



# Switch

## AUTOMATED OPTICAL SWITCH

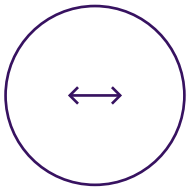
SPECIFICATION SHEET

AVAILABLE IN PXI

AVAILABLE IN MATRIQ

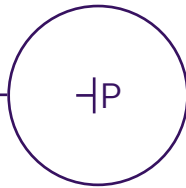
[quantifiphotonics.com](http://quantifiphotonics.com)

Add optical switching capability to your test system with Quantifi Photonics' automated optical switches. The fast and reliable optical switch will enable automated sequential testing, saving time and streamlining your test procedures.



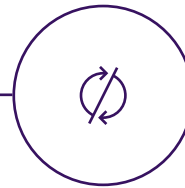
### Bidirectional

Our optical switches are bidirectional; use it in N x M or M x N configurations for superior versatility.



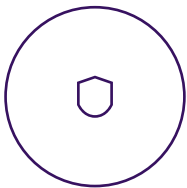
### Convenient park feature

The in-built park feature on applicable models provides the convenient functionality of an optical shutter.



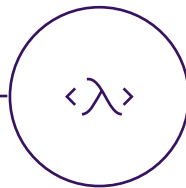
### High repeatability

High repeatability ensures that your measurements are reliable and consistent over time.



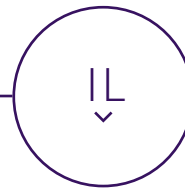
### High durability, > 3 x 10<sup>7</sup> cycles

High switch lifecycle of 30 million operations ensures you get reliable hassle-free usage, for a long time.



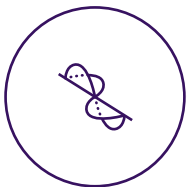
### Wide coverage of operational wavelengths

One versatile tool to cover a wide variety of applications.



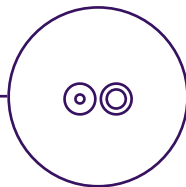
### Low insertion loss

Maximise your power budget with the low insertion loss.



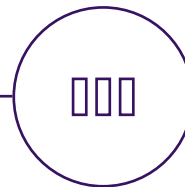
### Polarization maintaining output

On the polarization maintaining (PM) models, the slow axis of polarization is aligned with the output connector key as per industry standards. The user may choose to use polarization maintaining (PM) fiber or standard singlemode fiber (SMF)



### Supports single and multi-mode applications

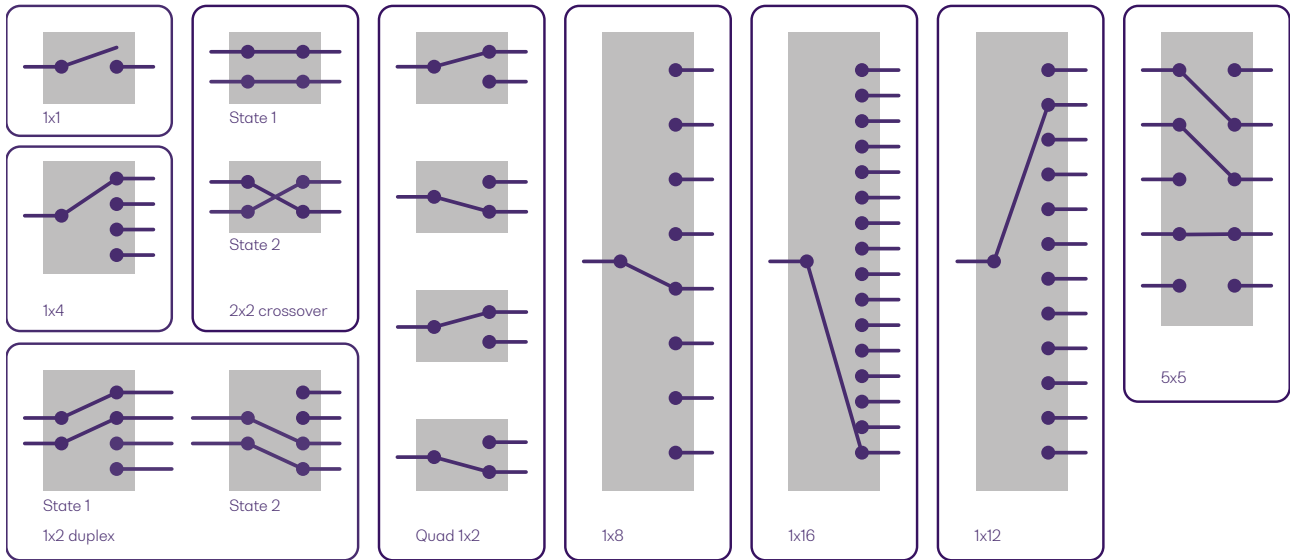
Available in either single-mode or multi-mode fiber options for a seamless integration into your setup.



### Wide variety of port configurations

Choose the number of ports and switching configuration to suit your specific application.

