

## FST

## Frost protection thermostat



### Summary

The frost protection thermostat is used for air- or water-side temperature monitoring at heat exchangers, water/air heaters, and for prevention of frost-caused damages.

### Application

- Air handling units, water distribution, hot water circuits.

### Function

The switch inside the frost protection thermostat acts (closes contacts C and 3) when the temperature falls below the preset temperature setpoint over a capillary tube length of at least 40 cm. Simultaneously contact C - 2 opens and can be used as a signal contact. Resetting follows automatically after the temperature rises above the preset setpoint value plus hysteresis (appr. 2 K) again (on type FST-xD-HR resetting must be done manually by pressing the reset button).

FST is “intrinsically safe”, i.e. in case of damaging the capillary tube or membrane system it automatically switches to the frost (alarm) state. The gas-filled (R507) membrane and the capillary tube constitute one measuring unit, which is mechanically coupled to the microswitch.

The capillary tube is laid at the warm side of the air heater to be protected, uniformly over the entire area at a distance of ca. 5 cm across of the heat exchanger tubes. For test purposes it is recommended to make a loop of ca. 20 cm directly underneath the enclosure and before entering the air duct. (This does not apply for outdoor installations!) To avoid damaging of the capillary tube, a minimum bending radius of 20 mm must be observed. Installation is facilitated by using the mounting clamps available under accessories.

The frost situation can be simulated and the functioning of the devices can be tested by dipping the capillary tube testing loop into a pot filled with ice water or using the test spray.

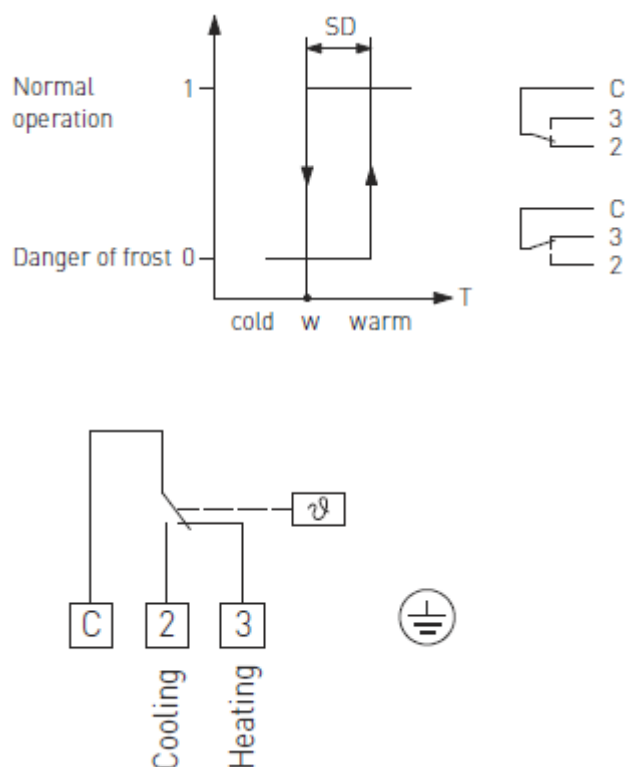
### Technical data

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Switching capacity	10 (2) A, 250 V AC, gold-plated contacts
Setting range	-10...15 °C, default value 5 °C
Hysteresis	2 +/-1 K
Reproducibility	+/-0.5 K

Contact	dustproof microswitch, single pole changeover contact
Sensor responding length	40 cm
Length of capillary tube	0.6 to 6 m, see table of types
Medium	air ( <b>FST-1/ 5/ 7/ 8</b> ), water ( <b>FST-3D</b> only)
Ambient temperatures	max. operating temp. 70 °C, min. operating temp w+min. 2 °C, storage and transport –30...70 °C
Cover	polyamide, 30% glass fibre reinforced, white, similar to RAL 9010
Dimensions	108 x 70 x 73.5 mm, see below
Other materials	mechanical parts: galvanized steel sheet metal capillary tube: copper capillary filling: R507 contacts: Ag/Ni (90%/10%), gold-plated 3 µm
Electrical connection	screw terminals for wires 0,14 – 2,5 mm <sup>2</sup>
Cable union	M20x1.5, incl. strain relief
Protection type	IP65
Standards	CE EMC directive 2004/108/EWG directive 2006/95/EWG

