QUANTIFI PHOTONICS®
A Teradyne Company

POL

1000 SERIES
POLARIZATION CONTROLLER AND SCRAMBLER

SPECIFICATION SHEET

AVAILABLE IN PXI

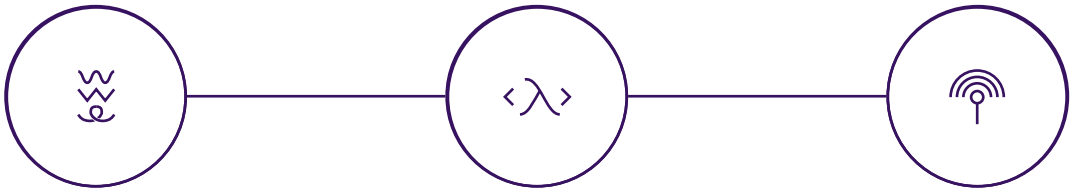
AVAILABLE IN MATRIQ

quantifiphotonics.com

Quantifi Photonics' POL 1000 Series enables high-speed automated polarization control for polarization dependent testing procedures.

Rotate or scramble the polarization of your signal with no need for manual adjustment of paddles or tension screws using intuitive software, LabVIEW or comprehensive SCPI commands.

The POL 1000 Series can be integrated with our wide range of optical and electrical test modules to build complete mixed-signal test platforms.



Preset or custom scramble modes

Set the instrument to scramble polarization with sinusoidal, triangular, random, or manual modes.

Broad wavelength coverage

A single unit can be used for wavelengths from O-band, C-band, and L-band (1260nm to 1650nm).

Full remote control

The unit can be fully controlled through standard SCPI programming commands.

Simple, intuitive operation with CohesionUI™

Control the instrument from your PC or mobile device. CohesionUI offers a sleek modern interface, cross device compatibility, customizable views and remote network access.

Low insertion loss and back reflection

The POL 1000 Series is implemented with an all-fiber design which results in lower insertion loss, low back reflection, and low polarization dependence loss.

TARGET APPLICATIONS

- PDL measurement of DUT
- ICR parameter testing
- Polarization selection

CHANGING THE POLARIZATION

The PoL-1001 contains three piezo-electric fiber squeezers that are oriented 45° from each other. By applying individual control signals, each fiber squeezer can cause the polarization to rotate in a plane that is orthogonal to the other two squeezers.

By changing the settings of all three squeezers in this manner, the user can move any monochromatic input polarization to anywhere on the Poincaré sphere. Below is an illustration of how each squeezer rotates a particular point on the Poincaré sphere in its own plane of rotation:

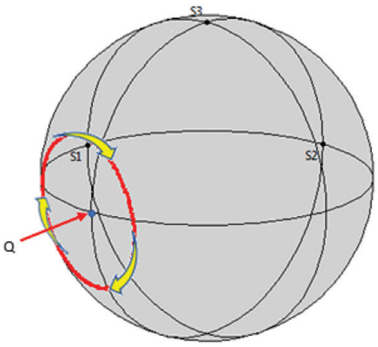


Figure 1: The #1 squeezer accepts a control signal from 0 to 1. This allows approximately 720° polarization adjustment along the rotation lines shown above.

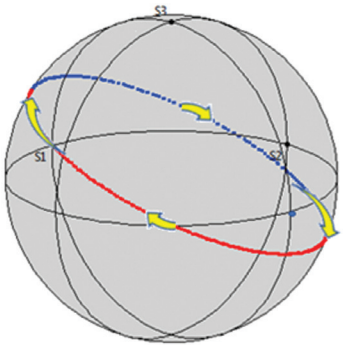


Figure 2: The #2 squeezer accepts a control signal from 0 to 1. This allows approximately 675° polarization adjustment along the rotation lines shown above.

