

# Spezial-Sensors for Automation



## Temperature Controller

- Compact model
- Programmable
- 2 Switching points
- Analog output



ISO 9001  
certified

# TEMPERATURE CONTROLLER

## Technology and application



### Functionality

The compact models TN 552 GPP and TN 552/1 GPP have two independent adjustable switching points. The compact models TN 552 GAPP and TN 552/1 GAPP have one independent adjustable switching point and one scalable 4...20 mA analog output.

The detecting range for fluids is from  $-40\text{ }^{\circ}\text{C}$  to  $+120\text{ }^{\circ}\text{C}$ , the tolerance is  $0.3\text{ }^{\circ}\text{C}$  ( $0\text{...}80\text{ }^{\circ}\text{C}$ ).

The compact models TN 552... offer a window function as an alternative to the standard limit monitoring. Additionally, the NO/NC output function is programmable. Transient temperature changes can be bridged with a switch-on / switch-off time delay.

The push-buttons on the front of the sensor are used for programming the sensor functions. The programmed switching point and parameters are displayed and set by keyboard request. This function is possible while the sensor is measuring.

### Installation

The compact models TN 552... can be installed in standard T-pieces or welded T-pieces. The packing is made with an additional flat seal or with other suitable materials. Please note the temperature and pressure resistance of the seals for increased process conditions. Fixing the sensor in the T-pieces is only allowed on the screw head of the sensor.

After the installation the display can be turned through an angle of  $330^{\circ}$  for best reading. In applications with temperature over  $+80\text{ }^{\circ}\text{C}$  the sensor should be mounted from the side into the pipe.

### Application

The hysteresis function is for controlling a temperature value. A limiting value can be programmed in this mode. As soon as the measured temperature is higher than the programmed limiting value, the output signals are switched as programmed (NC or NO). The hysteresis value is the difference temperature for the switch-on and switch-off signal of the limiting value. An additional time delay for the switching signals can be programmed for each switching point.

In the frame function mode the switching function is set depending of a programmed temperature range. The temperature range starts with the programmed lower value and end with programmed upper frame value.

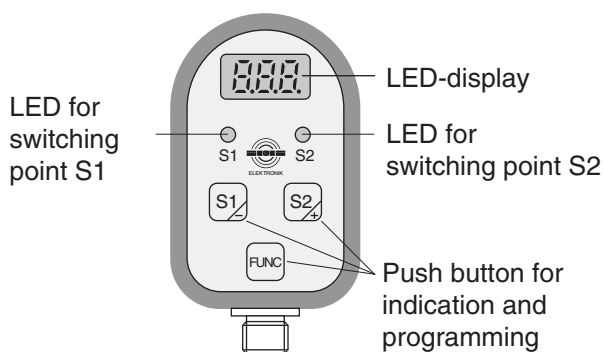
The time delay for the switching signal can also be used in this switching mode.

The analog output can be use for transmitting the temperature and getting the proportional current. For that you assign one temperature for the 4 mA first-value and one temperature for the 20 mA last-value in the programming mode. Between the temperature values it is permissible to have a minimal difference of  $16\text{ }^{\circ}\text{C}$  /  $29\text{ }^{\circ}\text{F}$ .

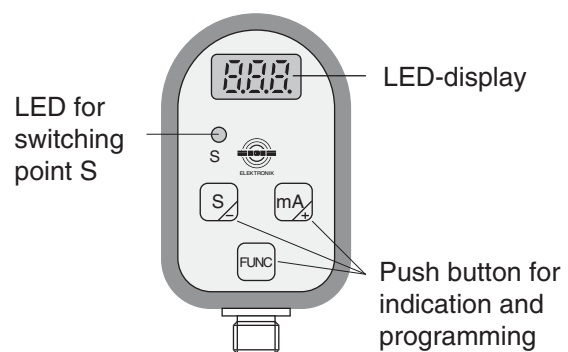
### Color code:

