

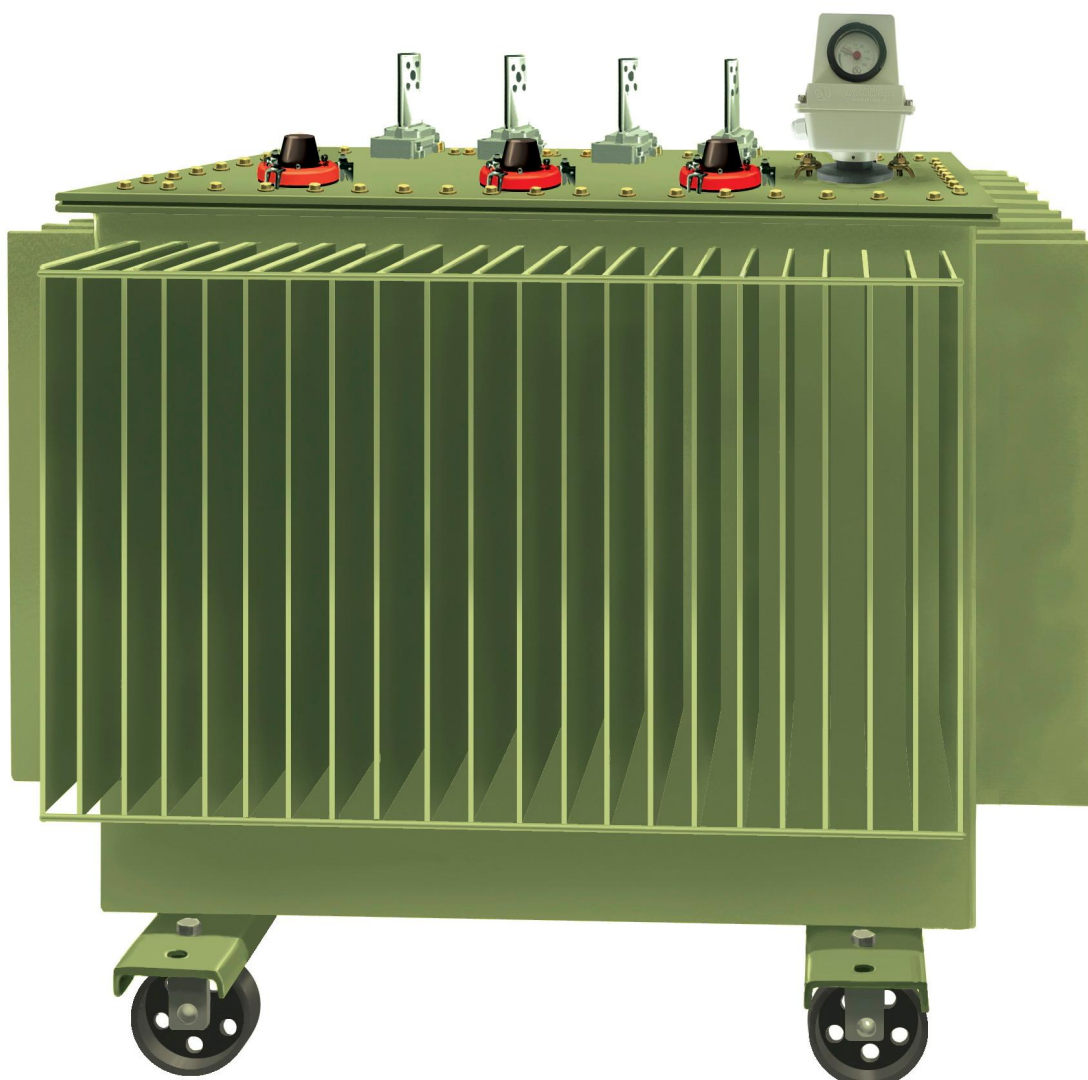


AUTOMATION 2000

20 rue de la pommeraie, 78310 Coignières — FRANCE
Tel: +33-1-3461-4232 — Fax: +33-1-3461-8919
info@automation2000.com — www.automation2000.com



TECHNICAL INSTRUCTIONS TDC & TDCI



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1- INTRODUCTION

Equipped with two independent thermostats compensated in temperature, TDC and TDCI have been designed to monitor dielectric temperature of electrical transformers.



