Thermostats
Types 5312-2, 5313-., 5314-., 5315-., 5317-., 5318-.

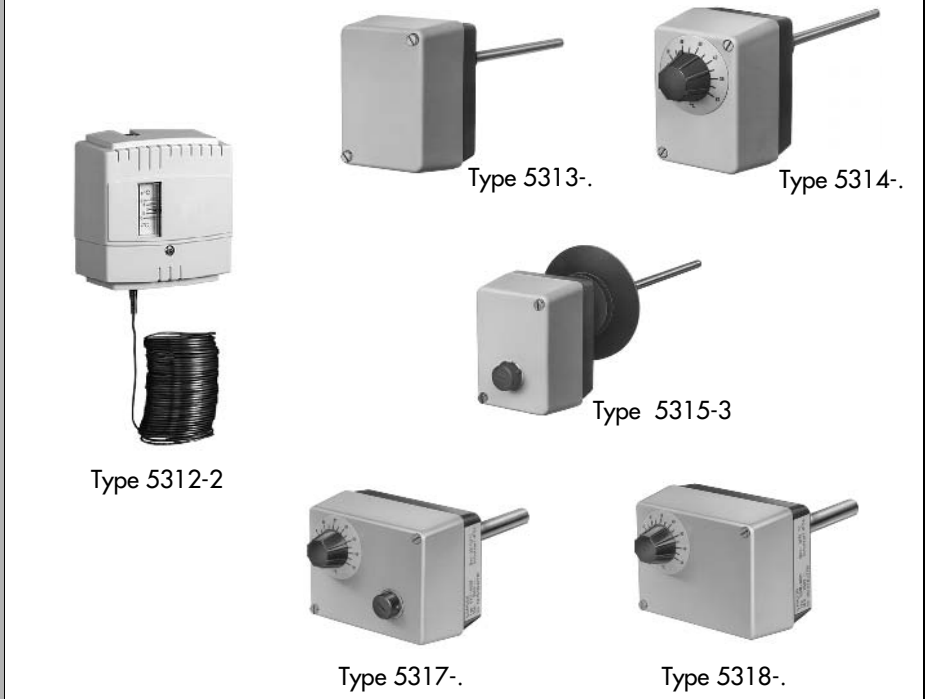

Fig. 1 · Thermostat versions

Mounting and operating instructions

EB 5205 EN

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1. Design and principle of operation

The thermostats have liquid-filled measuring elements and immersion tubes with G 1/2 threaded connection, which can be screwed onto pipelines (except Type 5312, frost protection thermostat for air ducts with capillary tube).
When the temperature exceeds an adjusted set point or limit value, the sensor element actuates a microswitch via a diaphragm and lever.

The connecting head with the temperature sensor is secured to the immersion tube with a clamping screw. These thermostats have a housing, allowing a maximum permissible temperature of +80 °C. Therefore, thermostats with a measuring range above 150 °C are equipped with an intermediate insulating piece.

Type testing
All thermostats, with the exception of the Type 5312-2 Thermostat, have been typetested according to DIN 3440 by the German Technical Inspectorate TÜV (Technischer Überwachungsverein). The corresponding register numbers are listed in the table on pages 3/4.

- *Assembly, start-up and operation of the device may only be performed by trained and experienced personnel familiar with this product.
  According to these mounting and operating instructions, trained personnel is referred to persons who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the relevant standards.*
- *For wiring and connection of the thermostats, you are required to observe the VDE regulations and the regulations of the local power supply company. For this reason, this type of work must be carried out by a specialist.*
- *Proper shipping and appropriate storage are assumed.*