BK = black    BN = brown    BU = blue    WH = white

TN 552...GPP



TN 552...GAPP



# TEMPERATURE CONTROLLER

Compact model with 2 switching points



Temperature monitoring of fluids

Display -40 °C...+120 °C / -40 °F...+248 °F

Programmable switching points

Hysteresis or window-function

NC/NO programmable

Time delay function

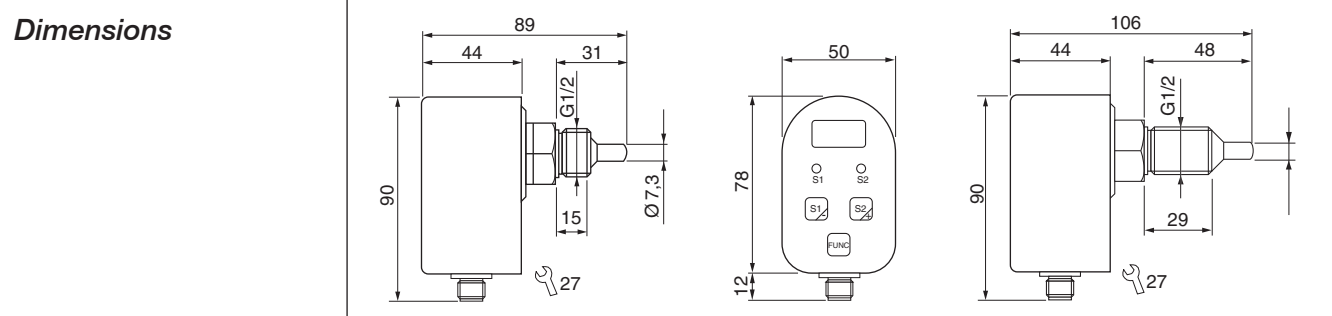
MIN- /MAX- memory function

Rotable display

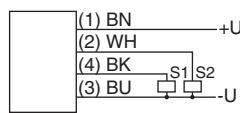
Switch-over °C - °F



Design	DC • G1/2 • L= 31 mm	DC • G1/2 • L= 48 mm
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Detection range	[°C/°F]	-40...+120 °C (-40...+248 °F)	
Output		2x	
ID-No.		P71017	P71018
Type		TN 552 GPP	TN 552/1 GPP
Supply voltage	[V]	24 DC ±10%	
Current consumption	[mA]	<100	
Voltage drop	[V]	<2.5	
Switching output		2x PNP, 200 mA	
Ambient temperature	[°C]	-20...+60	
Medium temperature	[°C]	-40...+120	
Response time	[s]	typ. 10	
Resolution display	[°C/°F]	0.1 / 0.5	
Range limit values	[°C/°F]	-39...+120 / -39...248	(0.5 / 1 Step)
Range hysteresis	[°C/°F]	0.5...99 / 1...179	(0.5 / 1 Step)
Range window	[°C/°F]	0.5...99 / 1...179	(0.5 / 1 Step)
Time delay	[s]	0...50	(0.5 / 1 Step)
Compressive strength	[bar]	100	
Sensor material		AISI 316 Ti	
Housing material		PBT	
Protection	[EN 60529]	IP 65	
Connection		M12 connector	



Accessories	see page 7.05
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# TEMPERATURE CONTROLLER

Compact model with analog output  
and switching point



Temperature monitoring of fluids

Display -40 °C...+120 °C / -40...+248 °F

Programmable switching point

Analog output 4...20 mA

Hysteresis or window-funktion

NC/NO programmable

Time delay function

MIN- /MAX- memory function

Rotable display



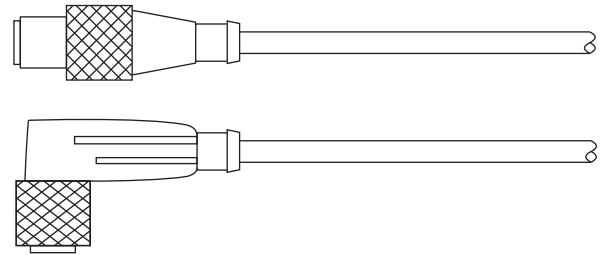
Design	DC • G1/2 • L= 31 mm	DC • G1/2 • L= 48 mm
Dimensions		
Detection range	-40...+120 °C (-40...+248 °F)	
Output		
ID-No.	P71019	P71020
Type	TN 552 GAPP	TN 552/1 GAPP
Supply voltage	24 DC ±10%	
Current consumption	<200	
Voltage drop	<2.5	
Analog output	4...20, scalable, Detection range min. 16 °C / 29 °F	
Switching output	PNP, 200 mA	
Ambient temperature	-20...+60	
Medium temperature	-40...+120	
Response time	typ. 10	
Resolution display	0.1 / 0.5	
Range limit values	-39...+120 / -39...248	(0.5 / 1 Step)
Range hysteresis	0.5...99 / 1...179	(0.5 / 1 Step)
Range window	0.5...99 / 1...179	(0.5 / 1 Step)
Time delay	0...50	(0.5 / 1 Step)
Compressive strength	100	
Sensor material	AISI 316 Ti	
Housing material	PBT	
Protection	IP 65	
Connection	M12 connector	
Accessories	see page 7.05	

