



# Power

## 1500 SERIES ANALOG OPTICAL POWER METER

SPECIFICATION SHEET

AVAILABLE IN PXI

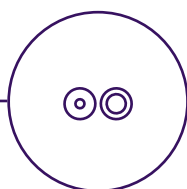
AVAILABLE IN MATRIQ

The Power 1500 Series optical power meter provides logarithmic analog output as well as a digital optical power meter for applications that require real-time feedback.



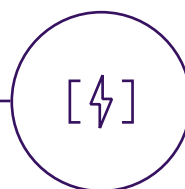
### Simple, intuitive operation with COHESIONUI™

Control the Power 1500 Series from your PC or mobile device. Plus, large format view mode makes it easy to monitor your instrument even when working away from your desk.



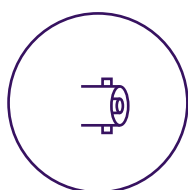
### Supports single-mode and multi-mode applications

Accepts either single-mode or multi-mode fiber for a seamless integration into your setup.



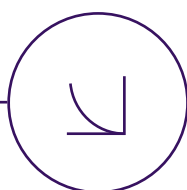
### Digital optical power readout

Convenient digital output of optical power makes it great for applications that require real-time feedback.



### Analog output for seamless hardware integration

The analog output can be integrated into your hardware set-up for fast power feedback in the order of kHz. The logarithmic output makes it easy to detect low-power signals.

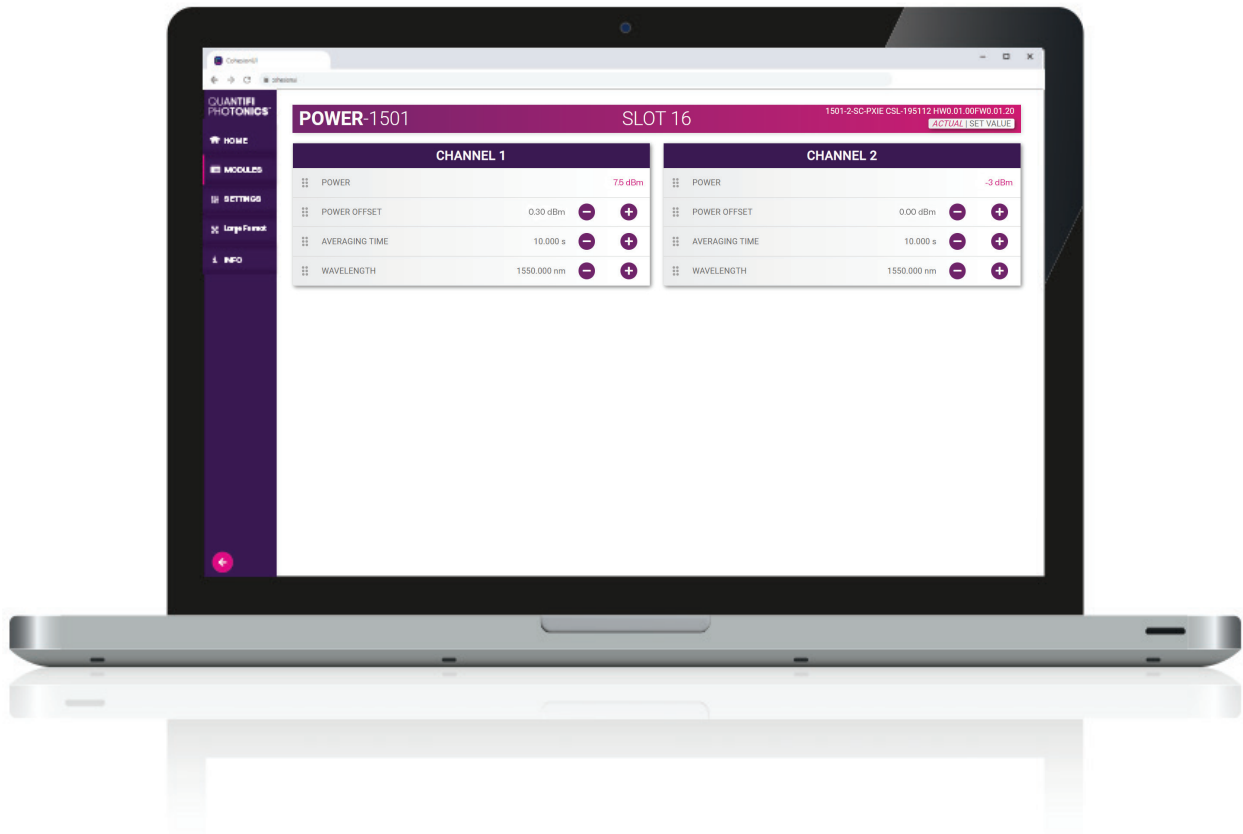


### Single logarithmic amplifier

Use of a logarithmic amplifier eliminates the gain jumps exhibited by power meters with multi-stage linear amplifiers. Get consistent and reliable measurement at all power levels.

