



LAP

Lite Temperature Monitor

**PRODUCT
CATALOG**

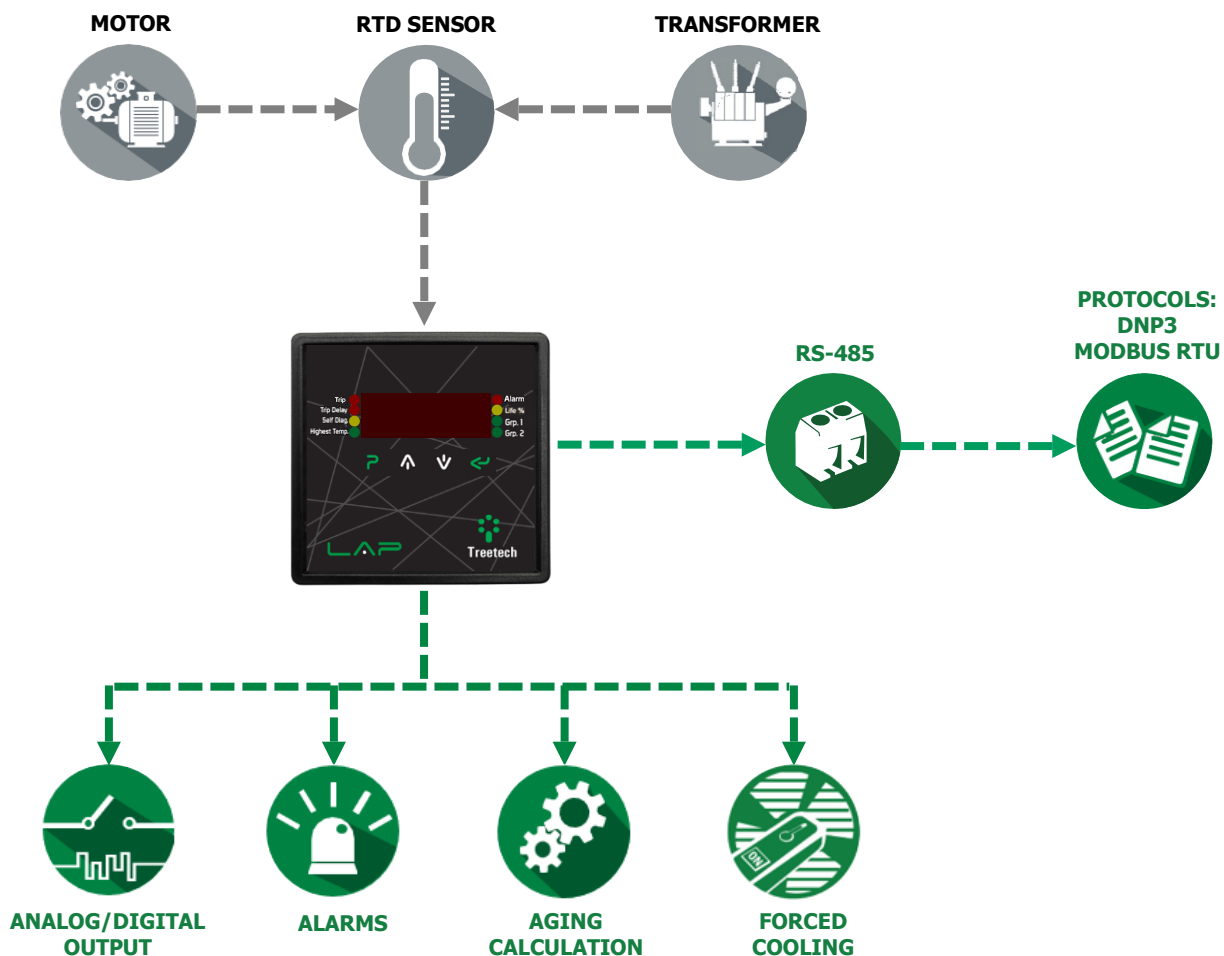
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MEASURING AND MONITORING THE TEMPERATURE OF YOUR ASSETS!








Thermal monitoring of electrical equipment, such as dry transformers, motors, generators and other assets, is essential for their safe operation, allowing a better use of the investment from these assets without jeopardizing their useful life. The LAP Lite Temperature Monitor adds low cost and high reliability, performing the monitoring and thermal protection of these equipment, providing their safe operation, while obtaining the maximum use of the assets and minimizing the risks to the safety of users, installations and useful life of monitored equipment.