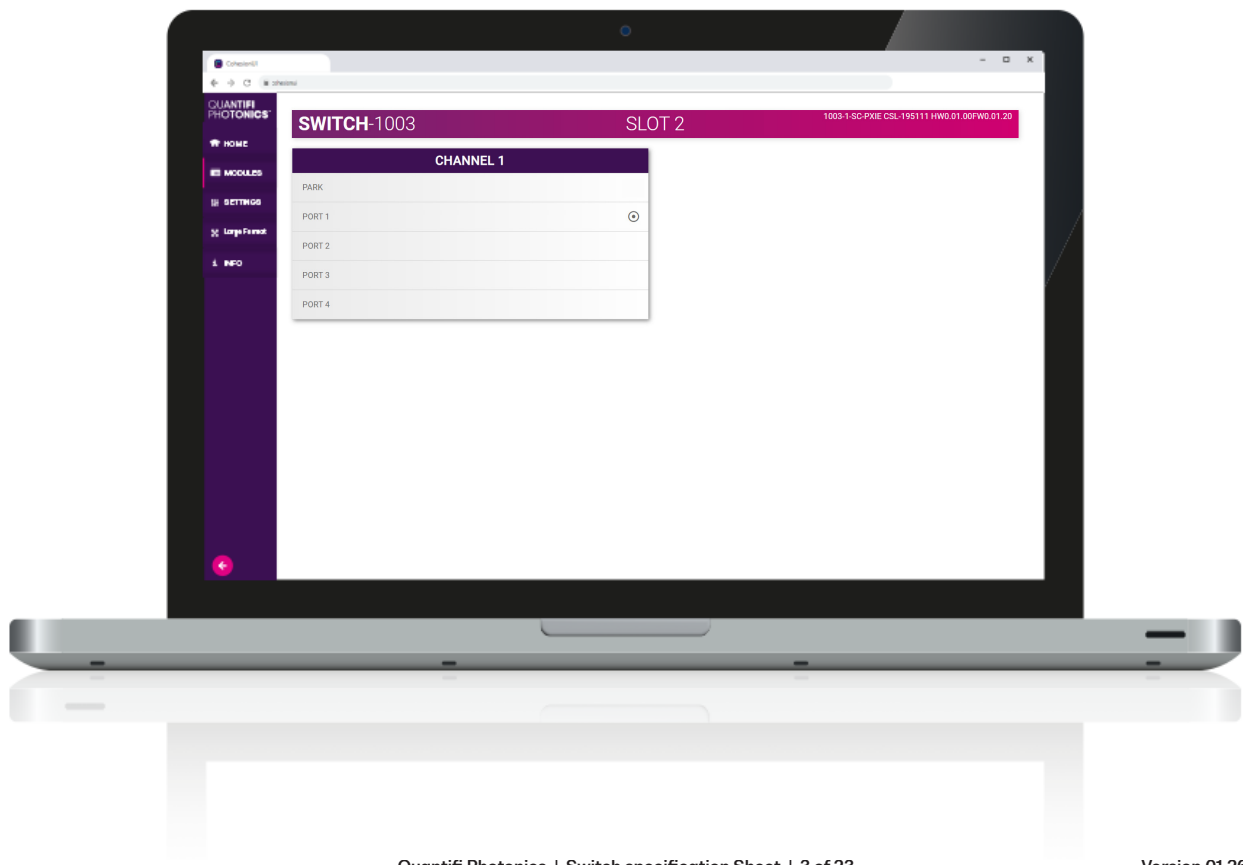
## CONFIGURATIONS



## COHESION UI - GRAPHICAL USER INTERFACE

### Simple, intuitive control with COHESIONUI™

COHESIONUI makes it simple to control our PXI or MATRIQ instruments from a PC, tablet or smartphone. Its cutting-edge design offers a sleek modern interface, cross device compatibility, customizable views and remote network access.



## The Switch is highly customizable.

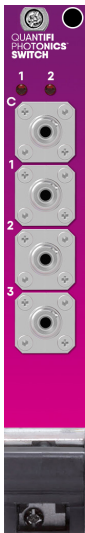
It comes with a wide range of switch configurations, fiber types and connectors. If you don't see what you need, please contact us to discuss your requirements.

Model number	Fiber type	Configuration	Connector	Wavelength	Slot count	Park state
1001	SMF-28	1 x 1	FC/PC, SC/PC, FC/APC, SC/APC	1260 to 1650 nm	1	No
1003	SMF-28	1 x 4	FC/PC, SC/PC, FC/APC, SC/APC	1260 to 1650 nm	1	Yes
1004	SMF-28	2 x 2 crossover	FC/PC, SC/PC, FC/APC, SC/APC	1260 to 1650 nm	1	No
1005	SMF-28	1 x 2 duplex	FC/PC, SC/PC, FC/APC, SC/APC	1260 to 1650 nm	2	No
1006	SMF-28	1 x 16	SC/PC, SC/APC	1260 to 1650 nm	2	Yes
1008 <sup>1</sup>	SMF-28	Quad 1 x 2	FC/PC, SC/PC, FC/APC, SC/APC	1260 to 1650 nm	2	Yes
1009	SMF-28	1 x 8	FC/PC, SC/PC, FC/APC, SC/APC	1260 to 1650 nm	2	Yes
1010	SMF-28	1 x 8 MT connector	FC/PC, SC/PC, FC/APC and SC/APC on common port; USCONEC Elite MT on 8 channel port	1260 to 1650 nm	1	Yes
1012	SMF-28	1 x 12 MT connector	FC/PC, SC/PC, FC/APC and SC/APC on common PORT USCONEC Elite MT MALE APC on 12 channel port	1260 to 1650nm	1	Yes
1013	SMF-28	1 x 24 MT connector	FC/PC, SC/PC, FC/APC and SC/APC on common PORT USCONEC Elite MT MALE APC on 24 channel port	1260 to 1650nm	1	Yes
1101	50µ core MMF OM3	1 x 1	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	1	No
1103	50µ core MMF OM3	1 x 4	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	1	Yes
1104	50µ core MMF OM3	2 x 2 crossover	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	1	No
1105	50µ core MMF OM3	1 x 2 duplex	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	2	No
1106	50µ core MMF OM3	1 x 16	SC/PC, SC/APC	800 to 1420 nm	2	Yes
1107	50µ core MMF OM3	1 x 12 MT connector	FC/PC, SC/PC, FC/APC and SC/APC on common PORT USCONEC Elite MT MALE APC on 12 channel port	800 to 1420 nm	1	Yes
1108 <sup>1</sup>	50µ core MMF OM3	Quad 1 x 2	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	2	Yes
1403	62.5µ core MMF OM1	1 x 4	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	1	Yes
1405	62.5µ core MMF OM1	1 x 2 duplex	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	2	No
1406 <sup>1</sup>	62.5µ core MMF OM1	1 x 16	SC/PC, SC/APC	800 to 1420 nm	2	Yes
1408 <sup>1</sup>	62.5µ core MMF OM1	Quad 1 x 2	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	2	Yes
1409	62.5µ core MMF OM1	1 x 8	FC/PC, SC/PC, FC/APC, SC/APC	800 to 1420 nm	2	Yes
1303	PM Panda 1550	1 x 4	FC/PC, SC/PC, FC/APC, SC/APC	1522 to 1570 nm	1	Yes
1304	PM Panda 1310	1 x 4	FC/PC, SC/PC, FC/APC, SC/APC	1290 to 1330 nm	1	Yes
1305	PM Panda 1310	2 x 2 crossover	FC/PC, SC/PC, FC/APC, SC/APC	1270 to 1350 nm	1	No
1306	PM Panda 1550	2 x 2 crossover	FC/PC, SC/PC, FC/APC, SC/APC	1510 to 1590 nm	1	No
1307	PM Panda 1310	1 x 16	SC/PC, SC/APC	1250 to 1350 nm	2	Yes
1309	PM Panda 1300	5 x 5 grid	FC/PC, SC/PC, FC/APC, SC/APC	1290 to 1330 nm	3	Yes
1310	PM Panda 1300	1 x 8	FC/PC, SC/PC, FC/APC, SC/APC	1290 to 1330 nm	2	Yes

