

# Operating Instructions for Thermostats

**Model: TER**



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## **2. Note**

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Please read these operating instructions carefully before commissioning the unit for operation. Follow the instruction precisely as described.

The instruction manuals on our website [www.kobold.com](http://www.kobold.com) are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email ([info.de@kobold.com](mailto:info.de@kobold.com)) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

The devices are only to be operated, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

## **3. Regulation Use**

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Any use of the Thermostats, model: TER, which exceeds the manufacturer's specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

With their different sensor designs, TER series thermostats can be used in a variety of applications. Their switching point can be set with an adjustment screw, and their control system consists of an integrated SPDT contact.

These thermostats are precision devices that were set and adjusted at the factory. Do not open this device or attempt to change the setting of the factory-sealed adjustment screw; this would lead to improper behaviour of the switching points.

## 4. Operating Principle

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The thermal sensors can be viewed as temperature-dependent pressure sensors. As the temperature increases, the pressure in the sensor system also increases. This pressure change is transmitted to a microswitch by means of a bellows system or a diaphragm. A compression spring, whose preload setting can be changed with a setpoint spindle, provides a counteracting force. The setting of the spindle determines the temperature switchpoint.

Depending on the sensor's design, it will employ either an adsorption or a tension system.

**Adsorption systems** (for all ranges to 50 °C) produce a linear scale with an almost constant differential gap extending over the entire setting range.

**Tension systems** (for ranges between 40 - 90 °C and 80 - 130 °C) are based on the temperature-pressure relationship of a given medium (vapour-pressure curve). A vapour-pressure curve is non-linear, which means that the resulting temperature scale is also non-linear. The differential gaps are different and are based on the switching temperature that has been set. The higher the switching temperature, the smaller the typical differential gap.

The average differential gaps are indicated in the device data sheets.

## 5. Instrument Inspection

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Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

### **Scope of delivery:**

The standard delivery includes:

- Thermostat (if necessary, with an immersion pipe)    Model: TER-...

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## 6. Mechanical Connection

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### 6.1. Serial Number

All switching devices and their matching terminal box covers are marked with the model designation and a serial number.

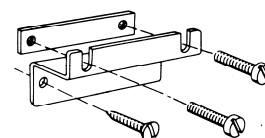
During installation, make sure that you do not inadvertently switch these covers.

### 6.2. Mounting the Device Housing

These thermostats can be mounted directly on a flat surface with 2 screws (4 mm). An optional TER-H1 wall mount system is also available (comes standard with TER-TRM models).

#### TER-H1 wall mounting

- Using the enclosed screws and anchors (6 mm), mount the retaining bracket horizontally on the wall.
- Using two M4 screws, mount the clamping plate on the back of the switching device (do not tighten the screws completely; be sure to leave 2 mm of clearance between the housing and the clamping plate).
- Hang the housing in the retaining bracket mount and secure it in place by tightening both M4 screws.



### 6.3. Sensor Installation

Immersion pipes in 3 different lengths are available for pressure-tight installations.

For information on additional accessories, see the data sheets.

## 7. Electrical Connection

### Terminal connection diagram

Remove the terminal box cover and the protective cover to access the terminal block. After the supply lines are connected, be sure to replace the protective cover.

The wiring is connected using a right-angle plug. The cable outlet can be located in any one of four positions (sequential offset of 90 °).

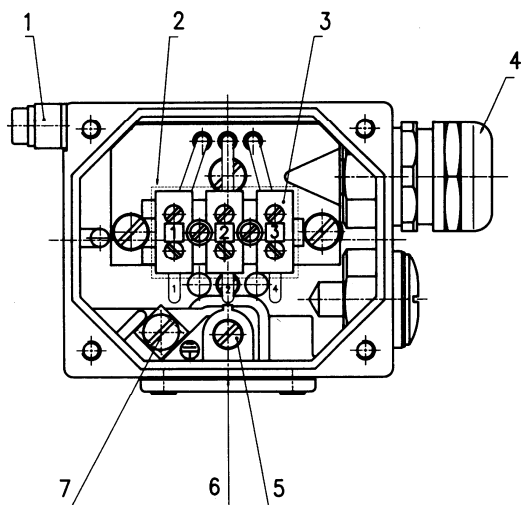
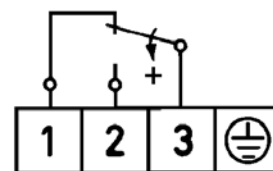
For rising temperature:	For falling temperature:
3-1 opens, 3-2 closes	3-2 opens, 3-1 closes

### Protective conductor terminal

Accessible after removing the terminal box cover.

