

# MEMS 3D MATRIX SWITCH SX2

DiCon's MEMS 3D Matrix Optical Switch is a proprietary optical switch structure built on DiCon's industry-proven MEMS mirror technology that enables any input to connect to any output in a stable, non-blocking all-optical cross-connect configuration. Its superior optical performance and reliability make it a versatile solution for routing both classical optical signals as well as sensitive quantum information.



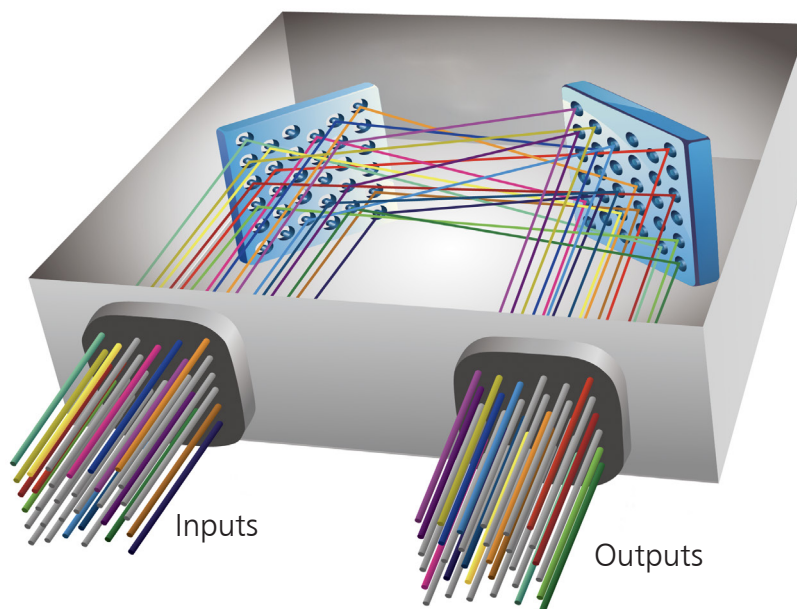
## FEATURES

- No dithering or active alignment artifacts
- High Reliability / Stability
- Lifetime > 1 Billion Switch Cycles
- Available in any MxN configuration up to 32x32
- Proven MEMS Technology

## APPLICATIONS

- Quantum Computing / Communication
- Cyber Surveillance
- Data Center Network
- Configurable Test & Measurement

## OPERATING PRINCIPLE



# MEMS 3D SWITCH MODULE - SX2

## ORDERING INFORMATION

□ - □ - P - □ - □ - U - 0 - □ - □ - □ - □

### Product Code

**SX2** 3D Switch  
**SX2H** High Stability  
 3D Switch

### Switch Configuration

**MxN** Specify  
 M ≤ 32, N ≤ 32 (For SMF)  
 M ≤ 24, N ≤ 24 (For PM)

### Alignment Type

**P** Opaque

### Fiber Type

**9** 9/125 μm SMF  
**PM13** Corning PM 1300 Fiber  
**PM15** Corning PM 1550 Fiber  
*\*Other fiber options available upon request*

### Wavelength Range

**O** 1260-1360 nm  
**E** 1360-1460 nm  
**S** 1460-1530 nm  
**C** 1530-1570 nm  
**L** 1570-1625 nm  
**U** 1625-1675 nm

*\*Multiple wavelength ranges can be supported. Use "/" to add multiple ranges.  
 For example: For 1260 - 1360nm & 1530 - 1570nm use O/C*

### Control Interface

**U** I<sup>2</sup>C/RS232/USB

### Start Up State

**0** Channel 0 (Off state)

### Fiber Jacket

**L** 900 μm Loose Tube Fiber (For PM Type Only)  
**B** 250 μm Bare Fiber (For PM Fiber Only)  
**T** 900 μm Tight Buffer (For 9/125 μm SMF Only)

*\*Other fiber options available upon request*

### Connector Type

**FC** FC/UPC  
**FC/APC** FC/APC  
**LC** LC/UPC  
**LC/APC** LC/APC  
**SC** SC/UPC  
**SC/APC** SC/APC  
**N** None

*\*Other connector types available upon request*

### Connector Key Orientation

**S** Slow Axis  
**F** Fast Axis  
**N** None

### Pigtail Length

**1** 1 Meter  
**X** Specify X Meters

*\*Tolerance is +/- 0.05 m*

Please contact DiCon Fiberoptics to discuss any special requirements not defined above.

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## Optical Specifications<sup>1,2</sup>

Wavelength Range	1260 to 1675 nm	
Insertion Loss <sup>3</sup>	0.6 dB typ. 1.1 dB max.	
Stability <sup>4,5</sup>	SX2	0.02 dB typ. 0.05 dB max.
	SX2H	0.008 dB typ. 0.01 dB max.
Crosstalk	-85 dB typ. -60 dB max.	
Back Reflection	-55 dB typ. -45 dB max.	
Wavelength Dependent Loss <sup>6</sup>	0.1 dB typ. 0.4 dB max.	
Polarization Dependent Loss <sup>7</sup>	0.1 dB typ. 0.25 dB max.	
Polarization Extinction Ratio <sup>8</sup>	20 dB typ. 18 dB min.	
Switching Time	25 ms max.	
Durability	10 <sup>9</sup> cycles min.	
Repeatability <sup>9</sup>	0.06 dB max.	
Optical Power	500 mW max.	
Fiber Type	9/125 μm Single-Mode or Polarization Maintaining	

