QUANTIFI PHOTONICS®

POL

1200 SERIES
HIGH-SPEED POLARIZATION CONTROLLER

ADVANCED SPECIFICATION SHEET

AVAILABLE IN PXI

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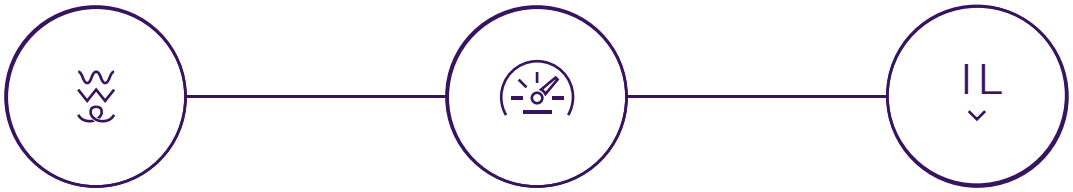
FEATURES

The 1200 Series Polarization Controller delivers extremely high speed automated polarization control for polarization dependent testing procedures in high-volume manufacturing environments.

It will quickly and accurately allow the user to measure critical polarization characteristics of components both in wafer-level testing and component testing. With three operating modes, it is a versatile instrument, capable of supporting the product lifecycle from R&D, to validation and manufacturing.
As a compact, single-slot PXIe module, it can be integrated with our range of optical and electrical test modules to build flexible, scalable and high-density test systems.



Three operating modes

A flexible and capable instrument with three modes of operation: Scan and Optimize, Manual and Depolarize.

High-speed operation

Extremely fast signal optimization for polarization dependent testing.

Low insertion loss

Design ensures exceptionally low insertion loss.

High optical power handling

The unit is capable of handling up to 500 mW of optical power (+25 dBm).

Full software control

No need to adjust paddles or tension screws, use SCPI or gRPC programming commands, LabVIEW, or our intuitive browser-based GUI, CohesionUI.

Comprehensive triggering capabilities

Control the behavior of the instrument in PXI with input triggers. The instrument also provides output triggers that can be used to synchronize instruments such as our optical power meters or tunable lasers.

TARGET APPLICATIONS

- Silicon photonics device testing
- Polarization dependent testing
- Versatile polarization control instrument

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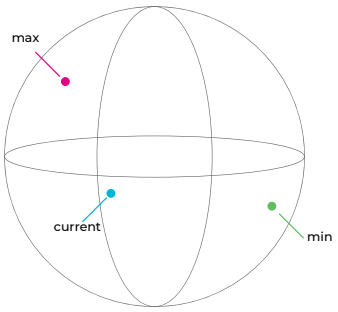
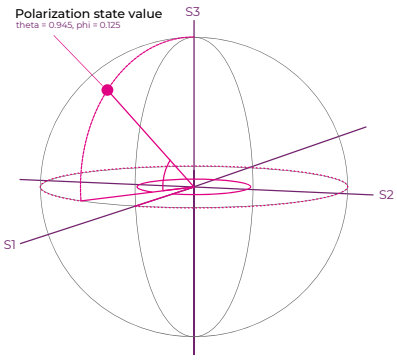
Unlike manual polarization controllers, the 1200 Series Polarization Controller utilizes two digitally-controlled electro-optic crystals to position the polarization state at any point on the Poincaré sphere.

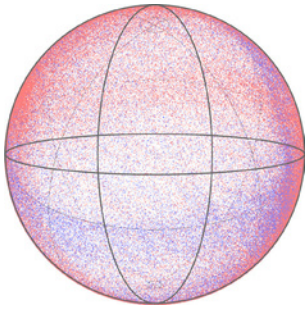
Three modes of operation



1. Scan and optimize:
Automatically scan, adjust and optimize the polarization based on a feedback signal to minimize or maximize loss due to polarization in under 10 ms.



2. Manual:
Set the desired polarization of your signal by manually adjusting the 2 control angles.



3. Depolarize (scramble):
Rapidly depolarize your signal. In this mode, the state of polarization is varied rapidly to generate a distribution approaching random coverage of the entire Poincaré sphere.

