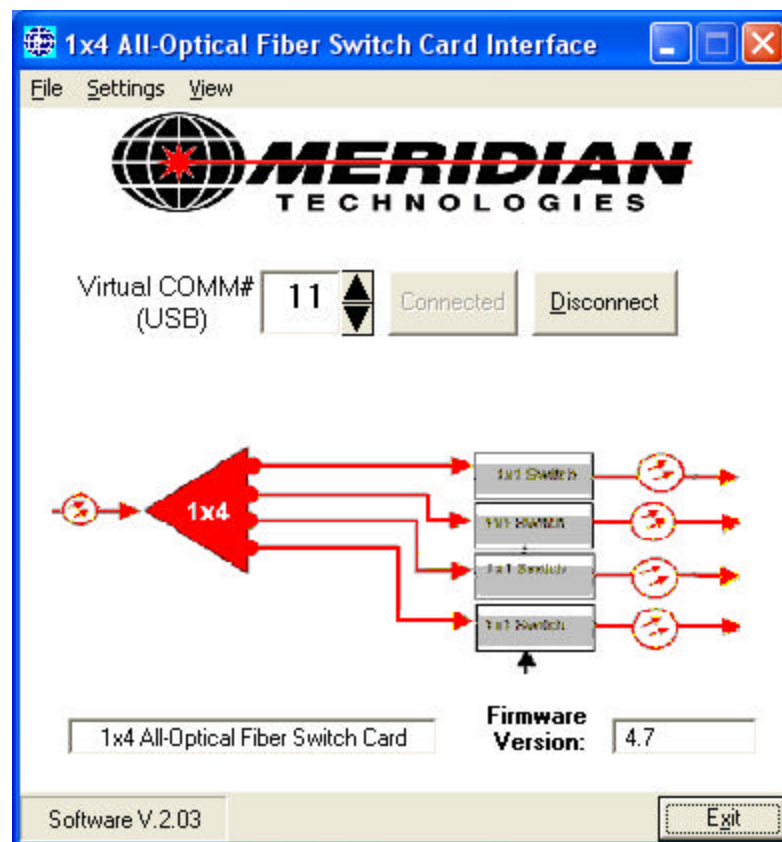
USB interface is USB2.0 & USB1.1 compatible and has mini connector. The Remote mode / by USB or SSPC/ will be controlled, when position 5 of the DIP switch on the front panel in ON. In the remote mode USB interface connection has a priority over SSPC. SSPC will control when USB is disconnected from PC. Each optical switch of the output ports 1,2,3,4 can be turned on or off, independently of the other switches. Any one, combination of switches or all switches can be turned on or off independently. Adjacent to each optical output connector there is an indicator light to indicate the switch's status / ON = GREEN /.

If the switches are set by the software / DIP switch in REMOTE setting / , when the USB is disconnected, the switch will stay in that position set by the software prior to being disconnected from the PC. When the DIP switch put back into LOCAL mode , each of the optical switches be configured as defined by the front panel DIP switches.

