

Optical Switching Modules

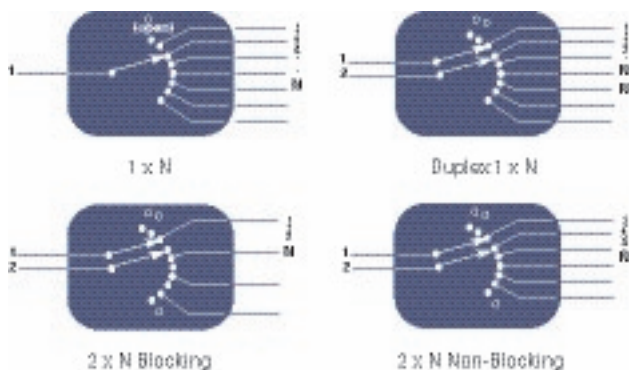
Overview

The SM8000 optical switch modules are part of the SMIP/™ family, offering the extensive control and interfacing features provided by SMIP/™. The latest optical relay technology, combined with the modular approach of VXI and SMIP/™, finally provides optical switching solutions that are open architecture and modular in design. Combined with other SMIP/™ switch products, a complete switching solution "From dc to Light" can now be configured in a single VXIbus mainframe, with a consistent driver interface.

Precise switching of optical channels is achieved in the SM8001 and SM8002 multi-channel switch modules using diffraction limited collimating lenses, which enhance both thermal stability and repeatability. The SM8003 singlemode prism switches provide channel selection from one input fiber to either one or two output fibers using a moving prism between fixed collimator pairs.

Specifications - SM8000

The SM8001 and SM8002 can each hold up to 2 optical switch modules. Each switch module can be either a 1xN (where N ranges from 2 to 17) or a 2xN (where N ranges from 2 to 8).



Selecting between the SM8001 and SM8002 is dependent on the required number of front panel I/O connectors for the desired configuration.

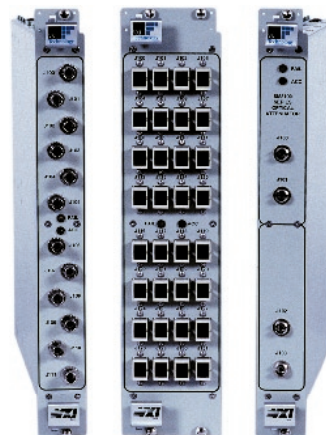
The total numbers of available connectors per base unit are:

SM8001 Single-slot, Multi-channel Base Unit:

12 ST connectors
16 SC connectors
16 FC connectors

SM8002 Double-slot, Multi-channel Base Unit:

24 ST connectors
32 SC connectors
24 FC connectors



Features

First Modular Optical Switch Family for VXI

Building Blocks Include 1xN, 2xN, 1x2, 2x2 and On-Off Switches

Mix and Match Optical Building Blocks for Final Configuration

Includes all the Features of the SMIP/™ Family

- Step 1:** Start with the SM8001, SM8002 or SM8003 Base Unit. The SM8001 and SM8002 house the 1xN and 2xN multi-channel switches. The SM8003 houses the 1x2, 2x2 and On-Off prism switches. Up to two 1xN or 2xN multi-channel switches can be housed in either an SM8001 single-slot or SM8002 double-slot VXIbus card. The SM8002 has more connector space on the front panel and can accommodate a larger number of N channels.
- Step 2:** Select the combination of 1xN and 2xN switches for the SM8001/SM8002, or select a combination of 1x2, 2x2 and On-Off Switches for the SM8003.
- Step 3:** Contact VXI Technology for price and delivery

Optical Switching Modules

Some examples of typical configurations are:

SM8001	With dual (1 x 5) switches using FC connectors (12 total)
SM8002	With 1x12 using ST connectors (13 total)
SM8002	With 1 x 17 switches using SC connectors (18 total)
SM8002	with dual (1 x 8) switches using FC connectors (18 total)
SM8001	With dual (1 x 4) switches using ST connectors (10 total)

