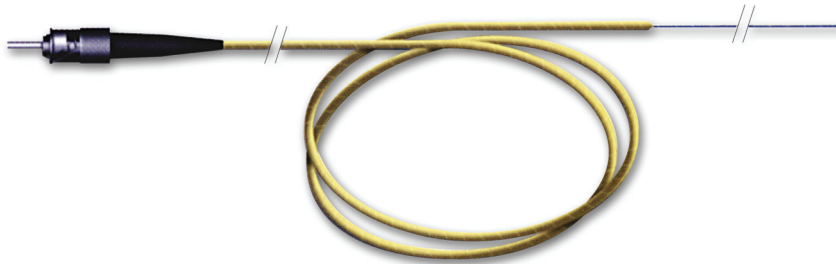


## TPT-32 Temperature sensor for oil-filled transformers



With thousands of fiber optic temperature sensors used and installed worldwide, FISO's heavy duty TPT-32 fiber optic temperature sensor, specifically designed for permanent installation in oil-filled transformers, clearly demonstrates FISO's experience and leading edge in transformer instrumentation for direct winding temperature measurement.

The TPT-32 sensor possesses a resilient construction, resistance to chemicals and all dielectric resistant materials featuring complete immunity to EMI and RFI environments. With a 3 mm outer diameter, a unique double PTFE oil permeable sheathing with transversal slits (spiral wrap), the TPT-32 is designed to withstand installation stresses, harsh testing conditions such as kerosene vapour, heat runs and induced vibration during the overall lifetime of the transformer.

The TPT-32's unique rugged design offers utmost protection for easy and safe installation. Due to its length customizable tapered tip the sensor can safely be positioned directly in hard to reach areas, allowing real-time monitoring of potential hot spots in transformer windings. Our mechanical design and semiconductor epoxy encapsulation eliminate the risks of air gaps when compared to other designs which may be more susceptible considering the design techniques used.

FISO'S Nortech product line uses a proven optical absorption/transmission technology using silica fiber and a GaAs semiconductor. The optical effects of temperature variations on the GaAs semiconductor are well known and predictable, ensuring repeatable, accurate measurements over extended periods. As the temperature of the semiconductor increases, the semiconductor's transmission spectrum (i.e. the light that is not absorbed) shifts to higher wavelengths. At any given temperature, transmission jumps essentially from 0% to 100% at a specific wavelength. Consequently, measuring the position of the absorption shift gives a measure of the semiconductor's temperature. It is important to note that the analysis isn't intensity dependent but wavelength dependent.

The TPT-32 is available in custom lengths of 1 to 15 meters with a temperature range of  $-40^{\circ}\text{C}$  to  $225^{\circ}\text{C}$ .

The TPT-32 temperature sensor is compatible and interchangeable with FISO'S Nortech product line. It can be used in conjunction with the Nortech Sentinel or the Nortech TT optical signal conditioner without any recalibration.

### Key Features

- Withstands temperatures up to  $225^{\circ}\text{C}$  ( $437^{\circ}\text{F}$ )
- Double PTFE sheathing
- Proven semiconductor optical absorption principle
- EMI/RFI immune
- Resists dielectric oil
- Resists kerosene vapor
- High flexibility and visibility
- Interchangeable
- No calibration
- Custom lengths from 1 to 15 meters

### Applications

- Power transformer temperature monitoring
  - Core
  - Windings
  - Bushings
- Load Tap Changer temperature monitoring
  - Contacts
  - Oil
- High voltage testing
- Generators
- Transmission lines
- High voltage cables
- Switchgears

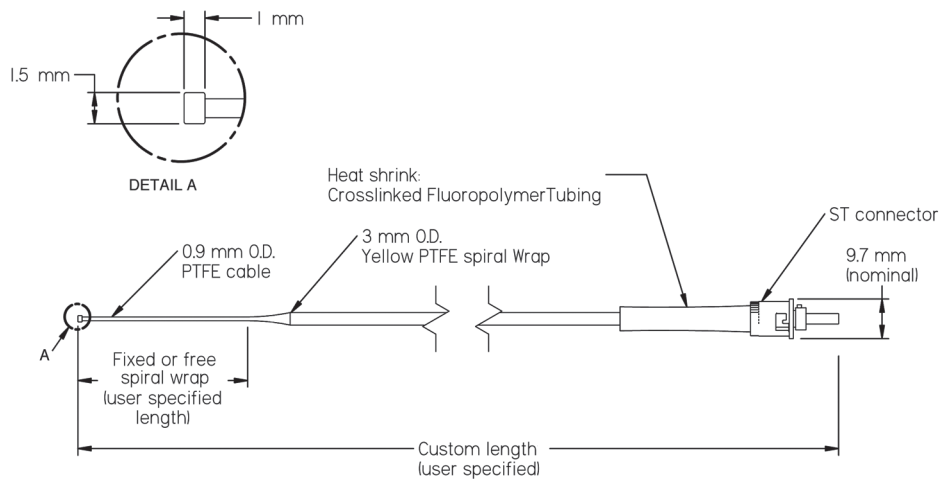


## Specifications

Temperature range	-40°C to 225°C (-40°F to 437°F)
Resolution	0.1°C
Accuracy	±2°C
Available sensor length	1 to 15 meters
Connector type	ST connector
Fiber type	200 µm silica fiber
Cable sheathing	Double PTFE sheathing (spiral wrap) with transversal slitting 0.9 mm PTFE cable* 3 mm PTFE spiral wrap cable*
Sensor dimensions	1.5 mm O.D. (see figure below)
Sensor certification	Dielectric and kerosene vapor tests approved
Part number	TPT-32

\* Both cables are designed with transversal slits for a faultless oil flow into the sheath

## TPT-32 Dimensions



Drawing Number: SCH-00503

## Complete Nortech Solution Includes

- Nortech TT or Nortech Sentinel
- TPT-32 temperature sensors
- NOR-EST EasyThroughs
- Fiber optic external extensions
- Other optional available accessories

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