

MEMS 3D MATRIX SWITCH

SX1

DiCon's MEMS 3D Matrix 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 classical optical signals and sensitive quantum information.



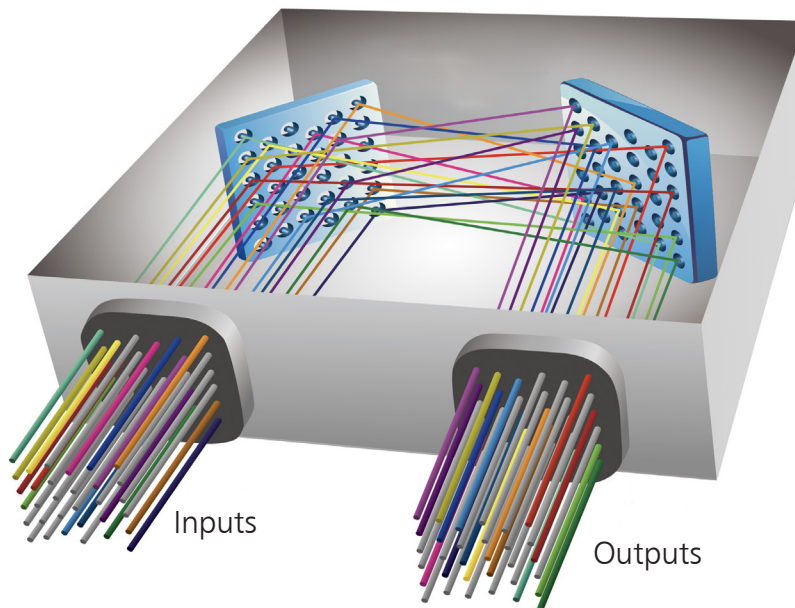
FEATURES

- No dithering or active alignment artifacts
- High Reliability / Stability
- Lifetime > 1 Billion Switch Cycles
- Available in any MxN configuration up to 16x16
- Proven MEMS Technology

APPLICATIONS

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

OPERATING PRINCIPLE



MEMS 3D SWITCH MODULE - SX1

ORDERING INFORMATION

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Product Code

SX1 3D Switch
 SX1H High Stability 3D Switch

Switch Configuration

MxN Specify
 M ≤ 16, N ≤ 16 (For SMF)
 M ≤ 12, N ≤ 12 (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 I²C/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 ^{1,2}		
Wavelength Range	1260 to 1675 nm	
Insertion Loss ³ (IL)	0.5 dB typ. 0.9 dB max.	
Stability ^{4,5}	SX1	0.02 dB typ. 0.05 dB max.
	SX1H	0.004 dB typ. 0.01 dB max.
Crosstalk	-85 dB typ. -60 dB max.	
Back Reflection	-55 dB typ. -45 dB max.	
Wavelength Dependent Loss (WDL) ⁶	0.1 dB typ. 0.4 dB max.	
Polarization Dependent Loss (PDL) ⁷	0.1 dB typ. 0.25 dB max.	
Polarization Extinction Ratio (PER) ⁸	20 dB typ. 18 dB Min.	
Switching Time	25 ms max.	
Durability	10 ⁹ cycles min.	
Repeatability ⁹	0.06 dB max.	
Optical Power	500 mW max.	
Fiber Type	9/125 μ m, SMF-28 Singlemode Fiber / Panda Fiber	

Environmental Temperature Specifications	
Operating ¹⁰	10 to 50°C
Storage	-40 to 85°C

Electrical Specifications		
Control Type	RS-232, I ² C or USB	
Supply Voltage	12 VDC	
Power Consumption	SX1	3.8 W max. Operating 6.5 W max. Start Up
	SX1H	22 W max. Operating 35 W max. Start Up
Connector type	Samtec P/N:STMM-108-02-G-D	
Mating connector	Samtec P/N:TCSD-08-01-F-N	

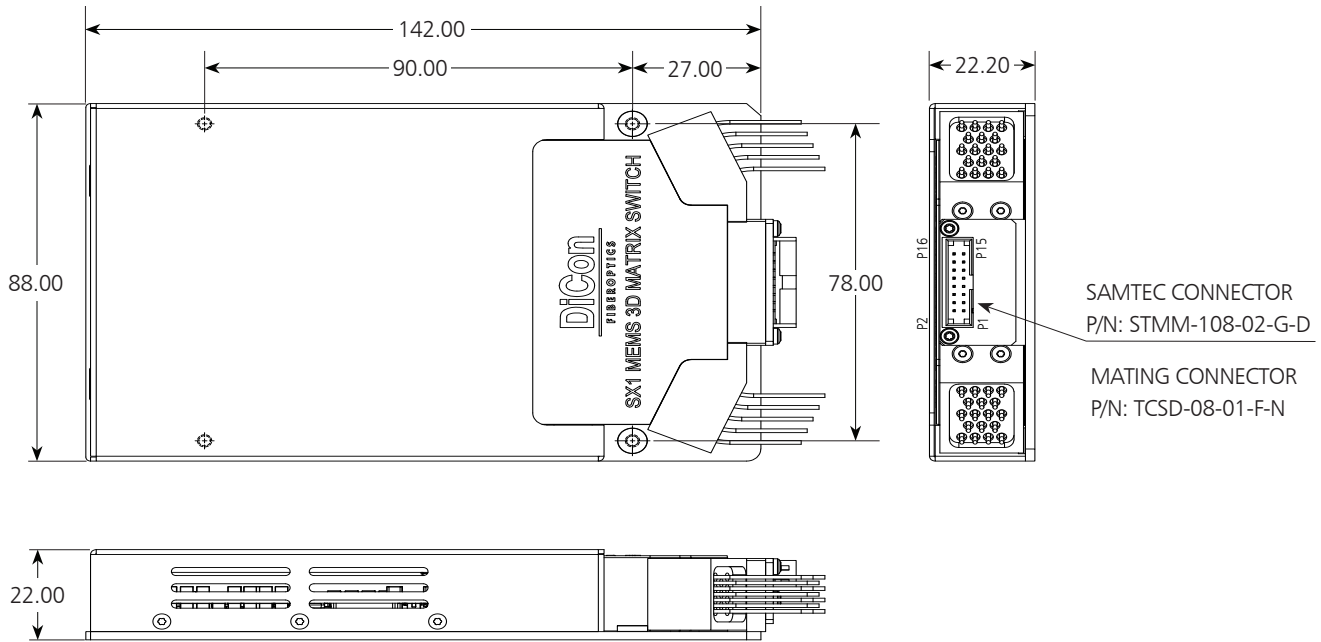
1. Specifications are without connector loss. IL adds 0.2 dB for one pair connector loss.
2. All measurements taken at room temperature for the set wavelength band index.
- Note: Each wavelength band has its own wavelength band index, which can be set to optimize the optical performance for that band. 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.
3. For multi-band operation, add up to 0.2 dB IL max over entire range.
4. Stability is defined as the difference between highest and lowest insertion loss for a given connection, over a given period.
5. Defined over 10 second period using 10 kHz sample rate.
6. The Wavelength Dependent Loss (WDL) is measured from CWL +/- 20nm.
7. Polarization Dependent Loss (PDL) is for single-mode fiber.
8. Polarization Extinction Ratio with connectors is 18 dB typ., 14 dB min.
9. Repeatability is defined over 100 cycles.
10. Extended operational temperature ranges are available.

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MECHANICAL SPECIFICATIONS

Dimensions in mm

SX1



SX1H