2- TECHNICAL DATA

2.1 Housing

- Housing in composite

Ratings: IP 56, IK 07

- Housing cover in composite with 4 screws that can be sealed by lead

Ratings: IP 56, IK 07

- Wiring output through M20 stuffing box with anchor

Tighten capacity: 7,5–13 mm

- Wiring through terminal block

Tighten capacity: 2,5 mm² (6 terminals)

2.2 Thermostats

- 2 independent fluid expansion thermostats

Bulb diameter: 6,5 mm

- Ambient temperature compensation

- Change-over contacts

- Setting scale: 40–140°C

- Setting accuracy: $\pm 2,5^{\circ}\text{C}$

- Measure accuracy: $\pm 3^{\circ}\text{C}$ at 60°C, $\pm 1,5^{\circ}\text{C}$ at 90°C

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2.3 Thermometer (TDCI only)

- 1 fluid expansion thermometer

Bulb diameter: 6,5 mm

Indicator diameter: 50 mm

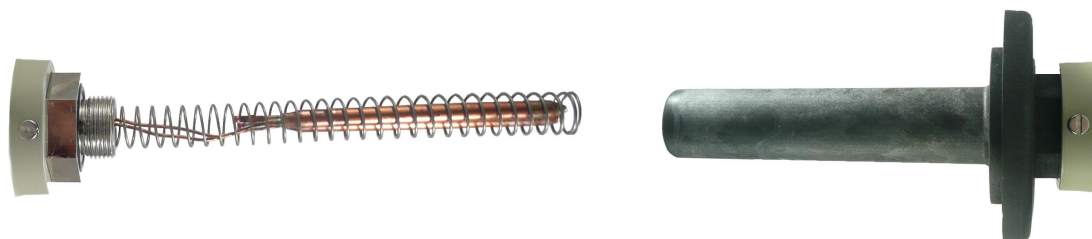
- Ambient temperature compensation
- Tracking pointer indicating maximum temperature reached
- Display scale: 30–150°C
- Measure accuracy: $\pm 4^{\circ}\text{C}$ at 60°C , $\pm 1,5^{\circ}\text{C}$ at 90°C

2.4 Fitting

- M22 x 1.5 male thread (fine-pitch) in nickel plated brass at the base of the housing, with O-ring type seal and bulbs protection spring
- (*As an option*) Flange with thermowell in composite at the base of the housing to be installed on a 60 mm opening (Viton seal and fixing hooks supplied)

Flange diameter: 85 mm

Thermowell: 104 mm (length), 25 mm (diameter)



2.5 Operating conditions

- Ambient temperature: -30°C to 65°C
- Dielectric temperature: $\leq 140^{\circ}\text{C}$

2.6 Breaking capacity

Current	Resistive load $L/R < 40\text{ ms}$	Inductive load
24 VDC	5 A	3 A
48 VDC	3 A	4 A
127 VDC	1 A	1 A
127 VAC 50/60 Hz – $\cos \varphi 0.5$	15 A	0.5 A
250 VAC 50/60 Hz – $\cos \varphi 0.5$	15 A	3 A

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3- INSTALLATION

3.1 Preamble

The following installation procedure is given for information only. Automation 2000 cannot be held responsible for its execution.

3.2 Installation precautions

Before installing TDC or TDCI, make sure that:

- Transformer is not powered.
- Transformer dielectric is at ambient temperature (approx. 20°C).
- Transformer opening on which TDC or TDCI will be installed is opened.

3.3 Hermetically sealed transformer installation procedure

TDC or TDCI with M22 fitting

- Mount TDC or TDCI in the thermowell designed for that purpose.

TDC or TDCI with flange

- Fit the flat Viton seal (supplied) in the TDC or TDCI flange throat.
- Mount TDC or TDCI on the transformer opening.
- Attach the 3 or 4 fixing hooks supplied according to the tightening precautions below.

TIGHTENING PRECAUTIONS

When you tighten the HM8 nuts on the fixing hooks, make sure that:

- ⇒ Tighten coupling is not higher than 3 m.kg (30 N.m).
- ⇒ The flange DOES NOT TOUCH the transformer cover (the flat Viton seal should stay visible – approx. 1 or 2 mm).
- ⇒ The fixing hooks are tightened one after the other, clockwise in two steps. During the first step, use a loose tighten coupling on all fixing hooks. During the second step, use a tighten coupling not higher than 3 m.kg (30 N.m).