### Ground connection/equipotential bonding

On exterior of switching device  
Max. cable cross section 4 mm<sup>2</sup>



- 1 Ground Connection
- 2 Protective cover (removable)
- 3 Terminals
- 4 Cable entry fitting, PG11
- 5 Switch point setting
- 6 Set screw for locking the setting spindle
- 7 Protective conductor terminal



**Caution!** The specified electrical ratings for the contact must not be exceeded, even for a short time. For higher switching loads we recommend the use of an interposing relay or other method of contact protection.

## 8. Adjustment

### 8.1. Setting the Switching Point

The switching point can be adjusted within the ranges specified in the data sheet by turning the setting spindle with a screwdriver. To do this, remove the terminal box cover (remove the 4 mm socket-head cap screws).

Before setting the switching point, loosen the socket-head set screw located above the scale by approximately 2 turns.



**The scale is only meant to be a general guide; a thermometer is required for accurate settings.**

Clockwise rotation: lower switching point  
Anti-clockwise rotation: higher switching point



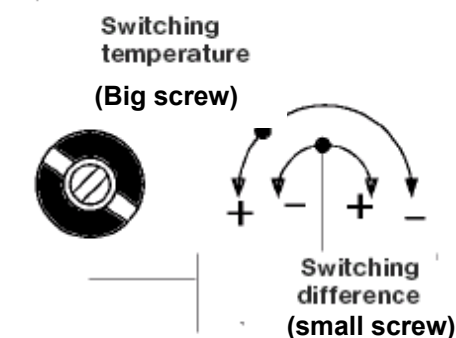
**After the adjustment is complete, be sure to retighten the set screw.**

### 8.2. Differential Gap Adjustment (TER-TRMV only)

The differential gap (hysteresis) is adjusted by turning the socket-head screw on the setting spindle.

Clockwise rotation: greater difference  
Anti-clockwise rotation: smaller difference

Changing the differential gap adjustment does not change the switching point for falling temperature. In the case of rising temperature, the switching point is only moved by the amount of the change in the differential gap.



### 8.3. Factory Adjustment

With falling temperatures, the changeover occurs at the set scale interval. The switch back (for rising temperature) occurs at a higher value equal to the amount of the differential gap.

## 9. Maintenance

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These Thermostats are maintenance-free.

## 10. Technical Information

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Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

## 11. Dimensions

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Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

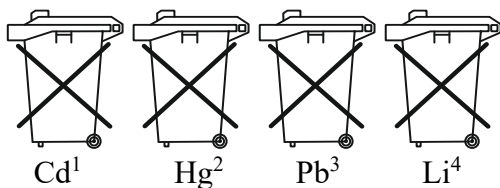
## 12. Disposal

### Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

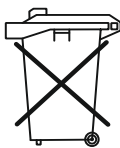
### Batteries

Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

### Electrical and electronic equipment



## 13. EU Declaration of Conformance

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We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

**Thermostat    Model: TER-...**

to which this declaration relates is in conformity with the following EU directives stated below:

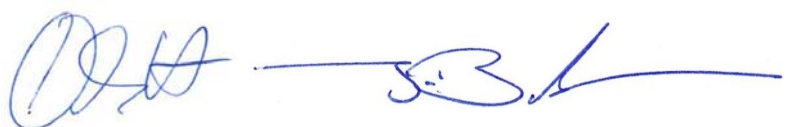
<b>2014/35/EU</b>	<b>Low voltage guideline</b>
<b>2011/65/EU</b>	<b>RoHS (category 9)</b>
<b>2015/863/EU</b>	<b>Delegated Directive (RoHS III)</b>

Also, the following standards are fulfilled:

**EN 60730-1:2008**    Automatic electrical controls for household and similar use - Part 1: General requirements

**EN 60730-2-6:2009**    Automatic electrical controls for household and similar use - Part 2-6: Particular requirements for automatic electrical pressure sensing controls including mechanical requirements

Hofheim, 05 Sept. 2023



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