



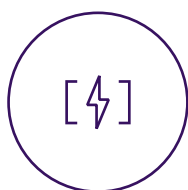
Doppler

MODULAR PHOTONIC DOPPLER VELOCIMETRY

SPECIFICATION SHEET

Velocity measurement of fast-moving materials is essential to a growing number of scientific and technical fields including shock physics, the study of material properties, hypervelocity impact testing, detonics and shock wave experiments.

The Quantifi Photonics Doppler combines the key optical components for Photonic Doppler Velocimetry (PDV) measurements in a compact instrument to enable streamlined high channel count PDV test setups.



Accurate control and measurement of target, probe and reference power

All of your optical power management in a single-slot PXIe module. This purpose built Doppler instrument streamlines your PDV test setup.



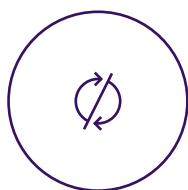
Drastically reduce the footprint of your test setup

Replace the stack full of bulky individual optical test instruments with one small instrument and save valuable lab space.



Easily build scalable, multi-channel systems

Combine with our Laser and O2E modules and fit up to 8-channels in a single 18-slot PXIe chassis.



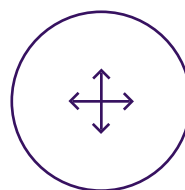
Generate reliable, repeatable measurements

Minimise the number of manual optical connections for reliable and repeatable measurements.



Simple, intuitive operation with CohesionUI™

CohesionUI makes it simple to control the Doppler instrument from your PC or mobile device.



Versatile configuration

Supports traditional homodyne and frequency-shifted heterodyne PDV testing.

TARGET APPLICATIONS

- Study of material properties and impact response using shock physics.
- Replacement for Velocity Interferometer System for Any Reflector (VISAR) with an integrated fiber-based system.
- Measure velocities in dynamic experiments with high temporal precision.

STREAMLINE PDV TEST SYSTEMS

Combine the Doppler with the Laser and O2E to build a streamlined PDV test system. All you need to add is an optical probe and digitizer or oscilloscope with suitable bandwidth for the application.



LASER

Tunable Laser Source

- Continuous Wave tunable laser source offering high-power output, narrow 100kHz linewidth and 0.01 pm resolution tunability.



DOPPLER

Photonic Doppler Velocimeter

- Power meter, variable optical attenuator and coupler all in one compact, space saving unit.



O2E

Optical-to-Electrical Converter

- High-bandwidth, broadband optical-to-electrical converter with 1 or 2 channels, AC or DC coupling, and various conversion gain and operating wavelength ranges.

Configure Systems from 1 to 64 + Channels

Our modular PXI architecture allows systems to be expanded as your requirements evolve.

Each PDV measurement channel consists of one Laser module containing two laser sources (Target and Reference), one Doppler module and one O2E module.

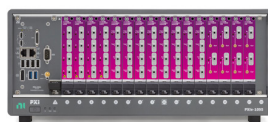
For single channel systems, a benchtop version is also available.



