Fiberoptic Probe for 3-Component LDV Systems Model TR360

TSI's Model TR360 Single-Lens, 5-Beam, Coaxial Fiberoptic Probe enables three-component velocity measurements in locations often inaccessible or impractical with other instruments.

- Makes 3-component measurements using a single probe
- Uses unique five-beam LDV technology
- Makes accurate measurements in confined areas

TSI's Model TR360 Five-Beam Fiberoptic Probe measures all three components of velocity simultaneously at a point in the flow field. It uses a single lens and a unique, coaxial, five-beam, three-color pattern to make LDV measurements. It represents the latest version of the five-beam technology originally developed and patented by TSI.

The ability to use a single probe to measure all three components of velocity in a flow field simultaneously has opened new avenues for flow measurements. In many flow situations, having small windows or window openings, as with IC engine cylinders and pressurized vessels, the use of a measuring system having two separate probes is not feasible. The compact design and ability to measure three velocity components with a single lens make the Model TR360 ideally suited for such applications.

For applications where the beams must traverse media with different refractive indices (e.g. wave or water tanks) the two-probe approach is also unattractive. The coaxial arrangement in the TR360 minimizes changes in beam crossing as the probe is traversed to map the flow field. Five-beam coaxial probe systems are used for measurements in towing tanks, water channels, cavitation tunnels and IC engines.

In operation, the beams generated by a **fiberlight**™ Multicolor Beam Separator using an argon-ion laser are coupled into the probe's six transmitting fibers. High performance optical fibers result in the most efficient fiberoptic probe system possible.

In a unique approach, one green and one violet beam are combined in the probe to create a single center beam (5th beam). The other four beams are arranged to form the four outside beams (see beam position drawing).

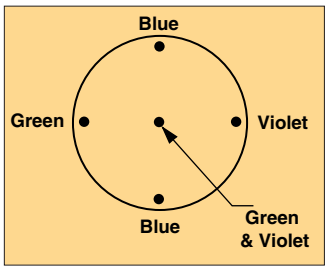
Scattered light collected by the probe is focused onto the receiving fiber and carried to a TSI PDM Scattered Light Separation and Photodetector System. The scattered light is separated into the individual wavelengths and converted into electrical signals by the photodetectors in the PDM system. The signal output from the PDM is sent to the signal processor and FlowSizer™ Data Analysis Software resolves the orthogonal velocity components and computes detailed flow properties.

TR360 coaxial fiberoptic probes can also be used to measure one or two components of velocity. An optional Model XPD60 beam expander and Model TLN15-453 lens can be used to increase standoff distance, reduce measuring volume size and improve system performance.

Specifications

5-Beam Fiberoptic Probe Model TR360

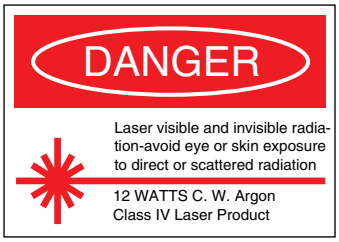
Probe Length	584 mm with lens		
Probe Diameter	82.3 mm		
Probe Weight	5.5 kg (probe only); 7.16 kg (probe with cable)		
Wavelength	0.515 µm	0.488 µm	0.4765 µm
Beam Diameter	1.8 mm	1.8 mm	1.8 mm
Beam Spacing	25.0 mm	50.0 mm	25.0 mm
Focal Lens FD	250.0 mm	250.0 mm	250.0 mm
Focal length	261.4 mm	261.4 mm	261.4 mm
Kappa (beam crossing)	2.74	5.46	2.74
Fringe Spacing	5.39 µm	2.56 µm	4.99 µm
Measuring Volume Diameter	95 µm	90 µm	88 µm
Measuring Volume Length	2.0 mm	0.94 mm	1.8 mm
Number of Fringes	18	35	18



To Order

Model TR360	Coaxial, 5-beam, 3-component fiberoptic probe with 250 mm F.D. lens and 10 m cable
Model XPD60	2.6X beam expander (requires TLN15-453 lens)

Specifications subject to change without notice.



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