SYSTEM TOPOLOGY



FEATURES AND FUNCTIONS

-  **IED**
 - ✓ The IED (Intelligent Electronic Device) was designed with a modern and compact design specifically for application in dry transformers in substations and industrial or commercial installations.
-  **SENSOR FOR TEMPERATURE MEASUREMENT**
 - ✓ The LAP has 6 inputs for RTD sensors for temperature measurement, and can be adapted to different applications and requirements. Thus, a thorough study of each application is necessary.
-  **DAILY COOLING ACTIVATION**
 - ✓ The daily cooling activation function prevents fans from remaining idle for long periods on machines operating at low load or during periods of low ambient temperature.
 - ✓ 2 Forced cooling groups that can act individually or together.
 - ✓ This function can also be applied as pre-cooling in transformers subject to foreseeable cyclical loads, being able to act before a load peak.
-  **ALARMS AND SELF-DIAGNOSIS**
 - ✓ Issuing alarms in the event of abnormalities;
 - ✓ Self-diagnosis for internal fault detection and integration with other sensors.
-  **COMMUNICATION PROTOCOLS**
 - ✓ RS-485 serial communication port for integration into supervisory or remote monitoring systems.
 - ✓ Modbus® RTU or DNP3 open communication protocols.

OPTIONAL FUNCTION

ONLINE CALCULATION OF WINDING INSULATION AGING

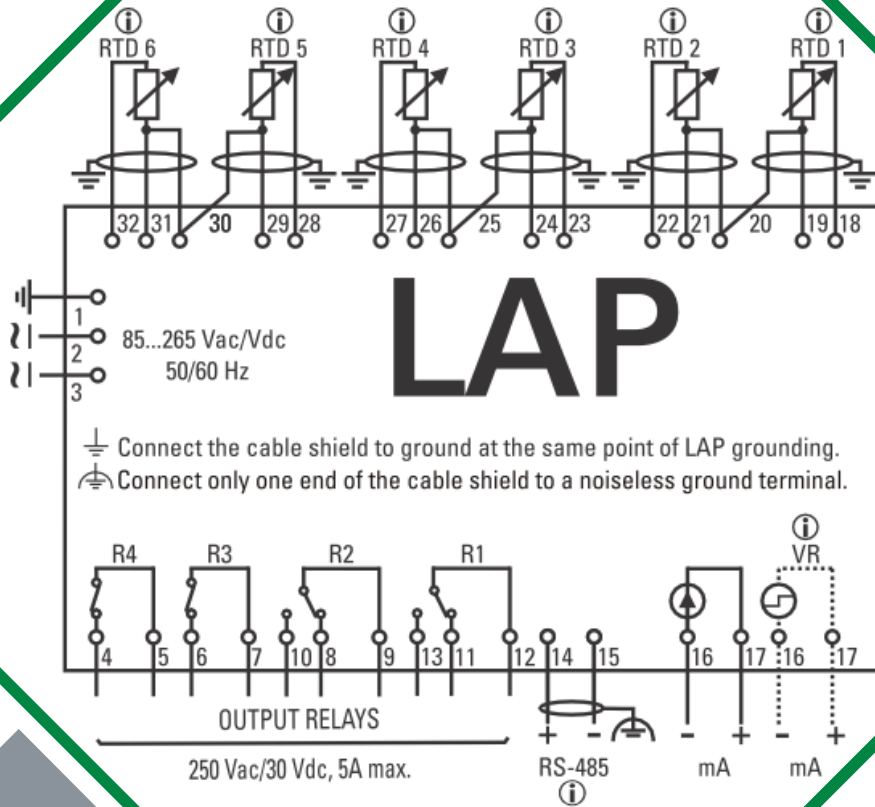
The Aging Calculation Function carries out online monitoring of the loss of life of the winding insulation, providing important information for the diagnosis and prognosis of the state of the equipment.