1.1 Technical data

Type	Set point range °C	Function	Sensor material Immer. tube	Sensor dimensions mm	p max bar [1)]	Switching differential approx. K	Repeat accuracy K	Max. medium temp. °C	DIN Register No.
5312-2	–10 to +12	TM	Cap. tube Copper	6 m Length		1	±0.12	200	–
5313-4	0 to 60	STM	Immer. tube Brass	200 x 8 G 1/2	50 (92)	3	+0 –3	69	STW (STB) 1095 02 S
5313-5	60 to 100	STM	Immer. tube Brass	150 x 8 G 1/2	48 (88)	4	+0 –4	149	STW (STB) 1095 02 S
5313-6	60 to 110	STM	Immer. tube Brass	150 x 8 G 1/2	48 (88)	4	+0 –4	149	STW (STB) 1095 02 S
5313-7	60 to 120	STM	Immer. tube Brass	150 x 8 G 1/2	48 (88)	4	+0 –4	149	STW (STB) 1095 02 S
5313-8	60 to 130	STM	Immer. tube Brass	150 x 8 G 1/2	48 (88)	4	+0 –4	149	STW (STB) 1095 02 S
5313-9	20 to 95	STM	Immer. tube CrNiMo	300 x 8 G 1/2	88	5	+0 –4	138	STW (STB) 1095 02 S
5313-10	50 to 300	STM	Immer. tube Steel	150 x 8 G 1/2	50 (72)	15	+0 –12	345	STW (STB) 1095 02 S
5314-1	20 to 90	TR	Immer. tube Brass	150 x 8 G 1/2	50 (92)	3	±1	103	TR 946 02
5314-2	20 to 90	TR	Immer. tube Brass	300 x 8 G 1/2	50 (92)	3	±1	103	TR 946 02
5314-3	20 to 150	TR	Immer. tube Brass	100 x 8 G 1/2	48 (88)	5	±2	172	TR 946 02
5315-1	30 to 110	STL	Immer. tube Brass	150 x 8 G 1/2	48 (88)	8	+0 –4	126	STB 947 02
5315-2	60 to 130	STL	Immer. tube Brass	150 x 8 G 1/2	48 (88)	7	+0 –4	149	STB 947 02
5315-3	130 to 200	STL	Immer. tube Steel	150 x 8 G 1/2	78 (83)	7	+0 –4	230	STB 947 02
5317-2	30 to 110	TR/STL	Immer. tube Brass	150 x 15 G 1/2	26 (48)	TR: 3 STL: 8	±1.2	126	TR/STB 957 02
5317-3	20 to 90	TR/STL	Immer. tube Brass	150 x 15 G 1/2	27 (50)	TR: 3 STL: 8	±1.2 –4	103	TR/STB 957 02
5317-4	50 to 120	TR/STL	Immer. tube Brass	150 x 15 G 1/2	26 (48)	TR: 3 STL: 8	±1.2 –4	138	TR/STB 957 02
5317-5	60 to 130	TR/STL	Immer. tube Brass	150 x 15 G 1/2	26 (48)	TR: 3 STL: 8	±1 –4	149	TR/STB 957 02

5318-1	0 to 70	TR/STM	Immer. tube Brass	300 x 15 G 1/2	27 (50)	TR: 3 STM: 8	±1 −4	80	TR/STW (STB) 958 02 S
5318-2	20 to 120	TR/STM	Immer. tube Brass	150 x 15 G 1/2	26 (48)	TR: 3 STM: 8	±2 −5	138	TR/STW (STB) 958 02 S
5318-3	20 to 100	TR/STM	Immer. tube Brass	150 x 15 G 1/2	27 (50)	TR: 3 STM: 8	±2 −5	138	TR/STW (STB) 1096 02 S
5318-4	20 to 110	TR/STM	Immer. tube Brass	150 x 15 G 1/2	26 (48)	TR: 3 STM: 8	±2 −5	138	TR/STW (STB) 1096 02 S

TM = temperature monitor, STM = safety temperature monitor, TR = temperature regulator, ST L = safety temperature limiter

Contact rating	For 230 V AC: 10 A with resistive load, 2 A with cosφ = 0.6, for 230 V DC: 0.25 A Protection 10 A, 6 A for Type 5312
Permissible ambient temperature	0 to 80 °C, 55 °C for Type 5312
Degree of protection	IP 54, IP 40 for Type 5312
Housing material	Cover: plastics (lead-sealable cover screws except for Type 5314) Lower housing section: die-cast aluminum, painted (except for Type 5312: sheet steel)
Weight, approximately	0.5 kg (Type 5317-2 approximately 0.7 kg)

