14.2014 DITEMP ATTS AUTOMATED TRIP TESTING SYSTEM

M SMARTEC

For distributed temperature sensing



GENERAL DESCRIPTION

The DiTemp[®] is a unique tool for the evaluation of distributed temperature over several kilometers. It is a powerful diagnostic instrument for the identification and localization of potential problems, such as leakages in pipelines and dykes, hot-spots in high-voltage cables and other events creating temperature anomalies.

When the DiTemp is used in security-critical applications, where availability and reliability are crucial, it is important to continuously verify the correct functioning of the whole system, including sensing cables, measurement system, data analysis software and alert transmission. The DiTemp ATTS (Automated Trip Testing system) is a fully independent device that is able to produce a controlled localized thermal anomaly (hot spot or cold spot) and verify its correct detection. This allows a continuous verification of the system availability and a periodic statistical evaluation of the confidence level (proven by experience SIL rating).

TECHNICAL DESCRIPTION

The DiTemp ATTS contains optical fiber sections of approximately 2m length each that can be heated or cooled in a controlled and reproducible way. The system is set to reproduce a temperature rise or drop of the same magnitude as the one expected in the case of an anomaly, e.g. a leakage. These two sections of fiber are placed at the beginning and at the end of the real measuring cable to test the detection of a simulated event at both extremities and therefore predict the ability to detect real events over the whole length of the sensing cable. The simulated temperature rise/drop events are typically generated every hour. The DiTemp ATTS records the timing of the simulation start and of the received alert from a dedicated zone in a DiTemp Relay Module controlled by the DiView software. If no alert is received after a predefined timeout, the DiTemp ATTS can generate an alert, indicating that the system might be unavailable. A signal is also available during the heating or cooling cycle, to allow recording by a plant control system. The DiTemp system will detect real leakages also during a simulated test, since the two events take place in different zones. Alerts from the test zone are typically not transmitted to the plant controller and do not initiate any further action.

The system records all timing results, so that a report can be periodically generated to summarize the availability score and the average and maximum reaction times. These reports can optionally be made available on SMARTEC's SHMLive web-based portal.



FEATURES

- Simulation of hot and cold spots
- Two zones
- Continuously verify availability in mission-critical alert systems
- Statistical evaluation of confidence levels (proven by experience SIL rating)
- Can be integrated with plant controller
- Standalone operation, fully independent from DiTemp and DiView
- Can be combined with redundant systems to achieve even higher confidence level
- SMARTEC Patent Pending



TECHNICAL FEATURES

- Size of hot/cold spot → 2 m
- Number of hot/cold spots → 2
- Maximum Temperature change → ± 15 °C / 10 s
- Heat/cool period → 10 s to 5 minutes (factory set)
- Heat/cool cycle → 1 minute to 24 h (factory set)
- Modes of operation → heat or cool (factory set)
- Fiber typology → MMF 50/125 μm (ITU.T G.651)
- Memory size → 2 years with 1h cycle time

TECHNICAL SPECIFICATIONS

- Operating temperature → 5°C to 40°C
- Storage temperature → -15°C to +65°C
- Humidity → 5% to 95% RH, non condensing
- AC Power → 100V 240V, 50Hz 60Hz
- DC Power → 24V or 48V supply option
- Power consumption → 100W maximum
- Dimension (HxWxD) →90 x 435 x 480 mm
- Weight → 9.5 kg
- Communication options → Modbus, Ethernet, 5 V signal



CERTIFICATION AND COMPLIANCE

CE MARK

Accordance with 89/336 EEC EMC directive accordance with LVD 72/23 EEC directive: EN 41003; EN 50178; EN 60065; EN 60825-1; EN 60950; EN 61010-1

ACCESSORIES AND ORDERING INFORMATION

- 14.2014 DiTemp ATTS
- 14.2010 DiTemp Reading Unit
- 14.2010 DiTemp Alarm Relay Module
- 14.2010 DiTemp External Channel Multiplexer
- 20.2010 DiView Data Management Software

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