

TECHNICAL CATALOGUE – EP4



ABOUT ELECTRON

Electron Digital Technology manufactures protection, supervision and control equipments type IED (Intelligent Electronic Device) to power transformers, reactors, energy substations, electric motors, industrial machines and industrial processes.

Founded in 2005, the history of Electron is featured by a solid and continuous growth, attending the whole Brazilian Market and exporting to countries in Latin and North Americas.

Inserted in a scenario of growth of the electrical and electronic sectors, Electron has developed a portfolio with innovator features in order to provide in an effective manner to the several segment applications.

Besides a staff formed by professionals with large experience in the field of engineering electric, electronic, mechanical, chemistry and IT, Electron counts with the partnership of specialized companies of Research and Development (R&D). This ensures that our products and services have high quality and the latest technologies to attend in a safe way the most rigorous customers.

Every equipment is submitted to severe tests that confirm the excellent performance and reliability of our products. For special projects, our engineering staff develops customized solutions to attend the specific needs with accuracy and high performance.



INTRODUCTIONS

The **EP4** thermal protection relay is a highly accurate and reliable equipment. It is designed to monitor up to 4 temperature channels simultaneously. These IEDs are used to protect and monitor dry transformers, electrical generators, motors, and industrial machinery following ANSI 23, 26, 38 and 49.

The **EP4** was built in compliance with strict quality standards and uses state-of-the-art electronics (SMD). Its hardware is designed to withstand harsh working conditions and can be installed directly on dry transformers or panels in power substations. In addition, its box constructed in aluminum with the dimensions of 98x98x37 mm is the most compact on the market and follows the DIN standards for fixing to the panels. Finally, it meets all levels of requirements, compatibility and reliability according to IED, DIN, IEEE and ABNT standards.

As signal input, the **EP4** thermal protection relay allows up to 4 Pt100 temperature sensors. It also has 3 independent temperature setpoints for each sensor that activate 3 isolated relays (NAF) used for alarm, shutdown or ventilation. There is also 1 relay for fault indication on the instrument or sensors (watchdog). Another relevant function is a volatile memory for storing the maximum temperatures reached.

As signal outputs, the **EP4** offers a configurable analog output between 0..10, 0..20 or 4..20 mA which replicates any of the temperature channels or the highest value. The IED also has an RS485 output with Modbus RTU or DNP 3 protocol for access to all parameters, including the activation of real-time ventilation.

The display mode is configurable, you can display the highest temperature, manually navigate through the 4 channels, or use the SCAN function showing all channels continuously. The indicative LEDs on the front of the unit can identify which channel was responsible for the alarm or shutdown. All functions and parameterizations are easily implemented directly in the IED.

An additional function of **EP4** is the intelligent ventilation exercise, which will trigger the fans daily for 5 minutes after they are set up.

