



Double thermostat

## Control Thermostats / Safety Limit Thermostats

## RAZ-ST..

Combination of electromechanical TR and STB according to DIN EN 14597

- **2-position control thermostat and safety limit thermostat with single-pole changeover microswitches**
- **Switching capacity of microswitches**
  - contact connection 1-2, 16 (2.5) A, AC 250 V
  - contact connection 1-4, 6 (2.5) A, AC 250 V
- **STB: contact connection 1-4, 2 (0.4) A, AC 250 V (Alarm contact)**
- **Push-in connection terminals<sup>1)</sup> for fast installation**
- **Time constant conforming to DIN EN 14579**
- **2 mounting choices: pocket or wall mounting**
- **External setting knob for setpoint adjustment**
- **Internal adjustment of switch-off temperature of safety limit thermostat (STB); switch-off temperature can be checked through the viewing window in the housing**
- **Ambient temperature compensation for switching mechanism and capillary tube (on STB)**
- **Fail-safe design, rupture of the capillary tube causes contact connection 1-2 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 adjustable setpoint of the control thermostat RAZ-TR is reached on rising temperature, contact connection 1-2 changes over to contact connection 1-4. When the temperature of the medium falls by the value of the switching differential, the RAZ-TR reverts to contact connection 1-2.

When the switch-off temperature of the safety limit thermostat TR-STB is reached, contact connection 1-2 changes over to contact connection 1-4 (alarm) and the RAZ-STB remains tripped in this position. When the temperature of the medium falls by the value of the switching differential, the thermostat must be manually reset after removal of the threaded nipple.

Should the expansion liquid escape through a leak in the sensing system of the safety limit thermostat RAZ-STB, the pressure in the diaphragm drops, causing the contact connection to mechanically 1-2 off.

## Type summary

Product number	Stock number	Control and switch-off temperature range	Capillary tube length	Scope of delivery
RAZ-ST.011FP-J	S55700-P136	(TR) 15...95 °C (STB) 100 °C	700 mm	Double pocket for 2 sensing elements, 100mm length, <b>ALT-DB100J</b> , brass nickel-plated, PN10), cable gland M20 x 1.5 mm Mounting instructions
RAZ-ST.030FP-J	S55700-P137	(TR) 15...95 °C (STB) 110 °C		
RAZ-ST.1500P-J	S55700-P138	(TR) 15...95 °C (STB) 110...130 °C		
RAZ-ST.1510P-J	S55700-P139	(TR) 15...95 °C (STB) 90..110 °C		

### Accessories

If the accessories required are not those included in the standard set, they can be ordered separately according to the type reference given in data sheets N1193 and N1194 (pockets).

### Important

Double pocket (**ALT-DB..J**) with the ending „J“ fits to this RAZ units only.

### Ordering

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

## Mechanical design

### Housing







The base of the thermostat is made of PA (reinforced) and is designed for protection pocket and wall mounting; the electromechanical control thermostat (TR) and the safety limit thermostat (STB) use 2 separate capillary type sensing elements.

The cover accommodates the setpoint setting knob, the viewing window and the removable threaded nipple for resetting the safety limit thermostat.

The cable entry gland is M20 x 1.5 mm.

## Notes

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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 setpoint and the switch-off temperature and for removing and replacing the thermostat, if required.
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.
 Important	Double pocket ( <b>ALT-DB..J</b> ) with the ending „J“ fits to this RAZ units only.
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 elements in the pocket, secure them with a clamp (mounting accessories).
 Temperature setting	The switch-off temperature (e.g. 110..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. Wire the thermostat according to the connection diagram and in compliance with local regulations. In case of rupture of the capillary tube, contact 1-2 will open (fail-safe function). In this state, contact 1-2 will remain open and, for this reason may not be used as part of the safety chain.
 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

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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

