

## T 5206 EN

**Single thermostats: Type 5343 (STM), Type 5344 (TR), Type 5345 (STL)**

**Double thermostats: Type 5347 (TR/STL), Type 5348 (TR/STM), Type 5349 (STM/STL)**



### Application

Typetested thermostat for temperature control in heat-generating plants and for use in HVAC applications

Thermostats functioning according to the liquid expansion principle with thermowells (accessories)

### Special features

- Can be mounted either as a contact thermostat or as a thermostat with thermowell
- Easy to wire using spring-clamp terminals
- Stable switching point thanks to ambient temperature compensation
- Degree of protection IP 54

### Safety temperature monitors (STM)

- Snap-action switch and automatic reset
- Set point can be adjusted with a screwdriver after opening the housing
- The electric circuit is opened when the measuring system fails

### Temperature regulators (TR)

- Snap-action switch for temperature control
- External set point adjustment at rotary knob
- Set point range can be mechanically limited

### Safety temperature limiters (STL)

- Snap-action switch
- Reset by unlocking with a screwdriver
- Set point can be adjusted with a screwdriver after opening the housing
- The electric circuit is opened when the measuring system fails

### Typetesting

The thermostats are tested by the German technical surveillance association TÜV according to DIN EN 14597.

The corresponding DIN register numbers are listed in the Mounting and Operating Instructions ► EB 5206.



## Versions

### Safety temperature monitors (STM)

Type 5343-1	Set point range	0 to 60 °C
Type 5343-2	Set point range	40 to 100 °C
Type 5343-3	Set point range	70 to 130 °C
Type 5343-4	Set point range	35 to 95 °C

### Temperature regulators (TR)

Type 5344-1	Set point range	0 to 120 °C
Type 5344-2	Set point range	20 to 150 °C

### Safety temperature limiters (STL)

Type 5345-1	Set point range	70 to 130 °C
Type 5345-2	Set point range	30 to 90 °C

### Double thermostats TR/STL

Type 5347-1	Set point range (TR)	0 to 120 °C
	Set point range (STL)	70 to 130 °C
Type 5347-2	Set point range (TR)	0 to 120 °C
	Set point range (STL)	30 to 90 °C

### Double thermostats TR/STM

Type 5348-1	Set point range (TR)	0 to 120 °C
	Set point range (STM)	70 to 130 °C
Type 5348-2	Set point range (TR)	0 to 120 °C
	Set point range (STM)	40 to 100 °C

### Double thermostat STM/STL

Type 5349-1	Set point range (STM)	70 to 130 °C
	Set point range (STL)	70 to 130 °C

## Principle of operation

### – Safety temperature monitors (STM)

A snap-action switch in the STM is triggered when the temperature at the temperature sensor rises above the adjusted set point. When the temperature falls below the set point by approximately 8 K, the switch returns to its original position.

The changeover contact interrupts the connections 2 and 4 and connects the connections 1 and 2 when the temperature at the temperature sensor falls below  $-20\text{ °C}$ . The snap-action switch automatically returns to the original position as soon as the temperature at the temperature sensor rises above  $-20\text{ °C}$  again. The snap-action switch is triggered when the capillary tube breaks.

### – Temperature regulators (TR)

The snap-action switch is triggered when the temperature at the temperature sensor rises above the adjusted set point. When the temperature falls below the set point by approximately 4 K, the switch returns to its original position.

### – Safety temperature limiters (STL)

The snap-action switch is triggered and locked when the temperature at the temperature sensor rises above the adjusted set point. When the temperature falls below the set point by approximately 10 %, the snap-action switch can be unlocked manually.

The changeover contact interrupts the connections 2 and 4 and connects the connections 1 and 2 when the temperature at the temperature sensor falls below  $-20\text{ °C}$ . The STL automatically unlocks as soon as the temperature at the temperature sensor rises above  $-20\text{ °C}$ .

The snap-action operation is triggered and remains in this position when the capillary tube breaks. It is not possible to unlock the device in this case.

