

# Special-Sensors for Automation



## Temperature Sensors

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



ISO 9001  
certified

## 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.

### Temperature sensor with threaded sleeve allowing for exchange during ongoing operations

The temperature sensor TN 553 can easily be exchanged during ongoing operations. This is made possible through the use of a special stainless steel (AISI 316 Ti) threaded sleeve that is mounted in the tank or pipe. In this way the compact device can at any time be removed without compromising the seal of the tank or pipe. The temperature sensor measures temperatures from  $-40^{\circ}$  to  $+120^{\circ}$  C and offers, among other features, two programmable switching points, freely selectable hysteresis and a temperature window function. The device is available as a 24 V DC device with PNP or analog output as well as a 230 V and 115 V AC model with Opto-MOS. Various cable lengths and optional plug-in or hardwire connections allow the device to be installed in various configurations. The thread is a G1/2 gauge.

### Installation

EGE temperature sensors 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.

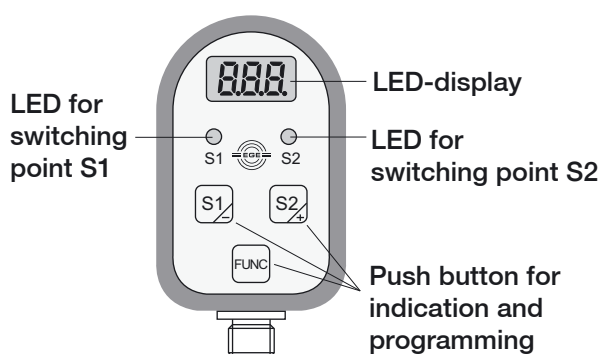
The time delay for the switching signal can also be used in this switching mode.

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  $16\text{ }^{\circ}\text{C} / 29\text{ }^{\circ}\text{F}$ .

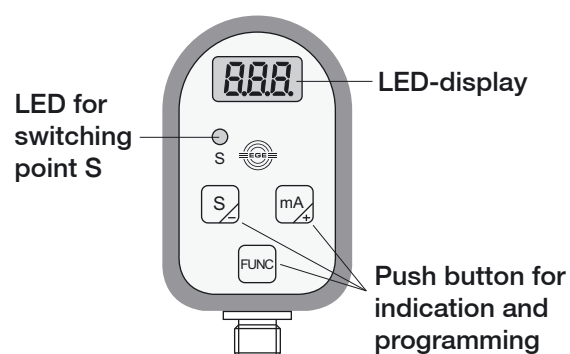
### Color code:

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

TN 552... GPP  
TN 553... GPP/WP



TN 552... GAPP  
TN 553... GAPP



## Two switching points and analog output

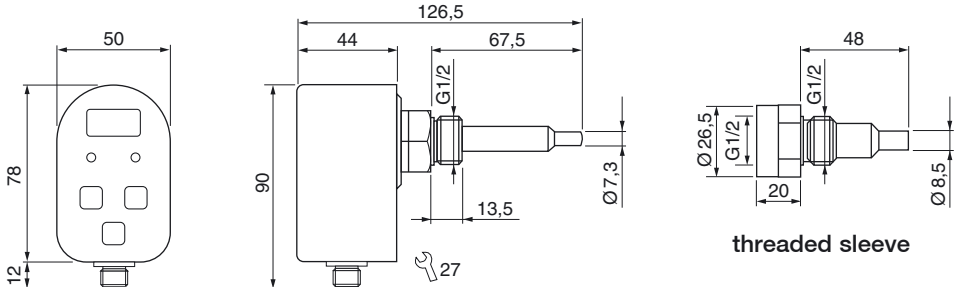

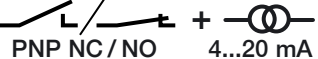
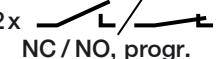
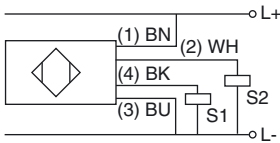
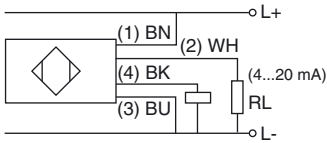
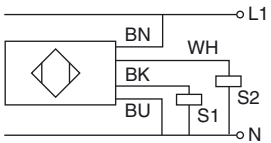
### Series TN 553

Exchangeable during ongoing operations through use of threaded sleeve

Measuring range  $-40...+120\text{ }^{\circ}\text{C}$

Two switching points, hysteresis and temperature window easily programmable



Design	DC • G1/2		AC • G1/2
Dimensions			
Detection range [°C]	-40...+120		
Output	2x  PNP NC/NO	 PNP NC/NO 4...20 mA	2x  NC/NO, progr.
ID-No.	P71021	P71022	P71023
Type	TN 553/1 GPP	TN 553/1 GAPP	TN 553/1 WP
Supply voltage [V]	24 DC $\pm 10\%$	24 DC $\pm 10\%$	230 AC $\pm 10\%$
Current consumption [mA]	60	60	20
Voltage drop [V]	<2.5	<2.5	<10
Ambient temperature [°C]	-20...+60		
Medium temperature [°C]	-40...+120		
Response time [s]	typ. 10...30		
Resolution display [°C]	0.1		
Range limit values [°C]	-39...+120 (0.5 / 1 Step)		
Range hysteresis [°C]	0.5...99 (0.5 / 1 Step)		
Range window [°C]	0.5...99 (0.5 / 1 Step)		
Time delay [s]	0...50 (0.5 / 1 Step)		
Programmable functions	two switching points, hysteresis/window, switching output NC/NO, MIN-/MAX- memory function		
Compressive strength [bar]	20		
Housing material	housing: PBT sensor and sleeve: AISI 316 Ti		
Protection [EN 60529]	IP 65		
Connection	M12 connector	1/2"-20UNF, 5-pol.	
Accessories	2x flat gasket, threaded sleeve, heat conducting paste		
			

