

T 5206 EN

Single thermostats: Type 5343 STM, Type 5344 TR, Type 5345 STL

Double thermostats: Type 5347 TR/STL, Type 5348 TR/STM and Type 5349 STM/STL



Application

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



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

Safety temperature monitor (STM)

- Snap-action switch and automatic reset
- Set point can be adjusted with a screwdriver after opening the housing
- Snap-action switch triggered when the capillary tube breaks

Temperature regulator (TR)

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

Safety temperature limiter (STL)

- Snap-action switch
- Reset by unlocking with a screwdriver
- Set point can be adjusted with a screwdriver after opening the housing
- Snap-action switch triggered when the capillary tube breaks

Testing according to DIN EN 14597



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

The Types 5343, 5344 and 5345 Thermostats are tested by the German technical surveillance association TÜV according to DIN EN 14597. Tested versions are indicated on the nameplate. The corre-

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

Versions

- Safety temperature monitor (STM)
- Temperature regulator (TR)
- Safety temperature limiter (STL)
- Double thermostat TR/STL
- Double thermostat TR/STM
- Double thermostat STM/STL

Principle of operation

Single thermostat

The thermostat is equipped with a changeover contact. When the thermostat is triggered, the connection between connections 1 and 2 are interrupted and the connections 1 and 4 are connected.

⇒ See ► EB 5206.

Safety temperature monitor (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 1 and 2 and connects the connections 1 and 4 when the temperature at the temperature sensor falls below -20 °C. The snap-action switch automatically returns to the original position as soon as the temperature at the temperature sensor rises above -20 °C again.

The snap-action switch is triggered when the capillary tube breaks.

Temperature regulator (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 limiter (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 1 and 2 and connects the connections 1 and 4 when the temperature at the temperature sensor falls below -20 °C. The STL automatically unlocks as soon as the temperature at the temperature sensor rises above -20 °C again.

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.

Double thermostat

Double thermostats are two thermostats that work independently but share the same housing. The principle of operation is the same as that of the single thermostat. Each thermostat has its own capillary tube.

TR/STL is the combination of a temperature regulator and safety temperature limiter.

TR/STM is the combination of a temperature regulator and safety temperature monitor.

STM/STL is the combination of a safety temperature monitor and safety temperature limiter.

Installation

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

Thermowell mounting with extendable capillary tube (up to 2000 mm)

Mounting position

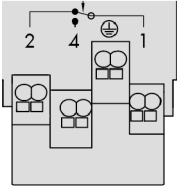
Contact thermostat:

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

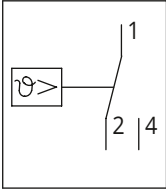
Thermostat with thermowell:

Any mounting position is possible.

Electrical connection



Temperature regulator (TR) · Safety temperature monitor (STM):



Safety temperature limiter (STL):

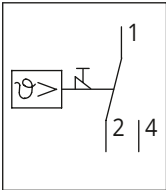


Fig. 1: *Electrical connection*

Technical data

Table 1: General technical data



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	
During use	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)	With 230 V AC +10 %	NC contact: 16 A (2.5) $\cos \varphi = 1$ (0.6) NO contact: 6.3 A (2.5) $\cos \varphi = 1$ (0.6)
	With 230 V DC +10 %	NC contact: 0.25 A NO contact: 0.25 A
Safety temperature monitor (STM)	With 230 V AC +10 %	NC contact: 16 A (2.5) $\cos \varphi = 1$ (0.6) NO contact: 6.3 A (2.5) $\cos \varphi = 1$ (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) $\cos \varphi = 1$ (0.6) NO contact: 2 A (2.5) $\cos \varphi = 1$ (0.4)
	With 230 V DC +10 %	NC contact: 0.25 A NO 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 ² 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 (STM, TR and STL)		

Table 2: *Technical data · Safety temperature monitors (STM)*

Type	Set point range	Hysteresis	Switching point accuracy		Maximum medium temperature
5343-1	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 K	
			Range: 35 to 60 °C	0 K -8.5 K	
5343-2	40 to 100 °C	8 K	Range: 40 to 100 °C	0 K -8.5 K	125 °C
5343-3	70 to 130 °C	8 K	Range: 70 to 130 °C	0 K -8.5 K	155 °C
5343-4	35 to 95 °C	8 K	Range: 35 to 95 °C	0 K -8.5 K	120 °C

