

# POWER AND PRECISION FOR LASER DOPPLER AND PHASE DOPPLER SYSTEMS

LATEST POWERSIGHT SYSTEM WITH HIGHER LASER  
POWER TO EXPAND YOUR MEASUREMENT CAPABILITY



UNDERSTANDING, ACCELERATED

# THE NEXT GENERATION OF THE POWERSIGHT SYSTEM-COMPACT, SIMPLE TO USE, AND FLEXIBLE WITH MORE LASER POWER FOR REAL-TIME VELOCITY OR SIMULTANEOUS VELOCITY AND SIZE MEASUREMENTS

## **More Laser Power**

The higher laser power up to 500 mW per channel increases the capability of making measurement in challenging environment, like for GDI dense spray and in large facility with long focal standoff of several meters

## **Compact and Standalone**

Compact in size with the powerful Diode Pump Solid State (DPSS) laser, transmitting and receiving optics and all control electronics for use as a standalone module for Velocity measurement as a Laser Doppler Velocimetry (LDV) system, or for simultaneous Velocity and Size measurement as a Phase Doppler Particle Analyzer (PDPA) system

## **Ease of Use**

Turnkey and with no alignment; fast laser warm up time in less than 1 minute for stable laser power output, laser power adjustable in the software

## **Reliability and durability**

Unique design of the thermal management of the laser (> 50 W of heat generation) to ensure proper cooling for reliable laser power output, beam pointing stability and longer laser life

## **Flexibility in extending the range of applications**

Module be adapted with various focusing lenses and beam expanders (or contractor) for different standoffs and measurement volume sizes to optimize your measurement results. Fiber optic probes can be attached to the module for measurements in underwater situations and hostile environment

## **Expanded capability**

Module can be easily configured to meet your current and also be expanded for future applications. Do research Today and Tomorrow with reduction in total cost association

## AN INNOVATIVE SOLUTION FOR LDV AND PDPA APPLICATIONS

The Powersight system with the 500 mW laser power per channel can now be used to meet many of your measurement needs:

- + Supersonic flows
- + Turbulent boundary layer flows
- + Flows in large scale wind and water tunnels
- + Automotive fuel GDI dense sprays
- + Medical inhaler sprays
- + Large scale agricultural sprays
- + Slurry spray (opaque fluids)
- + Multi-Phase flows

# THE NEW FACE OF LDV AND PDPA SYSTEMS TO MEET YOUR MEASUREMENT REQUIREMENTS

Three models of the Powersight modules are available to accommodate the system configurations from 1D to 3D of velocity components, including :

- + PS-TM-1D-532 (1D module expandable to 2D)
- + PS-TM-2D (2D module)
- + PS-TM-1D-515 (1D module used as 3D configuration)

All the modules are in transceiver configuration with built-in receiving optics for velocity, providing velocity measurements in 1D, 2D or 3D arrangements. For simultaneous velocity and particle sizing, the Phase Doppler Receiver is added. The patented intensity validation\* technique continues to be used in this system for the best particle sizing results.

The FSA signal processor is used with the module to make up the complete system. Depending on the application, the 1D, 2D and 3D FSA signal processor unit (velocity or sizing type) is selected to customize your applications and measurements. The unit includes external signal input and Once-Per-Rev input for rotating machinery applications.

The state-of-art Flowsizer 4G software, running in Windows® 10 (or Windows 7) 64-bit environment, allows you to operate the Powersight system easily and flawlessly. The software detects the hardware configuration automatically so that it is ready for optimal measurement once the model of the Powersight module is entered. The software also controls the power output of the laser for best signal to noise ratio. If you are interested in customizing hardware settings, the advanced setting pages allows you to get your desirable results and statistics.

Flowsizer 4G is fully configurable to display the plots and statistics you need. Seeking a unique way of looking at your data? No problem, with the custom graph and statistics designer you can easily create any plot for getting the most from your measurements!

\*US Patent # 4986659



# SPECIFICATIONS

POWER AND PRECISION FOR LASER DOPPLER AND PHASE DOPPLER SYSTEMS SPECIFICATIONS

Optical Module	Description
Laser wavelength	532 nm, 561 nm and 515 nm
Laser power	500 mW for 532 nm and 561 nm 300 mW for 515 nm
Laser Type	Diode pumped solid state
System configurations	1D, 2D and 3D with frequency shifting
System arrangements	Standalone module for LDV or PDPA
Fiber optic probe connection	Optional connection to fiber optic probe with cable length up to 20 meters; use with standard fiber optic probes, or with stainless steel fiber optic probes for underwater applications and IC Engine fiber optic probes for measurements of Engine flows
Velocity range	-313 m/s to 1600 m/s
Droplet Size Range	0.5 to 5,000 $\mu\text{m}$
Lens options	250 mm, 350 mm, 500 mm, 750 mm
Beam Expander options	External and internal Beam expander with various focal lenses and beam separations
Software	Description
Flowsizer 4G	Windows 7 or 10, 64-bit software for data acquisition, analysis and presentation

# MORE UNIQUE FEATURES:

- + **Faster warm-up time** - get system ready for operation in less than 1 minute and use the system immediately
- + **Thermal management** - maintain lasers in optimal condition for laser pointing stability giving uniform fringe spacing for the most accurate measurements and longer laser life span
- + **High coupling efficiency with fiber optic probes** - higher data rate, more accurate, shorter measurement time, faster measurements in transient situation with higher temporal resolution
- + **Last longer** - cost saving, cost of operation and reduction in maintenance
- + **On-line trouble shooting** - reduce down time and cost of operation



Specifications are subject to change

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