## Mounting

Wall mounting or mounting as a contact thermostat using a strap (for 15 to 100 mm pipe diameters)

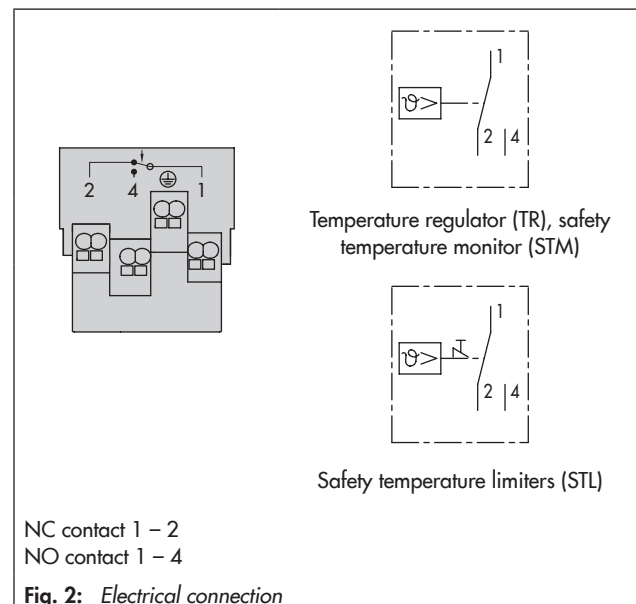
Thermowell mounting with extendable capillary (up to 2000 mm)

## Mounting orientation

**Contact thermostat:** the thermostat must not be suspended with the bottom of the housing (containing the bulb) facing upwards.



**Thermostat with thermowell:** any position is possible.

## Electrical connection



## Technical data

**Table 1:** General technical data · Types 5343, 5344, 5345, 5347, 5348 and 5349

Single thermostats: Type 5343 (STM), Type 5344 (TR), Type 5345 (STL)	
Double thermostats: Type 5347 (TR/STL), Type 5348 (TR/STM), Type 5349 (STM/STL)	
Permissible ambient temperature	
Transportation and storage	-30 to +80 °C
Service	Max. 80 °C
Pipe temperature when mounted as a contact thermostat	Max. 120 °C
Sensor length/diameter	87 mm/6 mm
Capillary tube length	2000 mm
Degree of protection	IP54 according to EN 60529
Cable entry	M20x1.5 cable gland, suitable for 6 to 12 mm cable diameter
Minimum switching capacity	AC/DC = 24 V, 100 mA
Maximum switching capacity	
Temperature regulator (TR), safety temperature monitor (STM)	With 230 V AC +10 % NC contact: 16 A (2.5); cos φ = 1 (0.6) NO contact: 6.3 A (2.5); cos φ = 1 (0.6)
	With 230 V DC +10 % NC contact: 0.25 A NO contact: 0.25 A
Safety temperature limiter (STL)	With 230 V AC +10 % NC contact: 16 A (2.5); cos φ = 1 (0.6) Signal contact: 2 A (2.5); cos φ = 1 (0.4)
	With 230 V DC +10 % NC contact: 0.25 A Signal contact: 0.25 A
Influence of mean ambient temperature based on the set point	A shift of the switching point arises when the ambient temperature at the knob and at the capillary tube deviates from the calibration ambient temperature of +22 °C: Higher ambient temperature → Lower switching point Lower ambient temperature → Higher switching point This influence is minimized by temperature compensation.
Electrical connection	Spring-cage terminals, 0.75 to 2.5 mm <sup>2</sup> wire cross-section
Materials	
Bottom section of the housing	PA (reinforced)
Housing cover	ABS with window (PMMA)
Temperature sensor, capillary tube	Cu (copper)
Weight	Single thermostat approx. 0.225 kg Double thermostat approx. 0.45 kg
Conformity	
Testing according to DIN EN 14597 (Types 5343, 5344 and 5345)	

