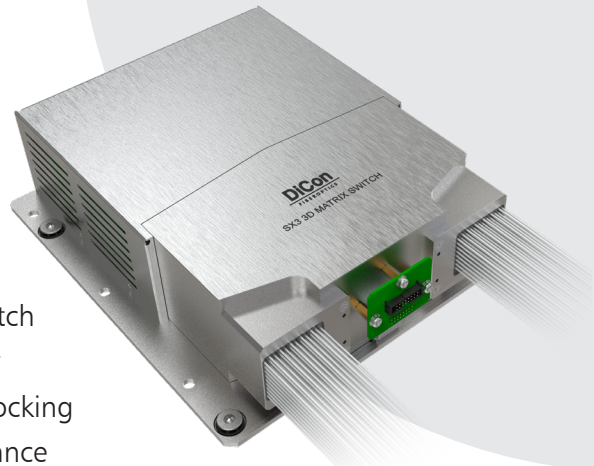
MEMS 3D MATRIX SWITCH
SX3



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.

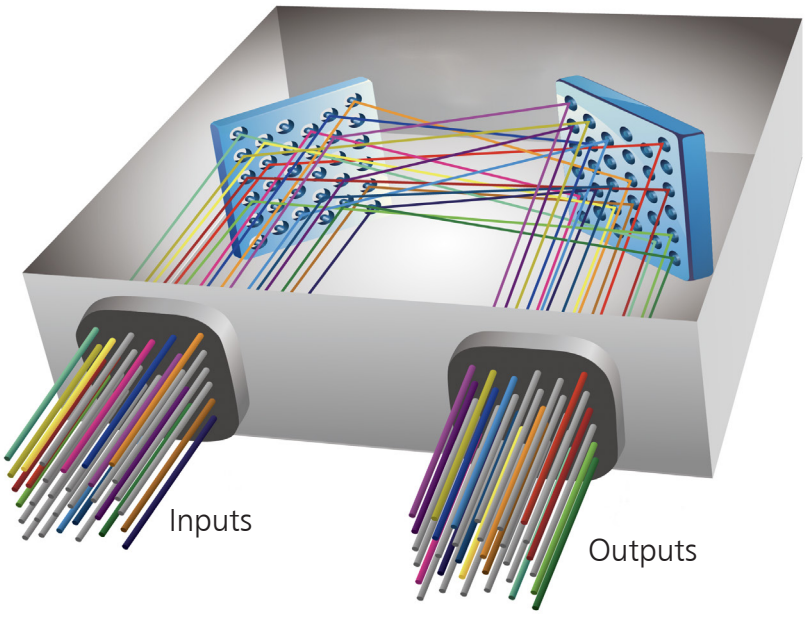
FEATURES

- No dithering or active alignment artifacts
- High Reliability / Stability
- Lifetime > 1 Billion Switch Cycles
- Available in any MxN configuration up to 96x96
- Proven MEMS Technology

APPLICATIONS

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

OPERATING PRINCIPLE



DiCon FIBEROPTICS

MEMS 3D SWITCH MODULE - SX3
ORDERING INFORMATION

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Product Code

SX3	3D Switch
SX3H	High Performance 3D Switch

Switch Configuration

MxN	Specify M≤96, N≤96 (For SMF) M≤72, N≤72 (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^2C/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.

MEMS 3D SWITCH MODULE - SX3

Optical Specifications[1,2]

Insertion Loss[3]		0.8 dB typ.	1.4 dB max.
Stability[4,5]	SX3	0.07 dB typ.	0.1 dB max.
	SX3H	TBD dB typ.	TBD dB max.
Crosstalk	SX3	-85 dB typ.	-70 dB max.
	SX3H	-85 dB typ.	-80 dB max.
Back Reflection		-55 dB typ.	-45 dB max.
Wavelength Dependent Loss[6]		0.1 dB typ.	0.4 dB max.
Polarization Dependent Loss[7]		0.1 dB typ.	0.25 dB max.
Polarization Extinction Ratio[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 μm Single-Mode or Polarization Maintaining	