## 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.



- Perfect for analog control loops that require feedback of the optical power
- Automate mechanical fiber positioning in your production environment
- Quickly characterize modulator transfer functions
- Measure insertion loss versus wavelength of your components using a swept laser.

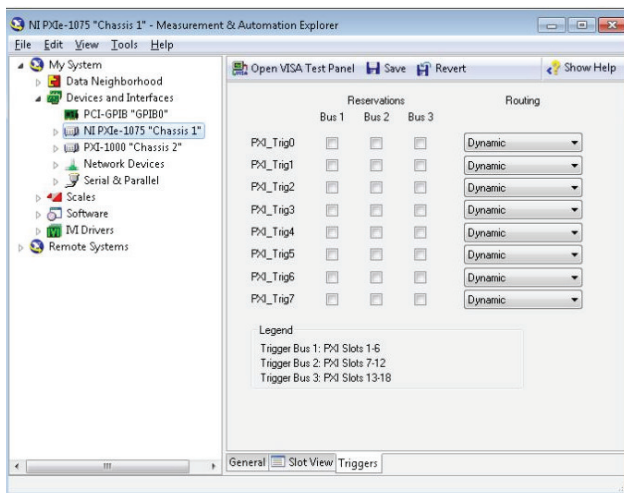
## HARDWARE TRIGGERING IN PXI

### Integrated hardware triggering

PXI's integrated timing and hardware triggering capabilities allow the user to synchronize a variety of instruments through the trigger bus and system reference clock features of the PXI platform. This offers a number of advantages over more traditional software-initiated measurements.

- True parallel measurements of multiple devices under test allows you to scale your manufacturing and decrease the test time per DUT.
- Extremely low latency allows you to capture fast events or measure your DUTs very quickly.
- Precise timing alignment between optical and electrical modules gives you control of trigger events to occur exactly when required.

Each slot can create a trigger and the trigger event can be transferred through each PXI Trigger line. Configuring the trigger line can be done easily through NI max software interface for the PXIe mainframe.



	Reservations			Routing
	Bus 1	Bus 2	Bus 3	
PXI_Trig0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dynamic
PXI_Trig1	<input checked="" type="checkbox"/>	←	→ <input checked="" type="checkbox"/>	Away From Bus 2
PXI_Trig2	<input checked="" type="checkbox"/>	←	→ <input checked="" type="checkbox"/>	Away From Bus 2
PXI_Trig3	<input checked="" type="checkbox"/>	←	→ <input checked="" type="checkbox"/>	Away From Bus 2
PXI_Trig4	<input checked="" type="checkbox"/>	←	→ <input checked="" type="checkbox"/>	Away From Bus 2
PXI_Trig5	<input checked="" type="checkbox"/>	←	→ <input checked="" type="checkbox"/>	Away From Bus 2
PXI_Trig6	<input checked="" type="checkbox"/>	←	→ <input checked="" type="checkbox"/>	Away From Bus 2
PXI_Trig7	<input checked="" type="checkbox"/>	←	→ <input checked="" type="checkbox"/>	Away From Bus 2

Legend

Trigger Bus 1: PXI Slots 1-6

Trigger Bus 2: PXI Slots 7-12

Trigger Bus 3: PXI Slots 13-18

## Find ‘first-light’ fast

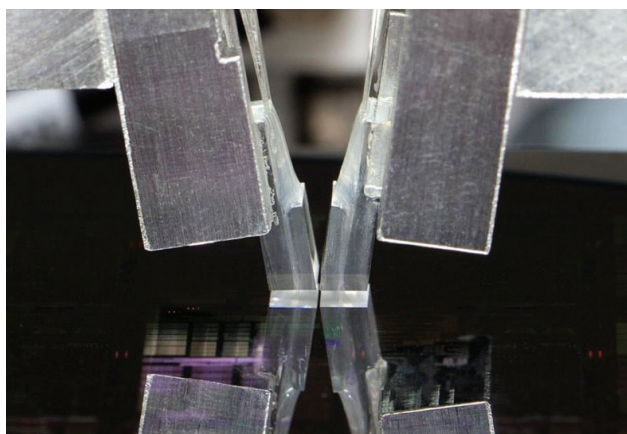
For silicon photonics manufacturers, the design, assembly and testing of devices is a highly complex and challenging task, requiring sub-micron alignment of components to ensure effective fiber/optical coupling and device performance.

With its analog RF output, the Power 1500 Series optical power meter has been designed to offer 60 dB of optical power range measurement across its output voltage ranging over several volts, with a continuously uninterrupted, logarithmic response.