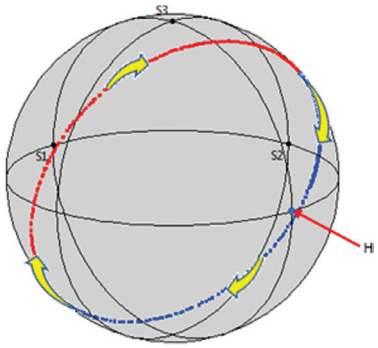


Figure 3: The #3 squeezer accepts a control signal from 0 to 1. This allows approximately 540° polarization adjustment along the rotation lines shown above.

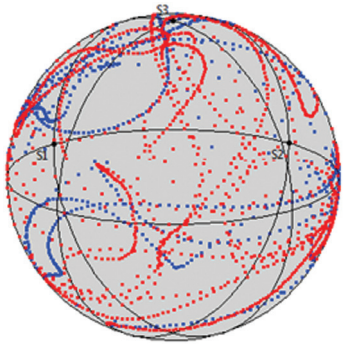


Figure 4: The Pol-1001 can also run in "scramble" mode. In this mode, the Pol-1001 applies constantly varying settings from 0 to 1 to the three squeezers with selectable functions of sinusoidal, triangular, or random. The distribution approaches a random coverage of the entire Poincaré sphere. The paths shown above are an example of the movement of the polarization over ~800ms in a random manner.

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

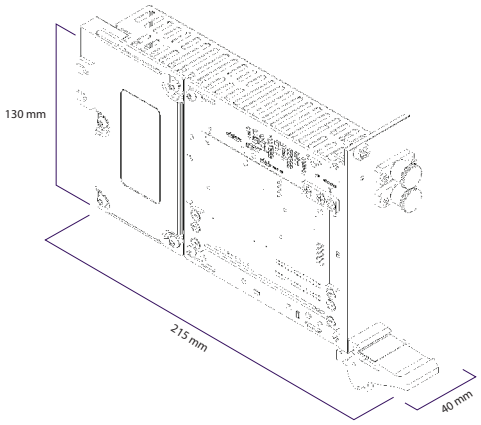
MATRIQ – COMPACT & PORTABLE

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

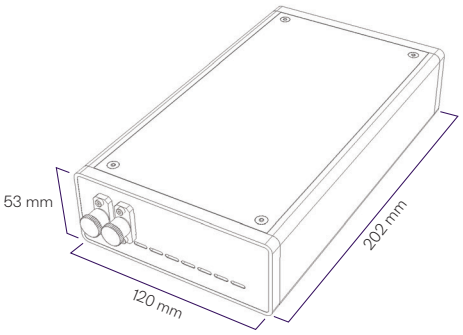
PXI – MODULAR

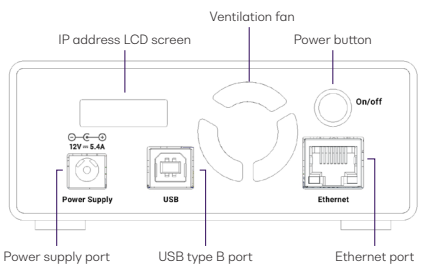
POL-1001-1-FC-PXIE



MATRIQ – COMPACT & PORTABLE

POL-1001-1-FC-MTRQ





POL TECHNICAL SPECIFICATIONS

General Specifications	PXI	MATRIQ
Bus connection	PXIe	USB and Ethernet
Optical connectors	FC/APC, FC/PC, SC/PC, SC/APC	FC/APC, FC/PC, SC/PC, SC/APC
Slot count	2	-
Dimensions (HxWxD)	130 x 40 x 215 mm | 5.1 x 1.6 x 8.5 inches	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
Storage temperature range	-40 °C to 70 °C | -40 °F to 158 °F	-40 °C to 70 °C | -40 °F to 158 °F
Operating temperature range	5 °C to 45 °C | 41 °F to 113 °F	5 °C to 45 °C | 41 °F to 113 °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)