Table 3: Technical data · Temperature regulators (TR)

Type	Set point range	Hysteresis	Switching point accuracy		Maximum medium temperature
5344-1	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	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	

Table 4: Technical data · Safety temperature limiters (STL)

Type	Set point range	Hysteresis	Switching point accuracy		Maximum medium temperature
5345-1	70 to 130 °C	8 K	Range: 70 to 130 °C	0 K -8.5 K	155 °C
5345-2	30 to 90 °C	8 K	Range: 30 to 90 °C	0 K -8.5 K	115 °C

Table 5: Technical data · Double thermostat (TR/STL)

Type	Set point range	Hysteresis	Switching point accuracy		Maximum medium temperature
5347-1	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: 70 to 130 °C	
5347-2	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: 30 to 90 °C	

Table 6: Technical data · Double thermostat (TR/STM)

Type	Set point range	Hysteresis	Switching point accuracy		Maximum medium temperature
5348-1	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: 70 to 130 °C	
5348-2	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: 40 to 100 °C	

Table 7: Technical data · Double thermostat (STM/STL)

Type	Set point range	Hysteresis	Switching point accuracy		Maximum medium temperature
5349-1	STM: 70 to 130 °C	8 K	Range: 70 to 130 °C	0 K -8.5 K	145 °C
	STL: 70 to 130 °C		Range: 70 to 130 °C	0 K -8.5 K	

Table 8: Technical data · 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

Dimensions

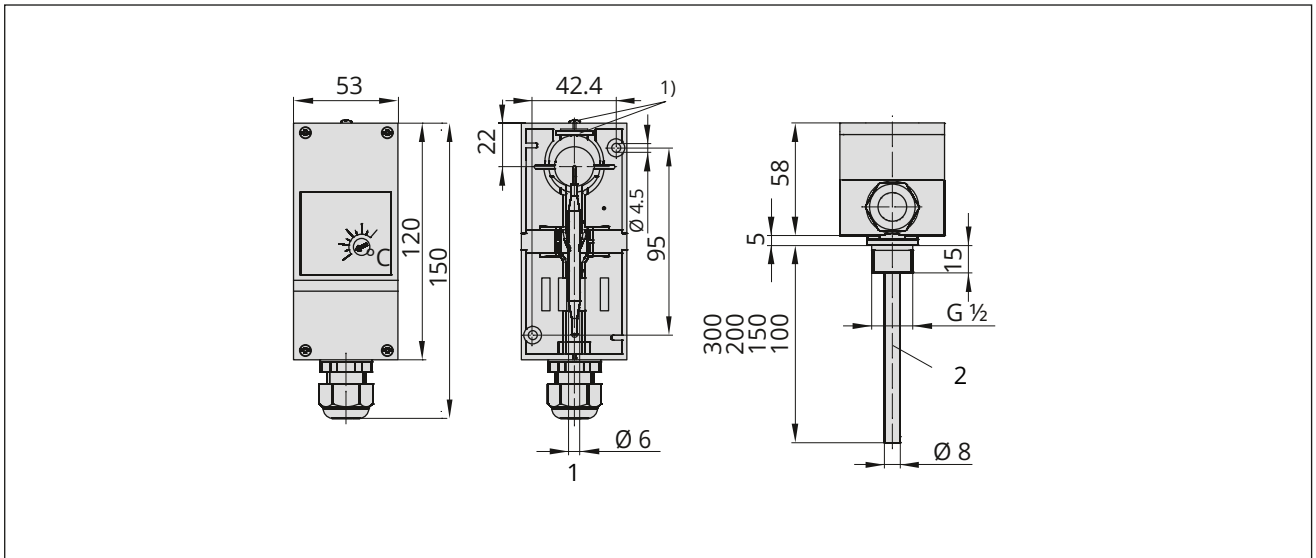


Fig. 2: Dimensions in mm · Type 5343 Safety Temperature Monitor STM

- 1) Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)
- 1 Sensor
- 2 Thermowell (accessories)