1 channel



4 channels



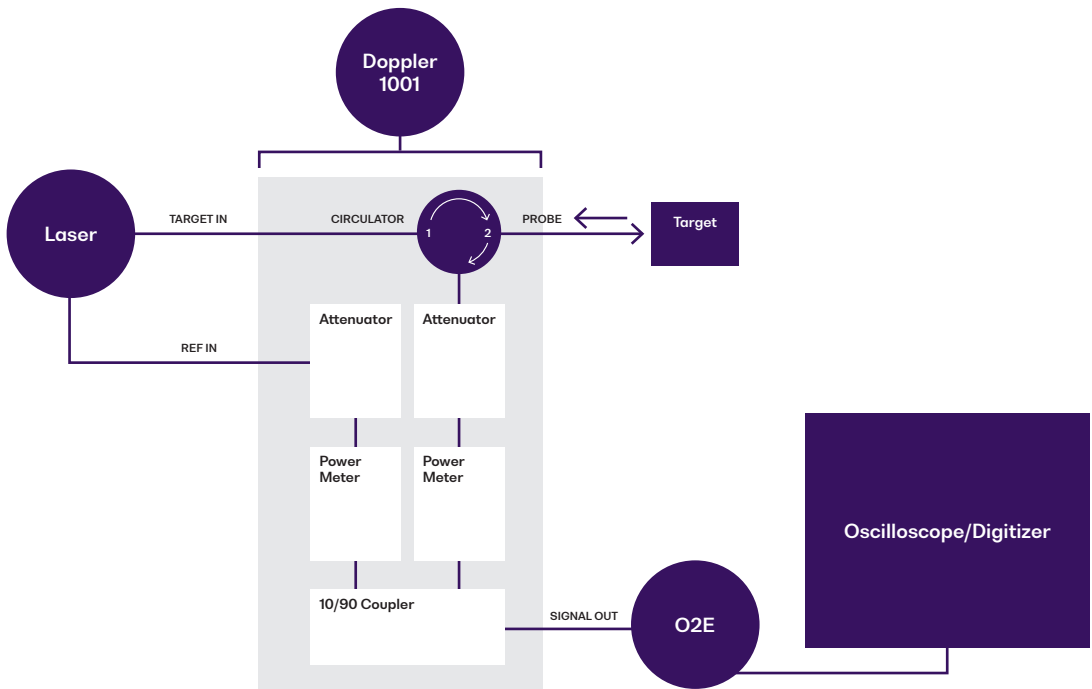
8 channels



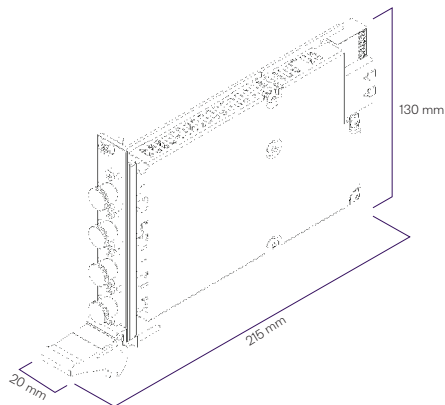
64 channels

FIGURE 1

Figure 1 represents the configuration of the Doppler 1001 in PXI or Matriq form. It incorporates many of the key fiber optical components required to accurately condition the target and the reference laser and to mix the probe with the reference.



DOPPLER 1000 SERIES DIMENSIONS



DOPPLER TECHNICAL SPECIFICATIONS

General Specifications	PXI
Bus connection	PXIe
Slot count	1
Optical connector type	FC/APC
Number of channels	2
Dimensions (HxWxD)	130 x 20 x 215 mm 5.1 x 0.8 x 8.5 inches
Weight	1 kg ~2.2 lbs
Operating temperature range	5 °C to 45 °C 41 °F to 113 °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	1001
Wavelength	1520 to 1650 nm
Probe output operating range	-50 to +20 dBm
Reference output operating range	-60 to +10 dBm
Damage level	+23 dBm
Insertion loss ³ target input to probe output	< 3 dB
Insertion loss ³ probe input to output	< 5 dB
Insertion loss ³ reference input to output	< 14 dB
Wavelength dependent loss	< 0.02 dB/nm
Return loss ³	> 45 dB
Circulator Directivity	> 45 dB
Warm-up time	< 20 minutes

Attenuator	1001
Calibration wavelength	1550 nm
Attenuation range typical ⁵	> 46 dB
Attenuation range guaranteed ⁵	> 40 dB
Resolution	0.01 dB
Attenuation speed	0.1 to 1000 dB/s

DOPPLER TECHNICAL SPECIFICATIONS

Power Meter	1001
Calibration wavelength	1550 nm
Polarization dependent responsivity ^{2,3}	< 0.2 dB
Linearity ^{2,5}	± 0.1 dB
Total uncertainty ^{2,3,5}	± 0.34 dB (Typical); ± 0.55 dB (Max)
Averaging time	100 µs to 10 s
Resolution	0.01 dB
Data logging	1 to 1024 per channel

Notes

1. Specifications are valid at 23 °C ± 3 °C
2. +10dBm to -40dBm, 23 °C

3. Excluding connectors
4. At calibration wavelengths

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.

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.

Versatile test modules for a wide range of requirements and applications.

Tunable Laser Source

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 Source

DFB laser sources available in a 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.



ELSFP-Compliant External Laser Source

Uses ELSFP-compliant pluggable modules to provide 8 channels of CW optical power at 1310 nm up to 24 dBm.



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 1260 to 1650 nm, low insertion loss and back reflection. Full remote control via intuitive GUI, LabVIEW or SCPI.



Optical Power Meter

Fast terminating or inline monitoring of optical signal power from -60 to +10 dBm across 750 to 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. Choose from 1 or 2 channels, AC or DC coupling and various conversion gain and operating wavelength ranges.



Optical Switch

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



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.



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.



Clock Recovery Instrument (CDR)

Clock recovery instrument for the QCA Series. Low jitter design and precise phase-locking provide a reliable, scalable solution for high-speed communication testing.



Coherent Transmitter

Generate high-quality coherent optical signals for transmitter development, testing and advanced modulation research.



Coherent Receiver

High-performance coherent optical receiver for accurate measurement and characterization of coherent modulation formats.



VISIQ Analysis Software

Coherent signal analysis software for intuitive DSP configuration, signal analysis and optimization.



Test. Measure. Solve.TM

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.

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