Environmental Temperature Specifications

Operating[10]	10 to 50°C
Storage	-40 to 85°C

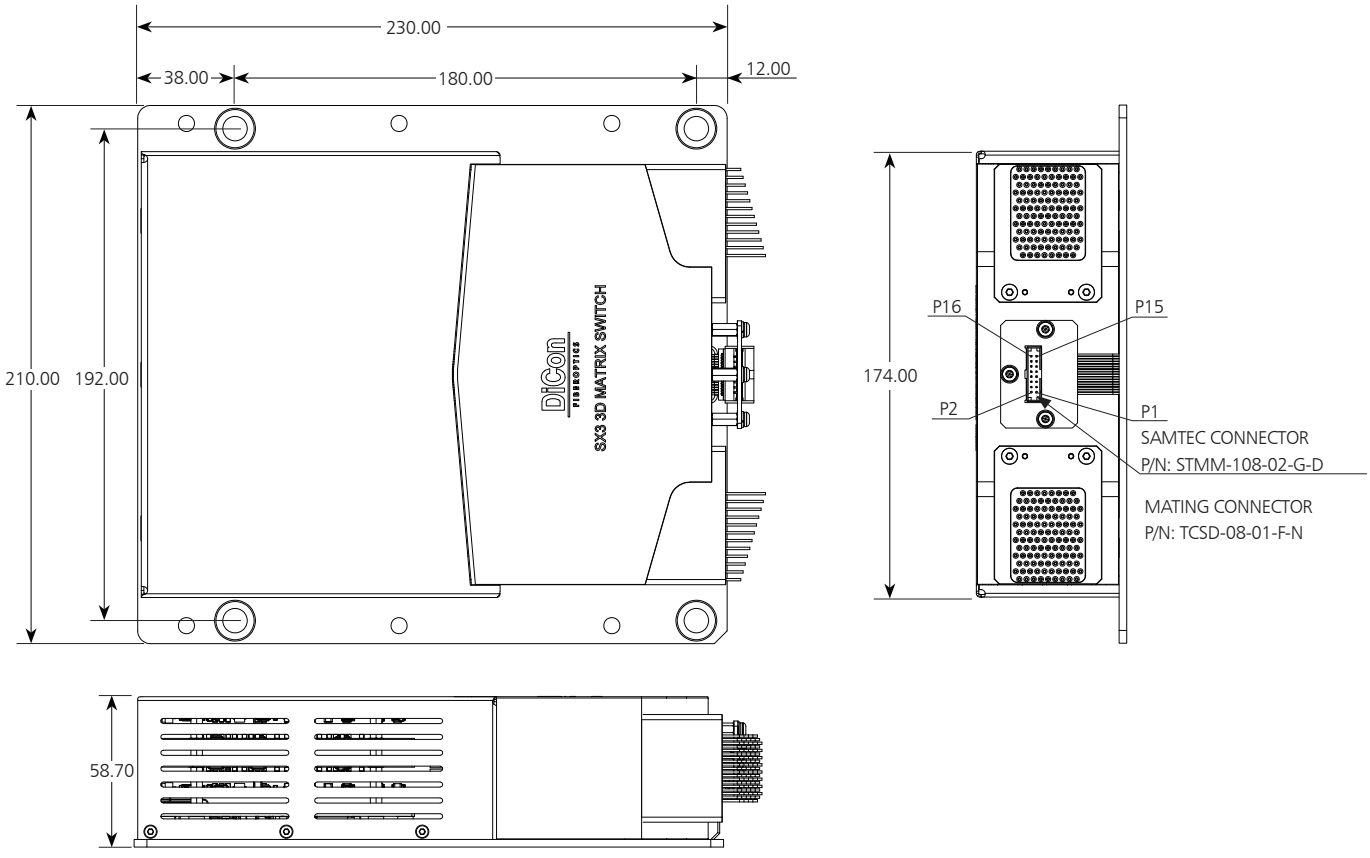
Electrical Specifications

Control Type	RS-232, I^2C or USB
Supply Voltage	12 VDC
Power Consumption	19 W max. Operating
	24 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 it's 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 0.2dB 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. Polraization 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.

MECHANICAL SPECIFICATIONS

Dimensions in mm



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