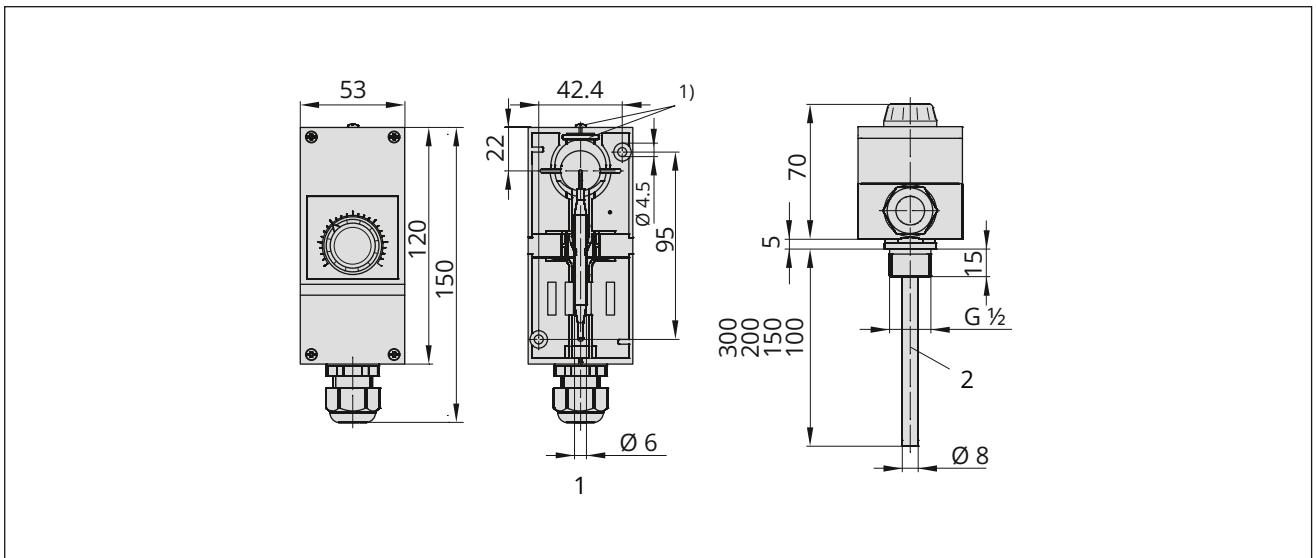


Fig. 3: Dimensions in mm · Type 5344 Temperature Regulator TR

- 1) Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)
- 1 Sensor
- 2 Thermowell (accessories)

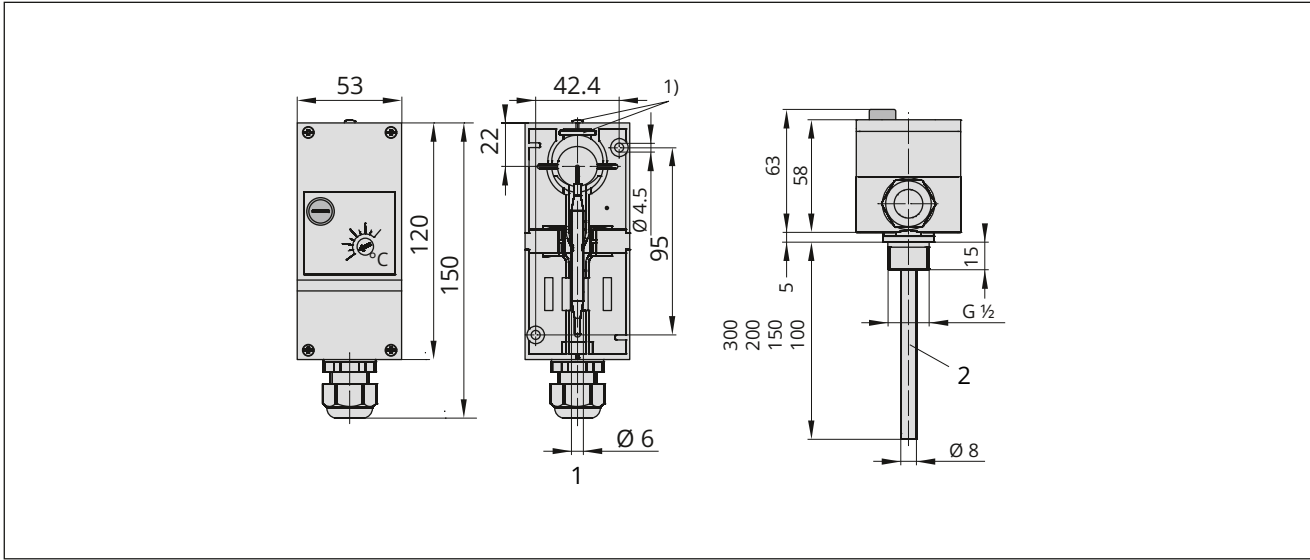


Fig. 4: Dimensions in mm · Type 5345 Safety Temperature Limiter STL

- 1) Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)
- 1 Sensor
- 2 Thermowell (accessories)

