

EP4

Application

The Thermal Protection Relay EP4 is design to:

- To read Dry Transformers 4 temperature channels simultaneously
- It has 3 independents setpoints for each sensor, that activates 4 relays (NAF) of isolated activation for ALARM, TRIP (Shutdown), and FANS.
- It also has 1 isolated relay (NAF) to indication Failures on the equipment.
- Another relevant function is the volatile memory to store the highest temperatures reached;
- Designed according to **ANSI 23/26/38/45/49/74/77/94**

Main Features



Obeys all levels of normative requirements: IEC, DIN, IEEE and ABNT.



4 Temperature channels for PT100 sensors (simultaneous)



LED display of 3 or 4 digits of high brightness



RS-485 as digital output with protocols: Modbus-RTU and DNP 3.0 Level 1



Operation Temperature extended: -40°C to +85°C



- It has 3 NAF relays used for ALARM, TRIP, and FANS.
- It also has 1 relay to indicate internal failures (watchdog).



4 Independent Temperature setpoints for each sensor.



It stores in memory the highest temperatures registered by each sensor



Aluminum Enclosure

The aluminum enclosure has high mechanical resistance and creates a Faraday Cage that increases the immunity of the electronic circuits in cases of noise induction and electrical discharges. The enclosure also works as a heat dissipator, extending the IED lifespan.



Display

High brightness LED display of 3 or 4 digits, allowing a great reading and visualization condition.



Easy to Configure

Easy configuration through the equipment frontal keys.



