



Installation and Operating Instructions for Thermostats Type TS and TSE



1 Application

Thermostats Type TS and TSE are manufactured in accordance with Directive 94/9/EC (ATEX 100a) and, among other applications, designed for temperature control of instrument enclosures or protective cabinets.

Type TS thermostat is factory-installed in the connection cable of the electric heater (standard design).

Type TS-E thermostat is an external thermostat with its own connection cable designed for on-site attachment to the electric heater by means of distance rolls

Both thermostats are approved for use in Zone 1 and Zone 2 hazardous areas, explosion groups G/D and temperature class T6.

EC-type examination certificate PTB 03 ATEX 2027X

2 Technical Data

Nominal voltage	Max. 265 V AC
Rated voltage	Max. 292 V AC
Special voltages are possible, if the output power is adapted accordingly and the suitable components selected	
Rated current (according to VDE 0298)	10 A
Ambient temperature	-60 to +80°C
Max. permissible operating temperature range at normal rating	-60 to +80 °C
Installation position	Any

3 Installation

Take care not to bend or exert any load on the connection cable during the transportation or unpacking of the heater. Before entry in the customer-supplied junction box, the cable must be firmly installed, observing the permissible bending radius of 5 times the outside cable diameter.

The thermostat has to be installed in a housing that meets the requirements of EN 60079-0:2009 section 1.

Example:

In order to effectively use the potential equalization and the thermal feedback of the heater, the TSE thermostat has to be connected to the heater by using the set of bolts supplied with the thermostat. The TSE has to be electrically connected in series with the heater in an Ex-e junction box.

The TS thermostat may hang under the heater or be in contact with the floor of the enclosure (as per illustration 8.1). The TS thermostat and the heater must be electrically connected in an Ex-e junction box.

4 Connection

The thermostat must only be connected and secured by personnel technically qualified in accordance with the label specifications "rated voltage" and "rated current".

A fuse with a rated current of 10 A acc. To IEC 60127-2-1 or a motor protection switch with instantaneous short-circuit or thermal tripping (adjusted to 10 A) shall be connected in series to each thermostat as short-circuit protection. The fuse or the motor protection switch may be accommodated in the corresponding power supply unit or it shall be connected in series separately. The rated

voltage of the fuse shall be the same as or higher than the maximum operating voltage specified for the thermostat. The breaking capacity of the fuse link shall be the same as or higher than the maximum short-circuit current expected to occur at the place of installation (usually 1500 A).

The ambient temperature range of the thermostat must not exceed -60°C and +80°C during operation.

The thermostat and its connecting cable (open-ended cable) shall be installed to provide for adequate protection against mechanical damage.

The connecting cable shall be connected inside of an enclosure which complies with the requirements of an acknowledged type of protection according to EN 60079-0:2009 section 1, if the connection is intended inside the hazardous area.

Equipotential bonding and earthing shall be safeguarded by mounting the thermostat to the complete system.

The thermostat shall mounted into an additional enclosure that meets the requirements acc. to EN 60079-0:2009.

In a TT or TN system, a residual current operated protective device (RCD) must be used whose rated response fault current does not exceed 100 mA. Residual current devices with a rated response fault current of 30 mA are to be preferred.

In an IT system, an insulation monitor must be used that switches off the power supply as soon as the insulation resistance falls to 50 ohms per volt of the rated voltage or lower (see DIN EN 60079-14:2008; section 7.4).

5 Initial Operation

Installation with TS (integrated in the heater) and installation with TSE (bolted to the heater):

As soon as the heater with integrated thermostat TS or with external thermostat TS-E is properly installed in accordance with the installation instructions specified in point 3 and point 4, ensuring free convection and the necessary clearances, it may be switched on.

A safety fuse will permanently open the circuit if the above installation and operating instructions are not followed.

6 Maintenance

Performance and safety tests can be conducted at intervals to be determined by the operator in compliance with current regulations.

Repair work must only be carried out by the manufacturer.

7 Safety Instructions for the Heater

Installation of the heater in an exposed position involves a certain risk of injury, especially the ends of the fins and the hot surfaces:

- Max. 160°C with T3 heaters
- Max. 100°C with T4 heaters
- Max. 70°C with T5 heaters
- Max. 50°C with T6 heaters