

Safety Limit Thermostats

RAK-ST...

Electromechanical STB according to DIN 3440

- Safety temperature limitation, with single-pole changeover microswitch
- Switching capacity contact connection 11-12 10 (2.5) A, AC 250 V
Terminal for alarm contact connection 11-13 0.5 A, AC 250 V
- Time constant conforming to DIN 3440
- 3 mounting choices: pipe, pocket or wall mounting
- Switch-off temperature can be checked through the viewing window in the housing
- Ambient temperature compensation for switching mechanism and capillary tube
- Fail-safe design, rupture of the capillary tube causes contact connection 11-12 to open
- Internal reset facility covered by removable threaded nipple

Use

Typical applications:

- Heat generation plant
- For general use in heating, ventilation and air conditioning plant

Function

When the switch-off temperature is reached on rising temperature, contact connection 11-12 changes over to contact connection 11-13 (alarm) and the thermostat remains tripped in this position. When the temperature of the medium falls by the value of the switching differential, the safety limit thermostat must be manually reset after removal of the threaded nipple.

Should the expansion liquid escape through a leak in the sensing system, the pressure in the diaphragm drops, causing the contact connection to mechanically 11-12 off.

Type summary

Standard-set	Switch-off temperature	Capillary tube length	Scope of delivery	Pocket length ¹⁾
RAK-ST.010FP	95 °C	700 mm	Pocket (for RAK....P) / mounting instruction / cable gland 16x1,5mm / Clamping band for max. pipe dia. 100 mm (for RAK..S)	100 mm
RAK-ST.020FP	100 °C			100 mm
RAK-ST.030FP	110 °C			100 mm
RAK-ST.1310P ²⁾	90...110 °C			100 mm
RAK-ST.1300P ²⁾	120...130 °C			100 mm
RAK-ST.1430S	80...100 °C	1600 mm		----

1) Pocket ALT-SB100, brass nickel-plated, PN10

2) According to DIN 3440

Accessories

Refer to Data Sheets N1193 and N1194.

Ordering

When ordering, please give type reference according to "Type summary" (standard set).

If the accessories required are not those included in the standard set, they can be ordered separately according to the type references given in Data Sheets N1193 and N1194.

Mechanical design

Housing

The base of the thermostat is made of PA (reinforced) and is designed for pipe, pocket or wall mounting; the electromechanical safety limit thermostat (STB) uses a capillary type sensing element.

The cover is made of ABS + PC and has a viewing window and a removable threaded nipple for resetting the thermostat.

The cable gland is M16x1.5 mm.

Notes

Mounting aid

Installation Instructions are enclosed in the package.

Mounting location

It must be ensured that there is sufficient clearance above the thermostat for seeing through the viewing window, for adjusting the switch-off temperature, e.g. type RAK-ST.1300P and for removing and replacing the thermostat, if required.

Pipe mounting

The clamping band should be properly tightened to ensure the entire length of the sensing element is in close contact with the pipe's surface.

Pocket mounting

Mount the pocket and adjust the hexagon as required. Immerse the capillary sensing element in the pocket and secure the base to the pocket by means of the screw.

Wall mounting with sensing element in the pocket

To prepare for wall mounting, knock out the fixing holes in the housing and pull out the capillary tube until the required length is reached. After immersing the capillary sensing element in the pocket, secure it with a clamp (mounting accessories).

⚠ Temperature setting

The switch-off temperature (e.g. 120...130°C) must be adjusted only by qualified personnel.

⚠ Wiring

The appliance must be wired by the installer only. The cables used must meet the insulation requirements for mains voltage.

 Max. AC 250 V



Disposal



In case of rupture of the capillary tube, contact 11-12 will open (fail-safe function). In this state, contact 11-13 will remain open and, for this reason may not be used as part of the safety chain.


Wire the thermostat according to the connection diagram and in compliance with local regulations.

Caution: prior to opening the housing, disconnect the thermostat from the mains supply.

Earth connections must be made in compliance with the regulations.