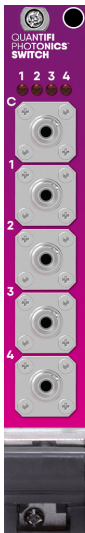
### Notes

1. PXI version only available with SC/PC and SC/APC connectors.

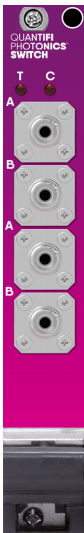
STANDARD SWITCH FRONT PANELS - PXI



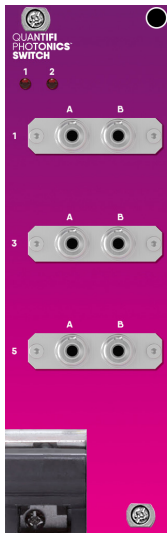
Models: 1001, 1101



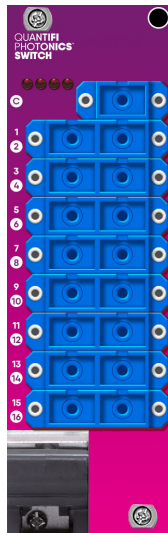
Models: 1003, 1103, 1303, 1304, 1403



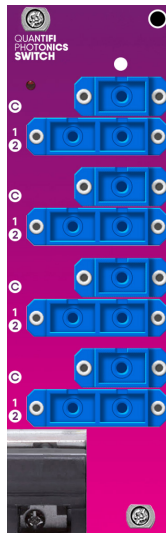
Models: 1004, 1104, 1305, 1306



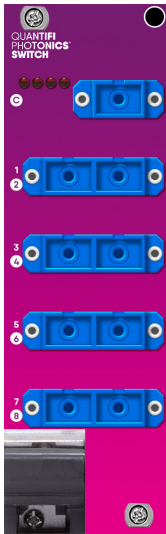
Models: 1005, 1105, 1405



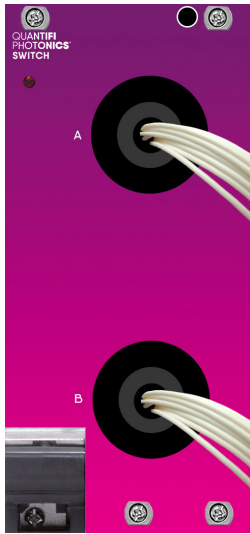
Models: 1006, 1106, 1307, 1406



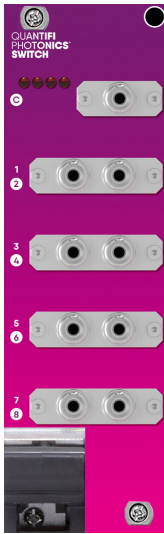
Models: 1008, 1108, 1308, 1408



Model: 1409



Model: 1309



Model: 1310



Models: 1010, 1012, 1013, 1107

## CHOOSE YOUR FORM FACTOR

### PXIe – MODULAR

Our expanding range of PXIe optical test solutions are used by customers in mixed-signal test and measurement systems, reducing complexity, lowering the cost of test and accelerating time to market.

- Multi vendor, open standard with over 2500 PXI modules available
- Advanced timing and synchronization capabilities across instruments
- Low latency, high performance processing and fast data throughput
- Design and build scalable, high channel count systems
- Small footprint and lower power consumption



### MATRIQ – COMPACT & PORTABLE

The MATRIQ series provides the same high-performance test capabilities of our PXIe modules in an compact benchtop design. MATRIQ instruments are simple to setup and easy to operate, making them the perfect choice for your optical lab or test bench.

