QUANTIFI PHOTONICS®
A Teradyne Company

LASER

2000 SERIES
SWEPT, TUNABLE, CONTINUOUS WAVE LASER SOURCE

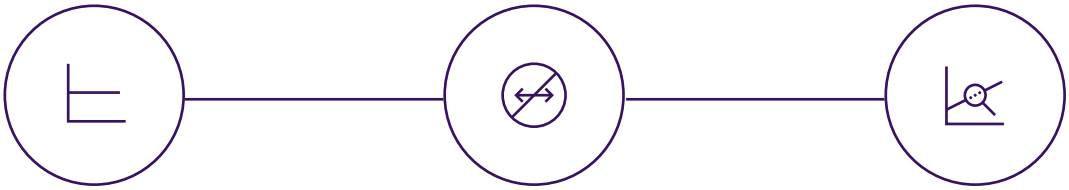
ADVANCED SPECIFICATION SHEET

AVAILABLE IN PXIE

quantifiphotonics.com

The Laser 2000 Series provides a laboratory-grade swept, tunable laser source in the O-Band, E-Band or C/L-Band.

The Laser 2000 Series can act as both a step-tuned source or a swept-wavelength laser source. It uses a high quality grating paired with state-of-the-art micro-electromechanics tuning mechanism for quick, voltage-controlled wavelength tuning and exceptional reliability. With 0.01 dB power stability and 400 nm/s high-speed scan rate, it is the perfect time-saving tool for R&D applications as well as production testing.



High power stability

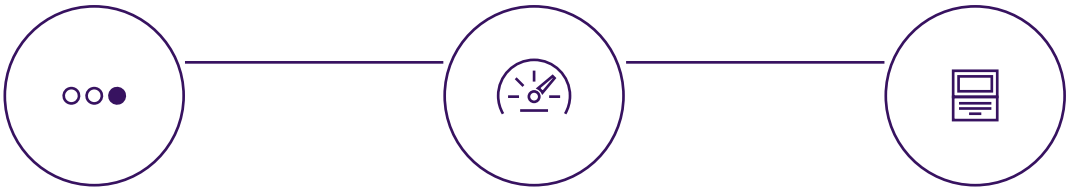
Highly stable output power ensures accurate and consistent test and measurement results.

No moving bulk optics

State-of-the-art MEMS technology and no moving bulk optics offer reliable wavelength tuning.

Fine tuning resolution

Set the exact wavelength you need with precision micro-electromechanics tuning.



Trigger at the start of each scan

The trigger output from the laser allows synchronization to the start and stop of each wavelength sweep.

Fast sweep speed

Save time on your DUT characterization or speed up your measurement with the Laser 2000 Series' rapid sweep speed.

Swept or step-tuning modes

Intuitive software GUI makes it simple to configure the laser in fixed, continuous or step tuning modes.

Analog power output

Provides a real-time reference of the laser's power output for an easy integration into automated test set-ups.

Wide coverage of wavelength options

Choose from a wide range of operating wavelength ranges to suit your specific application.

TARGET APPLICATIONS

Many devices, waveguides, and photonic integrated circuits (PIC) have wavelength-dependent performance that needs to be characterized and tested. By utilizing rapid wavelength scanning, a single laser source like the Laser 2000 Series can quickly scan the typical wavelength ranges utilized by such applications as DWDM and CWDM optical datacom and telecom transmission signals.

