

# LASER

## 2000 SERIES SWEPT, TUNABLE, CONTINUOUS WAVE LASER SOURCE

ADVANCED SPECIFICATION SHEET

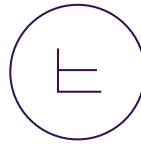
AVAILABLE IN PXIE

AVAILABLE IN MatriQ

FEATURES

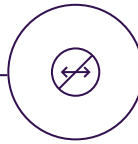
## The Laser 2000 Series provides a laboratory-grade swept, tunable laser source in the O-band or C-band.

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.



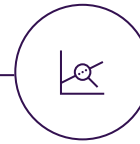
### High power stability

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.



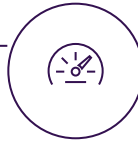
### Fine tuning resolution

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.



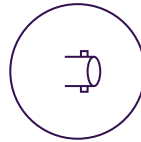
### Fast sweep speed

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



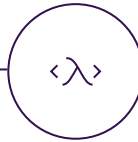
### Swept or step-tuning modes

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.

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## 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.

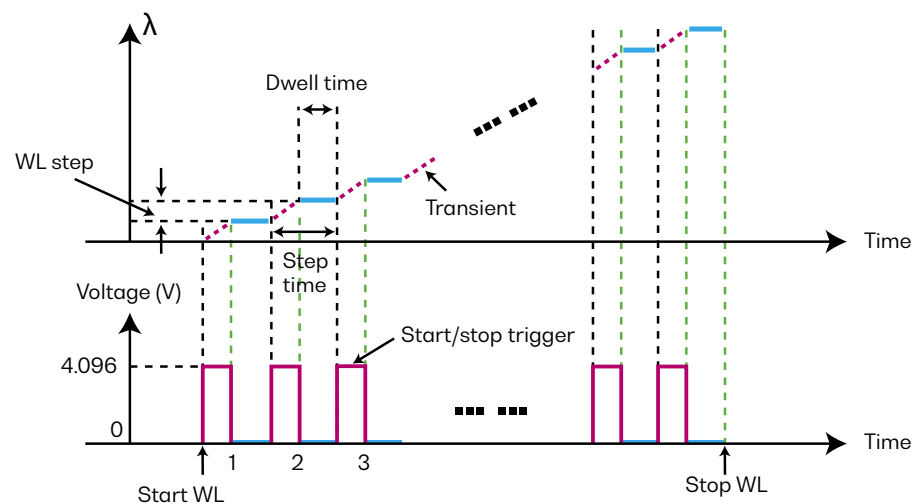
The rapid, consistent, and stable sweep characteristic of the Laser 2000 Series coupled with its built-in synchronization trigger inputs and outputs allows users to synchronize the laser sweep with other measurement tools such as fast optical power meters, spectrum analyzers, and oscilloscopes.

- 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.



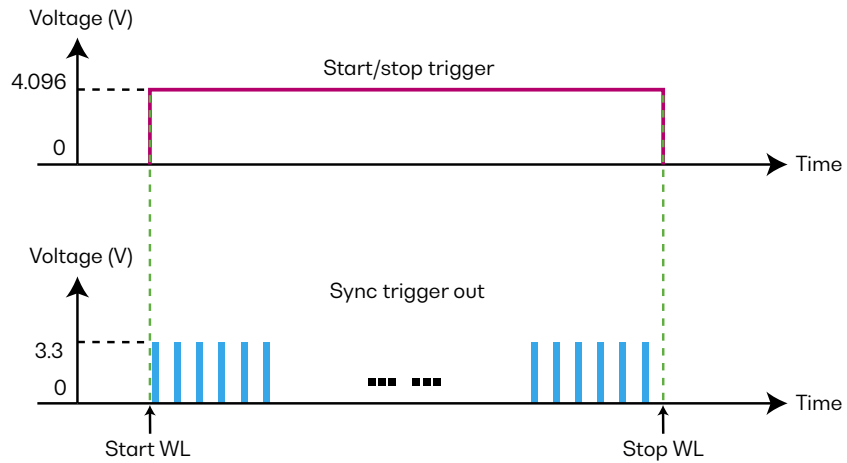
“Start/stop trigger” signals in stepped sweeping mode

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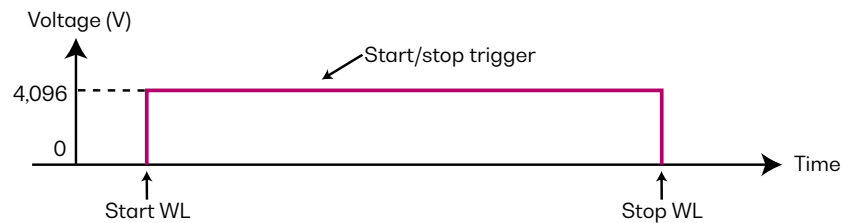
LASER 2000 SERIES OPERATION MODES

Swept Tuning

Laser performs a continuous sweep over selected wavelength range.