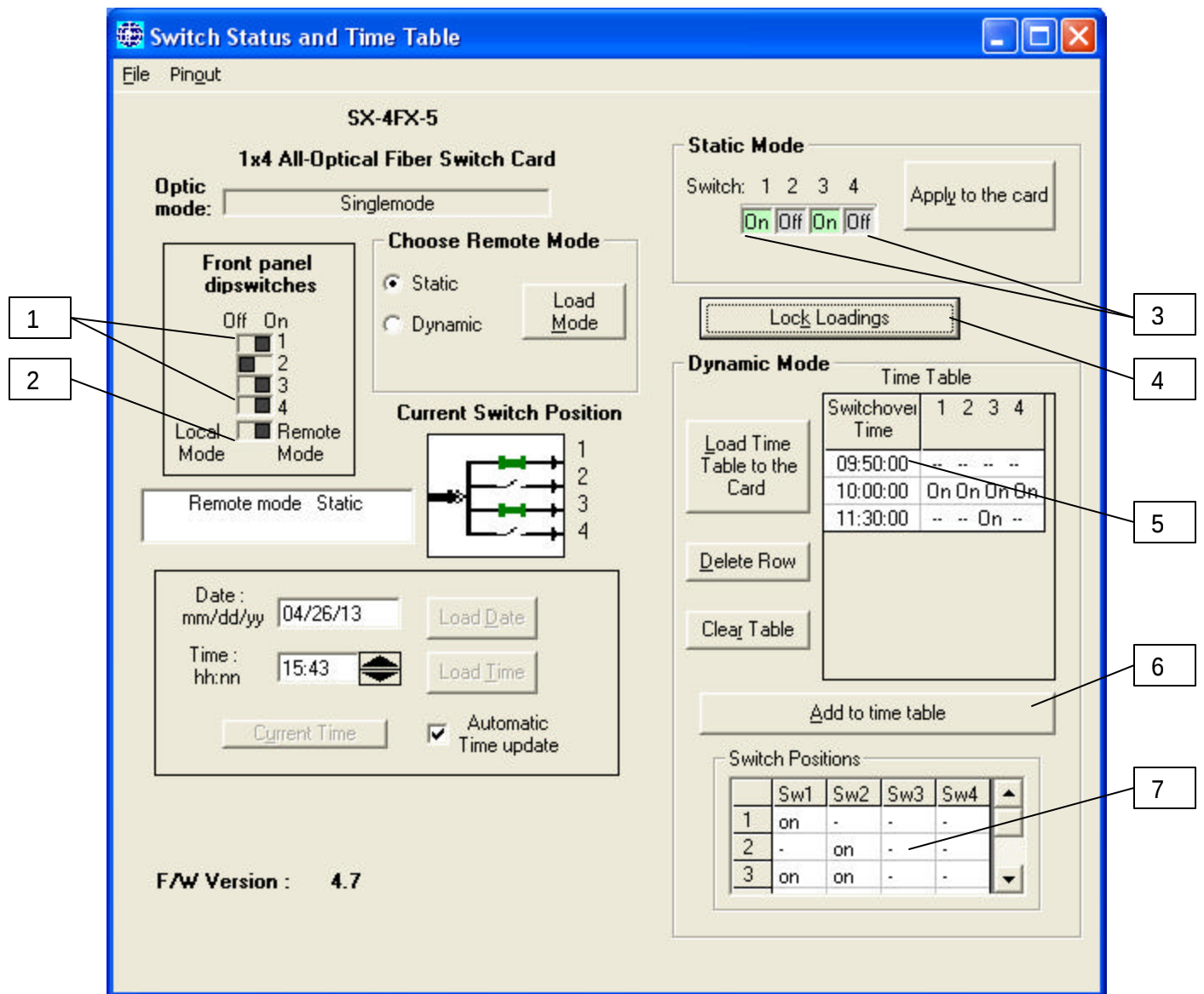
Software have a feature to lock/unlock the switch setting to avoid inadvertent switch changes someone from the PC.

Static mode:

Run program by clicking START, then “ALL PROGRAMS” and choose menu “Optical Fifer Switch 1x4”. The program find virtual Comm port # and open windows ”1x4 Optical Fiber Switch Card Interface” and “Switch Status and Time Table”.



If there is no connection, check or connect the PC to card via USB cable and click on “Connection” button in window . Than click menu “Settings” and then “Switch Status and Time Table” - window”Optical Fiber Switch 1x4 Card Interface” is appeared.



Click button “Lock/Unlock Loadings”(4). Select desired Static Mode configuration by clicking squares (on/off) (3) under the Switch 1 2 3 4 of the “Static Mode”. Then click button “Apply to the card“. Confirmation message is appeared.



Click “OK”.