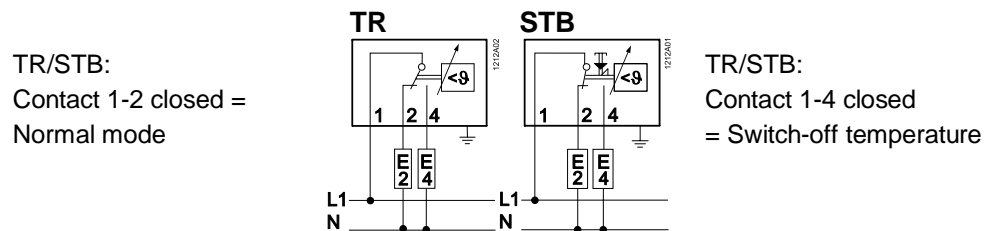
Switching mechanism of TR and STB	Switching capacity TR		
	Nominal voltage	AC 24...250 V	
	Nominal current $I_{(M)}$	contact connection 1-2	0.1...16 (2.5) A
		contact connection 1-4	0.1...6 (2.5) A
	Switching capacity STB		
	Nominal voltage range	AC 24...250 V	
	Nominal current range $I_{(M)}$	contact connection 1-2	0.1...16 (2.5) A
		contact connection 1-4	0.1...2 (0.4) A (e.g. alarm contact)
		External fuse	16 A
	Life expectancy at nominal rating	TR	min. 250 000 switching cycles
STB		min. 300 switching cycles	
Estimated value for $B_{10d}$ (STB)		$B_{10d} = 250'000$ (DIN EN ISO 13849-1)	
Safety class		I to EN 60 730	
Degree of protection		IP 40 to EN 60 529	
Functional data	Externally adjustable temperature TR		
	RAZ-ST.011FP-J	15...95 °C	
	RAZ-ST.030FP-J	15...95 °C	
	RAZ-ST.1500FP-J	15...95 °C	
	RAZ-ST.1510FP-J	15...95 °C	
	Safety limit thermostat STB		
	Internally adjustable safety switch-off temperature		
	RAZ-ST.011F-J	100 °C (fixed)	
	RAZ-ST.030F-J	110 °C (fixed)	
	Internally adjustable safety switch-off temperature for		
RAZ-ST.1500-J	110...130 °C (with tool)		
RAZ-ST.1510-J	90...110 °C (with tool)		
Thermal switching differential TR	STB (fixed)	6 K (range dependent)	
	STB adjustable	max. temperature $\pm 5$ K	
Directives and Standards	Product standard	EN 60730-x DIN EN 14597 (TR1181 & STB1184) <sup>1)</sup>	
	EU Conformity (CE)	CE1T1204xx <sup>1)</sup>	
	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		
	RAZ-ST.011FP-J	max. switch-off temperature + 25 K	
	RAZ-ST.030FP-J	max. switch-off temperature + 25 K	
	RAK-ST.1500P-J/ 1510-P-J	max. 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	125 °C		
Degree of pollution	normal to EN 60 730		
Controlled medium	Water, oil and air		
Influence of the ambient temperature on TR	-0.18 °C/°C		
Ambient temperature compensation for switching mechanism and capillary tube (on STB)			

Calibration	Manufacturing deviation TR	$\pm 3\text{ }^{\circ}\text{C}$
	STB	$+0 / -6\text{ }^{\circ}\text{C}$
	Drift after life expectancy TR and STB	$< \pm 5\%$
	Calibrated for ambient temperature at the switching mechanism and capillary tube	$22\text{ }^{\circ}\text{C}$ to DIN 14597
Connections	Time constant in: water	$< 45\text{ s}$ to DIN 14597
	oil	$< 60\text{ s}$ to DIN 14597
	air	$< 120\text{ s}$ to DIN 14597
	Electrical connections	Push-in <sup>2)</sup> terminals for wires $6 \times 0.75 \dots 2.5\text{ mm}^2$
General data	Earth connection	Push-in <sup>2)</sup> terminals for wires $2 \times 0.75 \dots 2.5\text{ mm}^2$
	Cable entry gland	M20 x 1.5 mm
	External wiring flexible cord	Type M attachment (designed to be connected with prepared conductors, e.g. ferrules)
	Housing colors	base RAL 7001 (dark-grey) cover RAL 7035 (light-grey)
Construction	Dim. of sensing elements TR and STB fixed	$6.5\text{ mm dia.} \times 85\text{ mm}$
	STB adjustable	$6.5\text{ mm dia.} \times 76\text{ mm}$
	Capillary length	$700\text{ mm}$
	Min. bending radius of capillary	R min. = $5\text{ mm}$
Weight of standard set	Carrier of switching mechanism	plastic
	Capillary tubes and sensing elements	copper
	Diaphragms	stainless steel

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

2) "Push-in" is a patented connection technique developed by Weidmüller, Germany's leading manufacturer of electrical connection technology

## Connection diagram



# Dimensions