- Same performance and control as our PXIe modules
- Plug and play with USB or Ethernet connectivity
- Control via the web-based GUI, COHESIONUI or SCPI commands
- Compact and portable design saves benchtop space

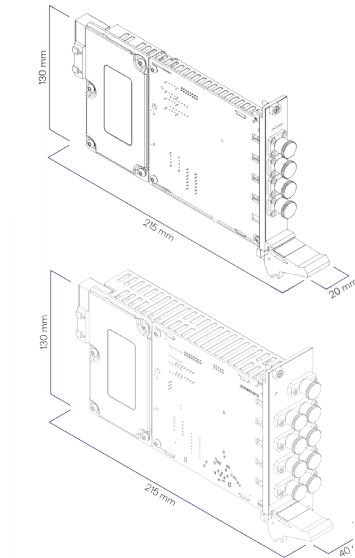


## SWITCH TECHNICAL SPECIFICATIONS

### PXI – MODULAR



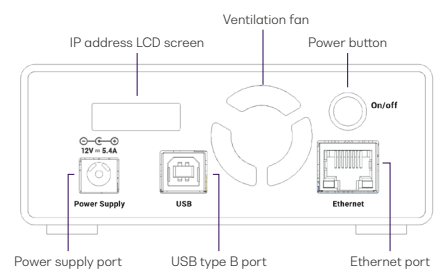
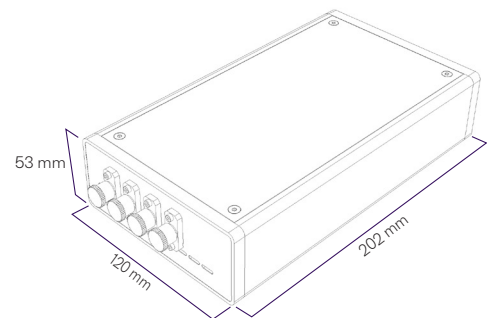
SWITCH-1003-1-FC-PXIE



### MATRIQ – COMPACT & PORTABLE



SWITCH-1003-1-FC-MTRQ



## SWITCH TECHNICAL SPECIFICATIONS

General specifications	PXI	MATRIQ
Bus connection	PXIe	USB and Ethernet
Optical connectors	FC/PC, FC/APC, SC/PC, SC/APC (1006, 1106, 1307, 1310, 1406: SC/PC, SC/APC only) (1010, 1107: MT only)	
Slot count	<b>1 slot:</b> 1001, 1003, 1004, 1010, 1012, 1013, 1101, 1103, 1104, 1107, 1111, 1303, 1304, 1005, 1306, 1403 <b>2 slots:</b> 1005, 1006, 1008, 1009, 1105, 1106, 1108, 1112, 1307, 1310, 1405, 1406, 1409 <b>3 slots:</b> 1309	-
Dimensions (HxWxD)	130 mm x 20mm x 215 mm (5.1" x 0.8" x 8.5") 130 mm x 40mm x 215 mm (5.1" x 1.6" x 8.5") 130 mm x 60mm x 215 mm (5.1" x 2.4" x 8.5")	53 x 120 x 202 mm   2.1 x 4.7 x 8.0 inches
Weight	~ 1 kg   ~2.2 lbs	~ 1.1 kg   ~ 2.4 lbs
Operating temperature range	5 °C to 45 °C   41 °F to 113 °F	5 °C to 45 °C   41 °F to 113 °F
Storage temperature range	-40 °C to 70 °C   -40 °F to 158 °F	-40 °C to 70 °C   -40 °F to 158 °F

Power specifications	PXI	MATRIQ
AC input voltage range	Please refer to the latest PXI Express Hardware Specifications published by the PXI Systems Alliance.	100 to 240 VAC
AC input current		1.3 A (115 VAC), 0.9 A (230 VAC)
AC frequency range		47 to 63 Hz
DC output voltage		12 V
DC output current max		5.41 A
Dimensions (LxWxH)		4.58 x 2.06 x 1.23" (116.3 x 52.4 x 31.3 mm)



# Single-Mode Fiber Optical Switches

1x1 optical switch	1001 <sup>9</sup>   SMF-28			1001 <sup>9</sup>   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.5 dB	1.0 dB		0.5 dB	1.0 dB
Return loss <sup>8</sup>		50 dB			50 dB	
Polarization dependent loss <sup>2</sup>			< 0.1 dB			< 0.1 dB
Wavelength dependent loss			<0.3 dB			<0.3 dB
Crosstalk		-80 dB			-80 dB	
Repeatability <sup>4</sup>			±0.1 dB			±0.1 dB
Damage level			+27 dBm			+27 dBm
Durability	3x10 <sup>7</sup> cycles			3x10 <sup>7</sup> cycles		

1x4 optical switch	1003 <sup>9</sup>   SMF-28			1003 <sup>9</sup>   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.6 dB	0.8 dB		0.6 dB	0.8 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Polarization dependent loss <sup>2</sup>			< 0.1 dB			< 0.1 dB
Wavelength dependent loss			0.2 dB			0.2 dB
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			±0.02 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

## SWITCH TECHNICAL SPECIFICATIONS

2x2 optical switch	1004   SMF-28			1004   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.8 dB	1.0 dB		0.8 dB	1.0 dB
Return loss <sup>8</sup>		55 dB			55 dB	
Polarization dependent loss <sup>2</sup>			< 0.05 dB			< 0.05 dB
Wavelength dependent loss			< 0.25 dB			< 0.25 dB
Crosstalk		-55 dB			-55 dB	
Repeatability <sup>4</sup>			±0.02 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	3x10 <sup>7</sup> cycles			3x10 <sup>7</sup> cycles		