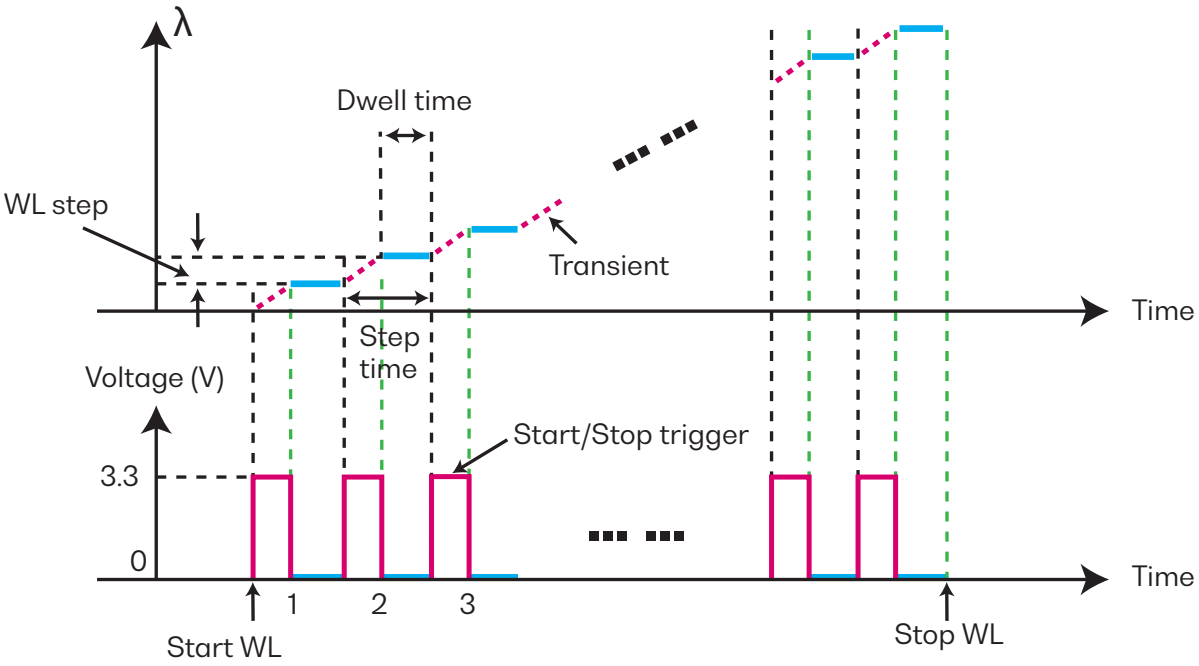
The rapid, consistent, and stable sweep characteristic of the Laser 2000 Series coupled with its built-in synchronization trigger inputs and outputs allows users to synchronize the laser sweep with other measurement tools such as fast optical power meters, spectrum analyzers, and oscilloscopes.

- General characterization of wavelength-dependent devices and materials
- Wavelength Dependent Loss measurements (WDL)
- Calibration of wavelength dependent optical modulators
- Rapid testing of wavelength Mux/DeMux passive components and wavelength selectable switches
- Emulation of laser sources for DWDM and CWDM applications
- General interferometry applications

LASER 2000 SERIES OPERATION MODES

Step Tuning

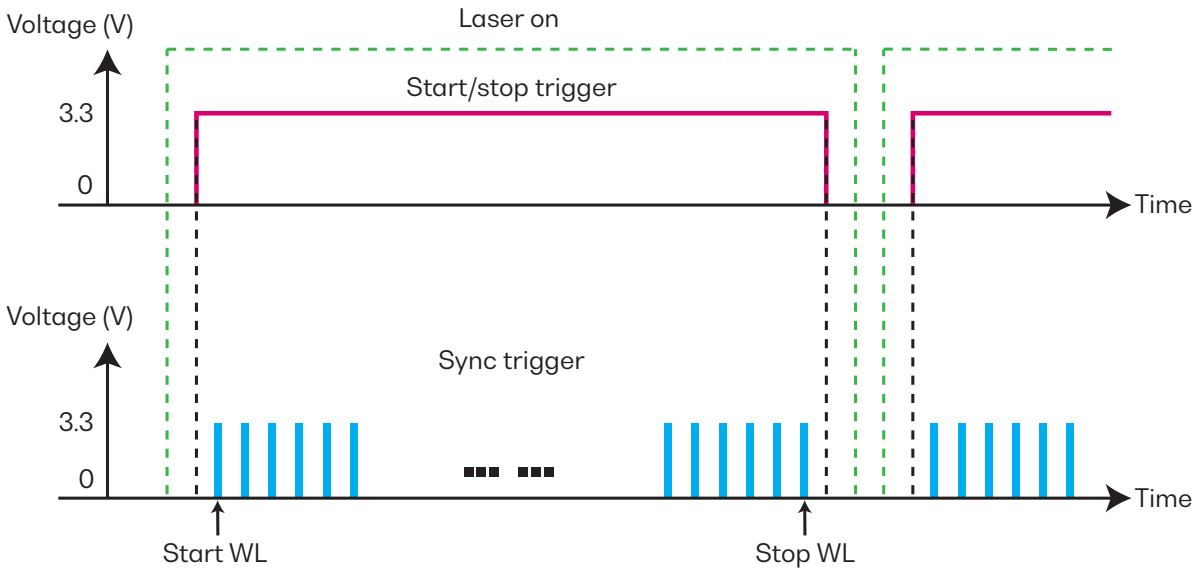
Laser jumps from set point to set point or stays at the set point.