“Sync trigger” synchronization signals in continuous sweeping mode



“Start/stop trigger” signal in continuous sweeping mode

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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



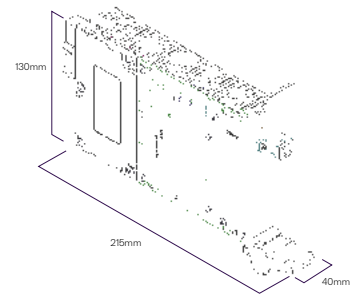
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LASER 2000 SERIES TECHNICAL SPECIFICATIONS

PXI – MODULAR



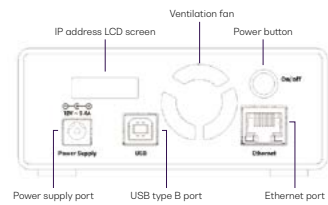
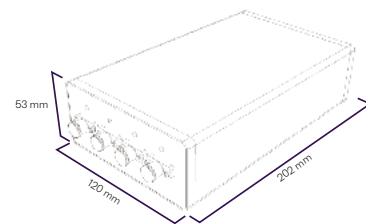
LASER-2001-1-FC-PXIE



MATRIQ – COMPACT & PORTABLE



LASER-2001-1-FC-MTRQ



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LASER 2000 SERIES TECHNICAL SPECIFICATIONS

General Specifications	PXIe	MATRIQ
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
Bus connection	PXIe	PXIe
Slot count	2	2
Number of channels	1	1
Operating temperature range	10 °C to 35 °C   50 °F to 85 °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.	90 to 264 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)

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LASER 2000 SERIES TECHNICAL SPECIFICATIONS

Model Number	2001	2001
Operating wavelength range	1250 to 1350 nm	1250 to 1350 nm
Minimum output power <sup>1</sup>	8 dBm	8 dBm
Power stability <sup>2</sup>	± 0.01 dB	± 0.01 dB
Output power monitor present	Yes	Yes
Wavelength stability <sup>2</sup>	± 5 pm	± 5 pm
Wavelength resolution	± 10 pm	± 10 pm
Internal wavelength reference	Yes	Yes
Signal to source ASE ratio <sup>3</sup>	≥ 65 dB	≥ 65 dB
Linewidth (FWHM)	< 350 MHz	< 350 MHz
Output fiber	Polarization Maintaining. Slow Axis Aligned	Polarization Maintaining. Slow Axis Aligned
Laser safety	1M	1M

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

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

Output Trigger	2001	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	Two SMA front Panel connectors: Start/stop trigger and sweep trigger
Start/stop trigger output	Rising edge on start/falling edge on stop	Rising edge on start/falling edge on stop
Sync trigger output	Pulse every 10pm (in PXIE adjustable from 10pm to 10,000pm)	Pulse every 10pm
Sync trigger output resolution	10 pm	10 pm

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LASER 2000 SERIES TECHNICAL SPECIFICATIONS

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

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

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

Output Trigger	2002	2002
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	Two SMA front Panel connectors: Start/stop trigger and sweep trigger
Start/stop trigger output	Rising edge on start/falling edge on stop	Rising edge on start/falling edge on stop
Sync trigger output	Pulse every 10pm (in PXIE adjustable from 10pm to 10,000pm)	Pulse every 10pm
Sync trigger output resolution	10 pm	10 pm

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LASER 2000 SERIES TECHNICAL SPECIFICATIONS

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

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

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

Output Trigger	2003	2003
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	Two SMA front Panel connectors: Start/stop trigger and sweep trigger
Start/stop trigger output	Rising edge on start/falling edge on stop	Rising edge on start/falling edge on stop
Sync trigger output	Pulse every 10pm (in PXIE adjustable from 10pm to 10,000pm)	Pulse every 10pm
Sync trigger output resolution	10 pm	10 pm

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## LASER 2000 SERIES SPECIFICATION NOTES

### 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

LASER -XXXX -1- XX -PXIE  
LASER -XXXX -1- XX -MTRQ

### Model number

- 2001** = 1250 to 1350 nm wavelength range  
**2002** = 1350 to 1450 nm wavelength range  
**2003** = 1520 to 1620 nm wavelength range

### 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.

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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 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.

CATALOGUE

Our portfolio of optical and electrical 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.

**Erbium-Doped Fiber 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.

**Fixed Wavelength Laser Sources**

Highly customizable DFB or FP laser sources available in a wide range of wavelengths and powers. Models support SMF, MMF and PMF.

**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. Models support SMF, MMF and PMF.

**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)**

Low cost, fast spectral measurement in a compact module with built-in analysis including SMSR, OSNR and spectral width. Targeted wavelengths for specific applications in O band, C band and 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.

**Bit Error Rate Tester (BERT)**

2 or 4-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.

**Pulse Pattern Generator (PPG)**

4 channel Pulse Pattern Generator from 0.3 to 30 Gbps for high-density multichannel applications. With integrated clock synthesizer and programmable de-emphasis and CTLE processor.

**Optical Switch**

Proven reliability and fast switching time. Wide variety of switch configurations: 1x4, 1x16, 16x16 and more. Models 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.

**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.

**Passive Component Integration**

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

**Passive Component Storage**

Protect and store your own passive fiber optic components such as splitters, connector adaptor patchcords, WDM couplers, and isolators in one handy module.

PXI - TEST MODULES

MATRIQ - TEST MODULES

We provide these products as PXIe modules and compact MATRIQ benchtop instruments.

See our website for more details.

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WHY CHOOSE QUANTIFI PHOTONICS

# Test. Measure. Solve.<sup>TM</sup>

Quantifi Photonics is transforming the world of photonics test and measurement. Our portfolio of optical and electrical test instruments is rapidly expanding to meet the needs of engineers and scientists around the globe. From enabling ground-breaking experiments to driving highly efficient production testing, you'll find us working with customers to solve complex problems with experience and innovation.

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



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