<sup>1)</sup> No EAC compliance for Type 5349

**Table 2:** Technical data (depending on type)

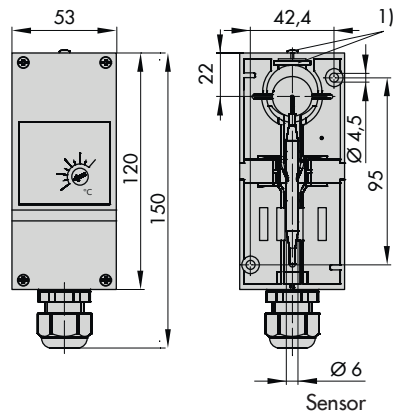
Single thermostat	Function	Set point range	Switching differential	Switching point accuracy			Max. medium temperature
5343-1	STM	0 to +60 °C	8 K	Range: 0 to 25 °C	0 K	-8.5 K	85 °C
				Range: 25 to 35 °C	0 K	-6.0 K	
				Range: 35 to 60 °C	0 K	-8.5 K	
5343-2	STM	40 to 100 °C	8 K	Range: 40 to 100 °C	0 K	-8.5 K	125 °C
5343-3	STM	70 to 130 °C	8 K	Range: 70 to 130 °C	0 K	-8.5 K	155 °C
5343-4	STM	35 to 95 °C	8 K	Range: 35 to 95 °C	0 K	-8.5 K	120 °C
5344-1	TR	0 to 120 °C	3 K	Range: 0 to 80 °C	+7.2 K	-7.2 K	145 °C
				Range: 80 to 120 °C	+3.6 K	-3.6 K	
5344-2	TR	20 to 150 °C	4 K	Range: 20 to 106 °C	+7.8 K	-7.8 K	175 °C
				Range: 106 to 150 °C	+3.9 K	-3.9 K	
5345-1	STL	70 to 130 °C	8 K	Range: 70 to 130 °C	+8.5 K	-8.5 K	155 °C
5345-2	STL	30 to 90 °C	8 K	Range: 30 to 90 °C	0 K	-8.5 K	115 °C
Double thermostat	Function	Set point range	Switching differential	Switching point accuracy			Max. medium temperature
5347-1	TR/STL	TR: 0 to 120 °C	3 K	Range: 0 to 80 °C	+7.2 K	-7.2 K	145 °C
		STL: 70 to 130 °C		8 K	Range: 80 to 120 °C	+3.6 K	
		STL: 70 to 130 °C	8 K	Range: 70 to 130 °C	0 K	-8.5 K	
5347-2	TR/STL	TR: 0 to 120 °C	3 K	Range: 0 to 80 °C	+7.2 K	-7.2 K	115 °C
		STL: 30 to 90 °C		8 K	Range: 80 to 120 °C	+3.6 K	
		STL: 30 to 90 °C	8 K	Range: 30 to 90 °C	0 K	-8.5 K	
5348-1	TR/STM	TR: 0 to 120 °C	3 K	Range: 0 to 80 °C	+7.2 K	-7.2 K	145 °C
		STM: 70 to 130 °C		8 K	Range: 80 to 120 °C	+3.6 K	
		STM: 70 to 130 °C	8 K	Range: 70 to 130 °C	0 K	-8.5 K	
5348-2	TR/STM	TR: 0 to 120 °C	3 K	Range: 0 to 80 °C	+7.2 K	-7.2 K	125 °C
		STM: 40 to 100 °C		8 K	Range: 80 to 120 °C	+3.6 K	
		STM: 40 to 100 °C	8 K	Range: 40 to 100 °C	0 K	-8.5 K	
5349-1	STM/STL	STM: 70 to 130 °C	8 K	Range: 70 to 130 °C	0 K	-8.5 K	145 °C
		STL: 70 to 130 °C		8 K	Range: 70 to 130 °C	0 K	

**Table 3:** Properties of the measuring fluid

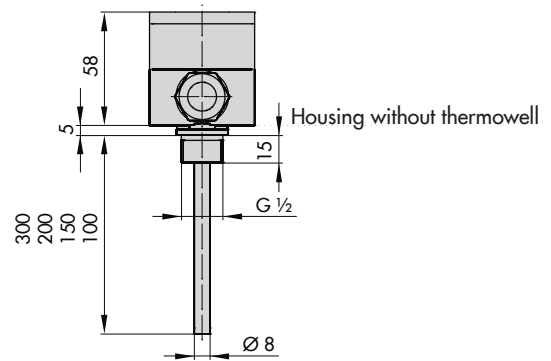
Dangerous reaction	No
Ignition temperature	375 °C
Water hazard	Class 1, slightly contaminating
Toxicological specifications	
Irritant	No
Health hazard	No
Toxic	No

Single thermostats

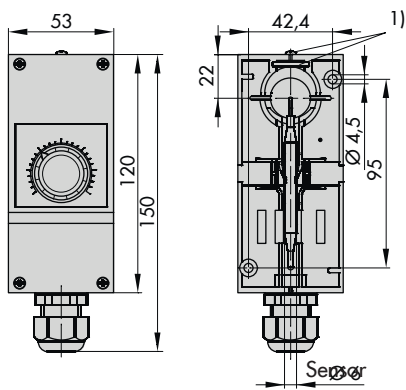
Type 5343 Safety Temperature Monitor (STM)



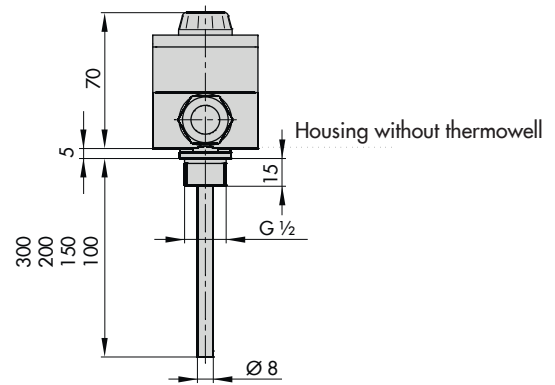
Dimensions with thermowell (accessories)