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4- ELECTRICAL OPERATION

4.1 Preamble

All TDC and TDCI come with change-over contacts, with a Normally Opened contact, a Normally Closed contact and a Common point.

In the following diagrams, contacts are shown unpowered (dead), meaning not under the influence of any defect.

4.2 Operating diagram

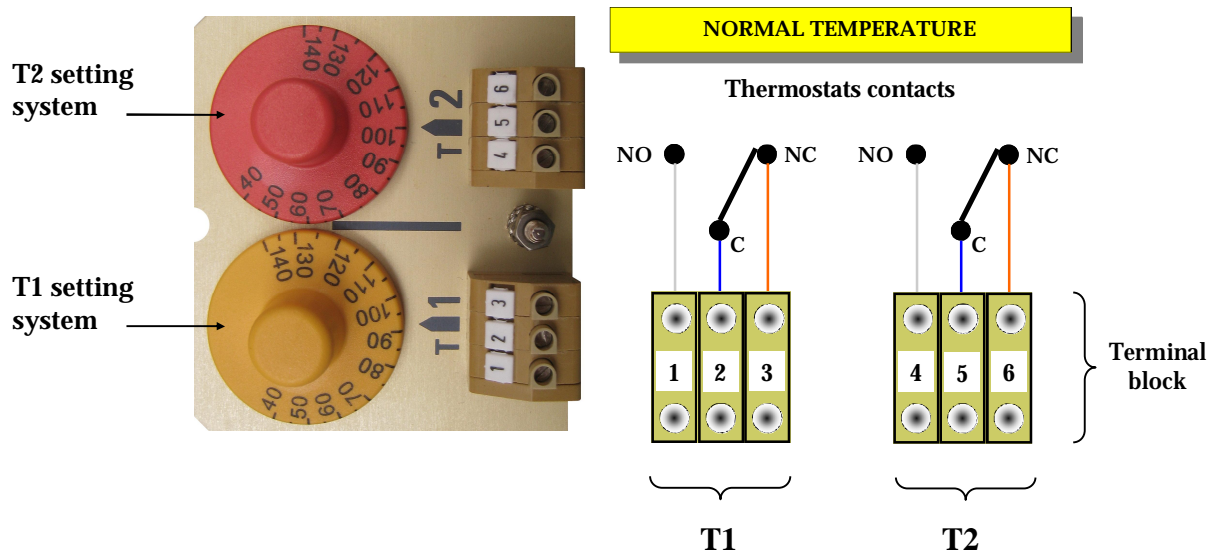
Temperature elevation is due to:

- an electrical defect inside the transformer tank causing a localized heating;
- an intensive transformer use (overcharge).

Temperature is monitored by two independent fluid expansion thermostats with ambient temperature compensation.

When the dielectric temperature reaches the set-point value ($\pm 2,5^{\circ}\text{C}$), the thermostat contacts close.

Temperature set-points are defined by the transformer manufacturer.





5- TESTS

5.1 Precautions

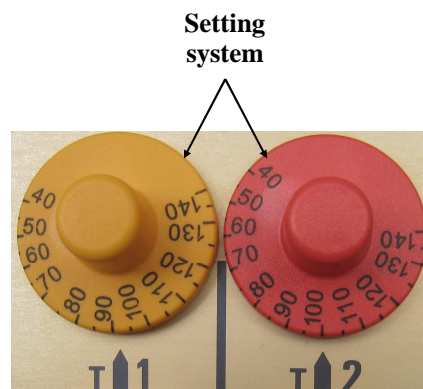
Before carrying out the tests, make sure:

- That the transformer is not powered.
- To carefully check the wiring system.
- That the electric interlocking system is powered so that the loops can be tested up to the final element (e.g. LED for alarm function, actuators for trigger function).

5.2 Temperature

Elements concerned: T1 and T2 thermostats

- Turn the setting system below 40°C.
- The contact mechanically changes position.
- Check that the loop is operating correctly, then reset the T1/T2 setting system at the desired values.