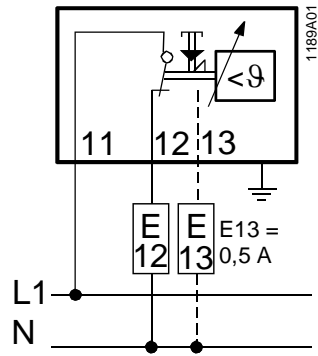
The device is a waste electronic equipment in terms of the European Directive 2002/96/EC (WEEE) and should not be disposed as part of unsorted municipal waste. The relevant national legal rules are to be paid attention. Use for disposal the systems set up to collect electronic waste. Observe all local and applicable laws.

Technical data

Switching mechanism	Switching capacity		
	Nominal voltage	AC 24...250 V	
	Nominal current $I_{(M)}$	contact connection 11-12	0.1...10 (2.5)
		contact connection 11-13	0.5 A (terminal for alarm)
	External fuse	10A	
	Life expectancy at nominal rating	min. 300 switching cycles	
	Safety class	I to EN 60 730	
	Degree of protection:	IP 43 to EN 60 529	
	Fixed switch-off temperature	RAK-ST.010F	95 °C
		RAK-ST.020F	100 °C
		RAK-ST.030F	110 °C
	Switch-off temperature, internally adjustable	(with tool)	
		RAK-ST.1300	120...130 °C
		RAK-ST.1310	90...110 °C
RAK-ST.1430		80...100°C	
Thermal switching differential	RAK-ST.010F / 020F / 030F / 1430	15 ± 5 K	
	RAK-ST.1300 / 1310	20 ± 5 K	
Norms and Standards	CE conformity, directives		
	Electromagnetic compatibility in accordance with	89/336/EEC	
	Low voltage directive	73/23/EEC	
	Pressure equipment directive	97/23/EC (CE 0497)	
	ENEC (European Norms Electrical Certification)		
	DIN3440 (for pocket mounting)	STB116704	
	RAK-ST.1300P / 1310P		
	C-tick	 N474	
	Product standards		
	Automatic electrical controls for household and similar use	EN 60 730-1	
Special requirements placed on temperature-dependent controls	EN 60 730-2-9		
	Type 2 action	BDFHKL	
Radio interference protection	click rate $N \leq 5$ to EN 55 014		

Environmental conditions	Operation	class 3K5 to IEC 60 721-3-3
	Max. temperature on bulb	
	RAK-ST. 010F / 020F / 1430	max. switch-off temperature + 25 K
	RAK-ST.030F	125 °C
	RAK-ST.1300/ 1310	135 °C
	Ambient temperature at the housing	max. 50 °C (T50)
	Humidity	< 95 % r.h.
	Mechanism	class 3M2 to IEC 60 721-3-3
	Storage and transport	class 2K3 to IEC 60 721-3-2
	Ambient temperature	-25...+70 °C
Humidity	< 95 % r.h.	
	Max. temperature socket	135°C
	Degree of pollution	normal to EN 60 730
	Controlled medium	Water, oil
	Ambient temperature compensation for switching mechanism and capillary tube	
Calibration	Calibration temperature	Max switch-off temperature
	Manufacturing deviation	+0 /-6 °C
	Drift after life expectancy	< ±5 %
	Calibrated for ambient temperature at the switching mechanism and capillary tube	20 °C to DIN 3440
	Time constant in: water	<45 s to DIN 3440
oil	<60 s to DIN 3440	
air	<120 s to DIN 3440	
Connections	Electrical connections	screw terminals for wires 2 x 0.75...1.5 mm ²
	Earth connection	screw terminal for wires 2 x 0.75...1.5 mm ²
	Cable gland	M16 x 1.5 mm (for max. 4-core cable)
	External wiring flexible cord	Type M attachment (designed to be connected with prepared conductors, e.g. ferrules)
General data	Housing colors	base RAL 7001 (dark-grey) cover RAL 7035 (light-grey)
	Dimensions of sensing element	
	Types 010F/ 020F/ 030F/ 1430	6.5 mm dia. x 87 mm
	Type 1300/ 1310	6.5 mm dia. x 75 mm
	Capillary tube length RAK-ST.1430S	1600mm
	Other types	700 mm
	Min. bending radius of capillary	R min. = 5 mm
	Construction	
	Carrier of switching mechanism	plastic
	Capillary tube and sensing element	copper
Diaphragm	stainless steel	
Contacts	Ag.1000/1000 (silver)	
Weight of standard set	0.30 kg	

Connection diagram



E13: Alarm

Dimensions

