TSENS Fiber Optic Temperature Sensors

A specifically designed innovative patented probe with robustness and ease of installation can attract much attention from transformer manufacturers. While the transformer operators get reliable and long term temperature data essential for precise transformer aging evaluation.

Our Rugged Monitoring Tsens probes have been designed and built to give precise results when installed in transformers by measuring temperature directly. The sensing technology is based on the proven zero-drift GaAs technology. They are completely built using first quality materials, with very high dielectric strength, so your transformers can benefit from accurate temperature readings, which is essential to a good knowledge of transformer aging rate. During factory heat run tests these probes will give both transformer manufacturer and operator invaluable information regarding the transformer expected MVA performance. The patented tip construction makes them extremely robust, while being very easy to install in radial spacers or in other pressboard material (such as for temperature measurements in cores or other transformer components). This tip along with a 200 µ Ø fiber offers the highest probe pulling force in the industry. The spiral-wrap cable is especially constructed to allow complete oil penetration assuring that no air can be present. All materials used in the probe construction are compatible with high temperature kerosene desorption processes.

Features

- Optimized for easy installation in oil-filled and dry-type transformers and reactors
- Rugged and robust construction built to outlast your transformer life
- Outstanding repeatability, zero-drift GaAs technology
- 9 mm disc design, suitable for all locations in a transformer (windings, cores, busbars, tap changers, etc.)
- Solvent and chemical resistant

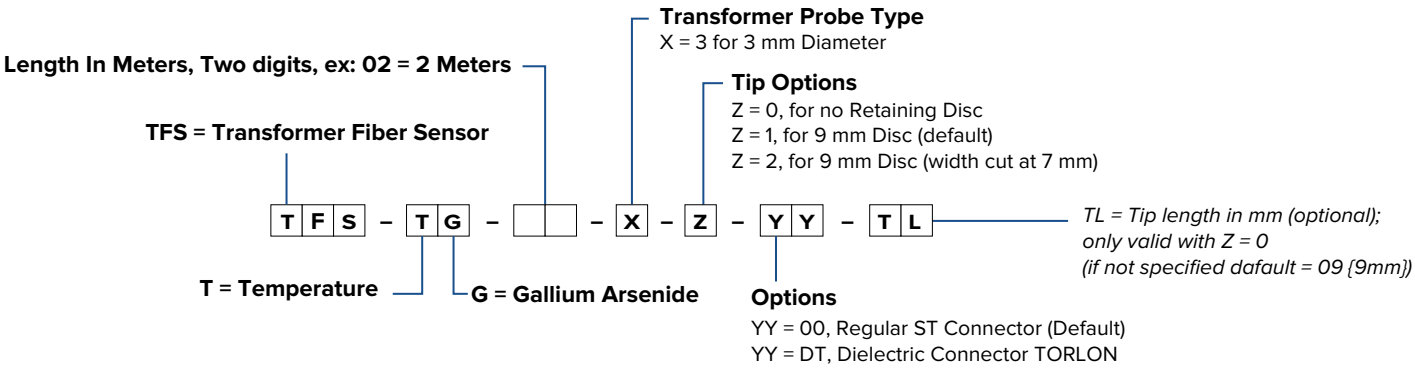
Benefits

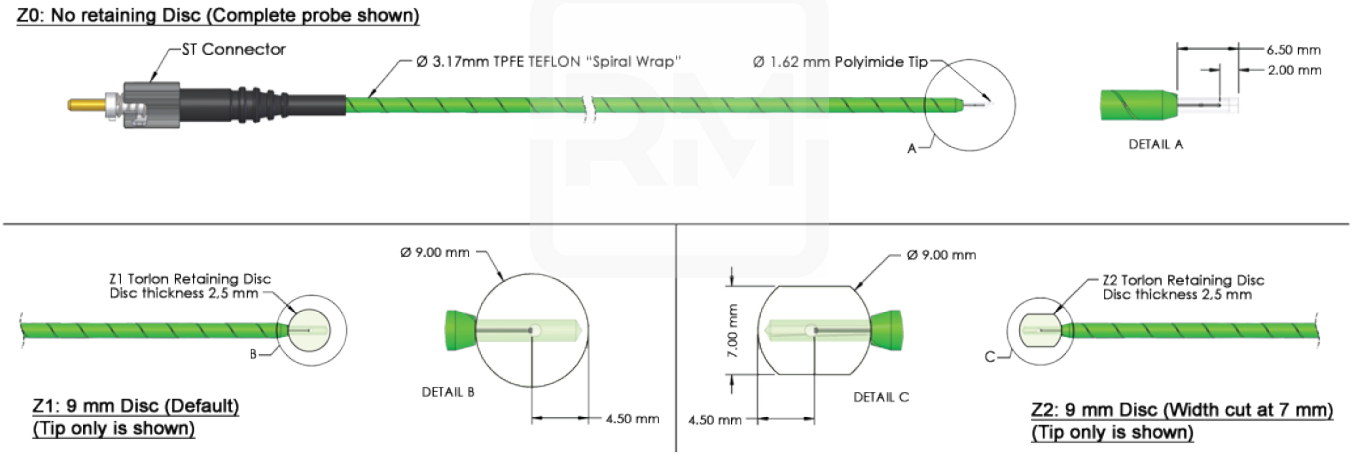
- Calibration free Sensors
- High Stability and No shift over time
- PTFE Teflon spiral-wrap reinforcement
- Robust fibre optic temperature sensor tip
- Available with disc and without disc
- Surpass ASTM D2413 and D149 standards
- Very low PD performance
- Designed to exceed transformer life

