



Double thermostat

## Control Thermostats / RAZ-ST.... Safety Limit Thermostats

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

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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

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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

Refer to Data Sheets N1193 and N1194.

**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).

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.

## Mechanical design

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### 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.

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

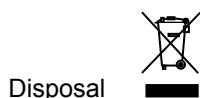
The appliance must be wired by the installer only.  
The cables used must meet the insulation requirements for mains voltage.  
Wire the thermostat according to the connection diagram and in compliance with local regulations.  
In case of rupture of the capillary tube, contact 1-2 will open (fail-safe 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

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 of TR and STB

Switching capacity TR		
Nominal voltage		AC 24...250 V
Nominal current I (I <sub>M</sub> )	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 (I <sub>M</sub> )		
	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
Safety class		I to EN 60 730
Degree of protection		IP 40 to EN 60 529

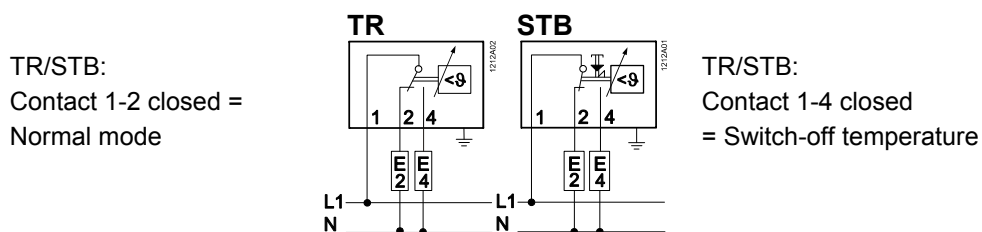
Functional data

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)

Norms and standards	Thermal switching differential TR	6 K (range dependent)
	STB (fixed)	max. temperature $\pm 5$ K
	STB adjustable	max. temperature $\pm 5$ K
	<b>CE</b> conformity	
	Electromagnetic compatibility directive	25004/108/EEC
Low voltage directive	2006/95/EEC	
Pressure equipment directive	97/23/EC (CE 0036)	
ENEC (European Norms Electrical Certification)		
DIN EN 14597	TR118107	
RAZ-ST.1500P-J / . 1510P-J	STB118407	
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 (TR)		BDFHKL (EN 60 730-1/2-9)
Type 2 action (STB)		EN14597
		BFHKLNPV (EN 60 730-1/2-9)
		EN14597
Radio interference protection		
Operation		click rate $N \leq 5$ to EN 55 014
Max. temperature on bulb		class 3K5 to IEC 60 721-3-3
RAZ-ST.011FP-J		max. switch-off temperature + 25 K
RAZ-ST.030FP-J		max. switch-off temperature + 25 K
RAK-ST.1500P-J/ 1510P-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	$\pm 3$ °C
	STB	+0 / -6 °C
	Drift after life expectancy TR and STB	< $\pm 5$ %
	Calibrated for ambient temperature at the switching mechanism and capillary tube	22 °C to DIN 14597
Connections	Time constant in: water	<45 s to DIN 14597
	oil	<60 s to DIN 14597
	air	<120 s to DIN 14597
	Electrical connections	Push-in <sup>1</sup> terminals for wires 6 x 0.75...2.5 mm <sup>2</sup>
Earth connection	Push-in <sup>1</sup> terminals for wires 2 x 0.75...2.5 mm <sup>2</sup>	
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)	
General data	Housing colors	base RAL 7001 (dark-grey) cover RAL 7035 (light-grey)
	Dim. of sensing elements TR and STB fixed	6.5 mm dia. x 85 mm
STB adjustable	6.5 mm dia. x 76 mm	

Capillary length	700 mm
Min. bending radius of capillary	R min. = 5 mm
Construction	
Carrier of switching mechanism	plastic
Capillary tubes and sensing elements	copper
Diaphragms	stainless steel
Weight of standard set	0.53 kg

## Connection diagram



<sup>1)</sup> "Push In" is a patented connection technique developed by Weidmüller, Germany's leading manufacturer of electrical connection technology

## Dimensions