WARNING

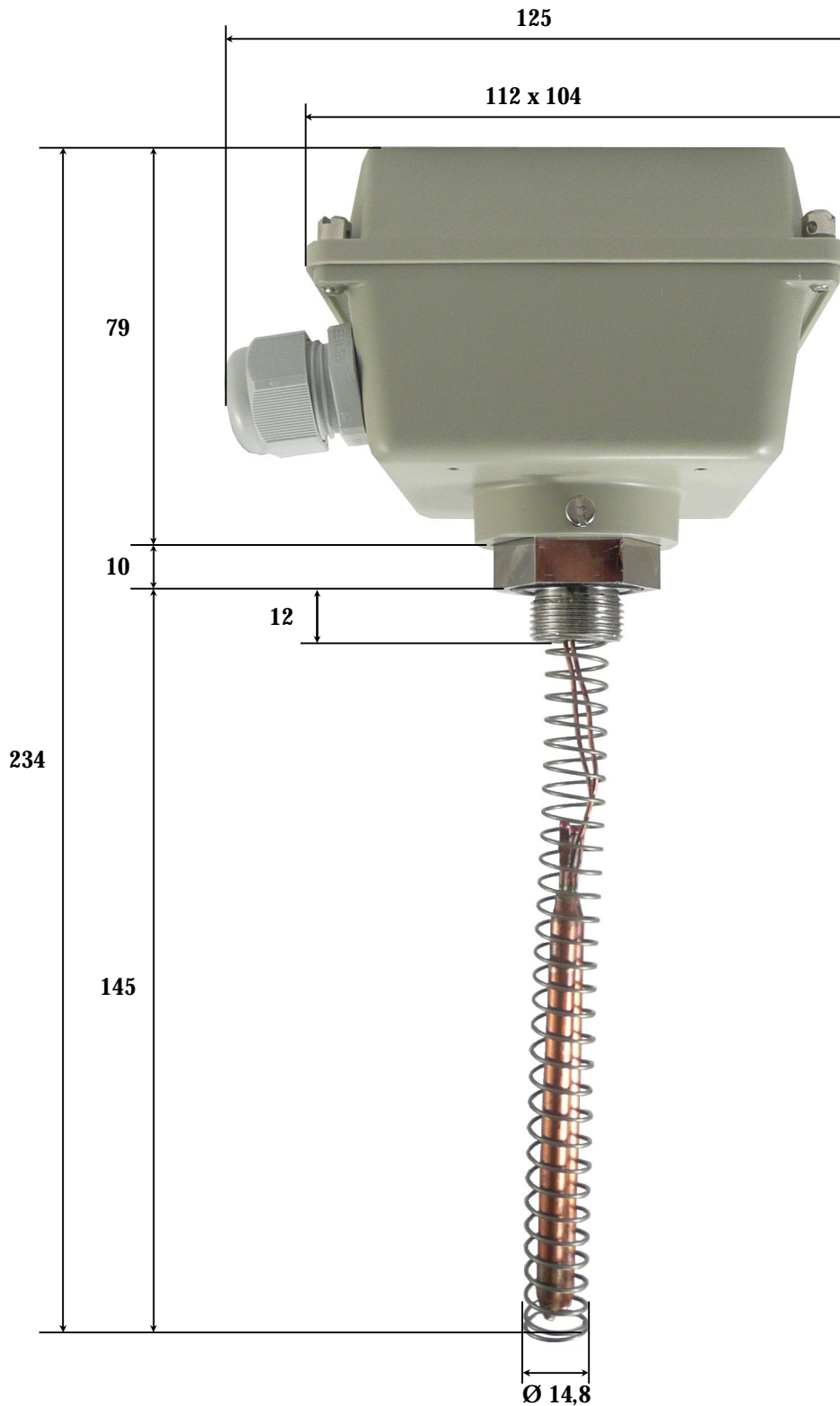
When you make tests by shunting the terminals, you are testing the cable and not the device.