Choose Remote Mode by clicking checkbox " Static", then click button "Load Mode". Remote configuration and static mode is saved to the card. If DIP Switch (2) on the front panel set to REMOTE, then Optic switches will be set in Static Mode configuration.

"Current Switch Position" shows real position on switch "Status Mode". You can change position of the switch clicking squares (3) under positions 1,2,3,4 in "Static Mode" and then "Apply to the card". This information will be send to the card and stored in non-volatile memory. You can return to previous position of the switch, clicking button "Back".

Dynamic mode:

This design has RTC (Real Time Clock). Card has a supercapacitor for supply RTC for a few week without card power.

This feature allows to control these four outputs by real time. An example of this would be that an operation center is on line from 6:00am to 5:00pm then they need to switch optical communications to another op center from 5:00pm to 6:00am.

RTC has two way for time and date setting : manually and automatically from PC.

For Date change double click in window with date mm/dd/yy , choose new Date from Calendar. To save new Date to card click " Load Date" , confirmation message is appeared.

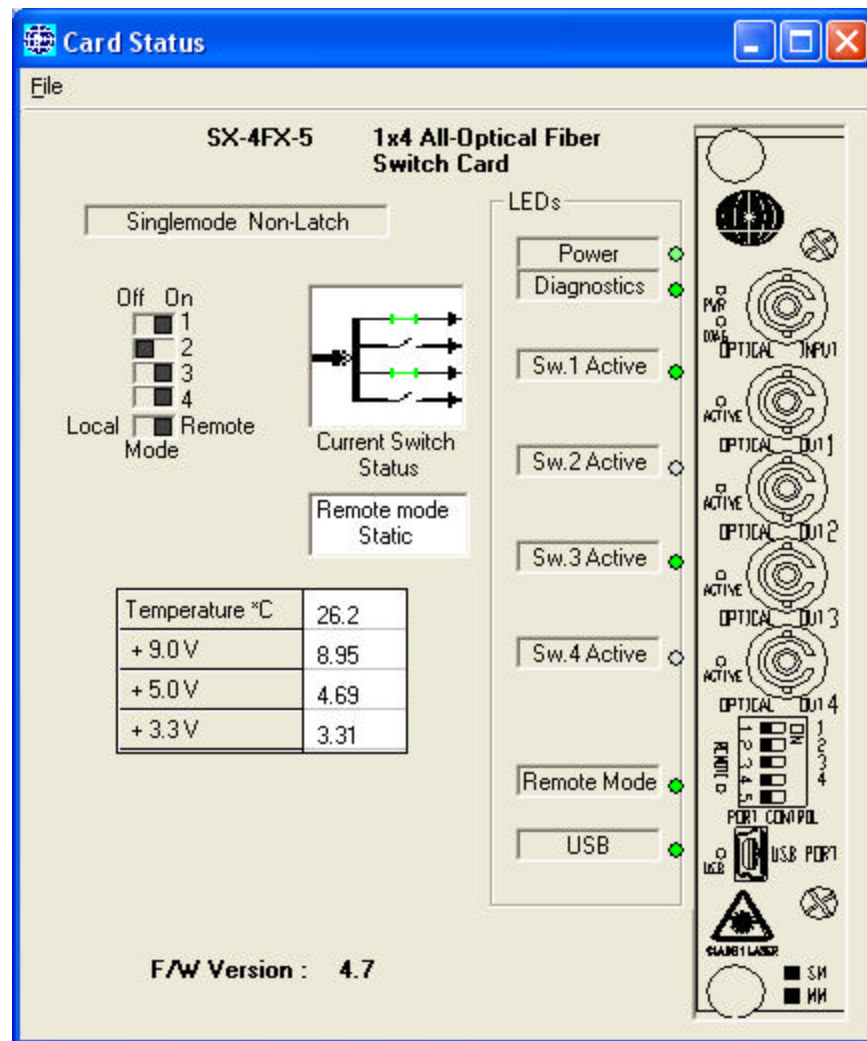
For Time changing highlight hours or minutes, make changes by arrows and click "Load Time". For Automatic Time update from PC mark the option "Automatic time update".

