

Product overview

The frost protection thermostat TFR is used for downstream temperature monitoring of water air heaters in ventilation and air-conditioning systems to prevent frost damages. It has a small differential gap and a good repeatability. The reset can be done automatically. For model TFR...-R reset is made manually by a button.

The frost protection thermostat can be used to initiate the following frost protection functions:

- Stop fan
- Close outside air dampers
- Open heating coil valve 100%
- Start heating coil pump
- Switch-off chiller (condenser) and humidifier
- Trip visual and/or audible frost alarm


Types available

Type code	Type	Description
EXT-TN-1071382	TFR3	Capillary tube length 3m, automatic reset
EXT-TN-1071405	TFR3-R	Capillary tube length 3m, manual reset
EXT-TN-1071399	TFR6	Capillary tube length 6m, automatic reset
EXT-TN-1071412	TFR6-R	Capillary tube length 6m, manual reset

Technical data

Standards	CE conformity	- 2004/108/EG Electromagnetic compatibility - 2001/95/EG Product safety
	EN conformity	- EN60730-1:2002 EMC - EN60730-1:2002 Product safety
General Data	Set point adjustment range	-10...+15°C (factory setting is 5°C)
	Differential gap	≤ 2 ± 1°C
	Repeatability	±0.5°C
	Sensor operating length	Approximate 60cm
	Capillary tube length	3m or 6m (depend on type used)
	Switching output	Change over contact, max. AC 250V, max. 10A
	Contact material	Ag/Ni(90%/10%) gold plated (3µm)
	Reset	- TFR : automatically - TFR...-R : manually
	Admissible medium	Air
	Mounting length	Any
	Connecting terminal	Screwing terminal max. 2.5 mm ²
	Cable entry	Cable connection M16x1.5
	Protection class	IP65 according to EN60529
	Ambient temperature	w+mind. 2K...70°C (w=setpoint)
	Transport	-30...70°C / max. 85% RH, non-condensing
	Enclosure	Lower part : PA6 GK30
Material cover	Cover : ABS, transparent	
Capillary tube	Material : copper Capillary tube filling : R 507	

Security advice

The installation and assembly of electrical equipment may only be performed by a skilled electrician. Isolate installation before removal of cover (disconnect fuse) and protect against reconnection.

The modules must not be used with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people or animals.

Electrical connection

For the electrical connection, the technical data of the corresponding device is valid.

The device must be operated at a constant supply voltage. When switching the supply voltage on/off, power surges must be avoided on site.

Mounting advice

Withdrawable tray

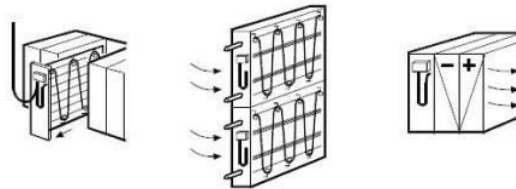
It is recommended to mount the frost protection thermostat on a special withdrawable tray directly downstream of the heating coil. The connecting cable must be long enough to enable the tray to be inserted and removed smoothly. For heating coils with a large cross section several frost protection thermostats can be fitted and connected in series. In such cases, the temperature set point is set individually for each frost protection thermostat.

Frost protection thermostat

The ambient temperature of frost protection thermostat housing (with the test loop) must be at least 2°C above the pre-adjusted set point. If this cannot be guaranteed (e.g. outdoors or in exposed spaces), housing and test loop must be installed inside the supply air unit.

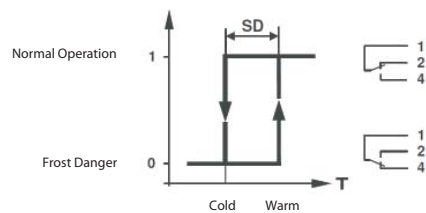
Capillary tube

The capillary tube must be mounted on the downstream side of the heating coil (and on the upstream side in case of cooling coils). It should be looped diagonally across the heat exchanger pipes at a distance of approximately 5cm and should cover the entire area evenly. For test purposes, it is recommended to have a loop of approximately 60cm directly beneath the housing outside the entry to the duct. To prevent damage to the capillary tube a minimum bending radius of 20mm must be ensured. Mounting can be facilitated by using the capillary tube clamps.

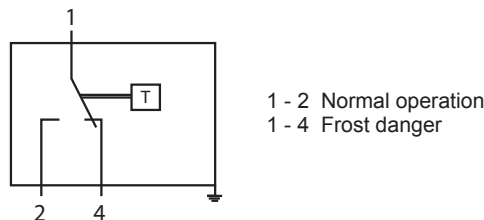


Function description

The frost protection thermostat trips when the temperature drops below the selected set point over a capillary length of 60 cm (contact 1-4 closes). Simultaneously contact 1-2 breaks and can be used as a signal contact. An automatic reset is made when the temperature exceeds the the adjusted set point again (contact 1-2 closes). For model TFR...-R manual reset is required by means of the reset button. The TFR... is "self-secured", i.e. in case of a capillary tube diaphragm damage, it switches automatically to the heating function. Contact 1-4 closes and can thus be used as an operating contact. The air temperature is measured over the full length of the capillary tube. The gas filled diaphragm system and the capillary tube form a unit of measurement which is mechanically linked to the micro-switch.



Terminal connection plan



Dimensions (mm)