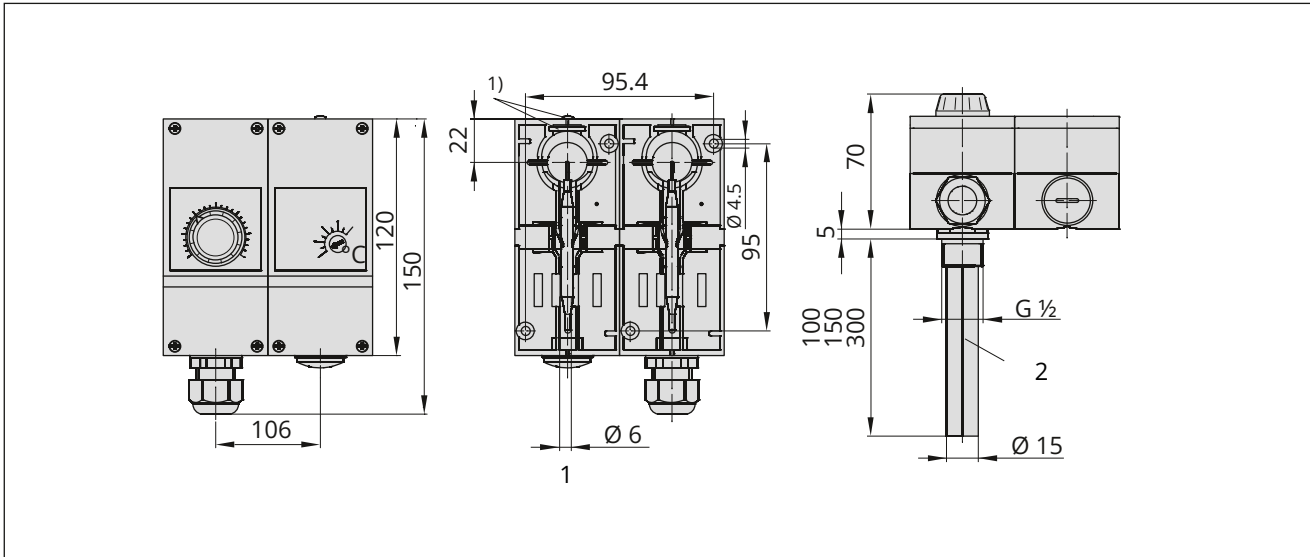


Fig. 5: Dimensions in mm · Type 5348 Double Thermostat TR/STM

- 1) Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)
- 1 Sensor
- 2 Thermowell (accessories)