1x2 duplex (2x4) optical switch	1005 <sup>9</sup>   SMF-28			1005 <sup>9</sup>   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.5 dB	1.0 dB		0.5 dB	1.0 dB
Return loss <sup>8</sup>		50 dB			50 dB	
Polarization dependent loss <sup>2</sup>			< 0.1 dB			< 0.1 dB
Wavelength dependent loss			< 0.3 dB			< 0.3 dB
Crosstalk		-80 dB			-80 dB	
Repeatability <sup>4</sup>			±0.1 dB			±0.1 dB
Damage level			+27 dBm			+27 dBm
Durability	3x10 <sup>7</sup> cycles			3x10 <sup>7</sup> cycles		

1x16 optical switch	1006 <sup>9</sup>   SMF-28			1006 <sup>9</sup>   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.7 dB	1.0 dB		0.7 dB	1.0 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Polarization dependent loss <sup>2</sup>			0.15 dB			0.15 dB
Wavelength dependent loss			0.30 dB			0.30 dB
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			±0.05 dB			±0.05 dB
Damage level			+27 dBm			+27 dBm

# SWITCH TECHNICAL SPECIFICATIONS

Quad (1x2) optical switch	1008 <sup>9</sup>   SMF-28			1008 <sup>9</sup>   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.5 dB	0.8 dB		0.5 dB	0.8 dB
Return loss <sup>8</sup>	50 dB			50 dB	55 dB	
Polarization dependent loss <sup>2</sup>			< 0.1 dB			< 0.1 dB
Wavelength dependent loss			< 0.2 dB			< 0.2 dB
Crosstalk			-50 dB		-55 dB	-50 dB
Repeatability <sup>4</sup>			±0.02 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

1x8 optical switch	1009 <sup>9</sup>   SMF-28			1009 <sup>9</sup>   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.7 dB	1.0 dB		0.7 dB	1.0 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Polarization dependent loss <sup>2</sup>			< 0.10 dB			< 0.10 dB
Wavelength dependent loss			< 0.20 dB			< 0.20 dB
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			±0.05 dB			±0.05 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

1x8 optical switch (MT connector)	1010   SMF-28			1010   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.9 dB	1.2 dB		0.9 dB	1.2 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Polarization dependent loss <sup>2</sup>			< 0.10 dB			< 0.10 dB
Wavelength dependent loss			< 0.20 dB			< 0.20 dB
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			±0.05 dB			±0.05 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		
Connector type	(FC/PC, FC/APC, SC/PC, or SC/APC) and (MTP-8/PC or MTP-8/APC)					

## SWITCH TECHNICAL SPECIFICATIONS

1x12 switch (MT connector)	1012   SMF-28			1012   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.9 dB	1.2 dB		0.5 dB	0.8 dB
Return loss <sup>8</sup>	50 dB			50 dB	55 dB	
Polarization dependent loss <sup>2</sup>			< 0.1 dB			< 0.1 dB
Wavelength dependent loss			< 0.2 dB			< 0.2 dB
Crosstalk			-50 dB		-55 dB	-50 dB
Repeatability <sup>4</sup>			±0.05 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		
Connector type	(FC/PC, FC/APC, SC/PC, or SC/APC) and (MTP-12/PC or MTP-12/APC)					

1x24 switch (MT connector)	1013   SMF-28			1013   SMF-28		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1260 to 1650 nm			1260 to 1650 nm		
Insertion loss <sup>2,7</sup>		0.7 dB	1.0 dB		0.7 dB	1.0 dB
Return loss <sup>8</sup>	50 dB			50 dB	55 dB	
Polarization dependent loss <sup>2</sup>			0.15 dB			< 0.1 dB
Wavelength dependent loss			0.3 dB			0.3 dB
Crosstalk			-50 dB		-55 dB	-50 dB
Repeatability <sup>4</sup>			±0.05 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		
Connector type	(FC/PC, FC/APC, SC/PC, or SC/APC) and (MTP-24/PC or MTP-24/APC)					

## Multi-mode fiber optical switches

1x1 optical switch	1101 <sup>9</sup>   50 µm Core MMF OM3			1101 <sup>9</sup>   50 µm Core MMF OM3		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,7</sup>		0.3 dB	0.6 dB		0.3 dB	0.6 dB
Return loss <sup>8</sup>		TBD			TBD	
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk		-80 dB			-80 dB	
Repeatability <sup>4</sup>			±0.1 dB			±0.1 dB
Damage level			+27 dBm			+27 dBm
Durability	3x10 <sup>7</sup> cycles			3x10 <sup>7</sup> cycles		

1x4 optical switch	1103 <sup>9</sup>   50 µm Core MMF OM3			1103 <sup>9</sup>   50 µm Core MMF OM3		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,6,7</sup>		0.8 dB <sup>6</sup>	1.2 dB <sup>6</sup>		0.8 dB <sup>6</sup>	1.2 dB <sup>6</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk		-25 dB			-25 dB	
Repeatability <sup>4</sup>			±0.02 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

2x2 optical switch	1104 <sup>9</sup>   50 µm Core MMF OM3			1104 <sup>9</sup>   50 µm Core MMF OM3		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>		0.8 dB <sup>5</sup>	1.0 dB <sup>5</sup>		0.8 dB <sup>5</sup>	1.0 dB <sup>5</sup>
Return loss <sup>8</sup>		TBD			TBD	
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk		-50 dB			-50 dB	
Repeatability <sup>4</sup>			±0.02dB			±0.02dB
Damage level			+27 dBm			+27 dBm
Durability	3x10 <sup>7</sup> cycles			3x10 <sup>7</sup> cycles		