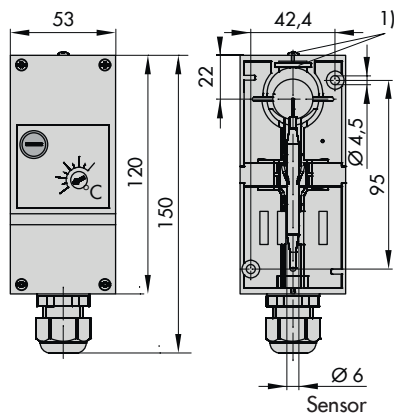
Type 5344 Temperature Regulator (TR)



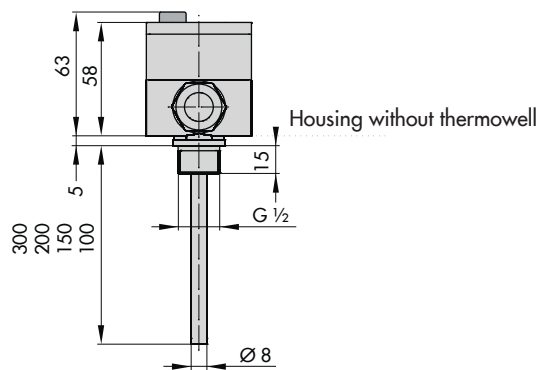
Dimensions with thermowell (accessories)



Type 5345 Safety Temperature Limiter (STL)



Dimensions with thermowell (accessories)

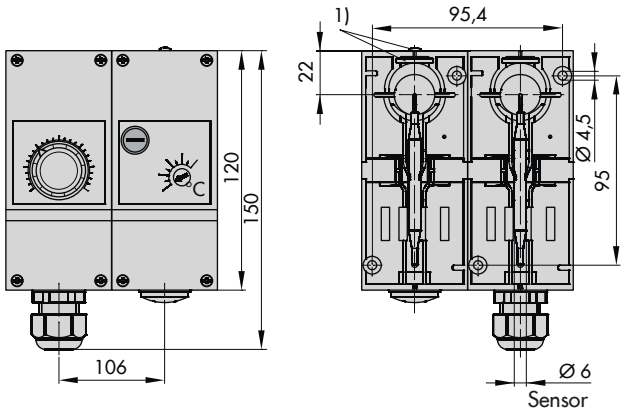


<sup>1)</sup> Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)

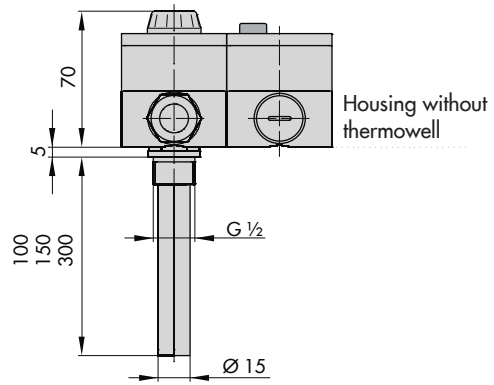
Fig. 3: Dimensions in mm · Single thermostats

Double thermostats

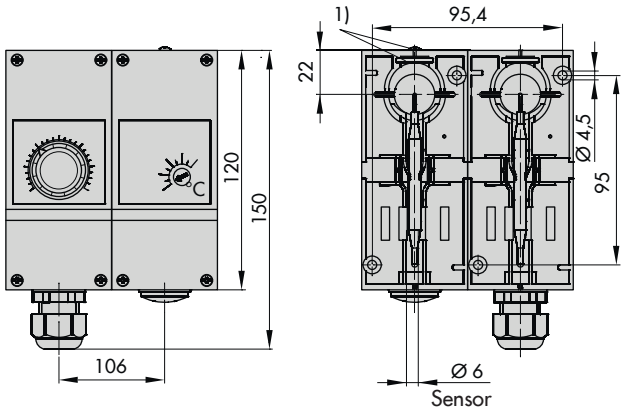
Type 5347 Double Thermostat TR/STL



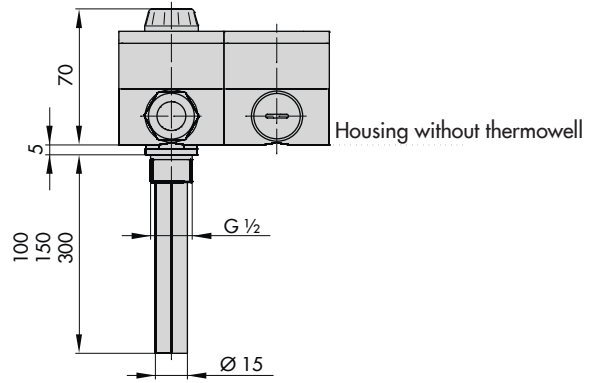
Dimensions with thermowell (accessories)



