SECTION 00000

SX-2FX-3 – FIBER OPTIC 2 CHANEL PROTECTION SWITCH ENGINEERING SPECIFICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Fiber Optic 2 channel fiber protection switch

1.02 SECTION INCLUDES

A. SX-2FX-x Series 2 channel fiber protection switch - Rack Mount

1.03 REFERENCES

A. Conformity for Europe (CE)

1.04 SYSTEM DESCRIPTION

A. Performance Requirements: provide automatic or manual switching between two active fibers
   1. The card shall utilize 1310nm optics capable of automatic or manual switching from its primary singlemode fiber to the alternate or redundant path in less than 10 msec (SX-2FX-3) (Automatic mode)

1.05 SUBMITTALS

A. Product Data: Manufacturer's printed product data sheet for each SX-2FX-3 card.
B. Detail Drawings: Electrical and optical connect drawings. Product mounting template.
C. Manufacturer's Installation and Operating Manual: Printed installation and operating information for each SX-2FX-3 card.
D. Warranty: Manufacturer's Printed Warranty

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in unopened factory packaging.
B. Inspect product upon delivery to assure that specified products have been received.
C. Store in original packaging in a climate controlled environment. Storage Temperature not to exceed: -55˚ C to +85˚ C

1.07 PROJECT/SITE CONDITIONS

A. Temperature Requirements: Products shall operate in an environment with an ambient temperature range of –34˚ C to +74˚ C.
B. Humidity Requirements: Products shall operate in an environment with relative humidity of 0% to 95% (non-condensing). If product is installed in condensation conditions, unit shall have conformal coating applied to the printed circuit board.

1.08 WARRANTY

A. Standard Meridian Technologies Warranty: Meridian warrants the product to be free of factory defects under manufacture's 10-year Warranty as submitted under article 1.05 (E)

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Acceptable Manufacturer: Meridian Technologies; 700 Elmont Rd, Elmont, NY 11003; Tel: 516-285-1000; Fax: 516-285-6300; Email: sales@meridian-tech.com; Internet: www.meridian-tech.com
B. Substitutions: Not Permitted
C. All fiber optic modules shall be supplied from a single manufacturer.

2.02 MANUFACTURED UNITS

A. Model Number Descriptions: Reference Table A: Product Number Descriptions

2.03 GENERAL SPECIFICATIONS

A. The 2 channel fiber protection switch shall be a Meridian SX-2FX series 1-slot, 3RU card. The card shall provide fiber-path protection with either automatic or manual switching between two redundant singlemode fiber paths. In the event of a loss or low signal strength of the fiber's optical signal is detected, the card shall automatically switch from its primary fiber to the alternate or redundant path in less than 10 msec. In addition, the user can override the switch to manually select one of the active fiber paths. The card shall be hot swappable in a rack mount system to alleviate a complete system shut down during maintenance or repair. The card shall have an MTBF of >120,000 hours and operate in an environment of –34˚ C to +74˚ C and relative humidity between 0% to 95% (non-condensing). The card shall be CE marked. The circuit board shall be UL 94 flame rated and meet all PCI standards. All PC boards shall be designated with part number, PC board number and show appropriate revision number. Housing shall be of all metal construction. All LED indicators and both electrical and mechanical connections shall be identified with silk-screened labels.
B. SPECTRASMART compatible. The SX-2FX series 2 channel all-optical fiber protection switch shall be compatible with the optional Meridian SpectraSmart, PC-based network management system for real-time fiber optic transmission system diagnostics (with Meridian's SR-2000/S1-PC chassis) SPECTRASMART software shall have the ability to set the switching threshold independently for each input fiber to compensate for fiber path loss variations.
C. ALARMS – The fiber protection switch shall have a contact alarm to indicate that the switch has been activated by a fiber fault. A form-C relay shall be provided in the card's front panel to indicate which fiber is being selected as the optical path through the switch
D. Front Panel LEDs - The card shall provide power, active input port, output port and diagnostic status indicating LEDs for monitoring proper system operation including Auto/Manual mode
E. Auto/Manual mode – the card shall have a front-panel mounted switch to convert the card from an automatic to manual mode of operation. An

A/B switch shall also be located on the front panel to provide selection of the primary fiber path.

2.04 OPTICAL SPECIFICATIONS

A. MERIDIAN Model Number SX-2FX-3
   1. Optical Fiber: 9/125 micron (singlemode)
   2. Number of Fibers Required: 3 (2 input & 1 output)
   3. Optical Wavelength range: 1260 to 1610nm
   4. Insertion loss:1.5dB (typical), 2.5dB (max)
   5. Return loss: 50dB
   6. Channel isolation: 55dB
   7. Repeatability: +/- 0.02dB (typical)
   8. Polarization dependent loss (PDL): 0.1 dB
   9. Switching speed: 5msec (typical), 10msec (max)
   10. Switching lifetime: 10 million cycles
   11. Optical input range: -35dBm to +5dBm
12. Optical Attenuation: No manual adjustments required

2.06 STATUS INDICATORS

A. Power: Green (on)
B. Diagnostic: Green (ok), Red (alarm)
C. Port A: Green (active), Red (alarm)
D. Port B: Green (active), Red (alarm)
E. Manual: Green (auto), Red (manual), Dual Green/Red (PC)