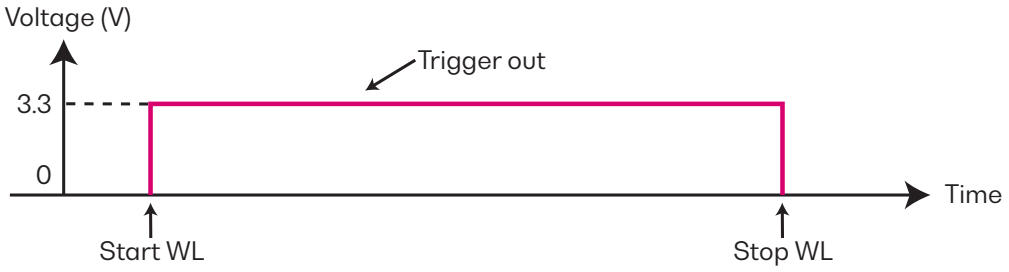
"Trigger out" signals in stepped sweeping mode

Swept Tuning

Laser performs a continuous sweep over selected wavelength range.



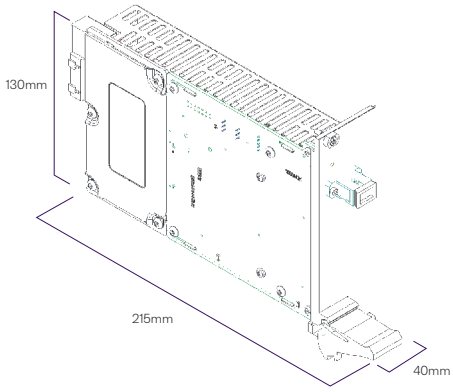
“Sync trigger” synchronization signals in continous sweeping mode



“Trigger out” signal in continous sweeping mode

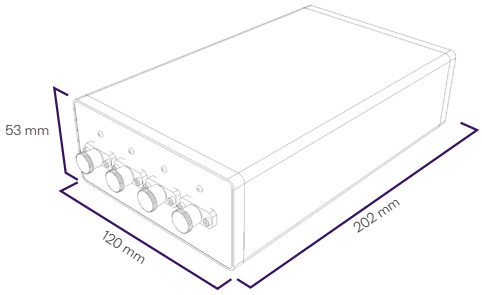
PXI – MODULAR

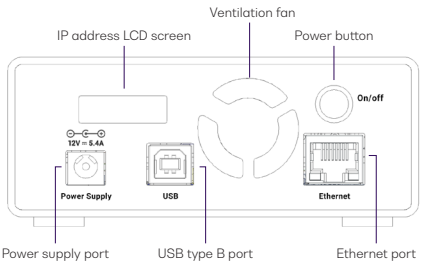
LASER-2001-1-FC-PXIE



MATRIQ – COMPACT & PORTABLE

*A Matriq version will be available in the future. Please contact us for more information.





General Specifications	PXIe
Dimensions (HxWxD)	130 x 40 x 215 mm | 5.1 x 1.6 x 8.5 inches
Weight	~ 1 kg | ~ 2.2 lbs
Bus connection	PXIe
Slot count	2
Number of channels	1
Operating temperature range	10 °C to 35 °C | 50 °F to 85 °F
Storage temperature range	-40 °C to 70 °C | -40 °F to 158 °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	2001
Operating wavelength range	1250 to 1350 nm
Minimum output power [1]	8 dBm
Power stability [2]	± 0.01 dB
Output power monitor present	Yes
Wavelength stability [2]	± 5 pm
Wavelength resolution	± 10 pm
Internal wavelength reference	Yes
Signal to source ASE ratio [3]	≥ 65 dB
Linewidth (FWHM)	< 350 MHz
Output fiber	Polarization Maintaining. Slow Axis Aligned
Laser safety	1 M

Step Mode	2001
Power repeatability step mode	± 0.05 dB
Wavelength accuracy step mode (5)	± 35 pm
Wavelength repeatability step mode	± 20 pm
Step tuning time	50 ms
Dwell time	1 to 65535 ms

Swept Mode	2001
Power repeatability sweep mode (4)	± 0.05 dB
Wavelength accuracy sweep mode (4)	± 8 pm
Wavelength repeatability sweep mode (4)	± 4 pm
Maximum sweep speed	400 nm/s

Output Trigger	2001
Output trigger line	**Two SMA front Panel connectors:** Start/stop trigger and sweep trigger PXI units also have configurable PXI backplane trigger: Trig 0 - 7 BUS for Start/stop trigger and sweep trigger
Start/stop trigger output	Rising edge on start/falling edge on stop
Sync trigger output	Pulse every 10pm (in PXIE adjustable from 10pm to 10,000pm)
Sync trigger output resolution	10 pm

Model Number	2002
Operating wavelength range	1350 to 1450 nm
Minimum output power [1]	8 dBm
Power stability [2]	± 0.01 dB
Output power monitor present	Yes
Wavelength stability [2]	± 5 pm
Wavelength resolution	± 10 pm
Internal wavelength reference	Yes
Signal to source ASE ratio [3]	≥ 65 dB
Linewidth (FWHM)	< 300 MHz
Output fiber	Polarization maintaining. Slow axis aligned
Laser safety	1 M

