



Safety Limit Thermostats

RAK-ST..M RAK-ST..M..

Electromechanical STB according to DIN EN14597

- **Safety temperature limitation, with single-pole changeover microswitch**
- **Switching capacity** contact connection 11-12 16 (2.5) A, AC 250 V
Terminal for alarm contact connection 11-13 2 (0.4) A, AC 250 V
- **Time constant conforming to DIN EN 14597**
- **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**
- **IP43 or IP65 protection class available**
- **Push-in terminals for fast installation**

Use

Typical applications:

- Fire protection thermostat in duct systems
- 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.

Should the temperature falls below -20°C the STB will open the current cycle (11-12). If it increases again, it will close automatically.

Type summary

Product No.	Stock number	Degree of protection	Switch-off temperature	Capillary tube length	Scope of delivery	Pocket length ¹⁾
RAK-ST.1385M ²⁾	S55700-P105	IP65	40...70 °C	700 mm	Pocket (for RAK....P) / mounting instruction / cable gland 16x1,5mm / Clamping band for max. pipe dia. 100 mm (for RAK..S)	-
RAK-ST.1600MP ²⁾	S55700-P107	IP65	95...130 °C			100 mm
RAK-ST.010FP-M ²⁾	S55700-P100	IP43	95 °C			
RAK-ST.020FP-M ²⁾	S55700-P101	IP43	100 °C			
RAK-ST.030FP-M ²⁾	S55700-P102	IP43	110 °C			
RAK-ST.1310P-M ²⁾	S55700-P104	IP43	90...110 °C			
RAK-ST.1300P-M ²⁾	S55700-P103	IP43	110...130 °C	1600 mm		
RAK-ST.1430S-M ²⁾	S55700-P106	IP43	80...100 °C			-

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

2) According to DIN 14597

Accessories

Refer to Data Sheets N1193 and N1194.

RAK-ST.1385M: The perforated pocket ALT-AB200 or another pocket (standard pocket for liquids ALT-SB100) must be ordered as a separate item (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 entire housing of the thermostat is made of PC plastic 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 PC and has a viewing window and a removable threaded nipple for resetting the thermostat.
- The cable gland is standard M16x1.5 mm.
- The PC plastic is especially designed to be flame resistant, UV protected and flexible against high temperatures and tough against chemical and biological impacts.

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-M 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).

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 Temperature setting


The switch-off temperature (40...70°C or 95...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.

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.

 Max. AC 250 V

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



Earth connections must be made in compliance with the regulations.



Disposal

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...16 (2.5)
	contact connection 11-13 2 (0.4) A (terminal for alarm)

External fuse 16 A

Life expectancy at nominal rating min. 300switching cycles

Safety class I to EN 60 730

Degree of protection: IP43 or IP65 to EN 60 529

Fixed switch-off temperature


RAK-ST.010FP-M	95 °C
RAK-ST.020FP-M	100 °C
RAK-ST.030FP-M	110 °C

Switch-off temperature, internally adjustable RAK-	(with tool)
ST.1300P-M	20...130 °C
RAK-ST.1310P-M	90...110 °C
RAK-ST.1430S-M	80...100 °C
RAK-ST.1385M	40...70 °C
RAK-ST.1600MP	95...130 °C

Thermal switching differential

RAK-ST.1385M	
RAK-ST.1600MP	
RAK-ST.010FP-M / RAK020FP-M /	10 ± SK
RAK030FP-M/ RAK1430S-M	
RAK-ST.1300P-M / RAK1310P-M	

Norms and Standards

 conformity, directives	
Electromagnetic compatibility in accordance with	2004/108/EC
Low voltage directive	2006/95/EC
Pressure equipment directive	97/23/EEC (CE 0036)
DIN EN 14597	STB119608

C-Tick 

Product standards

Automatic electrical controls for household and similar use	EN 60 730-1
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Special requirements placed on temperature-dependent controls EN 60 730-2-9

	Type 2 action	BFHKLNPV
Environmental conditions	Radio interference protection	click rate N ≤5 to EN 55 014
	Operation	class 3K5 to IEC 60 721-3-3
	Max. temperature on bulb	switch-off temperature + 25 K
	Ambient temperature at the housing	max. 80 °C (T80)
	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
	Degree of pollution	2 to EN 60 730
	Controlled medium	Water, oil, air
	Ambient temperature compensation for switching mechanism and capillary tube	22 °C DIN EN 14 597
Calibration	Calibration temperature	RAK-ST.1385M: 45 °C RAK-ST.1600MP: 100 °C RAK-ST.010FP-M: 95 °C RAK-ST.020FP-M: 100 °C RAK-ST.030FP-M: 110 °C RAK-ST.1300P-M: 120 °C RAK-ST.1310P-M: 100 °C RAK-ST.1430S-M: 90 °C
	Manufacturing deviation	+0 /-6 °C
	Drift after life expectancy	< ±5 %
	Calibrated for ambient temperature at the switching mechanism and capillary tube	
	RAK-ST.1385M	50 °C to DIN EN14597
	RAK-ST.1600MP	22 °C to DIN EN14597
	RAK-ST.010FP-M	22 °C to DIN EN 14597
	RAK-ST.020FP-M	22 °C to DIN EN 14597
	RAK-ST.030FP-M	22 °C to DIN EN 14597
	RAK-ST.1300P-M	22 °C to DIN EN 14597
RAK-ST.1310P-M	22 °C to DIN EN 14597	
RAK-ST.1430S-M	22 °C to DIN EN 14597	
	Time constant in: water	<45 s to DIN EN14597
	oil	<60 s to DIN EN14597
	air	<120 s to DIN EN14597
Connections	Electrical connections	Push In ¹⁾ terminals for wires 6 x 0.75...2.5 mm ²
	Earth connection	Push In ¹⁾ terminals for wires 2 x 0.75...2.5 mm ²
	Cable gland	M16 x 1.5 mm (max. 4-core cable)
	External wiring flexible cord	designed to be connected with unprepared conductors or prepared conductors, e.g. ferrules
General data	Housing colors	base RAL 7001 (dark-grey) cover RAL 7035 (light-grey)
	Dimensions of sensing element	6.5 mm dia x 85 mm resp. 6,5 dia x 76 mm
	Capillary tube length All types	700 mm
	Min. bending radius of capillary	R min. = 5 mm

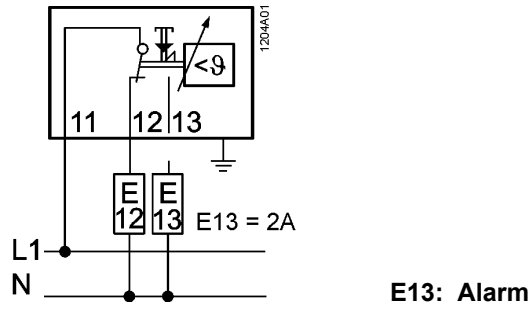
Construction

Carrier of switching mechanism	plastic
Capillary tube and sensing element	copper
Diaphragm	stainless steel

Weight of standard set 0.35 kg

¹⁾ Push In is a patented connection technology designed by Weidmüller, Germany's leading manufacturer of electrical connection technologies.

Connection diagram

**Dimensions**