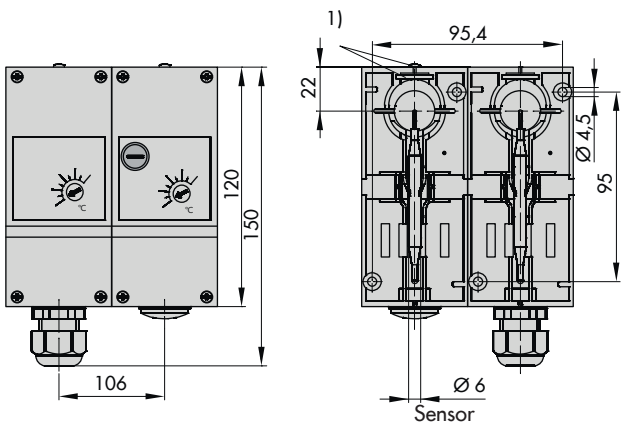
Type 5348 Double Thermostat TR/STM



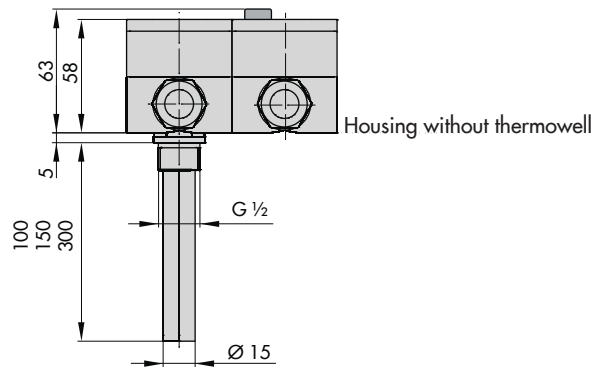
Dimensions with thermowell (accessories)



Type 5349 Double Thermostat STM/STL



Dimensions with thermowell (accessories)



1) Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)

Fig. 4: Dimensions in mm · Double thermostats

## Accessories

Thermowell for single thermostat		Max. pressure at 150 °C	Order no.
Nickel-plated brass · CuZn (2.0401)			
	100x8 mm	48 bar	1400-9844
	150x8 mm	48 bar	1400-9845
	200x8 mm	48 bar	1400-9846
CrNiMo steel (1.4571)			
	100x8 mm	88 bar	1400-9848
	150x8 mm	88 bar	1400-9849
	300x8 mm	88 bar	1400-9850
Thermowell for double thermostat		Max. pressure at 150 °C	Order no.
Nickel-plated brass · CuZn (2.0401)			
	100 x (2x8) mm	48 bar	1400-9901
	150 x (2x8) mm	48 bar	1400-9851
CrNiMo steel (1.4571)			
	100x15 mm	48 bar	1402-0340
	150x15 mm	48 bar	1400-9853
	300x15 mm	48 bar	1400-9854

### **i** Note

The scope of delivery of the thermowell includes the following parts:

- A clip to fasten the capillary tube to the thermowell (see ► EB 5206)
- A small metal plate with screw to attach the thermostat to the thermowell (see ► EB 5206)

Strap		Order no.
Strap for mounting the contact thermostat (15 to 100 mm pipe diameter)		1400-9865

## Ordering text

Type 534...-... Thermostat

### - Version

Single thermostat/double thermostat

### - Control function

STM, STL, TR

TR/STL, TR/STM, STM/STL

### - Temperature range

0 to 60 °C (STM)

40 to 100 °C (STM)

70 to 130 °C (STM, STL, STM/STL)

35 to 95 °C (STM)

0 to 120 °C (TR)

20 to 150 °C (TR)

30 to 90 °C (STL)

0 to 120 °C/70 to 130 °C (TR/STL, TR/STM)

0 to 120 °C/30 to 90 °C (TR/STL)

0 to 120 °C/40 to 100 °C (TR/STM)

## Associated mounting and operating instructions

- Types 534x: [▶ EB 5206](#)

## Associated Information Sheet

- Sensors and thermostats [▶ T 5200](#)