Model Number	1001	1001
Number of channels	1	1
Fiber type	SMF-28	SMF-28
Operating wavelengths	1260 to 1650 nm	1260 to 1650 nm
Damage power	+ 25 dBm	+ 25 dBm
Insertion loss[2]	< 0.2 dB	< 0.2 dB
Return loss[2]	> 65 dB	> 65 dB
PDL[2]	< 0.1 dB	< 0.1 dB
PMD	< 0.05 ps	< 0.05 ps
Scramble modes	Sinusoid, triangular, random, manual	Sinusoid, triangular, random, manual
Max frequency of each waveplate	10 Hz	10 Hz

Notes
1. Specifications are valid at 23 °C ± 3 °C.
2. Excluding connectors.

ORDERING INFORMATION

POL - 1001 - 1 - XX - PXIE
POL - 1001 - 1 - XX - MTRQ

Connector type
FC = FC/PC
FA = FC/APC
SC = SC/PC
SA = SC/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.

Guarantee performance

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**

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.

Our portfolio of optical & electro-optical test modules is rapidly expanding to meet a wide range of customer requirements and applications.

For more details visit **quantifiphotonics.com/products**

Tunable Laser Sources

Versatile telecom laser sources with full tunability across C or L bands. Narrow 100 kHz linewidth, up to 16.5 dBm of power, optional whisper mode to disable frequency dither.

Fixed Wavelength Laser Sources

Highly-customizable DFB or FP laser sources available in a wide range of wavelengths and powers up to 24 dBm. Supports SMF, MMF and PMF.

Swept, Tunable Continuous Wave Laser

Swept, tunable continuous wave (CW) laser source with 0.01 dB power stability and 400 nm/s high-speed scan rate for R&D and production testing.

Superluminescent Diode Broadband Light Source

Super-luminescent LED light source with high output power, large bandwidth and low spectral ripple and various wavelengths.

Erbium-Doped Fibre Amplifier (EDFA)

High power Erbium-Doped Fiber Amplifier for signal power amplification in C and L bands with various control modes, including automatic gain control.

Variable Optical Attenuator (VOA)

Fast attenuation speed with low insertion loss and built-in power monitoring. Operates in fixed attenuation or constant output power modes. Support SMF, MMF and PMF.

Polarization Controller & Scrambler

High-speed automated polarization control with broad wavelength coverage from 1260nm to 1650nm, low insertion loss and back reflection. Full remote control via intuitive GUI, LabVIEW or SCPI.

Optical Power Meters

Fast terminating or inline monitoring of optical signal power from -60 to +10 dBm across 750 – 1700 nm wavelengths. Model with logarithmic analog output for applications such as silicon photonics fiber alignment.

Optical Spectrum Analyzer (OSA)

Cost-effective, spectral measurement in a compact module with built-in analysis for: SMSR, OSNR & spectral width. Targeted wavelengths for specific applications in O band, C band & L band.

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.

Photonic Doppler Velocimeter (PDV)

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

Optical Switch

Proven reliability and fast switching time. Wide variety of switch onfigurations: 1x4, 1x16, 16x16 and more. Models support SMF, MMF and PMF.

Photocurrent Amplifier

Versatile photodiode amplifier to measure photocurrent in photonic integrated circuit (PIC) applications. Digital and analog measurement.

Passive Component Integration

Integrate passive optical components of your choice such as WDM couplers, splitters, band-pass filters, PM beamsplitters and circulators. SMF, MMF and PMF.

Test. Measure. Solve.™

Quantifi Photonics provides test solutions to help customers unlock scalable and cost-effective high-volume manufacturing of photonic integrated circuits (PICs), co-packaged optics and pluggable optics. The company's portfolio includes a wide range of photonic test instruments, and digital sampling oscilloscopes, available as benchtop or the industry-standard PXI format to support cost-effective, high-throughput design verification testing and high-volume manufacturing.

To find out more, get in touch with us today.

General Enquiries sales@quantifiphotonics.com
Technical Support support@quantifiphotonics.com
Phone - NZ +64 9 478 4849
Phone - USA +1-800-803-8872

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