## Contacts



## Types

Type	Capillary length	Medium
<b>FST-1D</b>	6 m	air
<b>FST-3D</b>	1.8 m	air, water
<b>FST-5D</b>	3 m	air
<b>FST-7D</b>	12 m	air
<b>FST-8D</b>	0.6 m	air

**FST-xD** TW = sledování teploty; automatické přepínání  
**FST-xD-HR** TB = teplotní omezovač; ruční restart

### Příslušenství:

**MK-05-K** 6 ks montážních plastových svorek (součástí dodávky)  
**KRD-04** držák průchodky pro kapilární trubičku

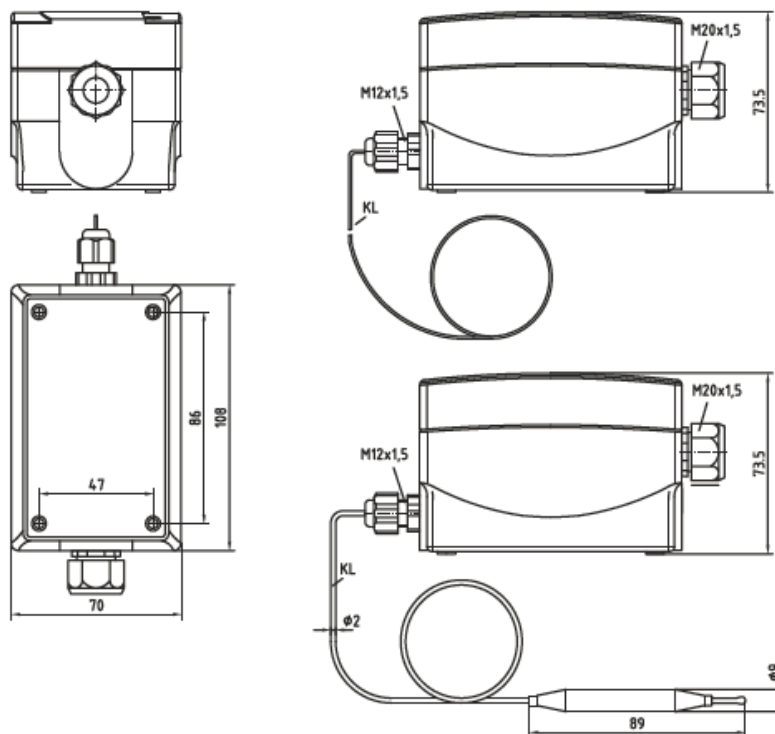
**TH-ms-01** měděná jímka 120 mm  
**TH-VA-02** nerezová jímka 120 mm

The most common type for heat register protection in air handling units is **FST-1D**. If more thermostats are linked together (for larger units) connect them in serial, so that if any of them responds alarm will be reported.

**FST-3D** provides capillary tube suitable for inserting into pockets, see drawing below.

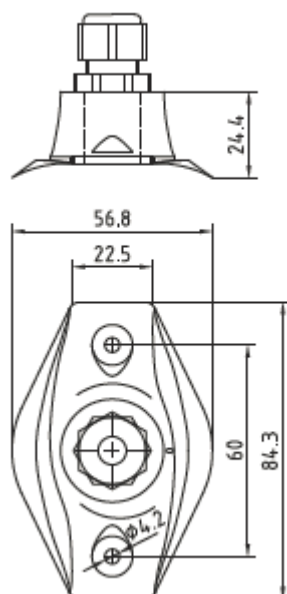
## Dimensions

FST-1/ 5/7/8



FST-3

## KRD-04



**MK-05-K**

