



**ORION ITALIA**

Protection relays & Metering division

**TR-42**

Temperature Control & Protection



### Dry-type Power Transformers Temperature Monitoring

The digital temperature relay TR-42 has been created as an accessory of main importance for resin or air insulated three-phase MT transformers, as protection against dangerous over temperatures on the insulating coil, on the winding and to manage the intervention of cooling fans. The temperature is detected by 3 or 4 thermal detectors PT 100 DIN 43760, three of them located in the transformer coils, the fourth on the core.

### FEATURES

- Display of the actual temperature of the 4 RTDs
- Display & storage of the highest temperature of each RTD
- 3 programmable output contacts from 0° to 220°C level 1, level 2 and FAN control
- Automatic and “Always ON” fan mode
- Alarm of TR-42 failure or PT 100 disconnection or short circuit
- Automatic fan start every week (bearing protections)
- Insulated RS-485 communication port (TR-42C1 only)

### FUNCTIONS AND SIGNALS

The TR-42 is equipped with seven-segment displays, programming and function keys along with signalling leds.

### COMMUNICATION (TR-42C1 only)

Communication capabilities are available in the TR-42, connecting the RS-485 port to a network controlled by a supervisor device (PC). The protocol used is Modbus RTU. The connections have to be made with shielded twisted wires.

### ACCESSORIES

#### PT 100:

- Each sensor PT 100 has one white wire and two red ones according to the UNI 7937 regulation
- 3 Cables insulated in teflon-shield silicone
- Sealed cylinder of stainless steel
- Cylinder seal made of AISI 316

#### PTBox:

- Plastic Box ABS. Protection degree IP65 dim. 175x125x75mm
- 3 Temperature Sensor PT100 Class B
- Cables length: 1mts, 1,5 mts, 2 mts
- Terminal block to connect to the TR-42

## SPECIFICATIONS

**Scale:**  $-10 \div +220 \text{ }^{\circ}\text{C}$   
**Accuracy:**  $\pm 1\%$  F.S.  $\pm 1$  digit  
**Settings:** L1, L2, FAN:  $0 \div 220 \text{ }^{\circ}\text{C}$   
**Supply voltage:** 24-240 Vcc/Vca (50-60Hz),  $-15\%$ ,  $+10\%$   
**Maximum power consumption:** 4VA or 4W  
**Inputs:** 4 platinum RTD PT100 with 3 wires. 500 Ohm Max. wire impedance  
**Outputs:** FAN: change-over, I<sub>max</sub> 16A 240Vac/24Vdc resistive load (5A continuous) /1HP 240 Vac.  
 L1,L2,FAULT: change-over with 5A(n.o) 3A(n.c) res. load 250 Vac.  
**Operational Temperature:**  $0 \div 50 \text{ }^{\circ}\text{C}$   
**Storage Temperature:**  $-20 \div 70 \text{ }^{\circ}\text{C}$   
**Relative Humidity:** 90% (non condensing)  
**Burn in:** 48 hours  
**Dielectric Withstand Voltage:** 2 kVac, 60 s  
**Construction:** according to the VDE, UL, CEI standards.  
**Terminal block:** draw-out terminals for 4 mm<sup>2</sup>cables (12 AWG)  
**Frame:** In ABS self-extinguish with frontal protection (IP54)  
**Assembly:** to be fixed in the structure through stirrups and screws.  
**Dimensions:** 96x96x114 mm  
**Weight:** 500 grams

**Communication port:** Insulated RS-485, insulation 1500 Vdc  
**Communication protocol:** MODBUS RTU, function: 03h, 04h, 05h, 06h, 10h

### Emissions Tests:

Radiated emissions: EN 55011; Port : enclosure.  
 Conducted emissions: EN 55011; Port: AC mains.

### Immunity Tests:

- Conducted disturbances induced by RF field  
References: EN 61000-4-6; Port: AC mains and signal lines
- Radiated electromagnetic field  
References: EN 61000-4-3; Port: enclosure
- Electrostatic discharge  
References: EN 61000-4-2; Port: enclosure
- Fast transients (burst)  
References: EN 61000-4-4; Port: AC mains and signal lines
- Surge  
References: EN 61000-4-5; Port: AC mains
- Voltage dips and short interruptions  
References : EN 61000-4-11; Port: AC mains.

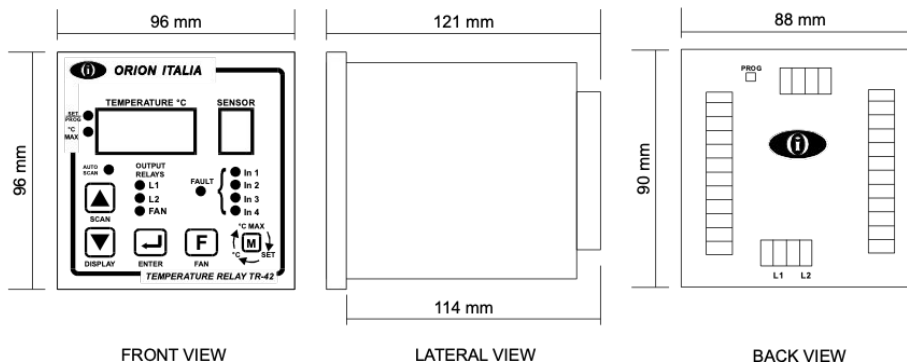
## ORDER CODE

**TR-42 X1**

**S:** without RS485

**C:** with RS485

## DIMENSIONS



## COMMUNICATION WIRING