## SWITCH TECHNICAL SPECIFICATIONS

1x2 duplex (2x4) optical switch	1105°   50 µm Core MMF OM3			1105°   50 µm Core MMF OM3		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>		0.3 dB <sup>5</sup>	0.6 dB <sup>5</sup>		0.3 dB <sup>5</sup>	0.6 dB <sup>5</sup>
Return loss <sup>8</sup>		TBD			TBD	
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk		-80 dB			-80 dB	
Repeatability <sup>4</sup>			±0.1 dB			±0.1 dB
Damage level			+27 dBm			+27 dBm
Durability	3x10 <sup>7</sup> cycles			3x10 <sup>7</sup> cycles		

1x16 optical switch	1106   50 µm Core MMF OM3			1106   50 µm Core MMF OM3		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>			1.6 dB <sup>5</sup>			1.6 dB <sup>5</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk			-25 dB			-25 dB
Repeatability <sup>4</sup>			±0.04 dB			±0.04 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

1x12 optical switch (MT connector)	1107   50 µm Core MMF OM3			1107   50 µm Core MMF OM3		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>			1.7 dB <sup>5</sup>			1.7 dB <sup>5</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk			-25 dB			-25 dB
Repeatability <sup>4</sup>			±0.04 dB			±0.04 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		
Connector type	(FC/PC, FC/APC, SC/PC, or SC/APC) and (MTP-12/PC or MTP-12/APC)					

## SWITCH TECHNICAL SPECIFICATIONS

Quad (1x2) optical switch	1108°   50 µm Core MMF OM3			1108°   50 µm Core MMF OM3		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,7</sup>		0.9 dB <sup>5</sup>	1.1 dB <sup>5</sup>		0.9 dB <sup>5</sup>	1.1 dB <sup>5</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk			-25 dB			-25 dB
Repeatability <sup>4</sup>			±0.02 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

1x4 optical switch	1403°   62.5µ Core MMF OM1			1403°   62.5µ Core MMF OM1		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,7</sup>		0.8 dB <sup>6</sup>	1.2 dB <sup>6</sup>		0.8 dB <sup>6</sup>	1.2 dB <sup>6</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk			-20 dB			-20 dB
Repeatability <sup>4</sup>			±0.2 dB			±0.2 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

1x2 (2x4) optical switch	1405°   62.5µ Core MMF OM1			1405°   62.5µ Core MMF OM1		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>		0.3 dB <sup>5</sup>	0.6 dB <sup>5</sup>		0.3 dB <sup>5</sup>	0.6 dB <sup>5</sup>
Return loss <sup>8</sup>		TBD			TBD	
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk		-80 dB			-80 dB	
Repeatability <sup>4</sup>			±0.1 dB			±0.1 dB
Damage level			+27 dBm			+27 dBm
Durability	3x10 <sup>7</sup> cycles			3x10 <sup>7</sup> cycles		

## SWITCH TECHNICAL SPECIFICATIONS

1x16 optical switch	1406 <sup>9</sup>   62.5 $\mu$ Core MMF OM1			1406 <sup>9</sup>   62.5 $\mu$ Core MMF OM1		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>			1.6 dB <sup>5</sup>			1.6 dB <sup>5</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		< 0.25 dB			< 0.25 dB	
Crosstalk			-25 dB			-25 dB
Repeatability <sup>4</sup>			$\pm 0.04$ dB			$\pm 0.04$ dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

Quad 1x2 switch	1408   62.5 $\mu$ Core MMF OM1			1408   62.5 $\mu$ Core MMF OM1		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>		0.9 dB	1.1 dB <sup>5</sup>		0.9 dB	1.1 dB <sup>5</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk			-25 dB			-25 dB
Repeatability <sup>4</sup>			$\pm 0.02$ dB			$\pm 0.02$ dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

1x8 optical switch	1409   62.5 $\mu$ Core MMF OM1			1409   62.5 $\mu$ Core MMF OM1		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	800 to 1420 nm			800 to 1420 nm		
Insertion loss <sup>2,5,7</sup>		1.0 dB	1.4 dB <sup>5</sup>		1.0 dB	1.4 dB <sup>5</sup>
Return loss <sup>8</sup>	20 dB			20 dB		
Polarization dependent loss <sup>2</sup>		TBD			TBD	
Wavelength dependent loss		TBD			TBD	
Crosstalk			-20 dB			-20 dB
Repeatability <sup>4</sup>			$\pm 0.02$ dB			$\pm 0.02$ dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		



# Polarization maintaining optical fiber switches

1x4 PM optical switch (1550 nm)	1303°   PM Panda 1550			1303°   PM Panda 1550		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1520 to 1570 nm			1520 to 1570 nm		
Insertion loss <sup>2,7</sup>			1.5 dB			1.5 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Wavelength dependent loss			0.25 dB			0.25 dB
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			±0.05 dB			±0.05 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

1x4 PM optical switch (1310 nm)	1304°   PM Panda 1310			1304°   PM Panda 1310		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1290 to 1330 nm			1290 to 1330 nm		
Insertion loss <sup>2,7</sup>			1.5 dB			1.5 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Wavelength dependent loss			0.25 dB			0.25 dB
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			±0.05 dB			±0.05 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		

2x2 crossover PM optical switch (1310 nm)	1305°   PM Panda 1310			1305°   PM Panda 1310		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1270 to 1350 nm			1270 to 1350 nm		
Insertion loss <sup>2,5,7</sup>		1.5 dB	1.8 dB		1.5 dB	1.8 dB
Return loss <sup>8</sup>		55 dB			55 dB	
Wavelength dependent loss		< 0.2 dB			< 0.2 dB	
Crosstalk		-60 dB			-60 dB	
Repeatability <sup>4</sup>			±0.02 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>7</sup> cycles			1x10 <sup>7</sup> cycles		
PER	> 18 dB (20 dB typical)			> 18 dB (20 dB typical)		