EXAMPLE TEST SETUPS FOR SCAN AND OPTIMIZE MODE

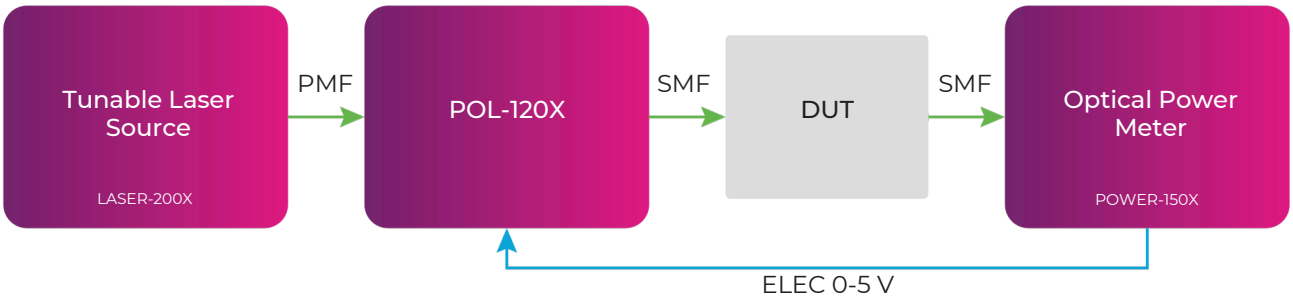


Figure 1: In this setup, a Quantifi Photonics Laser-200X swept tunable laser (with PM output) and Power-150X optical power meter with analogue output are used to run the Scan & Optimize mode on the DUT. The Power-150X passes an electrical signal to the POL-1201 via the front panel's RF input.

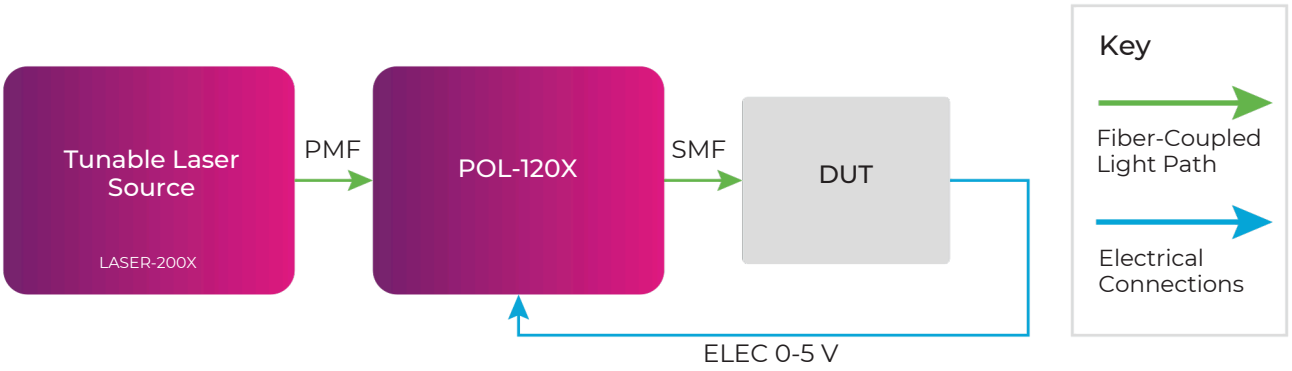
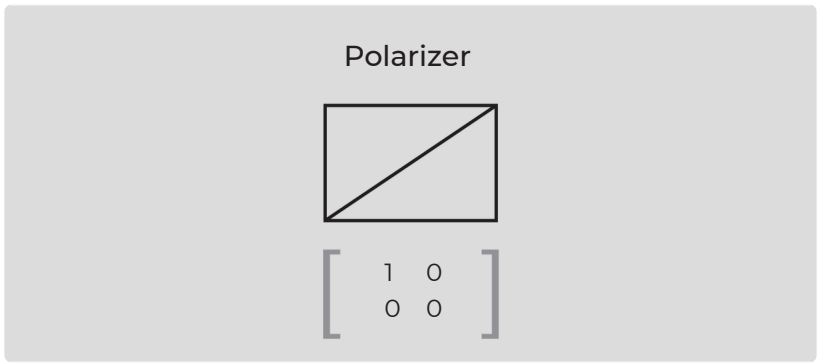


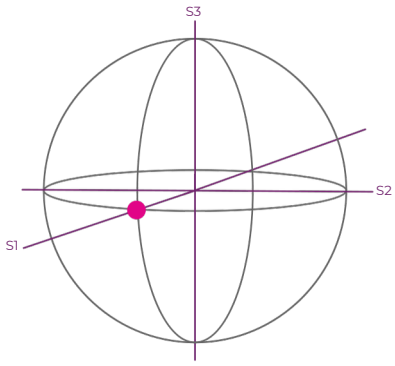
Figure 2: In this setup, the user's DUT incorporates a photo-detector and can pass the electrical signal back to the POL-1201's Trigger Input without the need for an additional optical power meter.