The standards used to carry out this calculation are chosen by the operator, according to the transformer manufacture. The options are: **IEEE C57.96-1999 and IEC 60076-12:2008.**

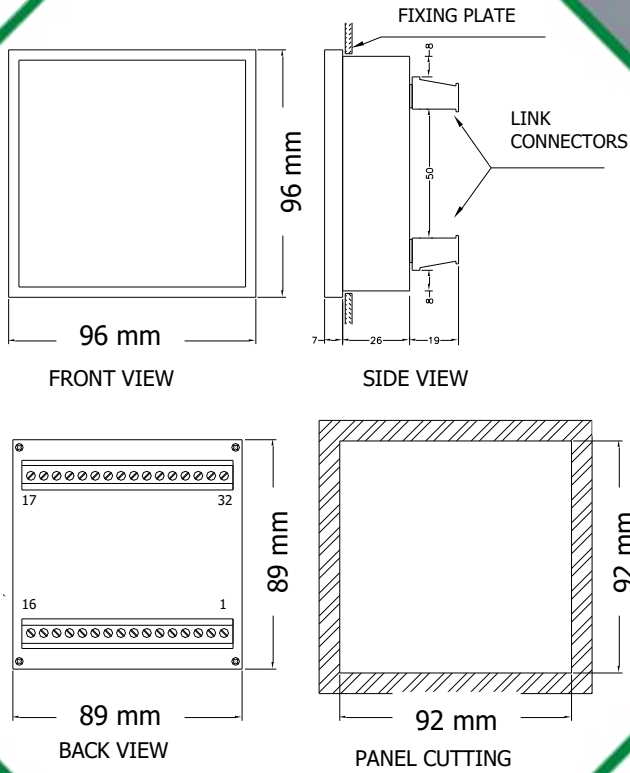
- ✓ Percentage of remaining life, from 100% (new insulation) to 0% (insulation end of life);
- ✓ Average insulation life loss rate, in percent per day, calculated over a selectable period;
- ✓ Extrapolation of remaining life for the insulation, calculated as a function of the above variables (percentage of remaining life and average rate of loss of life).

TECHNICAL DATA

HARDWARE	RANGE / DESCRIPTION
Power supply	85...265 Vac/Vdc, 50/60 Hz
Maximum consumption	≤ 5 W
Operating temperature	-10 to +70 °C
Degree of protection	IP20
Connections	0,5...2,5 mm ² , 22...12 AWG
Fixing	Panel mounting
MEASUREMENT INPUTS	RANGE / DESCRIPTION
Temperatures	Up to 6 RTD sensors with continuous self-calibration
Measuring range	-55...250 °C
Sensor	Pt100 Ω at 0 °C, three-wire
OUTPUTS	RANGE / DESCRIPTION
Relay outputs	2 programmable reversing relays + 2 programmable NC relays
Maximum switching power	70 W(dc)/250 VA(ac)
Maximum switching voltage	250 Vac/30 Vdc
Maximum driving current	5 A
Current loop outputs	1 programmable analogue or digital output
Bipolar options and maximum load	0...1 mA, 10 kΩ 0...5 mA, 2 kΩ 0...10 mA, 1kΩ 0...20 mA, 500 Ω 4...20 mA, 500 Ω
MAXIMUM ERRORS	RANGE / DESCRIPTION
Temperatures	0.5% of full scale + sensor error
Deviation due to temperature variation	20 ppm/ °C
Maximum error of analog outputs	0.5% of full scale



ELECTRICAL DIAGRAM



PRODUCT DIMENSIONAL

PRODUCT FRONT



ESSENTIAL ACCESSORIES

TEMPERATURE SENSOR PT100 Ω AT 0 °C

Temperature measurement in dry transformers, motors, generators and other equipment monitored by the LAP is performed using type Pt100 Ω at 0°C temperature sensors.



RECOMMENDED ACCESSORIES



SIGMA ECM® MONITORING SOFTWARE

In addition to online monitoring of the temperature of your assets, with our monitoring system and our specialized team, it is possible to keep track of the status of your assets going beyond reading data.

Follow-up based on analysis of the information collected by the IEDs installed in your assets.

WEATHER SHELTER

In case it is necessary to measure the ambient temperature in weather-exposed places, a meteorological shelter must be used to protect the Pt100 sensor, minimizing the errors that sun, rain, wind would cause on the measurement.



ORDER SPECIFICATION

In the product purchase order, it is necessary to specify:

- ✓ Product name;
- ✓ Quantity;
- ✓ Model;
- ✓ Optionals;
- ✓ Accessories.





Treotech

Rua José Alvim, 112 Centro – CEP 12940-750 – Atibaia/SP

Contact: +55 11 24101190

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