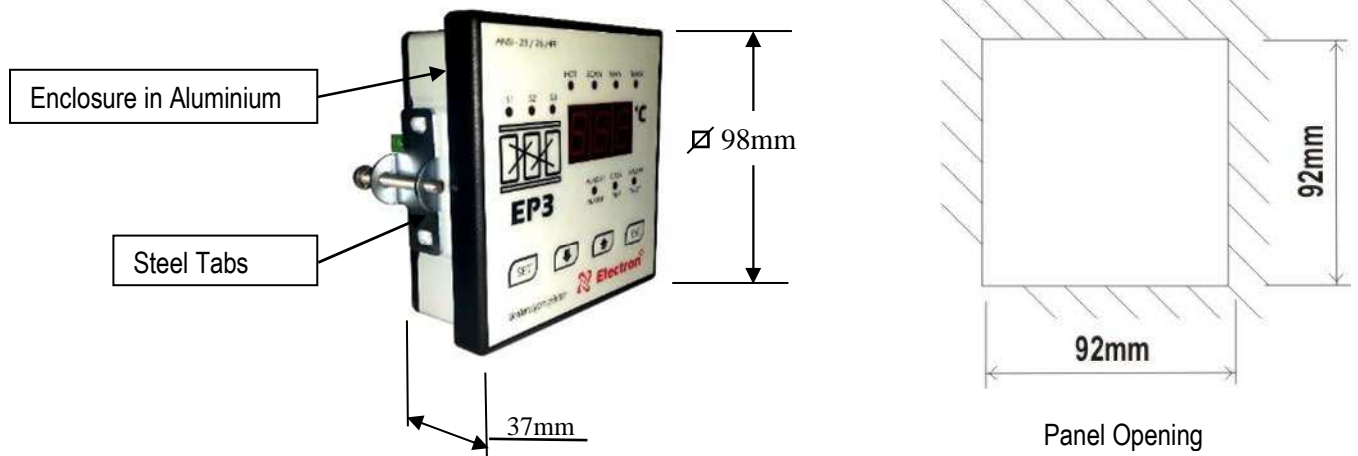
DADOS TÉCNICOS

Thermal Protection Relay	
Power Supply	24 to 275 Vdc/Vca 50/60 Hz
Operation Temperature	-10 to +70°C
Power Consumption	< 15 W
Temperature measuring input	Up to 4 x Pt100 to 3 cables [100 Ω to 0°C]
Measurement Range	0 to 200 °C
Analog Outputs (Active) Maximum load	0..10 mA – 800 Ω
	0..20 mA – 400 Ω
	4..20 mA – 400 Ω
Maximum Measurement Input Error	0,5% end of scale
Maximum Error of the Analog Outputs	0,5% end of scale
Output Contacts	4 – Free of Potential (Off - timed contact) (Ventilation - contact with hysteresis)
Maximum Switching Power	70 W / 250 VA
Maximum Switching Voltage	250 Vca/ 125 Vcc
Maximum Driving Current	10 A
Serial Communication Port	RS485
Communication protocol	Modbus RTU (Slave) or DNP 3
Auto Baud Rate	2.400 to 57.600 bps (Auto detection / Manual)
Enclosure DIN IEC 61554	98 x 98 x 37 mm – Aluminium
Mounting	Mounting at the door panel

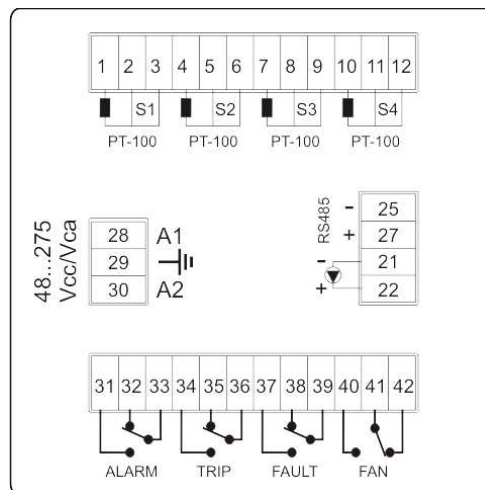
TYPE TEST

- Insulation Voltage (**IEC 60255-5**): 2kV / 60Hz / 1 min. (to ground);
- Voltage impulse (**IEC 60255-5**): 1.2/50 μseg. / 5kV / 3 neg. e 3 pos. / 5 segs. Interval;
- Electrostatic Discharge (**IEC 60255-22-2**): Air mode = 8kV / Contact mode = 6 kV;
- Irradiated electromagnetic field immunity (**IEC 61000-4-3**): 80 a 1000 MHz / 10V/m;
- Fast electrical transient immunity (**IEC 60255-22-4**): Power./Input./Output=4KV/Serial port. 2kV;
- Surge immunity (**IEC 60255-22-5**): phase/neutral 1kV, 5 per polar. (±) - phase-ground/neutral-ground 2kV, 5 per pole (±);
- Conduced electromagnetic perturbations immunity (**IEC 61000-4-6**): 0,15 a 80 MHz / 10V/m;
- Climatic test (**IEC 60068-21-14**): -40°C + 85°C / 72 hours;
- Vibration resistance (**IEC 60255-21-1**): 3 axis / 10 a 150Hz / 2G / 160min/axis;
- Vibration response (**IEC 60255-21-1**): 3 axis / 0,075mm-10 a 58 Hz / 1G de 58 a 150 Hz / 8min/axis.

