

STW 1101

STW 1102

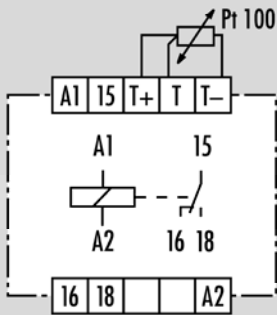
Temperature monitor for thermal resistance Pt 100

- Temperature setting range 0 to +799 °C
- Hysteresis adjustable
- Digital limit value setting
- Monitoring of the sensor line for breakage and short
- Linearity faults of the sensor compensated
- STW 1101 with operating current principle
- STW 1102 with standby current principle

Wiring diagram

STW 1101, STW 1102

KS 0304/1



Applications

- Monitoring of etching baths
- Temperature monitoring in baking lines
- Monitoring of chemical processes
- Monitoring of the supply air and exhaust air temperature in A/C units
- Safeguard against excess temperature
- Safeguard against low temperature

Function

The digitally-set limit value is compared to the temperature measurand. If the temperature measurand exceeds the limit value and there is no break or short in the sensor line, then the temperature monitor toggles. The >9 LED lights up. If the temperature value undershoots the set hysteresis, then the STW resets to the default position. Mains voltage, excess temperature and breakage or a short in the sensor line are indicated by the supply LED and/or the "TRIPPED" LED. The nominal voltage is galvanically separated from the measurement circuit.

STW 1101: Operating current principle
 STW 1102: Standby current principle

Notes:

- the supply voltage is galvanically separated from the measurement circuit.

Accessories

Cover

Z 29

Setting range

Temperature: 0 to ++ 799 °C, digital
 Hysteresis: 0.2 to +≥ 10 %, analog

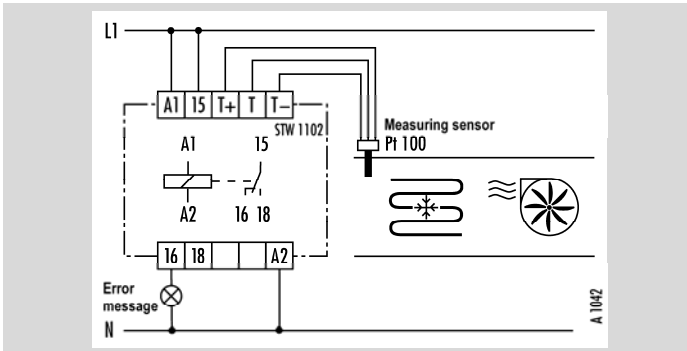
Pt 100 Temperature pickup sensor

Pt 100 sensor according to DIN 43 760. DIN IEC 751
 You will receive further technical information from the sensor supplier.

Application examples

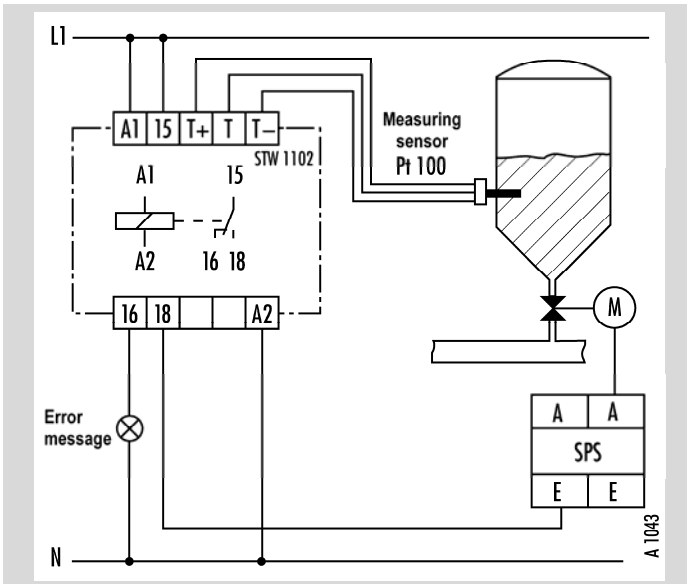
A/C unit

With the Pt 100 sensor, the supply air temperature in the A/C unit is monitored. If the temperature exceeds the set limit value, then the STW 1102 toggles. Via the contact 15/18, a fault alert is triggered.



Monitoring of chemical processes

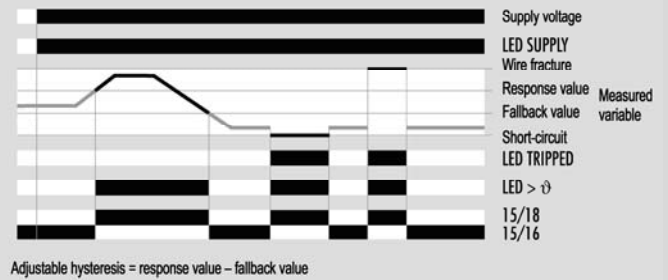
The Pt 100-temperature pickup sensor monitors the temperature of the liquid. If the temperature exceeds the set limit value, then actuation of the PLC via the contact 15/16 and the valve is closed.