## Two switching points

### Series TN 552

#### Measuring range

-40 °C...+120 °C / -40 °F...+248 °F

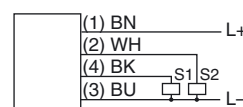
Two switching points, hysteresis and temperature window easily programmable

#### Rotable display

Switch-over °C - °F



Design	DC • G1/2 • L= 31 mm	DC • G1/2 • L= 48 mm
Dimensions		
Detection range	-40...+120 °C (-40...+248 °F)	
Output	2x  PNP NC/NO	
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 current [mA]	200	
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)
Programmable functions	two switching points, hysteresis/window, switching output NC/NO, MIN-/MAX- memory function	
Compressive strength [bar]	100	
Housing material	housing: PBT sensor: AISI 316 Ti	
Protection [EN 60529]	IP 65	
Connection	M12 connector	



#### Accessories

see page 7.06

## Switching point and analog output

### Series TN 552

#### Measuring range

$-40\text{ }^{\circ}\text{C} \dots +120\text{ }^{\circ}\text{C} / -40\text{ }^{\circ}\text{F} \dots +248\text{ }^{\circ}\text{F}$

**Switching point and analog output, hysteresis and temperature window easily programmable**

#### Rotable display

Switch-over  $^{\circ}\text{C} - ^{\circ}\text{F}$

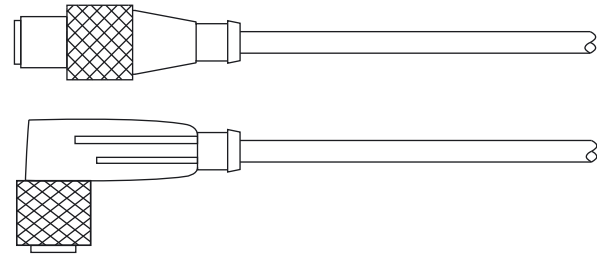


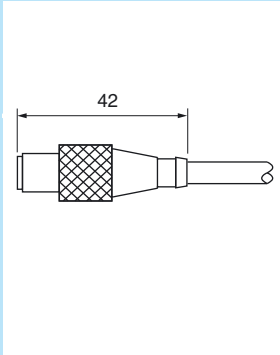
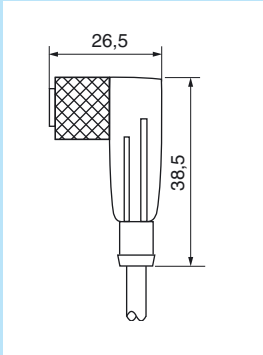
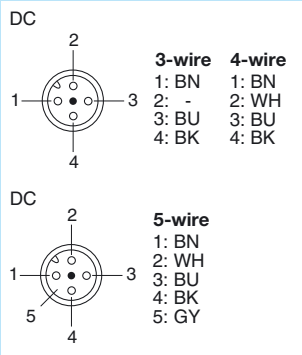
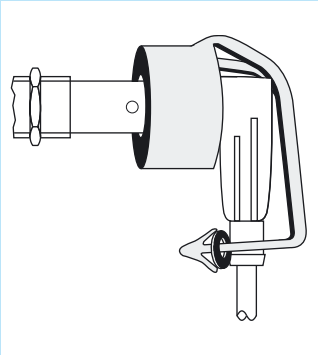
Design	DC • G1/2 • L= 31 mm	DC • G1/2 • L= 48 mm
Dimensions		
Detection range	-40...+120 °C (-40...+248 °F)	
Output		
ID-No.	P71019	P71020
Type	TN 552 GAPP	TN 552/1 GAPP
Supply voltage [V]	24 DC ±10%	
Current consumption [mA]	<200	
Voltage drop [V]	<2.5	
Analog output [mA]	4...20, scalable, Detection range min. 16 °C / 29 °F	
Switching current [mA]	200	
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)
Programmable functions	one switching point, hysteresis/window, switching output NC/NO, MIN- / MAX- memory function	
Compressive strength [bar]	100	
Housing material	housing: PBT sensor: AISI 316 Ti	
Protection [EN 60529]	IP 65	
Connection	M12 connector	
Accessories	see page 7.06	

## Accessories

### M12 connector 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>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 current	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).

## A selection

### Flow sensors

- Electronical monitoring of flow
- Lubrication monitoring
- Measuring range 1 ml/min...100 l/min
- Detection range 1...300 cm/s
- Reaction time 0.5 s

### Level sensors for Ex-applications

- For level monitoring in Ex areas
- For temperatures  $-35...+200\text{ }^{\circ}\text{C}$
- With PTFE connector cable
- Sensors for connection to amplifiers

### Level sensors

- For level monitoring  $-230...+230\text{ }^{\circ}\text{C}$
- Steam proof at a pressure of up to 30 bar
- For hot motor oil
- For liquid nitrogen
- For chemically aggressive media

### Ultrasonic sensors

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

### Pressure sensors

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

### Infrared detectors

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





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