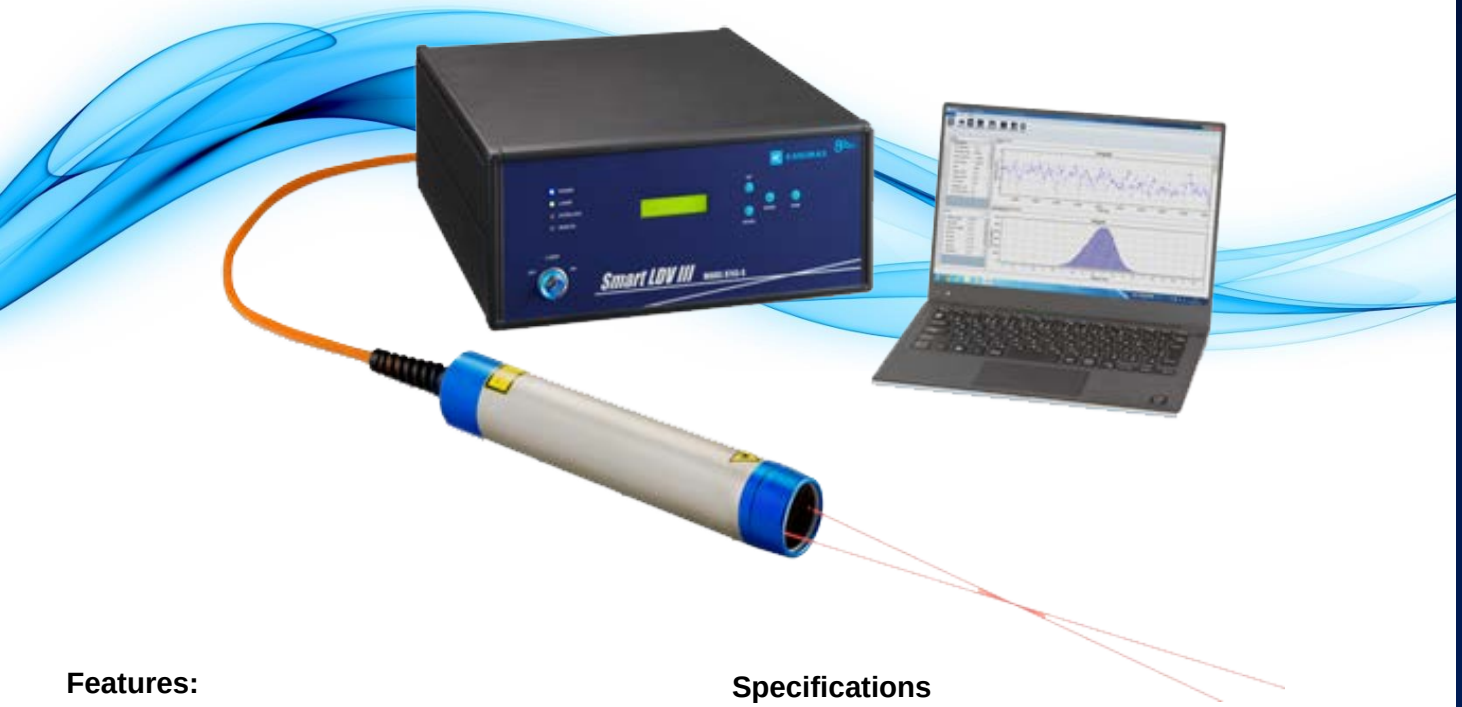
KANOMAX
The Ultimate Measurements

Smart LDV III

Easy-to-operate Laser Doppler Velocimeter for accurate flow velocity measurements and high repeatability

Smart LDV III

Model 8743/8743-S

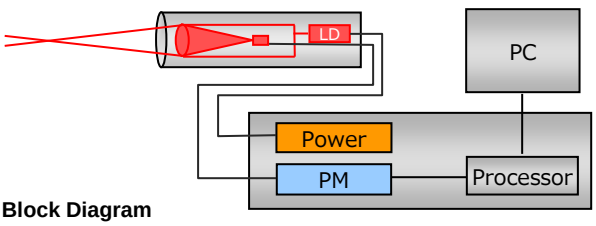


Features:

- Enhanced receiving sensitivity enabling high data-rate measurement
- Up to 60,000 velocity data/sec.
- High-speed data transfer by USB3.0
- Probe designed as all-in-one, no alignment necessary

Applications:

- Aerodynamic and hydraulic property measurement
- Measurement requiring high time-resolution
- Comparison with CFD
- PIV accuracy tests