Function diagrams

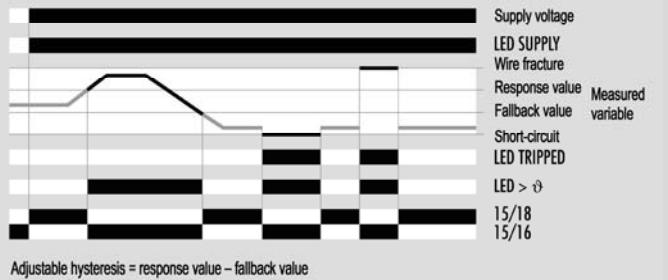
STW 1101

FD 0113 W1



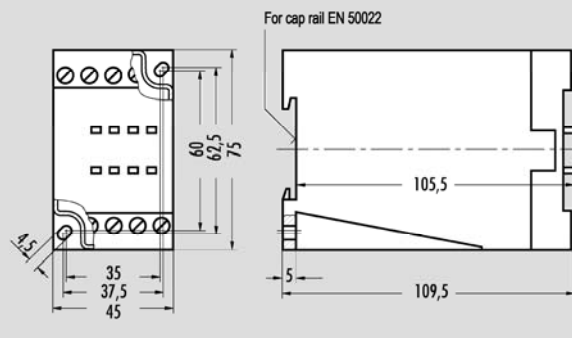
STW 1102

FD 0114 W1

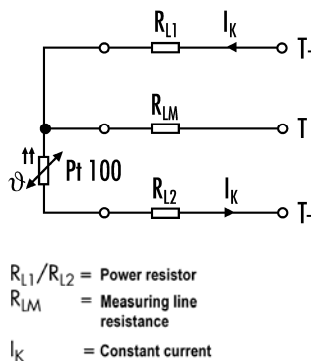


Dimensional drawing

S 3-18



3-conductor connector



For Pt 100 Temperature pickup sensor, three connector types are standard. The temperature monitors STW 1101 and STW 1102 shall be connected according to the three-conductor technique (principle wiring diagram). In this process, there is a constant flow I_K through the temperature pickup sensor. To halve metering errors due to line resistances R_{L1} and R_{L2} , a third line shall be used as a metering line. The resistance of the metering line R_{LM} can be disregarded due to the temperature monitor's high interior resistance.

Properties of the measured pickup sensor

	NiCr-Ni	Pt 100
Operating range	very large	medium-large
Setting interval	short	longer
precision	mid-range	exact
Dimensions	miniature-small	small
Application	For measurements in very large operating ranges with mid-range precision requirement	For measurements in medium to large operating ranges with high precision
Suitability for measurement in liquids	very good	good
Suitability for measurement in gases (e.g. air temperature)	good - very good	moderate
Costs (with the same mechan. design)	low-cost sensors	Price range higher than for thermal element sensors



Technical Data		STW 1101	STW 1102
Function type according to DIN EN 60255-6:11.94		Temperature limit value monitoring for Pt 100/.../3 according to DIN IEC 751. Linearity faults compensated. Limit value and hysteresis adjustable. Sensor line monitored for line breakage and short. Operating current principle, temperature exceedance	Temperature limit value monitoring for Pt 100/.../3 according to DIN IEC 751. Linearity faults compensated. Limit value and hysteresis adjustable. Sensor line monitored for line breakage and short. Standby current principle, temperature exceedance
Function check		1 LED green, 2 LEDs red	1 LED green, 2 LEDs red
Function diagram		FD 0113 W1	FD 0114 W1
Supply circuit			
Nominal voltage U_N	AC	220–240 V	
Rated output at 50 Hz and U_N (AC)		3.3 VA	
Rated output at 50 Hz and U_N (AC)		2.5 W	
Nominal frequency		50 to 60 Hz	
Operating voltage range		0.8 to 1.1 x U_N	
Measurement circuit			
Galvanic separation		yes	
Limit value setting		0 to +799, digital	
Toggle hysteresis		approx. 0.5 K	
Hysteresis setting, based on the set limit value		0.2 % to ≥ 10 %, analog	
Mean value of the fault		± 1.5 % ± 1 digit	
Scatter		± 1 %	
Influence of the supply voltage		$\leq \pm 0.02$ % / % ΔU_N	
Influence of the ambient temperature		$\leq \pm 0.01$ % / $K\Delta T$	
Output circuit			
Contact allocation		1 changer	
Contact material		Ag alloy, gold-plated	
Switching nominal voltage U_n		AC/DC 230/230 V	
max. steady current I_n , per current path		5 A	
Usage category according to EN 60947-5-1:1991		AC-15: U_e 230 V AC, I_e 3 A DC-13: U_e 24 V DC, I_e 2 A	
Short circuit safeguard, max. fuse insert Class gG		6 A	
Permissible frequency of operation		≤ 6000 operating cycles/h	
Mechanical service life		30×10^6 operating cycles	
Response time t_A		50 ms	
Fallback interval t_R		50 ms	
General Data			
Air and creep sections between the electric circuits		according to DIN VDE 0110-1:04.97	
Rated voltage impulse		4 kV	
Excess voltage category		III	
Degree of contamination		3 exterior, 2 interior	
Rated voltage		250 V AC	
Testing voltage U_{eff} 50 Hz according to DIN VDE 0110-1, Table A.1		2.21 kV	
Safety class for casing / terminals according to DIN VDE 0470 Section 1:11.92		IP 30 / IP 20	
Interference resistance according to IEC 61000-4		Test acuity 3	
Ambient temperature, work area		-20 to +60 °C	
Dimensional drawing		S 3-18	
Wiring diagram		KS 0304/1	
Connector cross-sections, fine wire / single core or fine wire with wire end ferrules		2 x 0.75 to 1.5 mm ² / 2 x 0.75 to 2.5 mm ² 1 or 2 x 0.5 to 1.5 mm ²	
Permissible tightening torque		0.8 to 1 Nm	
Weight		0.29 kg	
Accessories		Cover Z 29	
Approvals		–	

Device overview / Order numbers

Type	Rated voltage	Order number
STW 1101	AC 220-240 V 50-60 Hz	R3.187.0039.0
STW 1102	AC 220-240 V 50-60 Hz	R3.187.0049.0