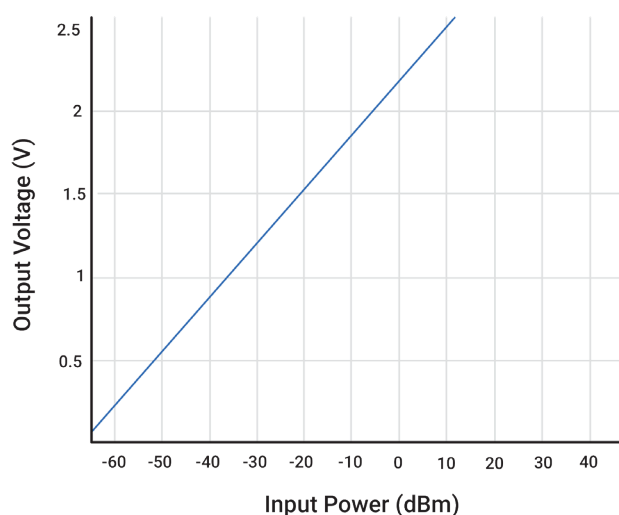
This analog signal is matched with an industry leading, fast 1MHz response which provides three-dimensional, electro-mechanical positioning systems with superior reaction time when moving from faint optical signals down to the final sub-micron positioning for today’s silicon photonics applications.

The superior, uninterrupted, logarithmic response enables high volume test systems to find the “first light” much quicker during the fiber alignment process. This makes it easier to align, test and assemble photonic components from wafer-level through to assembly and final packaging, and results in superior throughput for automated silicon photonics and general optronic assembly and test systems.

### Analog Output



Fiber optic probe positioned over silicon photonic wafer.  
(Image courtesy of ficonTEC Service GmbH)

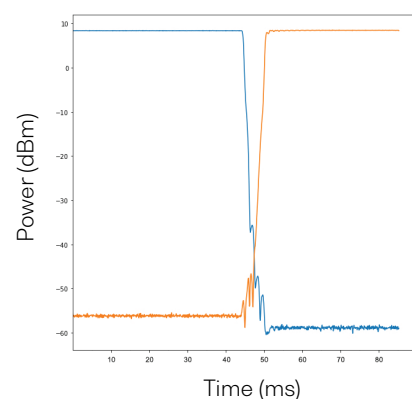


## POWER LOGGING

## Power logging capability

The graphic to the right is a Power vs Time graph demonstrating the data logging feature of the Power 1500 Series. This measurement shows the power transition between two output ports of an optical switch after a switching event.

Measurements in the order of milliseconds can be logged by triggering the power measurement synchronously with other optical modules or devices. A delay has been added to the optical switch to allow capture of the before and after states.



## 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

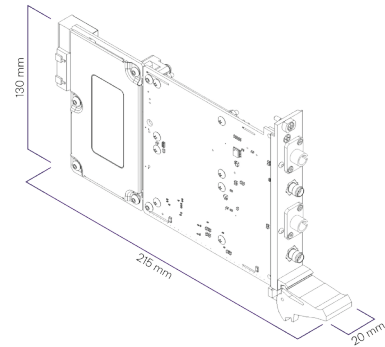
The MATRIQ series provides the same high-performance test capabilities of our PXIe modules in an compact benchtop design. MATRIQ instruments are simple to setup and easy to operate, making them the perfect choice for your optical lab or test bench.

- 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



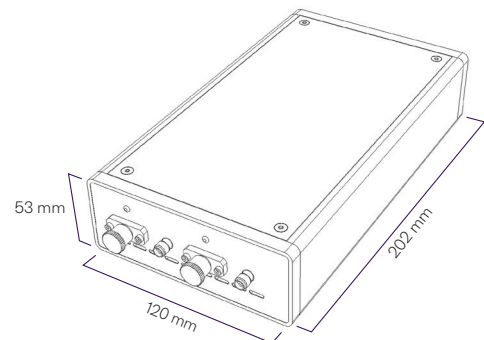
## POWER 1500 SERIES TECHNICAL SPECIFICATIONS

### PXI – MODULAR

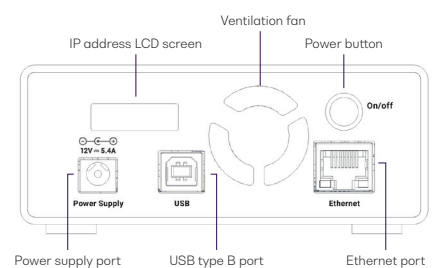


**POWER-1501-2-FC-PXIE**

### MATRIQ – COMPACT & PORTABLE



**POWER-1501-2-FC-MTRQ**



## POWER 1500 SERIES TECHNICAL SPECIFICATIONS

General Specifications	PXIe	MATRIQ
Bus Connector	PXIe	USB and Ethernet
Optical connector type	FC/APC, FC/PC, SC/PC, SC/APC	FC/APC, FC/PC, SC/PC, SC/APC
Slot count	1	-
Number of channels	1, 2	1, 2
Dimensions H x W x D	130 x 20 x 215 mm   5.1 x 0.8 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
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.	90 to 264 VAC
AC input current		1.3A (115Vac), 0.9A (230Vac)
AC frequency range		47 to 63 Hz
DC output voltage		12V
DC output current max		5.41A
Dimensions (LxWxH)		4.58 x 2.06 x 1.23" (116.3 x 52.4 x 31.3 mm)