2.07 CONNECTORS

A. Optical: ST or FC (three connectors)
B. Alarm: Screw Terminal (2 pin)
C. Input Status: Screw Terminal (3 pin)

2.08 ELECTRICAL SPECIFICATIONS

A. Power: (see SR-500, SR-1000, SR-2000 & SR-2001 series chassis for power specifications)
B. Current Protection: Automatic re-settable solid-state current limiters
C. Voltage Regulation: Solid-state, Independent on each board
D. Circuit Board: UL 94 flame rated and meets all PCI standards.
E. Rack mount Card: Shall be hot-swappable with MERIDIAN Model SR-2000 & 2001 series EIA 19" card cage

2.09 MECHANICAL SPECIFICATIONS

A. Surface Mount Dimensions: 6.3" x 0.8" x 5.25" (16.0 cm x 2.0 cm x 13.35 cm) (with SR-500 chassis)
B. Rack Mount Dimensions: 7.16" x 1.15" x 5.21" (18.2 cm x 2.9 cm x 13.2 cm)
C. Number of Rack Slots: 1
D. Finish: Card shall be constructed of anodized aluminum.
E. Weight: 450 gm (16 Oz)

2.10 ENVIRONMENTAL SPECIFICATIONS

A. MTBF: >120,000 Hours
B. Operating Temp: –34˚ C to +74˚ C
C. Storage Temp: -55˚ C to +85˚ C
D. Relative Humidity: 0% to 95% (non-condensing). If product is installed under condensation conditions, unit shall have conformal coating applied to the printed circuit board. (Add –C to model number for conformal coated printed circuit board)

2.11 REGULATORY AGENCIES/APPROVALS AND LISTINGS

A. UL 94-flame rated PCB board: 94VO
B. Conformity for Europe (CE)

2.12 ACCESSORIES

A. Card Cage: MERIDIAN Model SR-2000 and 2001 series EIA 19" card cage shall be available to house and power rack mount cards.
B. Blank Panels: MERIDIAN Model CD-BPL-S shall be available to cover unused rack slots.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect cards before installation.
B. Cards shall be free of any cosmetic defects or damage.
C. All optical connectors shall be covered with dust caps and remain on the card until installing cable connectors to card.
D. Shipping box shall include the card, power supply and operations manual.

3.02 PREPARATION

A. Standalone Module (Surface Mount)
   1. Shall be mounted on a properly prepared surface adequate for the size and weight of module. The placement of the unit shall allow provision for cable installation and maintenance as indicated on the approved detail drawings and in compliance with the MERIDIAN mounting template and installation manual.
B. Rack Mount Card (19" Rack)
   1. Shall be installed in the MERIDIAN Model SR-2001/AS1 card cage. Ensure the card cage is installed in a standard EIA 19" (482.6 mm) rack or wall standoff bracket adequate for the size and weight of the card cage. The placement of the unit shall allow provision for cable installation and maintenance as indicated on the approved detail drawings and in compliance with the MERIDIAN installation manual.

C. Optical Fibers

1. Caution: NEVER look into the end of an active optical fiber when using laser light output. Eye damage can occur. Wear eye protection when cleaving, terminating, and splicing fiber.
2. The number and type (multimode or single-mode) of optical fiber shall meet the requirements of the MERIDIAN model number in article 2.05 used in the installation.
3. All optical fiber cables shall be properly installed and terminated with the mating optical connectors as submitted in article 2.07 (A).
4. The optical link shall be tested with either a power meter, at a minimum, or OTDR to ensure

the link budget (overall path loss) plus an added 3dB of optical safety margin does not exceed the optical power budget as submitted in article 2.05.

5. All optical connectors on cable shall be cleaned in compliance to optical connector manufactures specifications and covered with dust caps until connection to the fiber optic card is made.

3.03 INSTALLATION

A. General: Locate fiber optic cards as indicated on the approved detail drawings and install card in compliance with the MERIDIAN installation and operations manual.

3.04 TESTING

A. Testing the Fiber Optic 2 channel fiber protection switch.
   1. Verify that all optical fibers are properly connected.
   2. Make sure that power is applied to all fiber optic cards, controllers, and receiver drivers or other equipment used in the system.
   3. Successful switching between two active fibers should be confirmed at this point by connecting and disconnecting ports A and B and toggling manual switch between A and B.

3.05 CLEANING

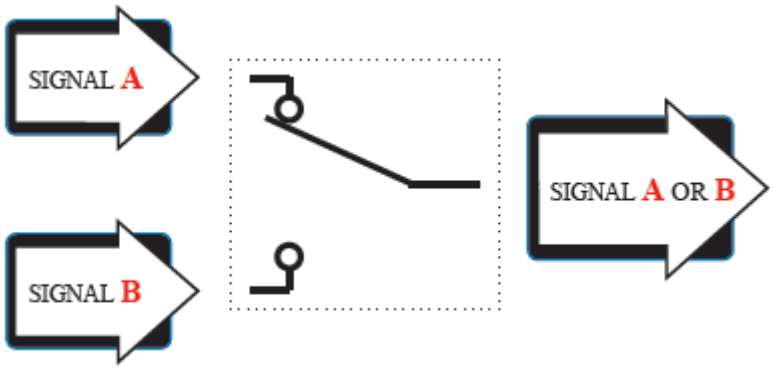
A. Follow all instructions for proper use of solvents and adhesives used for termination and splicing. At completion of the installation, dispose of all fiber scraps properly.

MANUFACTURED UNITS REFERENCE TABLES

Table A: Product Number Descriptions

SX-2FX Series	DESCRIPTION	OPTICAL POWER BUDGET	MAXIMUM DISTANCE*
SX-2FX-3	SM 2 channel Fiber Protection Switch, singlemode 3 Fiber, 1-slot card	40 dB	25 miles (40 km)

* Maximum distance is limited to fiber bandwidth and optical loss of the fiber and any additional loss by connectors, splices and patch panels.



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