Block Diagram

Specifications

Flow velocity range	-40m/s～260m/s (f=400mm, Model 8743-S)
Optical System	
Laser	LD λ=660nm, 60mW
Focal length	150mm, 200mm, 250mm, 300mm, 350mm, 400mm
Measurement volume size	0.13mm x 1.3mm (f=200mm)
Measurement method	Back scatter / Forward scatter (Option)
Probe size	Dia. 61mm x 345mm
Shift frequency	Model 8743：Without Frequency Shifter Model 8743-S：0.01－10MHz
Power supply	AC100－240V
Signal Processor	
Signal processing	8bit FFT（512,256,128point）
Frequency band	1kHz～40MHz（8 ranges）
Max data rate	60,000 speed data/sec*
Validation	Burst spectrum ratio
Interface	USB3.0
Software	
Max. number of data	100,000
Real time monitor	Burst waveform Burst spectrum Velocity histogram
Analysis function	Mean flow velocity, Turbulent intensity, Skewness factor, Flatness factor Velocity histogram, Time-series display
Data output	CSV format
Supported Operating System	Windows 7 / 8 / 10 (64bit only) Japanese / English

*Depending on measurement condition

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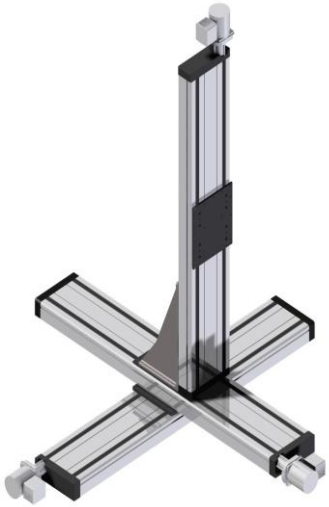
Options

Traverse System

Automated Traverse System for positioning the optical system

Easy measurements without the hassle of changing the measurement location manually.

- Automatic measurements from the LDV software
- Moves between each measurement point with high positioning accuracy
- Operable also in manual mode



Moving axis	X, Y, Z axis *
Stroke	500 mm *
Positioning accuracy	±0.02 mm (X axis) **
Drive system	Stepping motor
Controller	LDV Software (traverse-compatible version)

* Reference examples

** Positioning accuracy for Y and Z axis varies depending on the load

Corner Cube Mirror

Corner cube Mirror for better SNR of data

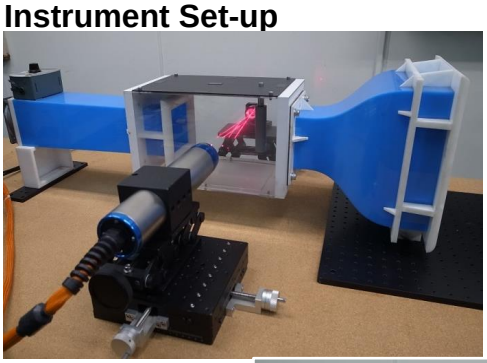
Designed to be placed at the opposite side of the laser to reflect strong front scattering light to the optical receiver in order to improve the signal-to-noise ratio.

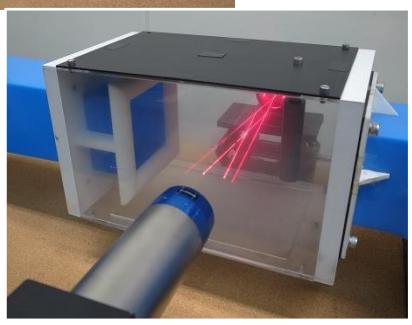
Focal length	200 mm, 250 mm, 300 mm, 350 mm, 400 mm
Effective diameter	Dia. 50 mm

A Laser Doppler Velocimeter (LDV) measures fluid velocity by utilizing coherence of laser light. It detects the Doppler shift frequency of the scattering light of particles in the fluid and calculates the velocity of the particles (fluid). With the LDV system, non-intrusive measurements can be achieved without disturbing the measuring object, liquid or gas flow. There is no need to calibrate the instrument, and it's possible to obtain high resolution reverse flow measurements with the LDV. The system provides the absolute value of the flow velocity at a high level of accuracy in a compact design. Absolute velocity measurements with high repeatability is realized with the Smart LDV III.

Application Example: Cylinder Wake Measurement

Instrument Set-up





Measurement Condition

Tracer particle:	Approx. dia. 5.0 μm
Focal length of probe:	200 mm
Frequency shifter:	Available
Measurement point:	Cylinder wake

Result