HOW IT WORKS

The Pol-120x sets the state of polarization (SOP) via a three-step process.

Step 1: Polarization aligned to the slow axis, S1.

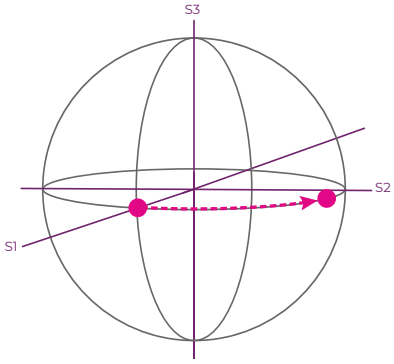




Step 2: Theta (θ) rotates the SOP along the azimuth from S1 position.

Phase retarder
Rotated @45 deg

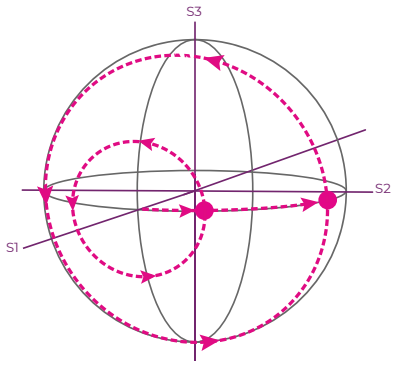
$$\begin{bmatrix} \cos(pi/4) & -\sin(pi/4) \\ \sin(pi/4) & \cos(pi/4) \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & \exp(i\,\Theta) \end{bmatrix} \begin{bmatrix} \cos(pi/4) & \sin(pi/4) \\ -\sin(pi/4) & \cos(pi/4) \end{bmatrix}$$



Step 3: Phi (Φ) rotates the SOP around the S1 axis to reach the desired position.

Phase retarder

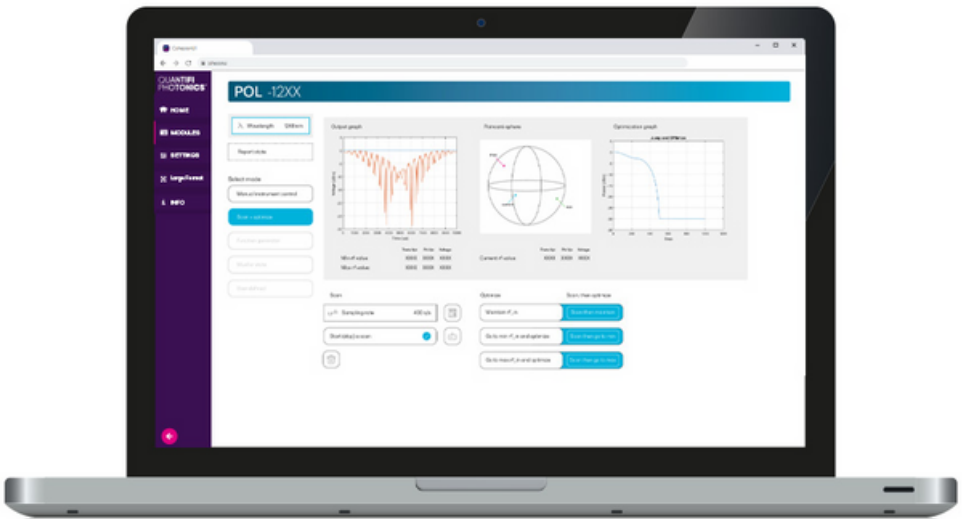
$$\begin{bmatrix} 1 & 0 \\ 0 & \exp(i\,\Phi) \end{bmatrix}$$



USER EXPERIENCE

Simple, intuitive control with COHESIONUI™

CohesionUI makes it simple to control our PXI instruments from any device running a modern web browser. Its cutting-edge design offers a sleek modern interface, cross device compatibility, customizable views and remote network access.