Dynamic mode can be set by clicking "Unlock Loadings" , choose checkbox "Dynamic" , then click "Load Mode" and receiving confirmation message.

In Dynamic mode you can set up to 10 different switch positions during the day. First, select switch positions, which you want "Switch positions" table (7) and highlight this row. Click button "Add to time table"(6) and this row is appeared in Time Table (5). Double click on "Switchover Time" column's row you want to change time, set desired hours and minutes (highlight them and change by arrows) and click 'OK'. Repeat it for next position for timing changes. It should be no less then 2 and no more then 10 rows in the Time Table. After filling all positions for one day click "Unlock Loadings"(if there is "Lock loadings"), then "Load Time Table to the Card".

Other features

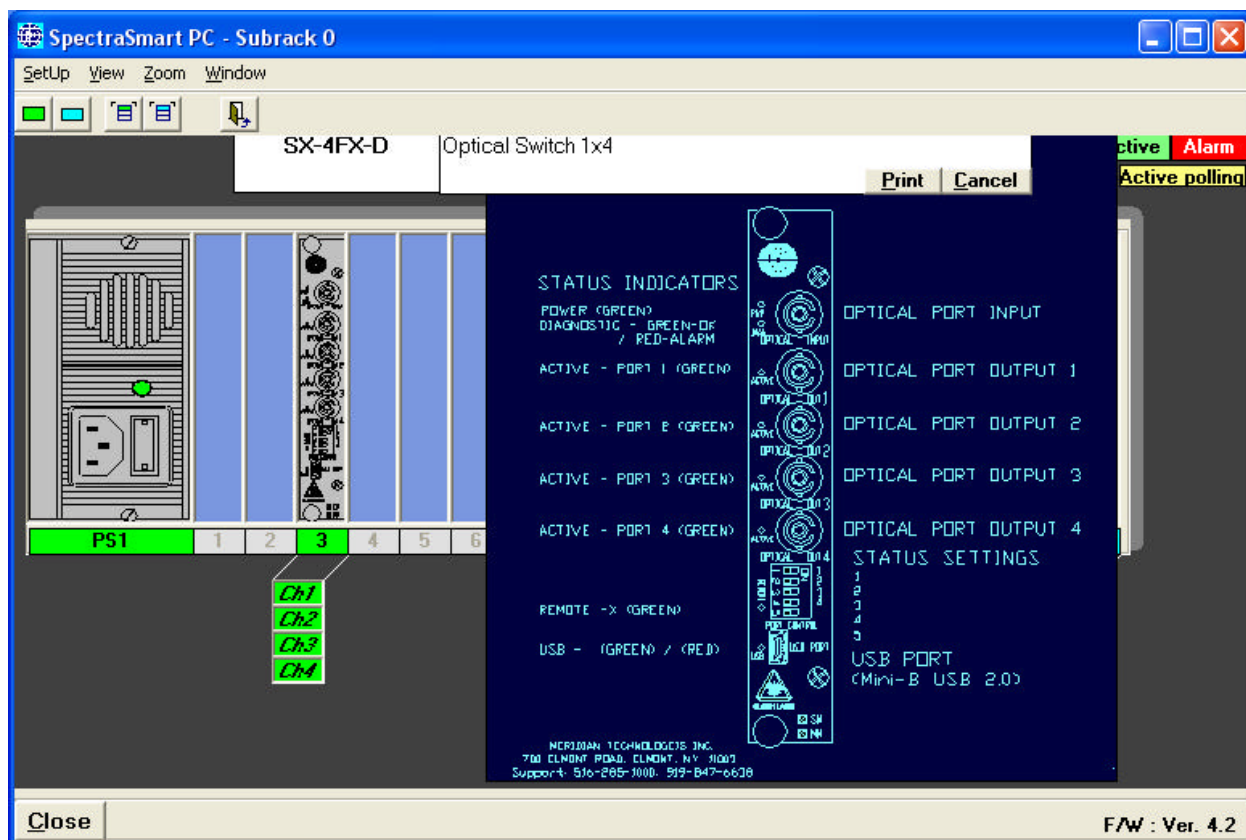
In window “1x4 All-Optical Fiber Switch Card Interface” click menu “View” and “Card Status”, where there is current info about this card.



