STT Series

The frost protection thermostat STT is used for air, or water-side temperature monitoring of heat exchangers, hot water circulation systems, water / air heaters, e.g. in ventilation and air conditioning systems and for the prevention of frost damage. The product features a small operating differential and high reproducibility. Resetting of the STT900 to STT904 occurs automatically, and the STT910-STT914 are designed to be reset manually by a reset button.
The output would typically switch off ventilators, close outside air flaps, open up air heating valves, switch on air heat pumps, switch off refrigeration compressors, switch off air humidifiers, or initiate a visual and / or acoustic frost alarm.
Location of these items in not critical, even in harsh environments as they are all rated to IP65.

SPECIFICATIONS

Switching capacity: . . . . . 10 (2) A, 250Vac. gold-plated switching contacts allow signal voltage switching < 24 V
Setting range: . . . . . -10 °C ...+ 15 °C / 14 °F... 59 °F, factory setting to w = 5 °C (41 °F)
Operating difference: . . . . . 2 ± 1 K (3.6 ± 1.8 °F)
Reproducibility: . . . . . ± 0.5 K (± 0.9 °F)
Contact: . . . . . .dustproof micro switch as single-pole potential-free changeover contact. Sensor responding length: ca. 40 cm
Length of capillary tube: . . . . . see descriptions of types (0.6 …12 m)
Resetting:
STT900 . . . . . STT904 automatic
STT910 . . . . . STD914 manual
Permissible medium:
air . . . . . (STT900, STT902 - STT904 / STT910, STT912 – STT914)
water . . . . . (STT901 / STT911)
Ambient temperatures:
maximum operating temperature: . . . + 70 °C (158 °F)
minimum operating temperature: . . . . . w + min. 2 °C (min. 3.6 °F)
Storage / transport: . . . . . - 30 ...+ 70 °C (- 22 ...+ 158 °F)
Process connection: . . . . . .by mounting clamps (included in the scope of delivery)
Connecting head: . . . . . plastic, material polyamide, 30 % glass-globe-reinforced, color pure white (similar RAL 9010)
Dimensions: . . . . . 108 x 72.5 x 70 mm
Other materials:
Mechanical sheet metal parts: . . . . . galvanized steel
Capillary tube: . . . . . copper
Capillary tube filling: . . . . . .R 507
Switching contacts: . . . . . Ag / Ni (90% / 10%) gold-plated (3µm)
Installation length: . . . . . .arbitrary
Electrical connection: . . . . . 0.14 - 2.5 mm²
Cable union: . . . . . M 20 x 1.5, including strain relief
Protection class: . . . . . .I (according to EN 60 730-1)
Protection type: . . . . . .IP 65 (according to EN 60 529)
Standards: . . . . . .CE conformity, EMC directive 89 / 336 / EWG, Low-voltage directive 73 / 23 / EWG
Output Contact Function:
1 - 4 . . . . . danger of frost / sensor breakage
1 - 2 . . . . . .normal operation

NOTES

A preset set point value can be lead-sealed at the adjusting screw.

It is necessary to ensure that ambient temperature at the enclosure does not drop below the preset set point temperature.

This device must be operated in a non-precipitating pollutant-free ambience.

The switch within the STT has the following behavior: Contacts 1 - 4 close when the temperature falls below the preset temperature set point over a capillary tube length of at least 40 cm. Contacts 1 - 2 open simultaneously and can be used as a signal contact. Resetting (closing contact 1 – 2) occurs automatically when the temperature rises above the preset set point value again plus hysteresis.
With types STT910 – STT914 a reset must be instigated manually by pressing the reset button.

STT is "intrinsically safe", i.e. if the capillary tube is damaged the device automatically switches to heating function, i.e. contacts 1 - 4 close.

The temperature is detected over the entire sensor length (capillary tube). The gas-filled (R 507) membrane system and the capillary tube constitute one measuring unit, which is mechanically coupled to the micro switch.

INSTALLATION GUIDANCE

The capillary tube should be laid at the warm side of the air heater to to offer maximum protection. In the case of air coolers the device should be upstream of the air cooler. It should be fitted uniformly over the entire duct area at a distance of approximately 5 cm across the heat exchanger tubes.

For test purposes it is recommended to make a loop of approximately 20 cm directly underneath the enclosure and before entering the air duct.

To avoid damaging the capillary tube, a minimum bending radius of 20 mm must be observed. Installation is facilitated by using the mounting clamps, which are supplied.

Frost simulation: A frost condition can be simulated and the function of the devices can be tested by dipping the capillary tube testing loop into a pot filled with ice water.

STT Range Item Numbers and Order Codes

Item No.	Item reference	Description / Length of capillary	Control characteristics	Permissible medium
5127090000	STT910	STT910 Frost Stat M 0,6m	manual	air
5127080000	STT914	STT914 Frost Stat M 12m	manual	air
5127070000	STT912	STT912 Frost Stat M 3m	manual	air
5127060000	STT911	STT911 Frost Stat M 1,8m	manual	air / water
5127050000	STT913	STT913 Frost Stat M 6m	manual	air
5127040000	STT900	STT900 Frost Stat A 0,6m	automatically	air
5127030000	STT904	STT904 Frost Stat A 12m	automatically	air
5127020000	STT902	STT902 Frost Stat A 3m	automatically	air
5127010000	STT901	STT901 Frost Stat A 1,8m	automatically	air / water
5127000000	STT903	STT903 Frost Stat A 6m	automatically	air