

TFL 201: Frost protection monitor/limiter with capillary-tube sensor

How energy efficiency is improved

Avoiding frost damage in heating coils and ventilation ducts

Features

- Temperature monitoring in heating coils and air ducts
- Variants as monitors or limiters
- Copper capillary tube
- Switching point can be set internally
- Small switching difference
- With capillary-tube holders made of plastic

Technical data

Power supply		
Max. load	Terminal 1-2	230 V~, 10 (2.5) A (on the normally-closed contact)
	Terminal 1-4	230 V~ 2 (0.4) A

Parameters		
	Setting range	-10...15 °C
	Factory setting	5 °C
	Switching difference	1.5 K
	Tolerance of switching difference	Max. ±1 K
	Max. sensor temperature	120 °C
Time characteristic	Time constant in moving air (0.3 m/s) ¹⁾	Capillary tube length 1.5 m: 25 s
		Capillary tube length 3 m: 31 s
		Capillary tube length 6 m: 51 s

Ambient conditions		
	Ambient temperature	-5...70 °C
	Temperature of instrument head ²⁾	-5...70 °C
	Storage and transport temperature	-30...80 °C

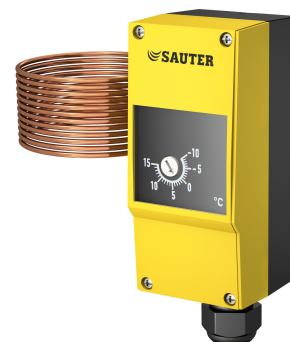
Construction		
	Connection terminals	Plug-in connectors
	Cable cross-section	Ø 0.75...2.5 mm ²
	Housing	Two sections, lower section black, upper section yellow, including inspection window
	Housing material	ABS, PMMA
	Weight	0.2 kg

Standards and directives		
	Type of protection	IP65 (EN 60529)
	Protection class	I (IEC 60730)
	EMC Directive 2006/95/EC	EN 60730-1 / EN 60730-2-9
	Low-voltage directive 2006/95/EC	EN 60730-1 / EN 60730-2-9

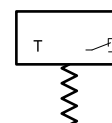
Overview of types				
Type	Function	Switching difference	Capillary tube	Capillary tube holder
TFL201F002	Monitor	1.5 K (±1 K)	3 m	3
TFL201F022	Limiter	1.5 K (±1 K)	3 m	3
TFL201F102	Monitor	1.5 K (±1 K)	1.5 m	3
TFL201F602	Monitor	1.5 K (±1 K)	6 m	6
TFL201F622	Limiter	1.5 K (±1 K)	6 m	6

¹⁾ The frost monitor always reacts to the coldest point (minimum length 7.5 cm (1.5 m), 15 cm (3 m) and 30 cm (6m))

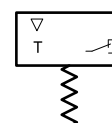
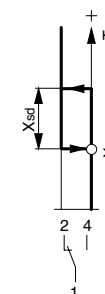
²⁾ The head of the instrument must be fitted in a warmer location than the sensor



TFL201F**2



TFL201F*02



TFL201F*22



Accessories

Type	Description
0300360014	Six holders for fitting the capillary tube

Description of operation

In the normal state, contacts 1-2 are closed. When the temperature falls below the lower change-over point (setpoint), the contacts switch from 1-2 to 1-4. When the temperature rises above the upper change-over point, the contacts switch from 1-4 back to 1-2.

F022 and F622 limiter with mechanical locking:

When the temperature has risen by the amount of switching difference X_{sd} again, the contacts can be manually reset (reset switch).

Intended use

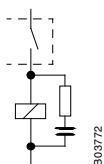
This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product regulations must also be adhered to. Changing or converting the product is not admissible.

Type key

F	X (capillary tube length)	Y (function)	Z (Index)
	0 = 3 m	0 = monitor	2
	1 = 1.5 m	2 = limiter	2
	6 = 6 m	-	2

Technical appendix



RC circuitry for inductive load

For the optimum RC circuitry, see the information from manufacturers of gates, relays, etc. If this is not available, the inductive load can be reduced by applying the following rule of thumb:

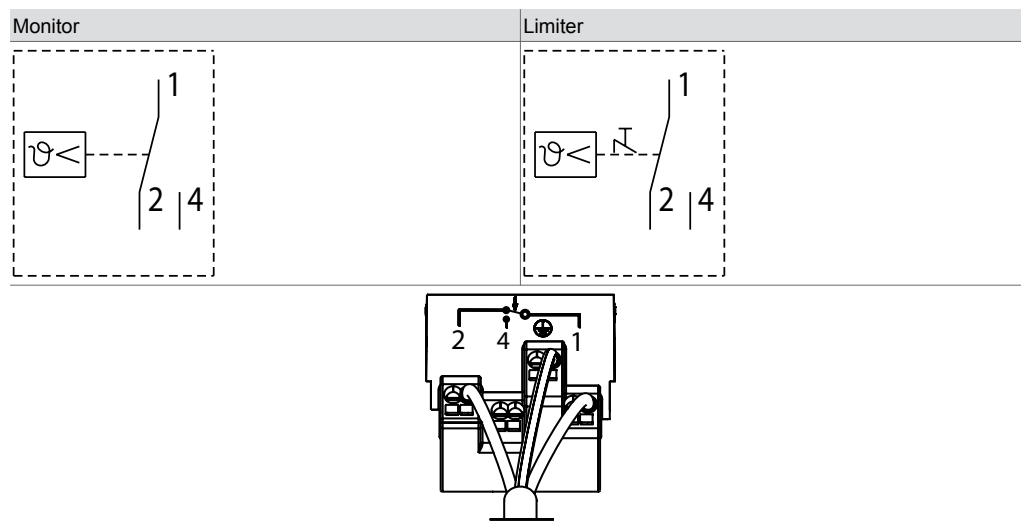
- Capacity of the RC circuitry (μF) equal to or greater than the operating current (A)
- Resistance of the RC circuitry (Ω) approx. the same as the resistance of the coil (Ω)

Disposal

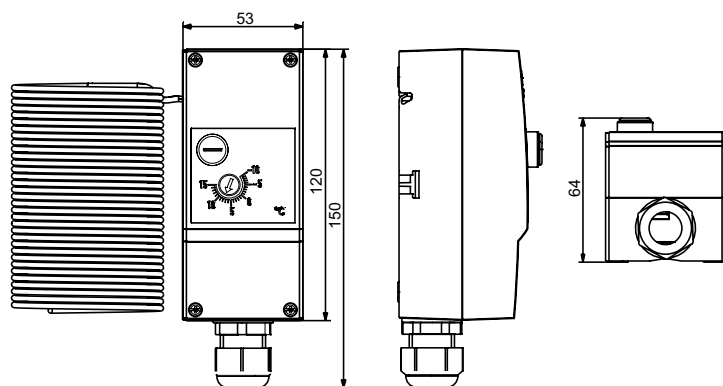
When disposing of the product, observe the currently applicable local laws.

More information on materials can be found in the Declaration on materials and the environment for this product.

Connection diagram



Dimension drawing



Accessories

0300360014

[mm]