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6- SPATIAL REQUIREMENT

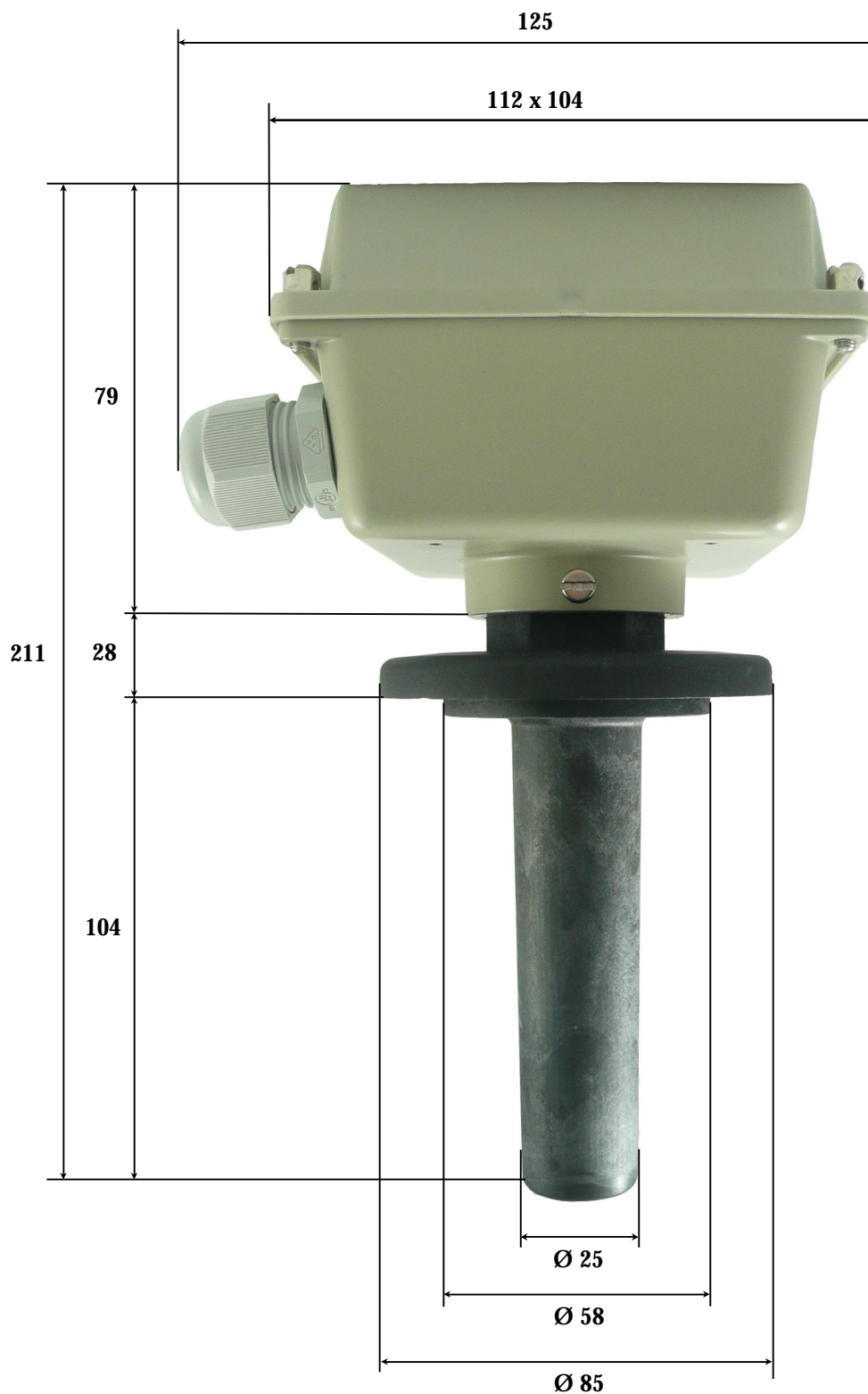