## Environmental Temperature Specifications

Operating <sup>10</sup>	10 to 50°C
Storage	-40 to 85°C

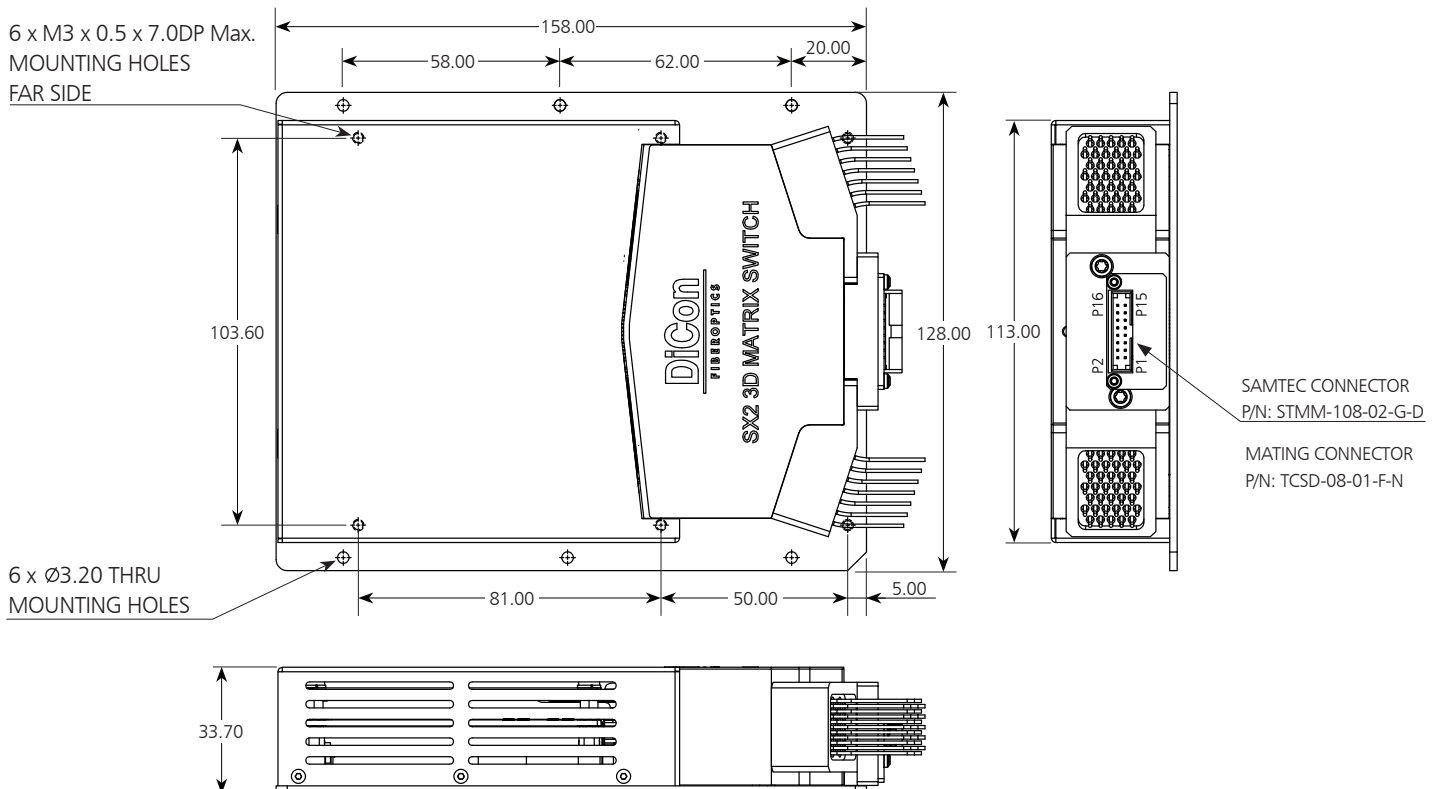
## Electrical Specifications

Control Type	RS-232, I <sup>2</sup> C or USB
Supply Voltage	12 VDC
Power Consumption	5.6 W max. Operating
	8.6 W max. Start Up
Connector type	Samtec P/N:STMM-108-02-G-D
Mating connector	Samtec P/N:TCSD-08-01-F-N

- Specifications are without connector loss. IL adds 0.2 dB for one pair connector loss.
- All measurements taken at room temperature for the set wavelength band index.  
Note: Each wavelength band has its own wavelength band index, which can be set to optimize the optical performance for that band. Only one wavelength band index can be selected at a time. The provided wavelength band index will be 1310nm, 1550nm & 1625nm for the full band version. Set a nearby wavelength band index to have the best performance if the selected band has no wavelength band index.
- For multi-band operation, add up to 0.2dB IL max over entire range.
- Stability is defined as the difference between highest and lowest insertion loss for a given connection, over a given period.
- Defined over 10 second period using 10 kHz sample rate.
- The Wavelength Dependent Loss (WDL) is measured from CWL +/- 20nm.
- Polarization Dependent Loss (PDL) is for single-mode fiber.
- Polarization Extinction Ratio with connectors is 18 dB typ., 14 dB min.
- Repeatability is defined over 100 cycles.
- Extended operational temperature ranges are available.

## MECHANICAL SPECIFICATIONS

Dimensions in mm



Please contact DiCon Fiberoptics to discuss any special requirements not defined above.

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[www.diconfiberoptics.com](http://www.diconfiberoptics.com)