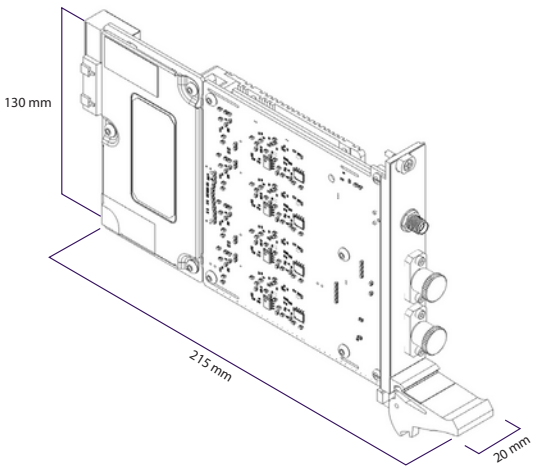
CHOOSE YOUR FORM FACTOR

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

POL TECHNICAL SPECIFICATIONS



POL-1201-1-FC-PXIE

General Specifications	PXI
Bus connection	PXIe
Optical connectors	FC/PC,SC/PC, FC/APC and SC/APC
Slot count	1
Dimensions (HxWxD)	130 x 20 x 215 mm | 5.1 x 0.8 x 8.5 inches
Weight	~ 1 kg | ~2.2 lbs
Storage temperature range	-40 °C to 70 °C | -40 °F to 158 °F
Operating temperature range	5 °C to 45 °C | 41 °F to 113 °F

Power Specifications	PXI
AC input voltage range	Please refer to the latest PXI Express Hardware Specifications published by the PXI Systems Alliance.
AC input current	
AC frequency range	
DC output voltage	
DC output current max	
Dimensions (LxWxH)	

Model Number	1201	1202
Number of channels	1	1
Fiber type	PMF Input, SMF output	PMF Input, SMF output
Operating wavelengths	1260 - 1360 nm	1520 - 1620 nm
Damage power	+ 25 dBm	+ 25 dBm
Insertion loss2	< 1.3 dB	< 1.3 dB
Return loss2	> 50 dB	> 50 dB
PDL2	< 0.1 dB	< 0.1 dB
Scramble modes	Sinusoid, triangular, random, manual	Sinusoid, triangular, random, manual
Max frequency of each waveplate	100 kHz	100 kHz
SOP accuracy	± 0.5 degrees	± 0.5 degrees
SOP repeatability	± 0.1 degrees	± 0.1 degrees
RF input impedance	50 and 1M ohms (SW configurable)	50 and 1M ohms (SW configurable)
RF voltage input range	0 to 5 V	0 to 5 V
RF damage threshold	< 0 and > 6 V	< 0 and > 6 V
RF input frequency response	300 kHz	300 kHz

Notes
1. Advanced specifications, valid at 23 °C ± 3 °C.
2. Excluding connectors.

ORDERING INFORMATION

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.

Your choice: add a

3 or 5 year extended warranty when you buy.

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 specifi cations
- End-to-end inspection to ensure all instrument functions are working and connectors are clean
- Firmware, soft ware and documentation updates
- Certifi cate 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@quantifi photonics.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.

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 laser platform. Select required wavelength, power and fi ber type for a customized solution.

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.

Optical-to-Electrical Converter

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

Variable Optical Att enuator (VOA)

Fast att enuation speed with low insertion loss and built-in power monitoring. Operates in fi xed att enuation or constant output power modes. Models support SMF, MMF and PMF connector types.

Polarization Controller & Scrambler

High-speed automated polarization control with broad wavelength coverage from 1260nm to 1650nm, low insertion loss and back refl ection. 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 fi ber alignment.

Optical Spectrum Analyzer (OSA)

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

Digital Sampling Oscilloscope (DSO)

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

Bit Error Rate Tester (BERT)

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

Passive Component Integration

Integrate passive optical components of your choice such as WDM couplers, splitt ers, band-pass fi lters, PM beamsplitt ers and circulators. Models support SMF, MMF and PMF.

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 onfi gurations: 1x4, 1x16, 16x16 and more. Models support SMF, MMF and PMF.

Passive Component Storage

Protect and store your own passive fi ber optic components such as splitt ers, connector adaptor patchcords, WDM couplers, and isolators in one handy module.

For more details visit **quantifi photonics.com/products**