6.1 TDC with M22 fitting



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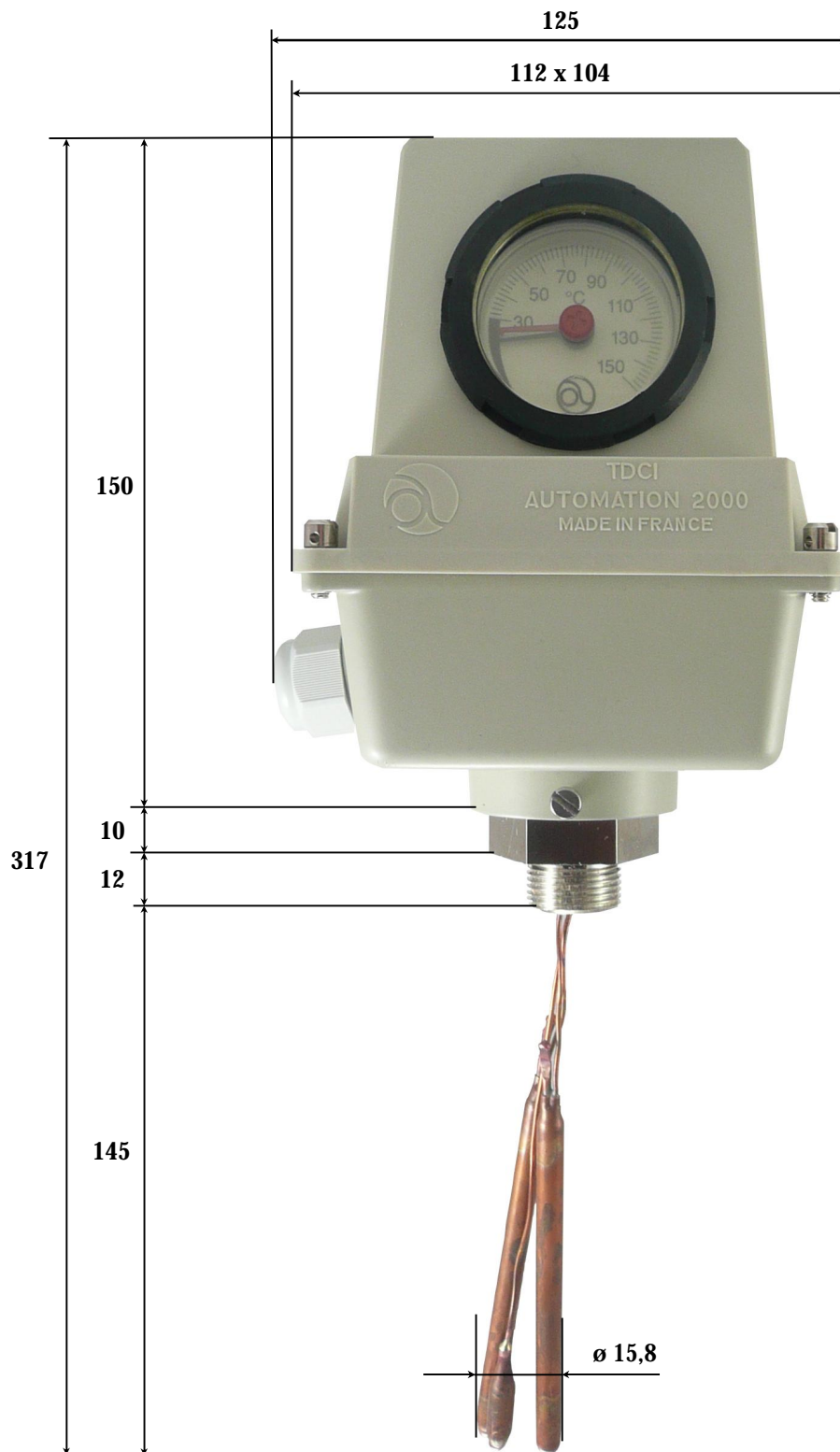
6.2 TDC with flange