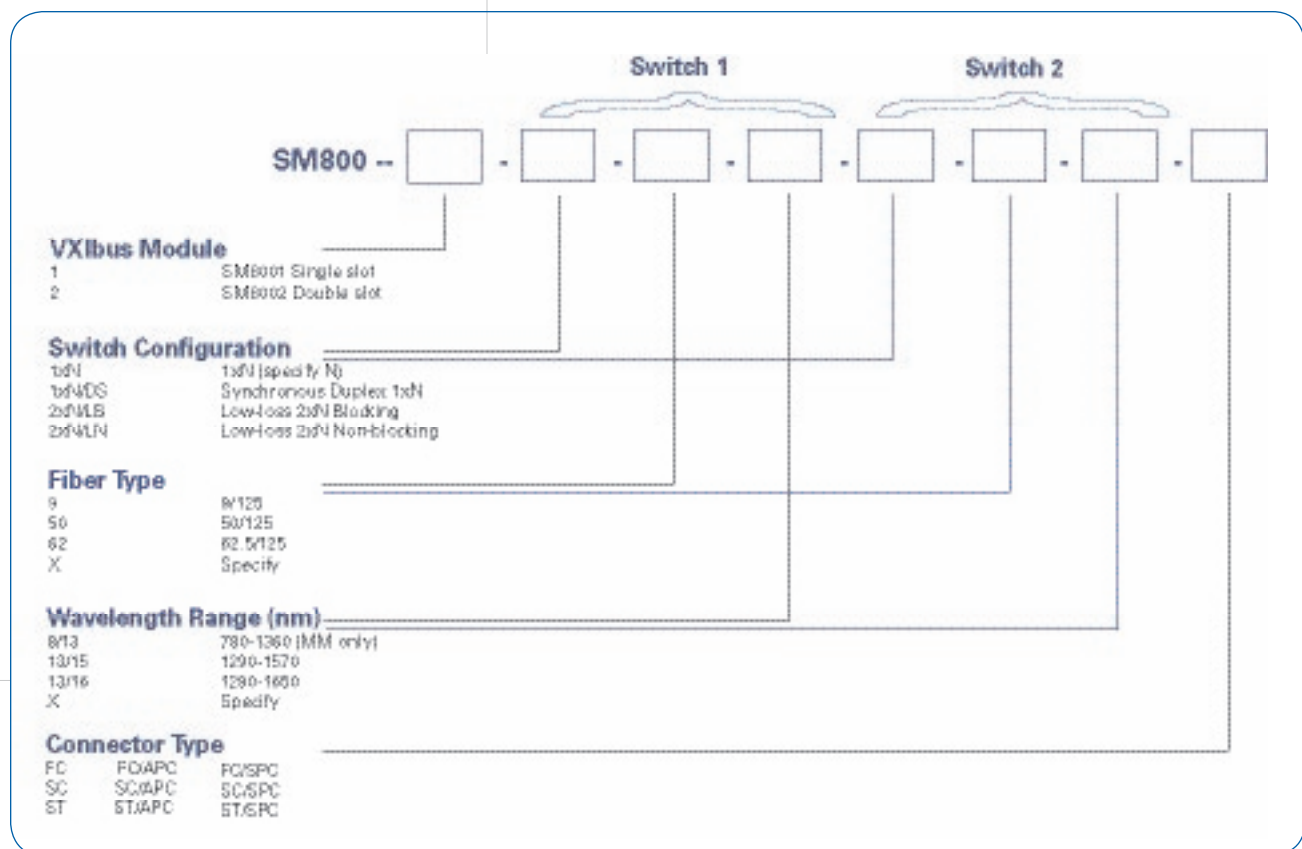
Specifications - SM8001 and SM8002

Insertion Loss: 0.6 dB typ, 1.2 dB max.

Back-reflection:
(Singlemode) -60 dB typ, -55 dB max.
(Multimode) -20 dB typ

Switching Time:	300 ms +16 ms per channel
Crosstalk:	-80 dB max.
Durability:	10 million cycles min.
Repeatability:²	±0.02 dB max. sequential
PDL:³	0.05 dB max. (singlemode)
Wavelength Range:	780 – 1650 nm
Operating Temperature:	0 °C to 50 °C max.
Storage Temperature:	-20 °C to +70 °C max.
Humidity:	40 °C /90% RH /5 days

1. All specifications referenced without connectors.
2. 100 cycles measured at constant temperature after warm-up.
3. Measured at 1550 nm. Singlemode only.

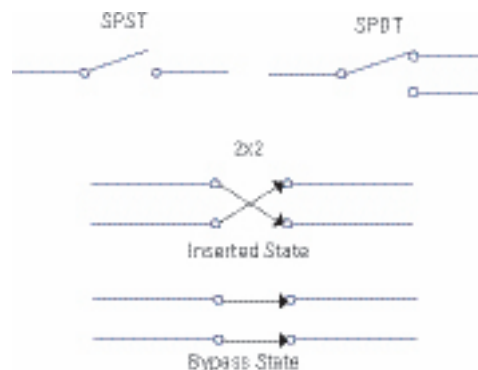


Optical Switching Modules

SM8003

The SM8003 can house up to 4 1x2, 2x2 and On-Off Switches. SPST and SPDT switches can be mixed and matched within the same unit.