[1] Values in parentheses for version with immersion tube made of stainless steel WN 1.4751 (DIN Register No. on request)

1.2 Immersion tubes

Instead of the immersion tubes listed in the "Technical data", immersion tubes made of CrNiMo steel (WN 1.4571) can be ordered. Depending on the temperature, the following pressures can be applied to them:

Ø Immer. tube: mm	Temperature				
	°C	100	150	200	300
8	bar	92	88	83	72
15		50	48	45	39

1.3 Ambient temperature

The thermostats are calibrated for an ambient temperature of 22 °C. At higher ambient temperatures, the switching point decreases by 0.08%/K for TR and TM, and by 0.17%/K for STM (STL) and STL . At lower ambient temperatures, the switching points increase.

2. Installation

2.1 Frost monitor for air ducts

(Type 5312-2)

Note that the frost monitor must not be used for corrosive gas service. Mounting clamps are required to fix the capillary tube at the outlet of the heating battery. The instrument may be installed at any mounting position. The housing shall be mounted as close as possible to the place of measurement since the entire length of the capillary tube is sensitive. The temperature at the housing shall be at least as high as the adjusted value, but shall not exceed 55 °C.

The capillary tube may not be bent. The smallest permissible bending radius shall not be less than 5 mm. If the capillary tube is broken, a temperature drop is indicated.

2.2 Thermostats with immersion tubes

(Types 5313, 5314, 5315, 5317 and 5318)

The instruments may be installed at any mounting position.
To make assembling easier, loosen the clamping screw and remove the immersion tube. The press-on spring delivered with Types 5317 and 5318 has to be reinserted into the immersion tube after being disassembled, otherwise the thermostat will not function properly.
The whole length of the immersion tube must be immersed in the flowing medium.

3. Electrical connection

When carrying out the electrical connections, follow the relevant regulations (VDE 0100).

Connect the thermostat, following the connection diagrams and paying special attention to the labels in the housing cover of each thermostat.

1. Open the housing.
2. Pass the connecting cable (Ø 5 to 10 mm, cross section of cable max. 2.5 mm²) through the cable gland of the housing and then connect it to the terminals according to the connection diagram.
3. Connect the protective earth conductor to the housing terminal "PE".

▷ Make sure that the reset button of devices featuring a lockout function is free to move.

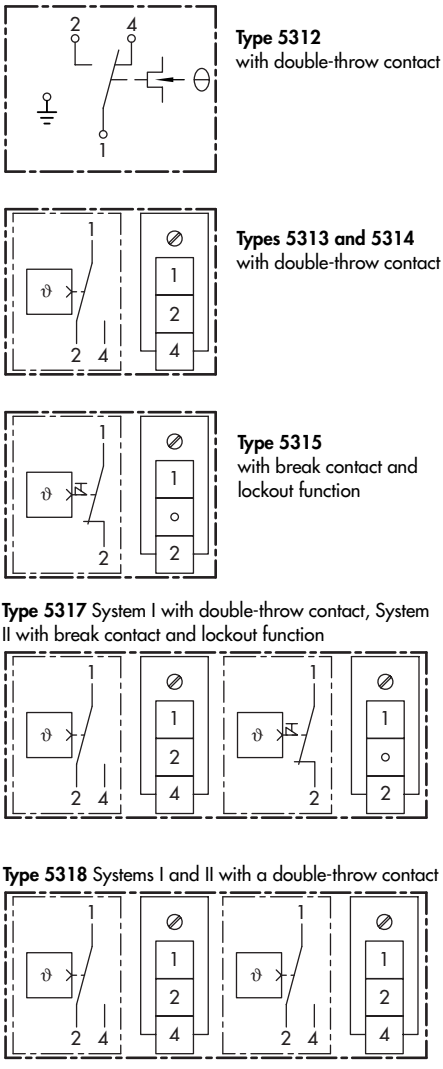


Fig. 2 · Connection diagrams

4. Operation

4.1 Set point adjustment

For temperature monitors (TM) and safety temperature monitors (STM), use a screwdriver to adjust the desired set point temperature according to the scale. With Types 5313, 5315, 5317 and 5318, the housing cover must first be removed.