Step Mode	2002
Power repeatability step mode	± 0.05 dB
Wavelength accuracy step mode (5)	± 35 pm
Wavelength repeatability step mode	± 20 pm
Step tuning time	50 ms
Dwell time	1 to 65535 ms

Swept Mode	2002
Power repeatability sweep mode (4)	± 0.05 dB
Wavelength accuracy sweep mode (4)	± 8 pm
Wavelength repeatability sweep mode (4)	± 4 pm
Maximum sweep speed	400 nm/s

Output Trigger	2002
Output trigger line	Two SMA front Panel connectors: Start/stop trigger and sweep trigger PXI units also have configuratble PXI backplane trigger: Trig 0 - 7 BUS for Start/stop trigger and sweep trigger
Start/stop trigger output	Rising edge on start/falling edge on stop
Sync trigger output	Pulse every 10pm (in PXIE adjustable from 10pm to 10,000pm)
Sync trigger output resolution	10 pm

Model Number	2003
Operating wavelength range	1520 to 1620 nm
Minimum output power [1]	8 dBm
Power stability [2]	± 0.01 dB
Output power monitor present	Yes
Wavelength stability [2]	± 5 pm
Wavelength resolution	± 10 pm
Internal wavelength reference	Yes
Signal to source ASE ratio [3]	≥ 65 dB
Linewidth (FWHM)	< 250 MHz
Output fiber	Polarization maintaining. Slow axis aligned
Laser safety	1 M

Step Mode	2003
Power repeatability step mode	± 0.05 dB
Wavelength accuracy step mode (5)	± 35 pm
Wavelength repeatability step mode	± 20 pm
Step tuning time	50 ms
Dwell time	1 to 65535 ms

Swept Mode	2003
Power repeatability sweep mode (4)	± 0.05 dB
Wavelength accuracy sweep mode (4)	± 8 pm
Wavelength repeatability sweep mode (4)	± 4 pm
Maximum sweep speed	400 nm/s

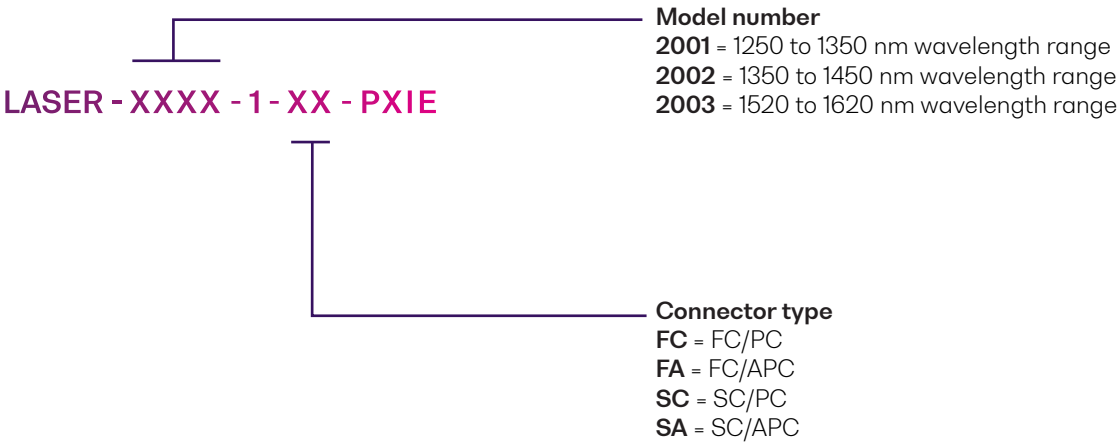
Output Trigger	2003
Output trigger line	Two SMA front Panel connectors: Start/stop trigger and sweep trigger PXI units also have configuratble PXI backplane trigger: Trig 0 - 7 BUS for Start/stop trigger and sweep trigger
Start/stop trigger output	Rising edge on start/falling edge on stop
Sync trigger output	Pulse every 10pm (in PXIE adjustable from 10pm to 10,000pm)
Sync trigger output resolution	10 pm

Notes

1. Output power will vary based on wavelength setting.
2. When measured after warm-up time, measurements over 1 hour at 25±1°C, at fixed wavelength.
3. ASE is measured at 0.1 nm bandwidth and +-1 nm away from center.
4. For tuning speed 120 nm/s, repeated over 100 measurements.
5. After using built-in wavelength calibration.
6. Specs as of February 2022

ORDERING INFORMATION

A MATRIQ version will be available in the future. Contact us for more 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.

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

quantifiphotonics.com

QUANTIFI PHOTONICS®
A Teradyne Company