## SWITCH TECHNICAL SPECIFICATIONS

2x2 crossover PM optical switch (1550 nm)	1306°   PM Panda 1550			1306°   PM Panda 1550		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1510 to 1590 nm			1510 to 1590 nm		
Insertion loss <sup>2,7</sup>		0.8 dB	1.2 dB		0.8 dB	1.2 dB
Return loss <sup>8</sup>		55 dB			55 dB	
Wavelength dependent loss		< 0.2 dB			< 0.2 dB	
Crosstalk		-60 dB			-60 dB	
Repeatability <sup>4</sup>			±0.02 dB			±0.02 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		
PER	> 18 dB (20 dB typical)			> 18 dB (20 dB typical)		

1x16 switch	1307°   PM Panda 1310			1307°   PM Panda 1310		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1250 to 1350 nm			1250 to 1350 nm		
Insertion loss <sup>2,7</sup>			1.5 dB			1.5 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Wavelength dependent loss		<0.3 dB ± 20 nm			<0.3 dB ± 20 nm	
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			± 0.04 dB			± 0.04 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		
PER	15 dB			15 dB		

5x5 grid switch	1309   PM Panda 1300			1309   PM Panda 1300
	Minimum	Typical	Maximum	This model is not available in MATRIQ form factor.
Wavelength range	1290 to 1330 nm			
Insertion loss <sup>2,7</sup>			0.8 dB	
Return loss <sup>8</sup>	50 dB			
Wavelength dependent loss			0.3 dB	
Crosstalk		-60 dB	-50 dB	
Repeatability <sup>4</sup>			± 0.03 dB	
Damage level			+27 dBm	
Durability	1x10 <sup>9</sup> cycles			
PER	16 dB	18 dB		

## SWITCH TECHNICAL SPECIFICATIONS

1x8 switch	1310 <sup>9</sup>   PM Panda 1310			1310 <sup>9</sup>   PM Panda 1310		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
Wavelength range	1290 to 1330 nm			1290 to 1330 nm		
Insertion loss <sup>2,7</sup>			1.2 dB			1.2 dB
Return loss <sup>8</sup>	50 dB			50 dB		
Wavelength dependent loss			0.3 dB			0.3 dB
Crosstalk			-50 dB			-50 dB
Repeatability <sup>4</sup>			± 0.05 dB			± 0.05 dB
Damage level			+27 dBm			+27 dBm
Durability	1x10 <sup>9</sup> cycles			1x10 <sup>9</sup> cycles		
PER	18 dB			18 dB		

### Notes

- Specifications are valid at 23 °C ± 3 °C
- Excluding connectors. Add 0.2 dB for SMF (0.1 dB for MMF) per connector
- Power off isolation is same as crosstalk
- Repeatability is defined after 100 cycles
- IL is measured at 850 and 1310 nm, 23°
- IL is measured at 850 and 1270-1411 nm, 23°
- IL is for single-band. Dual-band option adds 0.3 dB
- With FC/APC connectors
- Preliminary specs
- Multimode products are tested and calibrated using mode-conditioning setups defined in TIA EIA-455-43 FOTP-43 for Output Near-Field Radiation Patterns.

