



## Limit Thermostats

## RAK-TB.1..M

Electromechanical TB

- Limit thermostat 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 0.5 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
- Internal reset facility covered by removable threaded nipple
- Push-in terminals for fast installation

### Use

Typical applications:

- Heat generation plant
- For general use in heating, ventilation and air conditioning plant
- Underfloor heating systems (RAK-TB.1400-M)

### Function

When the switch-off temperature is reached, 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 below the value of the switching differential, the limit thermostat (TB) must be manually reset after removal of the threaded nipple.

If the probe has cooled down to a temperature below approx. -20°C, the control current circuit opens, however, automatically closes again, when the temperature rises.

## Type summary

Product No.	Stock number	Degree of protection	Switch-off temperature	Capillary tube length	Scope of delivery	Pocket length <sup>1)</sup>
RAK-TB.1400S-M	S55700-P108	IP43	45...60 °C	700 mm	Pocket (for RAK....B) / Clamping band for max. pipe dia. 100 mm /Cable gland M16x1.5 mm / Mounting instructions	---
RAK-TB.1410B-M	S55700-P109	IP43	50...70 °C			100 mm
RAK-TB.1420S-M	S55700-P110	IP43	65...80 °C			----

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

### 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 PC (reinforced) and is designed for pipe, pocket or wall mounting; the electromechanical thermal reset limit thermostat uses a capillary type sensing element.
- The cover is made of PC and has a viewing window.
- The cable gland is 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 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 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.

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.

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Earth connections must be made in compliance with the regulations.

## Disposal



The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic waste.

- Dispose of the device via the channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

## Technical data

Switching mechanism	Switching capacity	
	Nominal voltage	AC 24...250 V
	Nominal current I (I <sub>M</sub> )	contact connection 11-12 0.1...16 (2.5) A
		contact connection 11-13 2 (0.4) A (terminal for alarm)
	External fuse	16 A
	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
	Internally adjustable switch-off temperature	
	RAK-TB.1400S-M	45...60 °C
Directives and Standards	RAK-TB.1410B-M	50...70 °C
	RAK-TB.1420S-M	65...80 °C
	Thermal switching differential (all types)	10 ± 5 K
	Product standard	EN 60730-x
		DIN EN 14597
	EU Conformity (CE)	CE1T1206xx <sup>1)</sup>
	Radio interference protection	click rate N ≤5 to EN 55 014
	Operation	class 3K5 to IEC 60 721-3-3
	Max. temperature on bulb	max. switch-off temperature + 25 K
	Ambient temperature at the housing	max. 80 °C (T80)
Environmental conditions	Humidity	< 95 % rH
	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	125 °C
	Degree of pollution	2 to EN 60 730
	Controlled medium	Water, oil, air
	Manufacturing deviation	+0 /-6 °C
	Calibrated for ambient temperature at the switching mechanism and capillary tube to DIN EN 14597	22 °C
Calibration	RAK-TB.1400S-M	22 °C
	RAK-TB.1410B-M	22 °C
	RAK-TB.1420S-M	22 °C
	Time constant in: water	<45 s to DIN EN 14597
	oil	<60 s to DIN EN 14597
	air	<120 s to DIN EN 14597
	Electrical connections	Push In <sup>2)</sup> terminals for wires 6 x 0.75...2.5 mm <sup>2</sup>
	Earth connection	Push In <sup>2)</sup> terminals for wires 2 x 0.75...2.5 mm <sup>2</sup>
	Cable entry gland	M16 x 1.5 mm
	External wiring flexible cord	Type M attachment (designed to be connected with prepared conductors, e.g. ferrules)

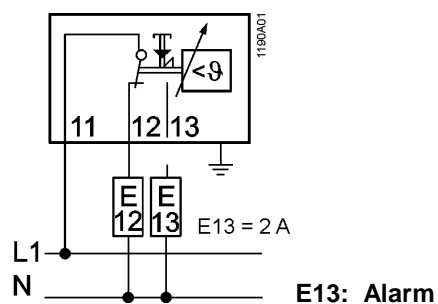
## General data

Housing colors	base RAL 7001 (dark-grey) cover RAL 7035 (light-grey)
Dimensions of sensing element	6.5 mm dia. x 73 mm resp. 87mm
Capillary 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
Contacts	Ag.1000/1000 (silver)
Weight of standard set: RAK...B	0.33 kg
RAK...S	0.27 kg

1) The documents can be downloaded from <http://siemens.com/bt/download>.

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

## Connection diagram



## Dimensions