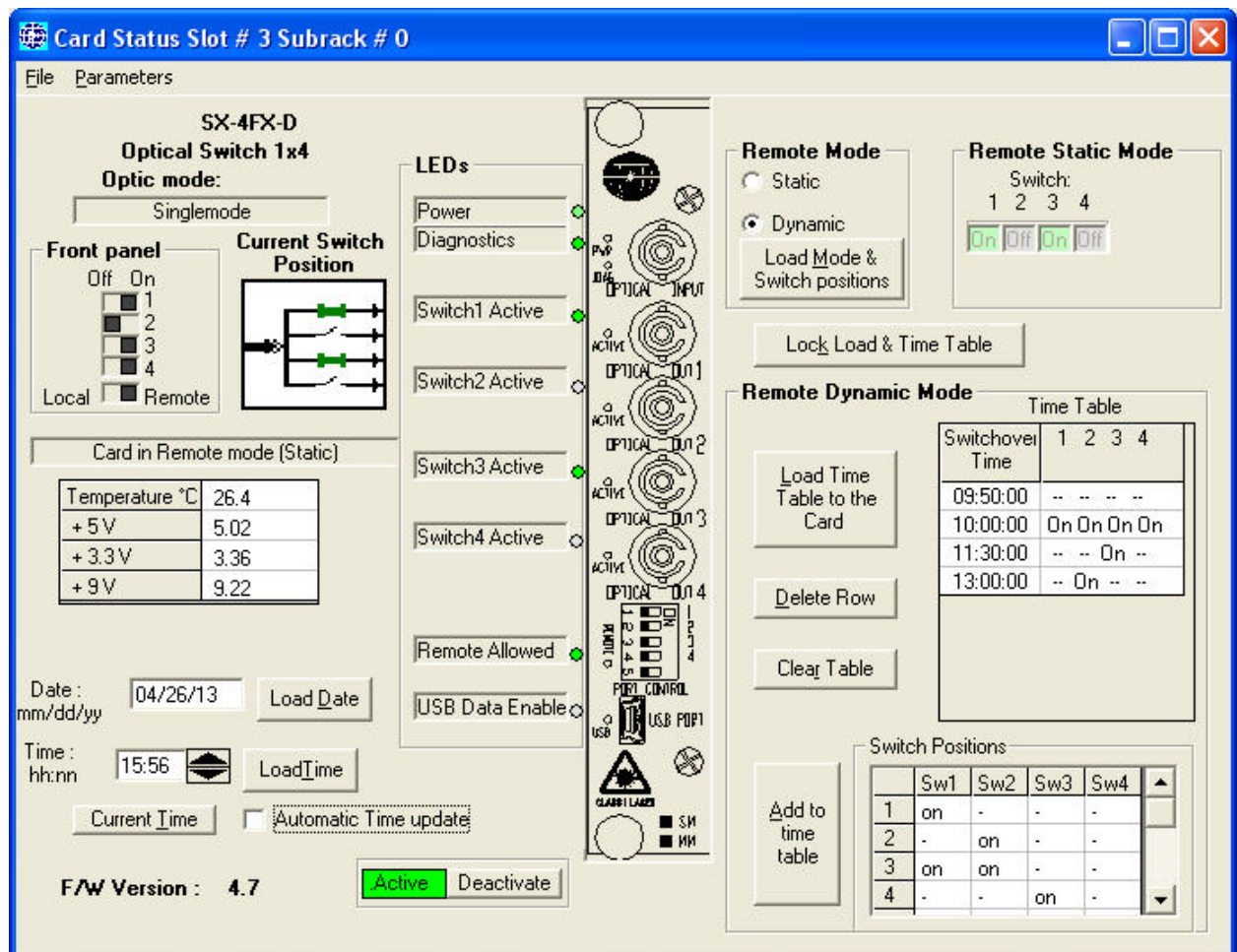
5.0 SpectraSmart Software Control

SpectraSmart PC is a Windows 2000/XP/Vista/7 based Link Status Monitoring and Diagnostic System. The SpectraSmart scans card parameters in sequential order, checking for levels against factory/user set threshold values. If an error or out of range condition is detected, the PC will continue to scan through system components until the error condition has been detected 3 times before showing an Alarm message. This helps ensure that the detected condition is an actual occurrence and not simply an anomaly.

The screen shots below illustrate what the computer displays when the SpectraSmart software is operated. This first screen shows a display of the card's front panel layout and identifies the various indicators and associated input/output interfaces. When a valid alarm is generated and identified the 2nd alarm display will be shown on the screen indicating what card generated the alarm as well as the cause of the alarm. When triggered, the "Suggestion" button will suggest appropriate corrective action to be taken to correct the alarm.



This card has additional features that can be monitored in a window displayed using SpectraSmart by right clicking on the image of the card and then clicking from dropdown menu "Card Status". See the Card Status screen display below.



When the front DIP switch position 5 is ON – remote mode (SpectraSmart control enable) the user can set ports active status to card. This information will be sent to the card and stored in non-volatile memory.