## ORDERING INFORMATION

**SWITCH - XXXX - X - XX - PXIE**  
**SWITCH - XXXX - X - XX - MTRQ**

### Connector type

**FC** = FC/PC

**FA** = FC/APC

**SC** = SC/PC

**SA** = SC/APC

**[ ]** = For models with MT connectors, refer to the MT connector types table below\*

### Number of switches

**1** = 1 switch

**2** = 2 switches (only available for models 1001 and 1101)

**4** = 4 switches (only available for models 1008, 1108 & 1408)

### Model number

#### SINGLE-MODE FIBER

**1001** = 1x1 switch, single-mode, SMF-28

**1003** = 1x4 switch, single-mode, SMF-28

**1004** = 2x2 crossover switch, single-mode, SMF-28

**1005** = 1x2 duplex switch, single-mode, SMF-28

**1006<sup>3</sup>** = 1x16 switch, single-mode, SMF-28

**1008<sup>1</sup>** = Quad 1x2 switch, single-mode, SMF-28

**1009** = 1x8 switch, single-mode, SMF-28

**1010<sup>2</sup>** = 1x8 switch, single-mode, SMF-28,

**1012<sup>2</sup>** = 1x12 switch, single-mode, SMF-28

**1013<sup>2</sup>** = 1x24 switch, single mode, SMF-28

#### POLARIZATION MAINTAINING FIBER

**1303** = 1x4 switch, PM Panda 1550

**1304** = 1x4 switch, PM Panda 1310

**1305** = 2x2 crossover switch, PM Panda 1310

**1306** = 2x2 crossover switch, PM Panda 1550

**1307<sup>3</sup>** = 1x16 switch, PM Panda 1310

**1309** = 5 x 5 grid switch, PM Panda 1300

**1310<sup>1</sup>** = 1x8 switch, PM Panda 1300

### MULTI-MODE FIBER

**1101** = 1x1 switch, multi-mode, 50 µm core OM3

**1103** = 1x4 switch, multi-mode, 50 µm core OM3

**1104** = 2x2 crossover switch, multi-mode, 50 µm core OM3

**1105** = 1x2 duplex switch, multi-mode, 50 µm core OM3

**1106<sup>3</sup>** = 1x16 switch, multi-mode, 50 µm core OM3

**1107<sup>2</sup>** = 1x12 switch, multi-mode, 50 µm core OM3

**1108<sup>2</sup>** = Quad 1x2 switch, multi-mode, 50 µm core OM3

**1403** = 1x4 switch, multi-mode, 62.5 µm core OM1

**1405** = 1x2 duplex switch, multi-mode, 62.5 µm core OM1

**1406<sup>3</sup>** = 1x16 switch, multi-mode, 62.5 µm core OM1

**1408<sup>1</sup>** = Quad 1x2 Switch, multi-mode, 62.5 µm core OM1

**1409** = 1x8 switch, multi-mode, 62.5 µm core OM1

1. PXI version only available with SC/PC and SC/APC connectors

2. MT connector only

3. SC/PC, SC/APC only

### \*MT Connector types

<b>AA</b> = FC/PC + MTP-8/PC	<b>BA</b> = FC/PC + MTP-12/PC	<b>CA</b> = FC/PC + MTP-16/PC	<b>DA</b> = FC/PC + MTP-24/PC	<b>EA</b> = FC/PC + MTP-36/PC
<b>AB</b> = FC/APC + MTP-8/PC	<b>BB</b> = FC/APC + MTP-12/PC	<b>CB</b> = FC/APC + MTP-16/PC	<b>DB</b> = FC/APC + MTP-24/PC	<b>EB</b> = FC/APC + MTP-36/PC
<b>AC</b> = SC/PC + MTP-8/PC	<b>BC</b> = SC/PC + MTP-12/PC	<b>CC</b> = SC/PC + MTP-16/PC	<b>DC</b> = SC/PC + MTP-24/PC	<b>EC</b> = SC/PC + MTP-36/PC
<b>AD</b> = SC/APC + MTP-8/PC	<b>BD</b> = SC/APC + MTP-12/PC	<b>CD</b> = SC/APC + MTP-16/PC	<b>DD</b> = SC/APC + MTP-24/PC	<b>ED</b> = SC/APC + MTP-36/PC
<b>AE</b> = FC/PC + MTP-8/APC	<b>BE</b> = FC/PC + MTP-12/APC	<b>CE</b> = FC/PC + MTP-16/APC	<b>DE</b> = FC/PC + MTP-24/APC	<b>EE</b> = FC/PC + MTP-36/APC
<b>AF</b> = FC/APC + MTP-8/APC	<b>BF</b> = FC/APC + MTP-12/APC	<b>CF</b> = FC/APC + MTP-16/APC	<b>DF</b> = FC/APC + MTP-24/APC	<b>EF</b> = FC/APC + MTP-36/APC
<b>AG</b> = SC/PC + MTP-8/APC	<b>BG</b> = SC/PC + MTP-12/APC	<b>CG</b> = SC/PC + MTP-16/APC	<b>DG</b> = SC/PC + MTP-24/APC	<b>EG</b> = SC/PC + MTP-36/APC
<b>AH</b> = SC/APC + MTP-8/APC	<b>BH</b> = SC/APC + MTP-12/APC	<b>CH</b> = SC/APC + MTP-16/APC	<b>DH</b> = SC/APC + MTP-24/APC	<b>EH</b> = SC/APC + MTP-36/APC

## WARRANTY INFORMATION

This product comes with a standard 1 year warranty.

## EXTENDED WARRANTIES AND CALIBRATION PLANS

With an **extended warranty and calibration plan** you'll spend more time focused on your priorities and less time worrying about maintenance.

Add a **3 or 5 year extended warranty** when you purchase your Quantifi Photonics instruments.



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Ensure your equipment is operating at the best it can be for reliable and accurate results.

### Lower cost of ownership

Lock in savings and maximise your testing budget with a lower base cost of ownership.

### Peace of mind

Spend less time worrying about maintenance and more on generating results.

## CALIBRATION PLANS FOR ADDITIONAL DISCOUNTS

Order a **calibration plan** when purchasing your Quantifi Photonics instruments and get additional discounts.

### 10% Discount

On calibrations ordered at the time of purchase.

### 25% Discount

Add on an extended warranty and receive a 25% discount on calibrations.

Over time and with regular use, all optical parts and connectors require re-calibration and maintenance to guarantee accurate and reliable performance. We recommend Quantifi Photonics optical instruments are re-calibrated every 12 months. With an instrument calibration performed by Quantifi Photonics technicians you receive:

- Comprehensive calibration to factory specifications
- End-to-end inspection to ensure all instrument functions are working and connectors are clean
- Firmware, software and documentation updates
- Certificate of calibration which includes detailed test results

## How to do I secure my extended warranty or calibration plan?

Contact your Quantifi Photonics sales representative or email [sales@quantifiphotonics.com](mailto:sales@quantifiphotonics.com)

Extended warranties and calibration plans must be ordered at the time of purchase and are available only for Quantifi Photonics' products. The 25% calibration discount only applies to calibrations while the product is covered by the extended warranty period.

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### Optical Power Meters

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### Optical Spectrum Analyzer (OSA)

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### Optical-to-Electrical Converter

High bandwidth, broadband O-to-E converter. Available in a range of configurations; choose from 1 or 2 channels, AC or DC coupling and various conversion gain and operating wavelength ranges.



### Digital Sampling Oscilloscope (DSO)

Digital equivalent-time sampling oscilloscope (DSO) with high-quality precision timebase and low jitter mode, available in 1 or 2 channels in a compact benchtop instrument.



### Bit Error Rate Tester (BERT)

4 or 8-channel Pulse Pattern Generator and Error Detector at rates up to 29 Gbps for the design, characterization and production of optical transceivers and opto-electrical components.



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Purpose-built module for Photonic Doppler Velocimetry (PDV). A circulator, two VOAs and a passive coupler all built into one compact module.



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