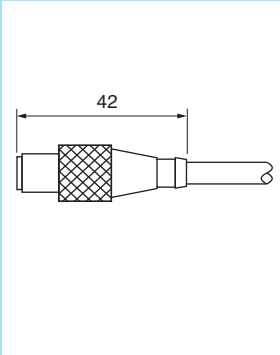
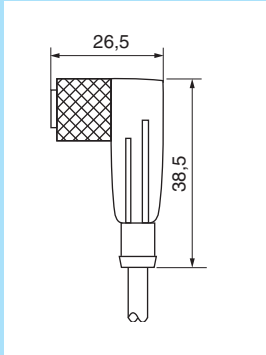
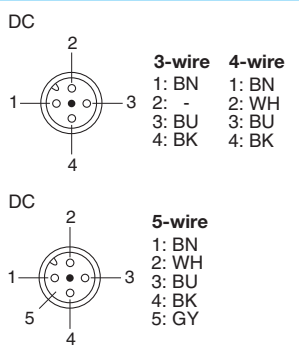
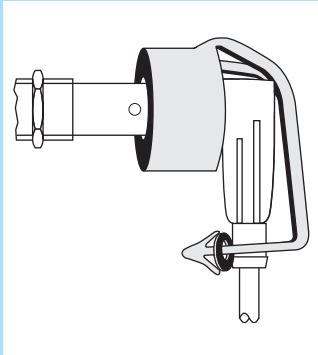
### System SL

Finished cable plug casing

Self locking screw plug

Protection IP 67



Cable plug housing straight	Cable plug housing angular	Pin-assignment	Plug-lock
		<p>DC</p>  <p>3-wire 1: BN 2: - 3: BU 4: BK</p> <p>4-wire 1: BN 2: WH 3: BU 4: BK</p> <p>DC</p> <p>5-wire 1: BN 2: WH 3: BU 4: BK 5: GY</p>	
SLG...	SLW...	DC	PL-M12

TYPE	ID-NO.	DESIGN	
SLG 3-2	Z01076	Cable plug housing M12 DC, straight	2 m PVC-cable 3x0.34 mm <sup>2</sup>
SLG 3-5	Z01077	Cable plug housing M12 DC, straight	5 m PVC-cable 3x0.34 mm <sup>2</sup>
SLW 3-2	Z01078	Cable plug housing M12 DC, angular	2 m PVC-cable 3x0.34 mm <sup>2</sup>
SLW 3-5	Z01079	Cable plug housing M12 DC, angular	5 m PVC-cable 3x0.34 mm <sup>2</sup>
SLW 3-2-LED	Z00052	Cable plug housing M12 DC, angular	2 m PVC-cable 3x0.34 mm <sup>2</sup> PNP with LED
SLG 4-2	Z00445	Cable plug housing M12 DC, straight	2 m PVC-cable 4x0.25 mm <sup>2</sup>
SLG 4-5	Z00449	Cable plug housing M12 DC, straight	5 m PVC-cable 4x0.25 mm <sup>2</sup>
SLW 4-2	Z00446	Cable plug housing M12 DC, angular	2 m PVC-cable 4x0.25 mm <sup>2</sup>
SLW 4-5	Z00450	Cable plug housing M12 DC, angular	5 m PVC-cable 4x0.25 mm <sup>2</sup>
SLW 4-2-LED	Z01157	Cable plug housing M12 DC, angular	2 m PVC-cable 4x0.25 mm <sup>2</sup> PNP with LED
SLG 5-2	Z01150	Cable plug housing M12 DC, straight	2 m PVC-cable 5x0.34 mm <sup>2</sup>
SLW 5-2	Z01151	Cable plug housing M12 DC, angular	2 m PVC-cable 5x0.34 mm <sup>2</sup>
PL-M12	Z01182	Plug-lock for sensors in Ex areas	

### TECHNICAL DATA

Protection	IP 67	Rated voltage	250 VDC
Contact resistance	≤5 mΩ	Insulation resistance	>10 <sup>9</sup> Ω
Switching resistance	4A (CSA=3A)	Testing voltage	2.0 KV eff.
Temperature range	-25...+80 °C		

### Note

Sensors with NC output are connected to 4 pole cable plug housings. In this case, the break output is connected to the white lead (connection 2).

# PROCESS-SENSORS

## A selection



### Flow Controller

- Electronical monitoring of flow
- Lubrication monitoring
- Minimum rate 1 ml/min
- Reaction time 0.5 s



### Level Controller for Ex-applications

- For level monitoring in Ex areas
- For temperatures -35...+200 °C
- With PTFE connector cable
- Sensors for connection to amplifiers



### Level Controller

- For level monitoring -230...+230 °C
- For hot motor oil
- For liquid nitrogen
- For leakage detection
- For chemically aggressive media



### Ultrasonic

- Switching distance up to 5000 mm
- Level monitoring
- Watertight housing
- Teach-in functions



### Pressure-Controller

- Monitoring in pipes and containers
- Pressure up to 16 bar
- Level up to 10 m ( $\pm 1$  cm)
- Compact models
- Programmable



### Infrared Detectors

- Measurement of temperature
- Monitoring of hot media
- Position control





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