Measurement Devices

QUANTIFI PHOTONICS™

LASER COMPONENTS

Power

1500 SERIES
ANALOG OPTICAL POWER METER

SPECIFICATION SHEET

AVAILABLE IN PXI

AVAILABLE IN MATRIQ

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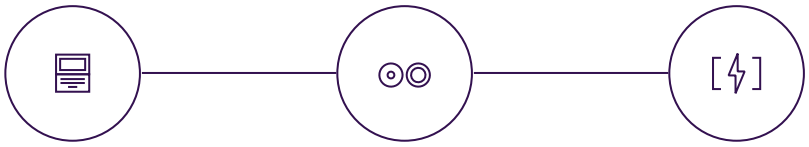
LASER COMPONENTS

FEATURES

Quantifi Photonics' Power 1500 Series analog power meter brings cost-effective test and measurement.

The Power 1500 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.

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TARGET APPLICATIONS

- 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 versus wavelength of your components using a swept laser.

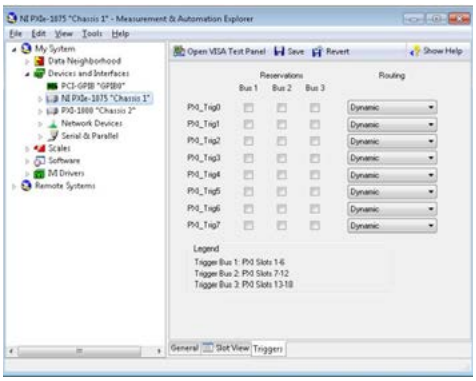
HARDWARE TRIGGERING IN PXI

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.



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FEATURES

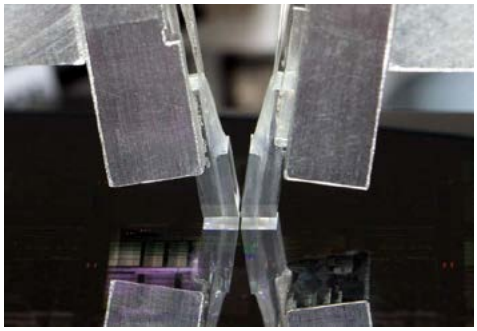
Find ‘first-light’ fast

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.

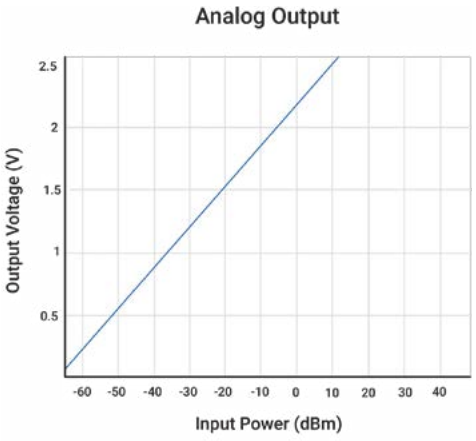
With its analog RF output, the Power 1500 Series optical power meter has been designed to offer 60 dB of optical power range measurement across its output voltage ranging over several volts, with a continuously uninterrupted, logarithmic response.

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.



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

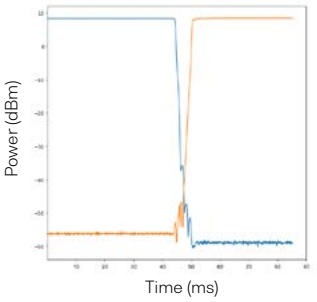


POWER LOGGING

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.



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LASER COMPONENTS

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 1500 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, LabVIEW or SCPI commands
- Compact and portable design saves benchtop space

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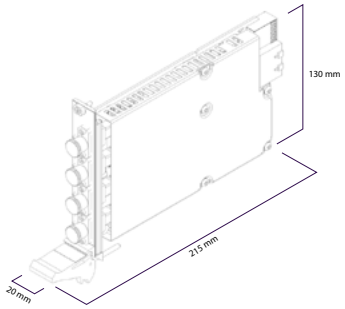
POWER 1500 SERIES TECHNICAL SPECIFICATIONS

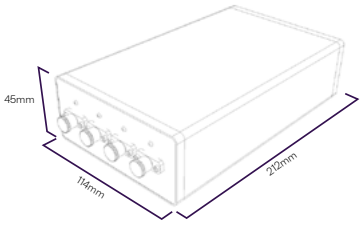
PXI – MODULAR

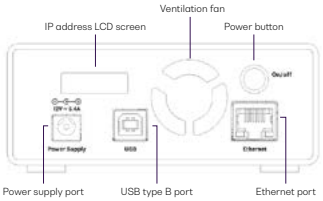
POWER - 1501 - 2 - FC - PXIE



MATRIQ – COMPACT & PORTABLE

POWER - 1501 - 2 - FC - MTRQ





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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	2	2
Dimensions H x W x D	130 x 20 x 215 mm | 5.1 x 0.8 x 8.5 inch	45 x 114 x 212 mm | 1.7 x 4.5 x 8.3 inch
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

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 [2,3]	<0.2 dB	<0.2 dB
Return loss [6]	>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 [2]	± 0.25 dB	± 0.25 dB
3 dB frequency response @ 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, 1310, 1490, 1550	850, 1310, 1490, 1550
Linearity [2,5]	± 0.1 dB: -40dBm to 0dBm, ± 0.20 dB: -50 dBm to -40 dBm	± 0.1 dB: -40dBm to 0dBm; ± 0.20 dB: -50 dBm to -40 dBm
Total uncertainty [2,3,5]	± 0.29 dB (Typical) | ± 0.50 dB (Max)	± 0.29 dB (Typical) | ± 0.50 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

1. Specifications are valid at 23 °C ± 3 °C.
2. +10 dBm to -40 dBm, 23 °C.
3. Excluding connectors.
4. < 10 dB attenuation.
5. At calibration wavelengths.
6. Wavelength 1550 nm ± 30 nm, standard single-mode fiber, angled connector 8°, T=23 °C ± 5 °C.

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ORDERING INFORMATION

POWER - 1501 - X - XX - PXIE
POWER - 1501 - X - XX - MTRQ

Number of channels
2 = 2 Power meter channels

Connector type
FC = FC
SC = SC

WARRANTY INFORMATION

This product comes with a standard 3 year warranty.

An optional 5 year extended warranty is also available, please discuss with your sales representative at the time of purchase.

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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 onfigurations: 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.

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 optimal solutions.

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

Version 0.6.2

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