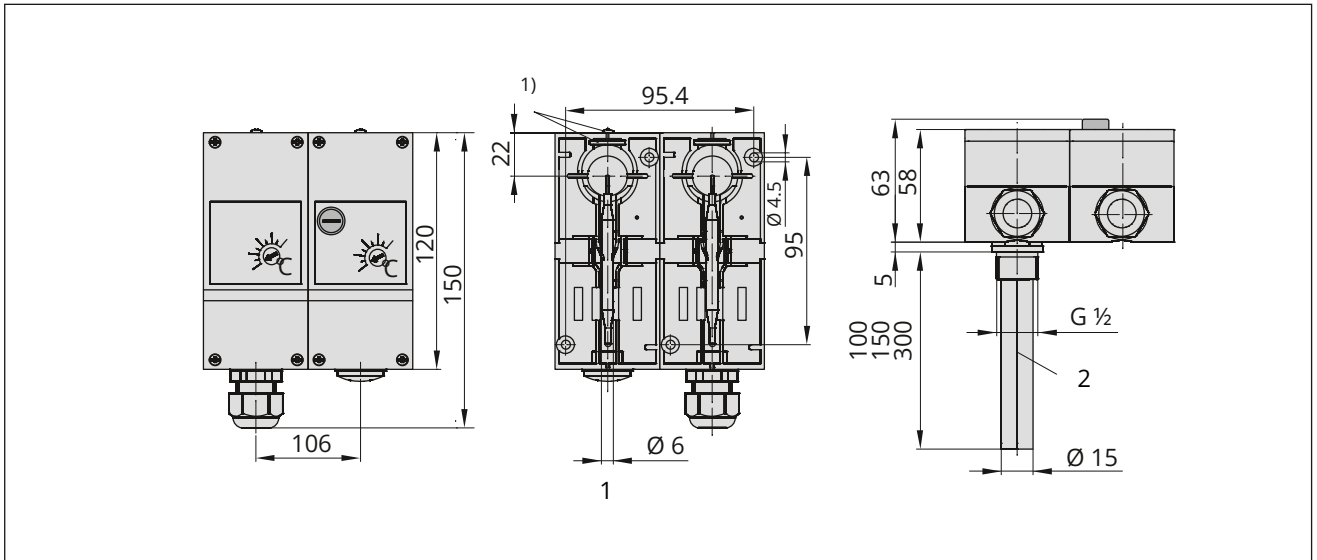


Fig. 6: Dimensions in mm · Type 5349 Double Thermostat STM/STL

- 1) Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)
- 1 Sensor
- 2 Thermowell (accessories)

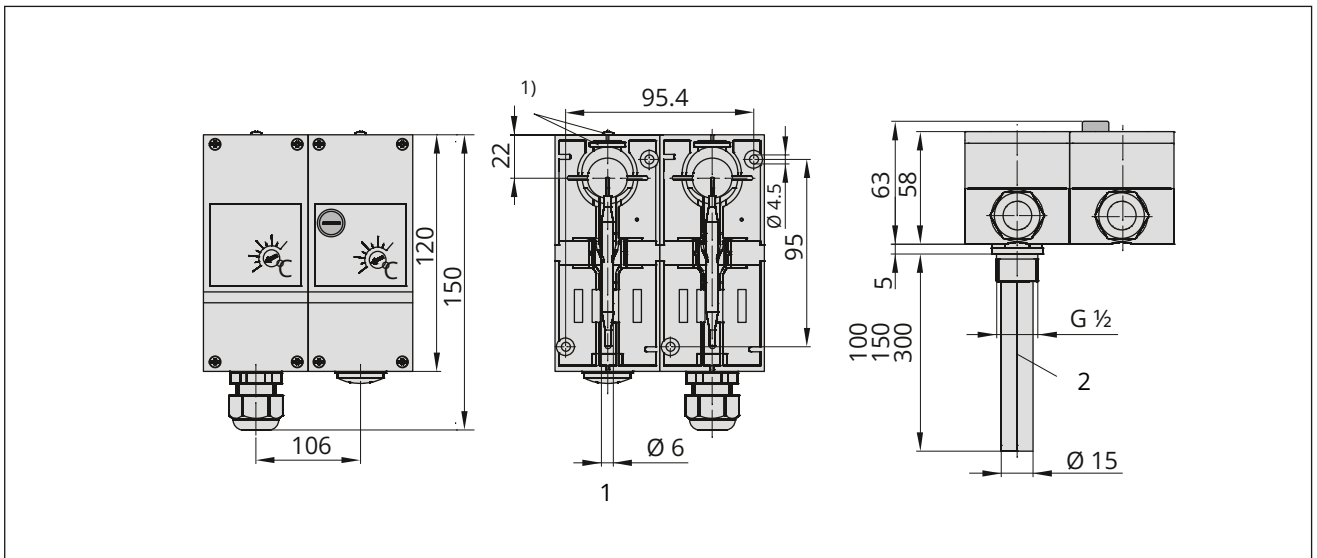


Fig. 7: Dimensions in mm · Type 5349 Double Thermostat STM/STL

- 1) Metal plate and screw for fastening the thermostat onto the thermowell (wall mounting)
- 1 Sensor
- 2 Thermowell (accessories)

Accessories

Table 9: Accessories

Thermowell		Max. pressure at 150 °C	Mat. no.
For single thermostats			
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
For double thermostats			
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	1402-9853
	300x15 mm	48 bar	1402-9854
Strap			
For mounting the contact thermostat (15 to 100 mm pipe diameter)			1400-9865

i Note

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

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

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
 - 40 to 100 °C
 - 70 to 130 °C
 - 35 to 95 °C
 - 0 to 120 °C
 - 20 to 150 °C
 - 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)

Related documents

- Types 5343, 5344, 5345, 5347, 5348 and 5349 ▶ EB 5206

- Sensors and thermostats ▶ T 5200

