

FIBER OPTIC TEMPERATURE SENSOR

TST

Key Features

- Temperature range: -200°C to $+200^{\circ}\text{C}$
- Monitoring of the transformer temperature
- Long-term reliability
- Standard deviation*: up to $\pm 0.1^{\circ}\text{C}$
- Completely non-conductive
- Complete immunity to RFI, EMI, NMR and microwave radiation
- Precise, direct temperature measurement

Applications

- Generators
- Oil-filled transformers
- Monitoring of "Hot-Spot" inside high voltage temperature
- Measurement in gas insulated power breakers transformers
- Temperature measurement on large drives



FIBER OPTIC TEMPERATURE SENSOR

TST

TECHNICAL SPECIFICATION

Name of sensor	TST, the comprehensive one
Temperature range *2	-200 °C to +200 °C
Standard deviation *1	Up to +/- 0.1 °K
Fiber Ø	200 µm
Measurement speed *3	Up to 16 °K/s
Sensor standard lengths	2m, 3m, 5m and 7m (Other lengths on request)
Connector type	ST
Signal conditioner	Compatible with all Optocon and Weidmann fiber optic thermometers

DESCRIPTION

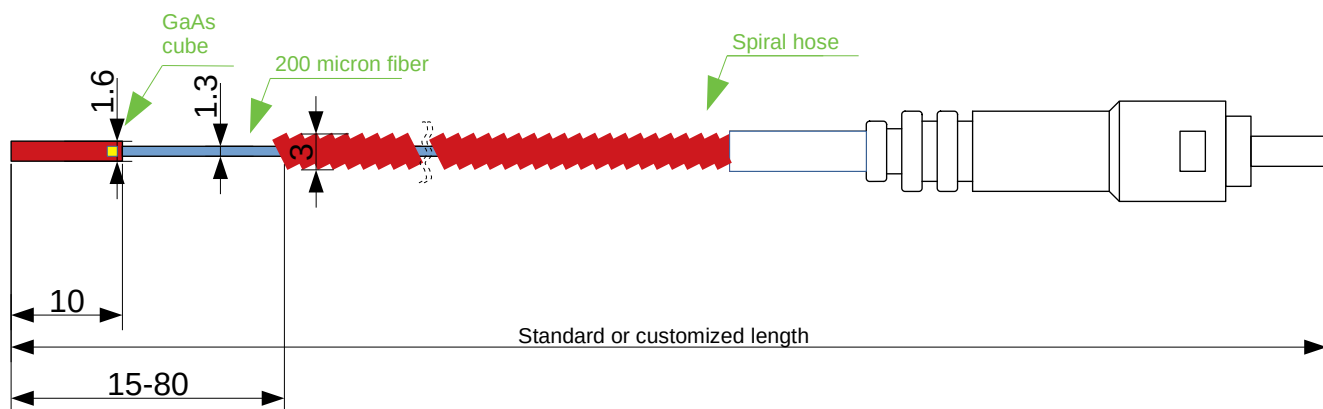
Due to the growing demand for energy existing power plants and are stretched to their limits. High power generators are often filled with hydrogen in order to cool effectively. For isolating the windings of a transformer oil is used. Besides the heavily contaminated electromagnetic environment the risk for explosions is high. To ensure operational safety, critical factors such as temperature have to be monitored in generators and transformers. The fiber optic sensor TST is a robust, oilpermeable fiber optic temperature sensor for use inside oil-filled power transformers. This is especially suitable for the initial manufacturing conditions of a transformer, and the long-term events such as oil immersion and vibration. The probes can be used in a spacer combined with a SD-Disk and mounted directly on the transformer windings.

In addition, we offer special optic feedthrough for the installation of the fiber optic sensor on tank walls and oil transformers. The TS Trafo probe consists of a slotted fiberglass with PFA sheath, which is also protected by a PTFE spiral wrap. Due to it has a perfect impregnation against dielectric oils and other liquids. All our sensors are completely non-metallic and therefore intrinsically safe. They do not contain any components which could create sparks and leading to explosions. Therefore they can be used safely in hazardous areas. They are also completely immune against RFI, EMI, NMR and microwave radiation.

The fiber tip is provided with a GaAs crystal (gallium arsenide). Starting at a light wave length of 850nm GaAs becomes optical translucent. This allows an exact temperature measurement in seconds. The fiber optic sensor TS Trafo has a response time of 2s. With a standard deviation*1 of +/- 0.2°C it allows precise and repeatable measurements.

The length of the sensor cable is completely variable, without affecting the accuracy of the measurement results.

DIMENSIONS



Longtime bending radius (>10min) = 27,0mm
 Momentary bending radius (≤10min) = 10,0mm

*1 Statement only possible with analysis unit. See data sheet of the measurement device for information about technical data.
 *2 Long-term temperature range -200°C up to +260°C, Short-term temperature range +260°C up to +300°C
 *3 Measurement accuracy and standard deviation depend on calibration range and spreading of calibration points