For checking these functions in detail, click the right mouse button on the front panel image of the card and choose "Parameters" from the dropdown menu. This will display these various card parameters for viewing and modification.

The "Current parameters" screen below shows the various card parameters and operating condition settings. The center numbers show the actual (real-time) value as well as min and max values that SpectraSmart has measured for each.

Subrack # 0 Slot # 3 SX-4FX-D

# par	Current value	Min	Max	Parameter description
1	26.4	26.4	26.4	T°C Card/Module, deg. < 75° C
2	5.02	5.02	5.02	+5 V Supply, ± 10%
3	3.35	3.35	3.36	+3.3 V Supply, ± 10%
4	9.22	9.22	9.22	+9 V Supply, ± 10%
5	0	0	0	Optical Switch status, 0-OK, 1-fail
6				
7				

Click the right mouse button on the front panel image of the card and choose “Card memory” from the dropdown menu the user can read the card’s information including the part number, date of manufacture, working (operational) days, and maximum operating temperature of the card.

You can control activity all port in static or dynamic modes like it discribe in USB Interface Control.

Card Information

SR# 0 Slot# 3 Card SX-4FX-D

* Part Number SX4x1

* Serial Number 134657

* Date of Manufacture 10/25/2012

* Running time of Card/Module in days 1

* Card/Module temperature /max/ °C 32

* Duration of exceeded Card/Module temperature in days 0

6.0 Front Panel Pinout Assignment Diagram

Figure below shows the front panel layout, connector location, indicator location and pinout assignment for the SX-4FX-x module.