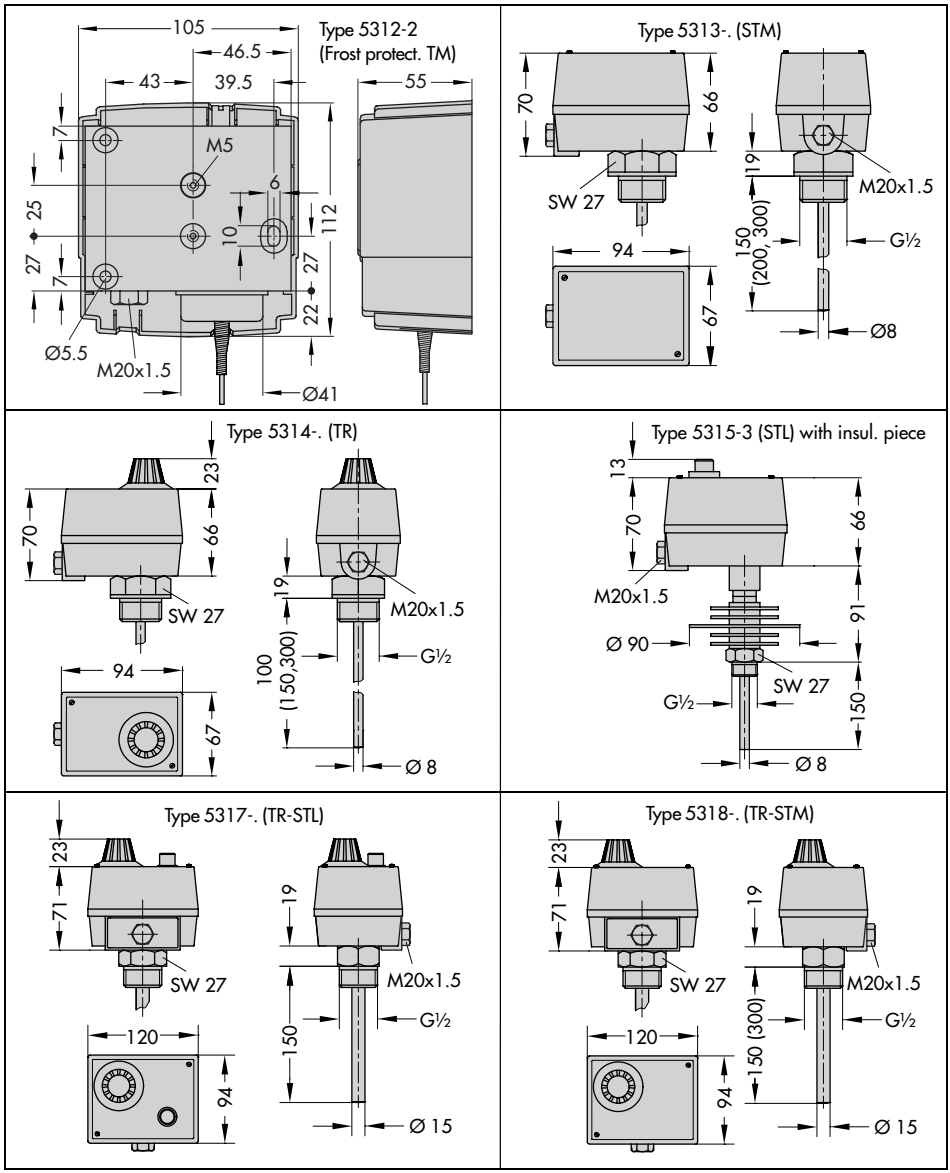
The adjustment can be secured, tightening the lead-sealable screws located in the housing cover.

For temperature regulators (TR), adjust the set point externally, using the rotary knob.

4.2 Resetting

For the safety temperature limiters (STL), the switching contact is mechanically locked when the temperature exceeds the adjusted set point limit value. When the temperature falls below the limit value and the switching differential, the thermostat can be reset by pressing the reset button. To do so, unscrew the protective cap on the housing cover.

5. Dimensions in mm



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