Model Number	1501	1501
Sensor	InGaAs wide area detector	InGaAs wide area detector
Wavelength	750 to 1700 nm	750 to 1700 nm
Power	-60 to +10 dBm	-60 to +10 dBm
Damage level	+12 dBm	+12 dBm
Polarization dependent responsivity <sup>2,3</sup>	<0.2 dB	<0.2 dB
Return loss <sup>5</sup>	>45 dB	>45 dB

Analog Output	1501	1501
Electrical connector	SMA	SMA
Output impedance	50 ohms	50 ohms
Max output	< 2.5 V (2 V @ +10 dBm Typical)	< 2.5 V (2 V @ +10 dBm Typical)
Conversion gain	33.33 mV/dB (Typical) (10M Ohm input), 16.66 mV/dB (Typical) ( 50 Ohm input)	33.33 mV/dB (Typical) (10M Ohm input); 16.66 mV/dB (Typical) ( 50 Ohm input)
Linearity <sup>2</sup>	± 0.25 dB	± 0.25 dB
3 dB frequency response at 1550 nm	> -20 dBm: 1 MHz; >-30 dBm: 350 kHz; >-40 dBm: 25 kHz	> -20 dBm: 1 MHz; >-30 dBm: 350 kHz; >-40 dBm: 25 kHz

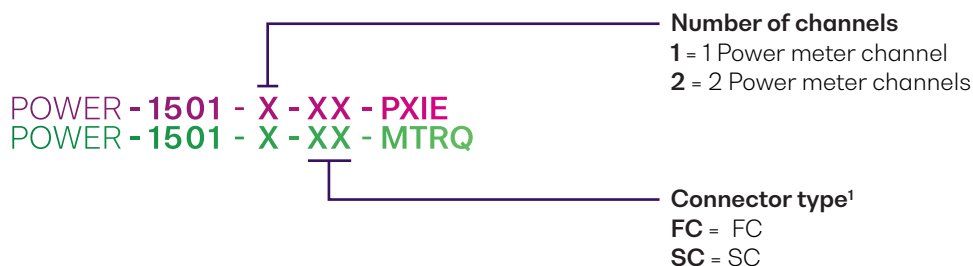


Digital Power Meter	1501	1501
Calibration wavelengths	850 nm, 1310 nm, 1490 nm, 1550 nm, 1611 nm	850 nm, 1310 nm, 1490 nm, 1550 nm, 1611 nm
Linearity <sup>2,4</sup>	± 0.1 dB: -40 dBm to 0 dBm, ± 0.20 dB: -50 dBm to -40 dBm	± 0.1 dB: -40 dBm to 0 dBm; ± 0.20 dB: -50 dBm to -40 dBm
Total uncertainty <sup>2,3,4</sup>	± 0.22 dB (Typical)   ± 0.35 dB (Max)	± 0.22 dB (Typical)   ± 0.35 dB (Max)
Averaging time	100 µs to 10 s	100 µs to 10 s
Resolution	0.01 dB	0.01 dB
3 dB frequency response	5 kHz	5 kHz
Data logging capability	1 to 1024 points per channel	1 to 1024 points per channel
Sample rate for trace	0.01 Hz to 12 KHz	0.01 Hz to 12 KHz
PXIe trigger capability	Yes	No

#### Notes

- Specifications are valid at 23 °C ± 3 °C.
- +10 dBm to -40 dBm, 23 °C.
- Excluding connectors.
- At calibration wavelengths.
- Wavelength 1550 nm ± 30 nm, standard single-mode fiber, angled connector 8°, T=23 °C ± 5 °C.

## ORDERING INFORMATION



#### Notes

- Because it is a free-space launch into a large area detector that captures all the light, the FC connector is compatible with FC/APC type inputs and the SC is compatible with SC/APC inputs.

## 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 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.

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 fiber 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 configurations; choose from 1 or 2 channels, AC or DC coupling and various conversion gain and operating wavelength ranges.



### 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 connector types.



### 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.



### 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.



### 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.



### 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.



### 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 configurations: 1x4, 1x16, 16x16 and more. Models support SMF, MMF and PMF.



PXI – MODULAR SYSTEM

MATRIQ – COMPACT BENCHTOP

See our website for more details  
[quantifiphotonics.com/products](https://quantifiphotonics.com/products)

# 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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