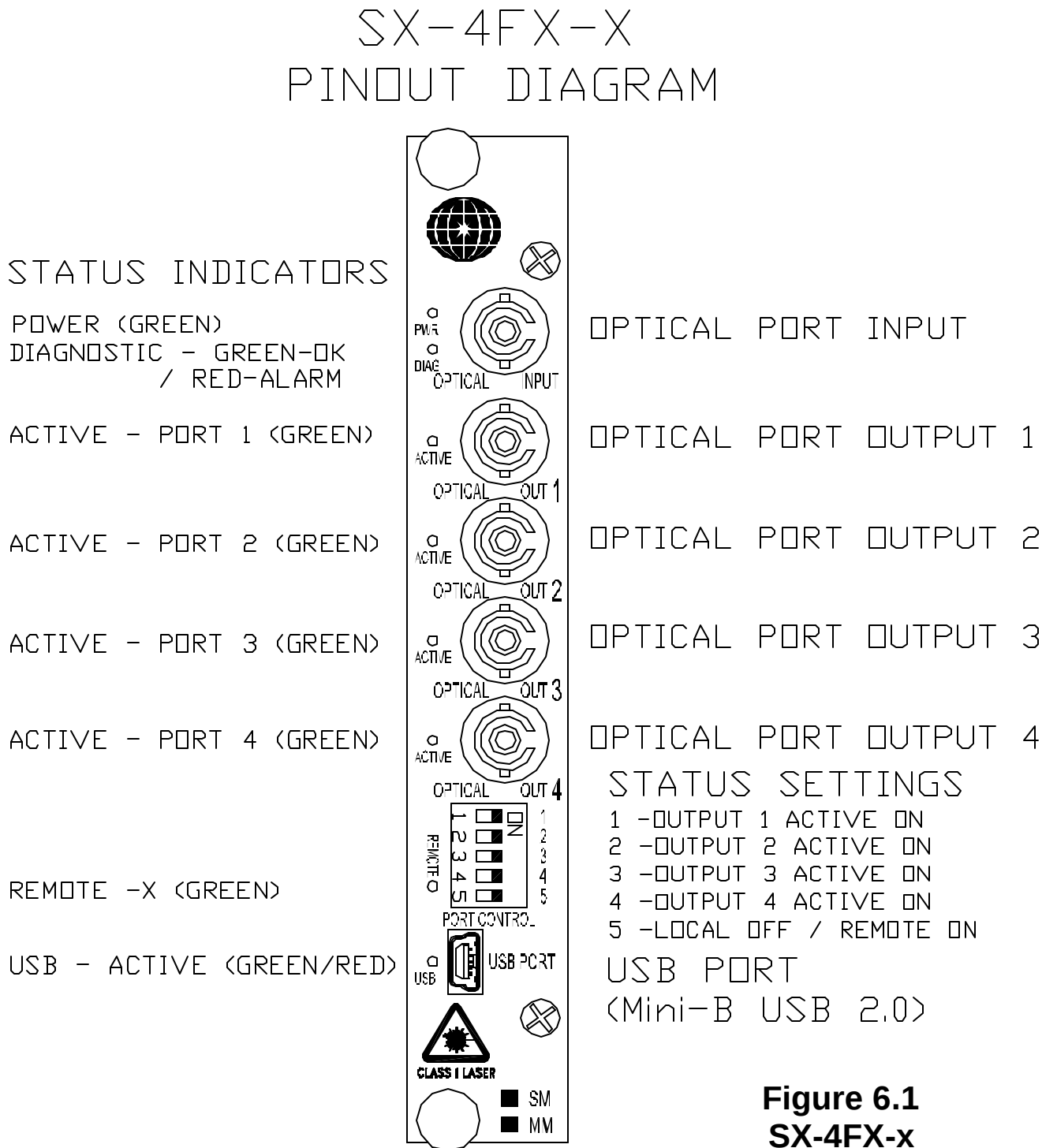


Figure 6.1
SX-4FX-x
Front Panel Layout Diagram

SX-4FX-xJ

PINOUT DIAGRAM

STATUS INDICATORS

POWER (GREEN)
DIAGNOSTIC - GREEN-OK
/ RED-ALARM

ACTIVE - PORT 1 (GREEN)