Applications

- Oil Filled or Dry Type Transformers
- Ideal for direct measurements of temperature
- Suitable for high voltage environments (1 MV, or more)
- Suitable for HVDC windings
- Standard radial spacers
- Withstands kerosene desorption
- Compatible with all types of transformer oil including ester type
- Can be Integrated with all Rugged Monitoring instruments

Ordering Code





Technical Specifications

Temperature range	-80°C to +250°C
Repeatability	0.2°C
Accuracy absolute temperature	+/- 0.8°C
Accuracy relative temperature	+/- 0.2°C
Probe sheathing material	Teflon spiral-wrap
Tip material	Torlon (with disc) or Polyimide (no disc)
Connector	Stainless alloy ST with zirconia ferrule (Optional: Dielectric Torlon ST with zirconia ferrule)
Probe length	Up to 25 meters
Response time	Up to 0.2 sec without disc. About 2 sec with disc
Longevity	Probe accuracy and repeatability constant over time

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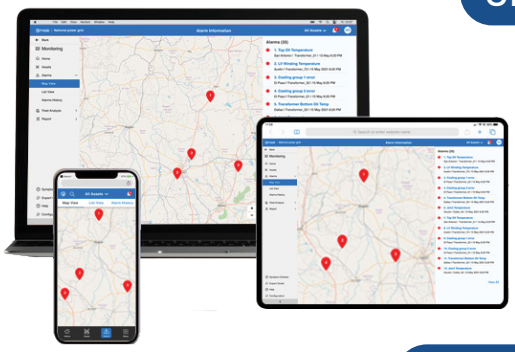
Asset Monitoring : **Enterprise Architecture**

Compatible with Rugged Monitoring Enterprise Solution

UI/UX



- Data Layer
- Analytics
- User Interface
- Custom Dashboards
- Reporting
- Email/SMS Notifications

RM EYE

Private Cloud (Customer Cloud),
Rugged Monitoring Cloud

IEC 60870-104
IEC 61850
FTP/SFTP
- XML, JSON
- CSV, COMTRADE

Data Collection

ODBC
MODBUS
DNP 3.0
HTTPS
MQTT

Asset Data

Transformer Monitoring System

Switchgear Monitoring System

Power Cable Monitoring System

- Offline Test Results
- Inspection Records
- Name Plate

- Historian
- CMMS
- SCADA/ DCS

Power Electronics (Battery, UPS, VFD, Relay)

One Solution for Advanced Asset Performance Management System

RM EYE - Unified platform to monitor entire network of electrical assets

Features

- **Advanced asset health monitoring** with analysis and recommendations to increase asset effectiveness in addition to maximizing equipment uptime
- **Modern remote monitoring solutions** provide valuable insights to Multiple Assets at Multiple Sites from time to time
- **Establish a real time and consistent monitoring** by getting the right information into right hands
- **Simple and user-friendly interface** providing easy and fast access to all the features
- **Everything about the asset at one place** The raw data, analysis and recommendations
- **Advanced asset algorithms** for electrical assets to evaluate asset health
- **Advanced reporting technology with automated alerts**
- **An efficient, reliable partial discharge monitoring for all the assets**
- **A detailed comprehensive DGA analysis**
- **Built on well-established remote and cloud-based monitoring technology**
- **Quick configuration** so that you are not required to configure separately.
- **Protocols: IEC 61850, MODBUS, MQTT**
- **Robust integration with 3rd party systems and devices** with industry standard protocols
- **Bulk configuration imports for fast deployment**
- **Encompasses a secure access to data and configuration**
- **QR code scanner on mobile devices**
- **Accessible on web browser and mobile app**
- **Historical data storage and on demand access** via export feature
- **Extended multilingual support** to handle product inquires or troubleshoot problems proactively
- **Systematic fleet management analysis**
- **Offline test data integration and analysis**