

TSI Mini-Fiber Probes TR110/TR210 Series

*...the latest in fiberoptic probe technology in the
smallest package size available—from TSI!*

Features

New One- and Two-Component Fiberoptic Probes for LDV and PDPA applications:

- Sealed
- Stainless steel construction
- Selection of focusing lenses
- Designed to be placed “in the flow”

Introduction

TSI, the pioneer in fiber probe-based LDV measurements, has introduced the TR110 and TR210 series probes, the next generation of fiberoptic mini-probes. The new probes integrate advances in fiber technology, optics miniaturization, and performance, enabling measurements never-before-possible. They provide the ideal combination of ruggedness and flexibility needed for accurate flow diagnostics in confined spaces using fiberoptic probes immersed in the flow.

Operation

The all new TR110 and TR210 series probes incorporate the latest advances in fiberoptic technology, miniature optics, specialty metals, and precision machining to enable trouble-free measurements. A new lens design offers a choice of three interchangeable lenses, all able to operate in air or underwater.

The probes use new single-mode transmitting fibers and a SNR-optimized multimode fiber-based receiving system. New miniature optics components

produce a smaller measurement volume, higher spatial resolution, and a more stable beam crossing. The fibers and optics work together to provide cleaner, stronger signals and higher data rates.

New specialty stainless alloys and ceramics, combined with appropriate stabilization processes, reduce internal stress buildup, and improve long-term stability, even with changes in environmental conditions. This ensures more years of trouble-free performance before the probe will require servicing.

Special CNC and EDM machining techniques are used to manufacture the miniature high-precision parts used only in the new TR110 and TR210 series. A sealed and purged design makes them the choice for underwater and in-flow measurement situations. They also are ideal for measurements in restricted or confined spaces. The lightweight probe body can be placed inside ducts or flow channels or in test enclosures and the like.



The TR110 and TR210 series probes are particularly suited for use in TSI's IC engine probes, which can be used in either 12mm or 14mm spark plug ports. Thanks to a wide operating temperature range, they also can be used inside furnaces and boilers, provided a suitable cooling jacket is used.

The three multipurpose interchangeable lenses combine to offer a 2:1 range in fringe spacing and waist size. All can be used in air or in submerged flow applications. Only high accuracy, coated, chromically-and spherically-corrected optics are used, as in all TSI LDV and PDPA optics.

A single TR110 probe measures one component of velocity and a TR210 probe two velocity components. Combining TR110 and TR210 probes allows all three velocity components to be measured.

Specifications

TR 10 Series Mini-Fiber Probes

Diameter	15.2mm
Length	159mm
Weight	200g
Fringe Spacing	4.1µm standard; 5.5µm and 8.2µm optional
Measurement Region Diameter	79µm standard; 105µm and 157µm optional
Number of Fringes	19
Construction	Multi-alloy stainless steel and ceramic
Underwater Operation	Water-tight to 1Atm
Temperature Range	0 to 50°C (storage, shipping) 0 to 25°C (operating)
Lens Focal Length	60mm supplied with the probe; 80mm and 120mm optional
Lens Usage	All lenses can be used in air or underwater
Fiber Cable Length	8m standard; 15m and 20m optional
Interchangeability	Interchangeable with all other TSI fiberoptic probes
Output Fiber Connection	SMA
Lens Model Numbers	TLN01-60, TLN01-80, TLN01-120



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