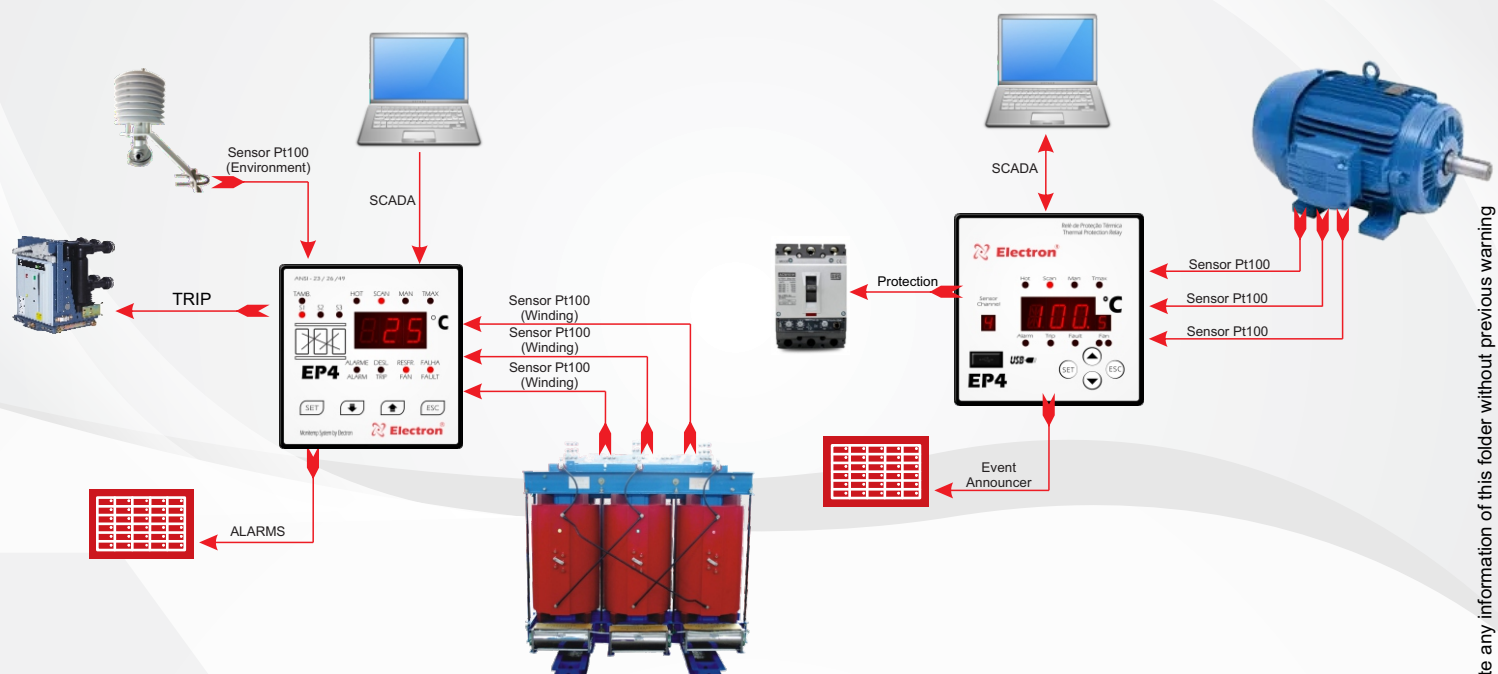
PT100

Compensated inputs for PT100 sensors of 2 or 3 wires for windings temperature measurement



Quality

Its Hardware is designed to stand to severe working conditions. It attends all levels of reliability according with IEC, DIN, IEEE and ABNT normative



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Technical Features

Power Supply	24 to 275 Vac/Vcc and 50/60 Hz
Operation Temperature	-40°C to +85°C / -10 to +70°C
Power Consumption	<15W
Temperature Measurement Inputs	Up to 4 Sensors – PT100 to 0°C, 2 or 3 wires (EM 60751 – DIN 43700)
Temperature measurement range	0° to 200°C or -50°C to 250°C
	0 ... 1mA – 8000 Ohms
	0 ... 5mA – 1600 Ohms
Active Analog Output 15Vdc and Maximum Load	0 ... 10mA – 800 Ohms
	0 ... 20mA – 400 Ohms
	4 ... 20mA – 400 Ohms
Maximum Error of the Measurement Inputs	0.5% end of scale
Maximum Error of the Analog Outputs	0.5% end of scale
Output Contacts	4 (NAF) – Potential free
Maximum Commutation Power	70 W / 250 VA
Maximum Voltage Commutation	250 Vac / 125 Vdc
Maximum Current Conduction	10 Amperes
Frontal Communication Door	Male USB 2.0 Type A
Serial Communication Door	RS 485 – 2 fios (ANSI/TIA/EIA -485A)
Communication Protocol	Modbus RTU ou DNP 3.0 -L1
Auto Baud Rate (bps automatic detection)	2.400 a 57.600 bps
Enclosure DIN IEC 61554	98x98x37 mm or 98x98x57 mm
Fixation	On panel door with steel barrettes
Protection	IP 40 (Frontal) and IP 20 (Conectors)

Type Tests Attended

- Applied voltage (IEC 60255-5): 2kV / 60 Hz / 1 min (against ground);
- Voltage pulse (IEC 60255-5): 1.2 / 50 ms / 5 kV / 3 neg and 3 pos / 5 pos Range;
- Electrostatic discharges (IEC 60255-22-2): Air Mode = 8 kV / Contact Mode = 6 kV;
- Immunity to radiated electromagnetic disturbance (IEC 61000-4-3): 80 to 1000 MHz / 10 V / m;
- Immunity to fast electrical transients (IEC 60255-22-4): Alim. / Inputs / Outputs = 4 kV / Common 2 kV;
- Immunity to overvoltages (IEC 60255-22-5): Phase / Neutral 1 kV, 5 per polar (±) - phase-ground / neutral-ground 2 kV, 5 per polar (±);
- Immunity to conducted electromagnetic disturbances (IEC 61000-4-6): 0.15 to 80 MHz / 10 V / m;
- Climatic test (IEC 60068-21-14): -40°C @ +85°C / 72 hours;
- Vibration resistance (IEC 60255-21-1): 3 axis / 10 - 150 Hz / 2G / 160 min / axis;
- Vibration response (IEC 60255-21-1): 3 axis / 0.075mm @ 10 - 58 Hz / 1G @ 58 - 150 Hz / 8 min / axis;