Wavelength Range:	780 -1650 nm
Insertion Loss:	0.6 dB typ, 1.0 dB max.
Back-reflection:	-55 dB max. (Singlemode) -20 dB max. (Multimode)
Switching Time:	8 ms typ, 15 ms max.
Crosstalk:	-80 dB max. (Singlemode)
Durability:	10 million cycles min.
Repeatability:²	±0.02 dB max.
PDL:³	0.05 dB max.
Operating Temperature:	0 °C to 50 °C max.
Storage Temperature:	-20 °C to +70 °C max.
Humidity:	40 °C /90% RH /5 days



1. All specifications referenced without connectors.
2. Short-term repeatability for 100 cycles at constant temperature.
3. Measured at 1550 nm. (Singlemode)

The total numbers of available connectors per base unit are:

SM8003 Single-slot Prism Switch Base Unit:

12 ST connectors
16 SC connectors
12 FC connectors

Some examples of typical configurations are:

SM8003 with 4 SPDT prism switches using SC connectors
SM8003 with 2 SPDT and 2 SPST prism switches using FC connectors

SM8003 -		Switch 1	Switch 2	Switch 3	Switch 4
Switch Type					
12	SPST (On-Off)				
14	SPDT				
22/MB	2 x 2				
0	None				
Fiber Type					
B	8/125				
B0	50/125				
B2	62.5/125				
X	Specify				
Wavelength Range (nm)					
B/13	780-1300 (MIM only)				
13/15	1290-1570				
13/16	1290-1650				
X	Specify				
Connector Type					
FC	FC/APC				
SC	SC/APC				
ST	ST/APC				

Optical Attenuators

Overview

The SM8201 and SM8202 are single-slot VXIbus modules. The SM8201 is a single-channel variable attenuator, whereas the SM8202 is a dual-channel variable attenuator. Both modules are used to automatically adjust optical power level in test systems with a range 0 dB to 30 dB, with better than 0.1 dB resolution. Applications include setting power levels to optimize receiver sensitivity in single wavelength systems, as well as active gain equalization in dense WDM systems. Factory test applications include bit error rate performance and dynamic range testing.

Optical Performance

Features

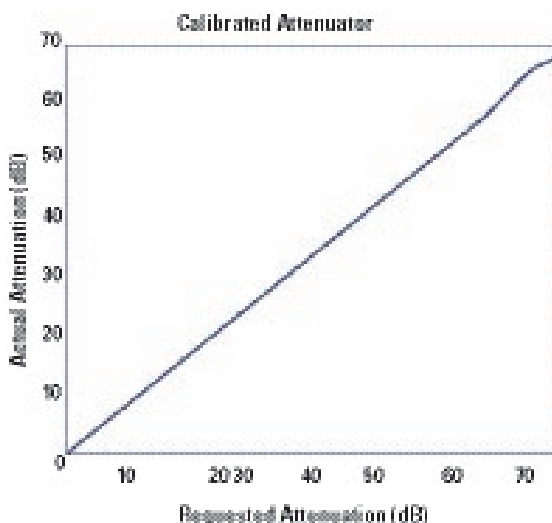
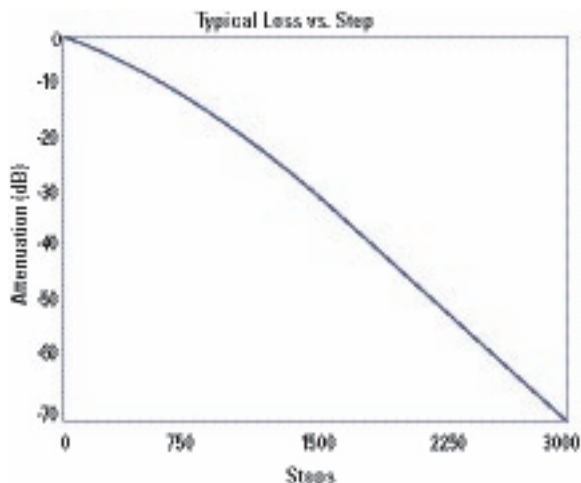
Wide Attenuation Range (0 dB - 30 dB)

Low Back Reflection (-50 dB max.)

Precise Resolution (0.1 dB)

Low Insertion Loss (0.8 dB typ)

Up to 2 Optical Attenuators per Single VXIbus Slot



Optical Attenuators

Specifications³

Range:¹ **0 dB - 30 dB** **31 dB -60 dB**

Resolution 0.10 dB

Repeatability: ±0.01 dB

PDL² 0.2 dB

Absolute ±0.1 dB

Insertion Loss: 0.8 dB typical, 1.3 dB max.

Back Reflection:² -50 dB max.

Tuning Speed: 50 msec/min. 1400 msec max.

Operating Temp: 0 °C to +50 °C

Storage Temp: -20 °C to +70 °C

Humidity: 40 °C/ 90% RH / 5 days

1. Maximum attenuation for multimode components is 30 dB.
2. Singlemode only measured at 1550 nm.
3. All specifications referenced without connectors.
4. Performance results vary depending on multimode launch condition.