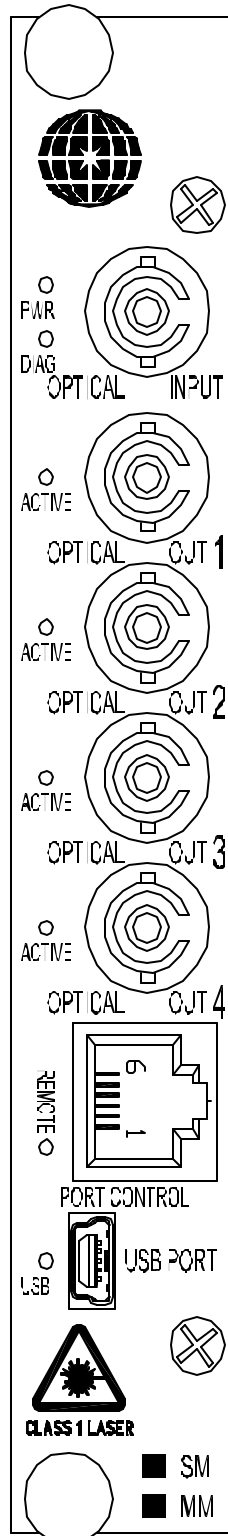
ACTIVE - PORT 2 (GREEN)

ACTIVE - PORT 3 (GREEN)

ACTIVE - PORT 4 (GREEN)

REMOTE -MODE (GREEN)

USB - ACTIVE (GREEN/RED)



OPTICAL PORT INPUT

OPTICAL PORT OUTPUT 1

OPTICAL PORT OUTPUT 2

OPTICAL PORT OUTPUT 3

OPTICAL PORT OUTPUT 4

CONTROL PORT (RJ-11)

1. OUTPUT 1 ACTIVE
2. OUTPUT 2 ACTIVE
3. OUTPUT 3 ACTIVE
4. OUTPUT 4 ACTIVE
5. LOCAL/REMOTE
6. GND

USB PORT
(Mini-B USB 2.0)

Figure 6.2
SX-4FX-xJ

Front Panel Layout Diagram

7.0 Status Indicators

The above front panel layout diagram also list and describe the function of the various LED indicators. The front panel mounted indicators show provide visual indication of the operational status of the card. The function of these LED indicators is as follows:

Power:	Green (on)
Diagnostic:	Green (ok), Red (alarm)
Port 1	Green (active)
Port 2	Green (active)
Port 3	Green (active)
Port 4	Green (active)
Mode	Green (remote)
USB	Green/Red (active)

8.0 Specifications

Optical:

Wavelength range	1260nm to 1610nm
Insertion loss	7.5dB (typical) 8.5dB (max)
Return loss	50dB
Channel isolation	55dB
Repeatability	+/- 0.02dB (typical)
Polarization dependent loss (PDL)	0.1 dB
Switching speed	5msec (typical), 10msec (max)
Switching lifetime	10 million cycles
Optical input range	-50dBm to +10dBm

Connectors

Optical	FC or ST
USB	Mini-B USB 2.0
Status Port.....	Switch(default), RJ-11(optional)
Power	See SR Series Chassis for Details

Quality

MTBF	>120,000 hours @Ground Fix 35°C per MIL217F
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Physical

Dimensions (Card)	160mm (6.3") L, 127mm (5") H, 20mm(0.80")W
Weight (Card)	450 gms (16 Oz)
No. of Slots	1
Module	See SR-500 Brochure

Enviromental

Operating Temperature 0°C to +70°C
Storage Temperature -55°C to +85°C
Relative Humidity 0 to 95% Non-condensing

9.0 Troubleshooting

Below is a listing of several problem 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 chasses 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 chasses 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 chasses or location in the same chasses, if available.

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

10 Appendix1 Product Part Numbers

The table below lists the various part numbers and description that are available for this series of product.

Product Part Number Guide			
Part Number	Fiber Interface	Optical Connector	Wavelength
SX-4FX-5	Singlemode	FC	1310/1550nm
SX-4FX-5ST	Singlemode	ST	1310/1550nm



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