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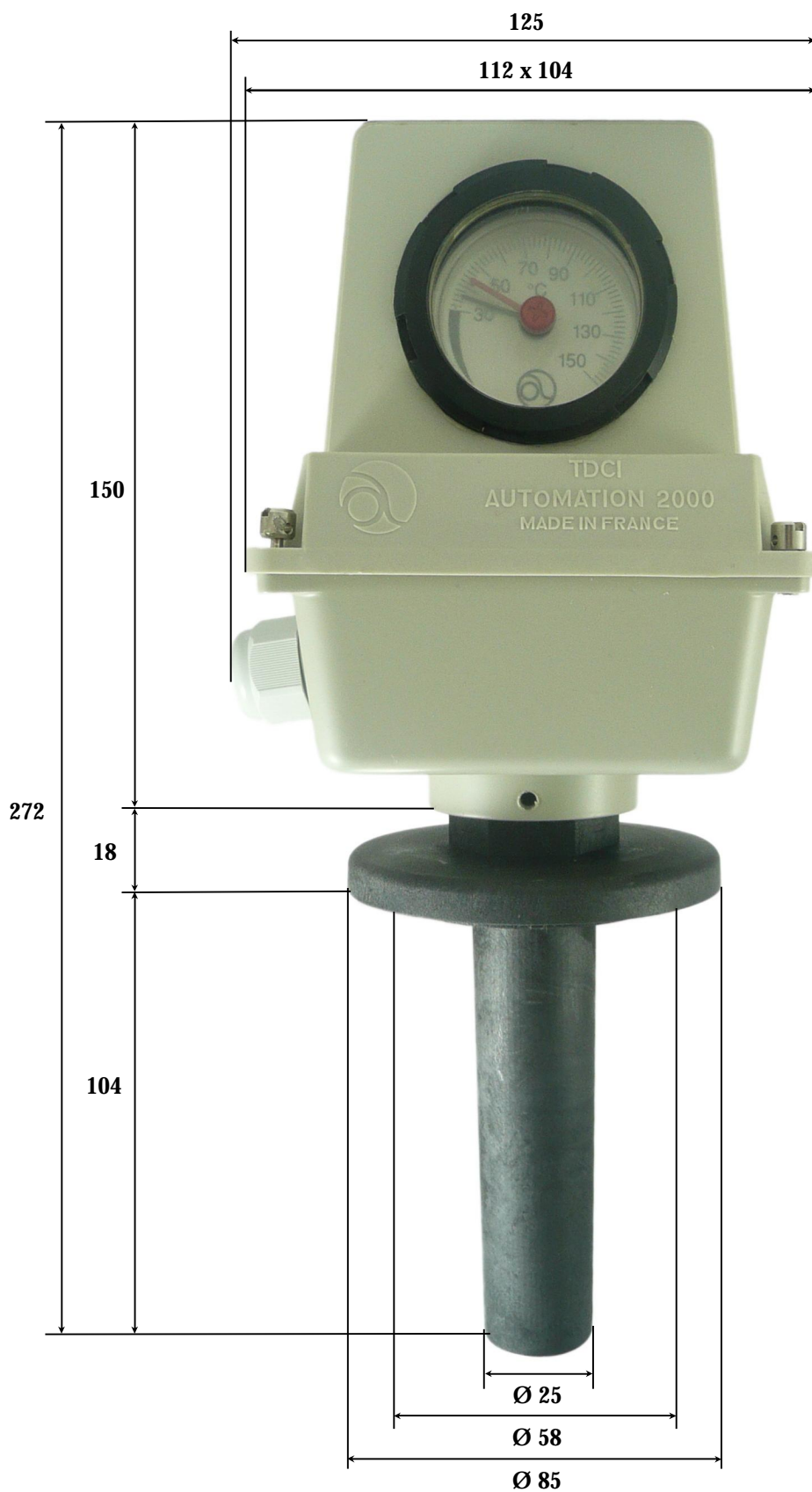
6.3 TDCI with M22 fitting



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6.4 TDCI with flange



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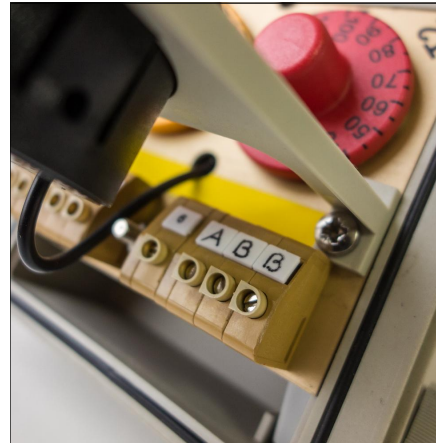
7- OPTIONS

PT : Pt100 sensor

The TDC® or TDCI® is equipped with a Pt100 sensor 100 Ω at 0°C (138.5 Ω at 100°C). It is connected to an independent terminal block with 3 wires. This sensor enables to remotely control the dielectric temperature.

PTC : 80°C PTC thermistor

The TDC® or TDCI® is equipped with a 80°C Positive Temperature Coefficient thermistor. It is connected to an independent terminal block with 2 wires. As an example, this thermistor can send a signal to the cooling fans' controller.



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