DIMENSIONS

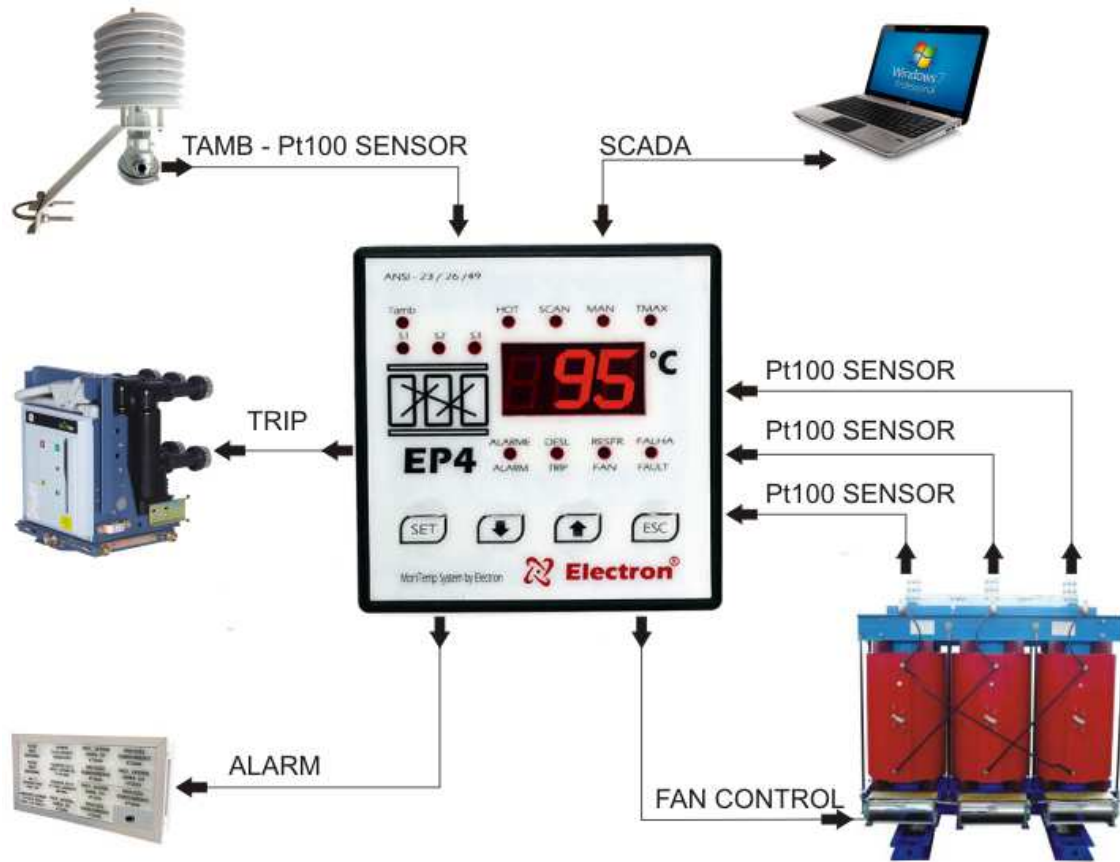


WIRING DIAGRAM



EP4

EXAMPLE OF APPLICATIONS



ASSEMBLY ACCESSORIES



Temperature sensor Pt100
Stainless steel or Teflon bulb



Box for external use