

#### Overview



SITRANS TH100 Slim is particularly suited for the production of compact thermometers with integrated transmitter.

Its cylindrical stainless steel enclosure is simply welded to the basic body of the compact thermometer.

Its compact design makes the SITRANS TH100 Slim the ideal solution for manufacturers from a wide variety of industries.

For the parameterization, the SIPROM T software is used in combination with the modem for SITRANS TH100/TH200.

#### Benefits

- Transmitter in 2-wire system with M12 device plug for mounting on compact thermometer.
- Solution for easy and space-saving temperature measurements in a variety of industries.
- Programmable; as a result, the sensor connection, measuring range and much more are programmable.

#### Application

The SITRANS TH100 Slim transmitter can be used in combination with Pt100 compact resistance thermometers for temperature measurement in all industries. Thanks to its compact design, it can be mounted to all kinds of designs.

The output signal is a load-independent direct current of 4 to 20 mA which is proportional to the temperature.

Parameterization is implemented over the PC using the parameterization software SIPROM T and the modem for SITRANS TH100/TH200. If you already have a "Modem for SITRANS TK" (article number 7NG3190-6KB), you can continue to use this for parameterization of the SITRANS TH100.

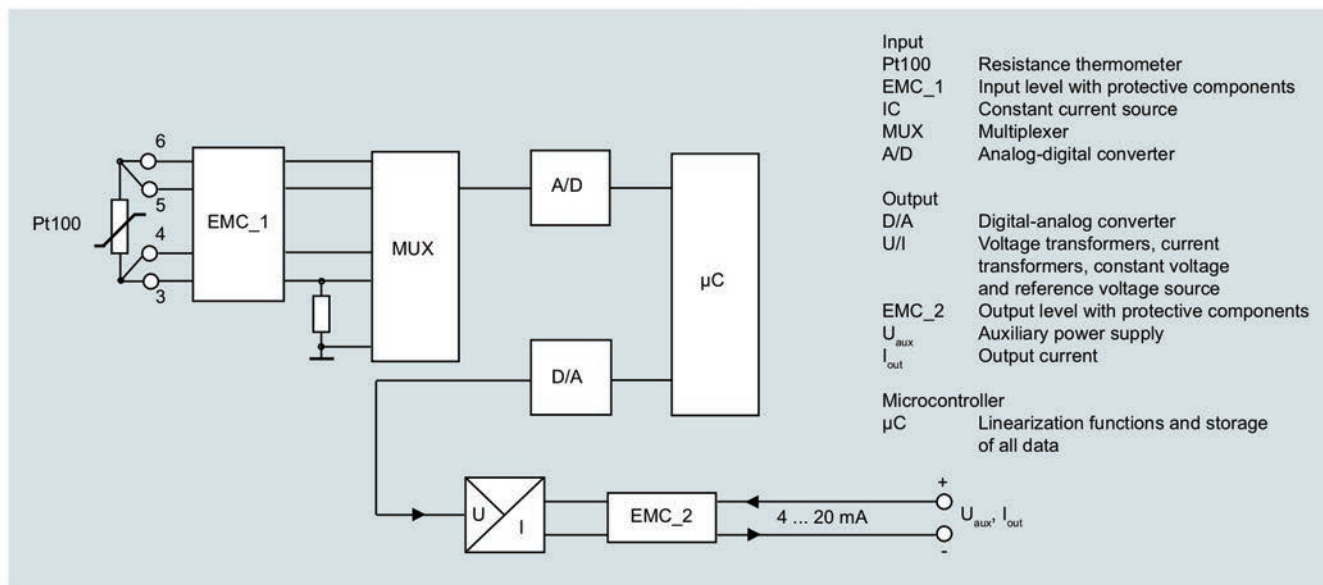
#### Function

##### Mode of operation

The measured signal supplied by a Pt100 resistance thermometer (2, 3 or 4-wire connection) is amplified in the input stage. The voltage, which is proportional to the input variable, is then converted into digital signals by a multiplexer in an analog-to-digital converter. They are converted in the microcontroller in accordance with the sensor characteristic and additional parameters (measuring range, damping, ambient temperature, etc.).

The signal prepared in this way is converted in an analog-to-digital converter into a load-independent direct current of 4 to 20 mA.

An EMC filter protects the input and output circuits against electromagnetic interferences.



SITRANS TH100 Slim, function block diagram

## Temperature measurement

Temperature transmitters

Compact and head transmitters

### SITRANS TH100 Slim (Pt100)

#### Technical specifications

##### Input

###### Resistance thermometer

Measured variable	Temperature
Input type	Pt100 according to IEC 60751
Characteristic curve	Temperature-linear
Type of connection	2, 3, 4-wire connection
Resolution	14 bit
Measuring accuracy	< 0.25 °C (0.45 °F)
Repeatability	< 0.1 °C (0.18 °F)
Measuring current	Approx. 0.4 mA
Measuring cycle	< 0.7 s
Measuring range	-60 ... +160 °C (-76 ... +320 °F)
Measuring span	25 ... 220 °C (45 ... 396 °F)
Unit	°C or °F
Offset	Programmable: -100 ... +100 °C (-180 ... +180 °F)
Wire resistance	Max. 20 Ω (total from feeder and return conductor)
Noise rejection	50 and 60 Hz

##### Output

Output signal	4 ... 20 mA, 2-wire
Auxiliary power	8.5 ... 36 V DC (30 V for Ex)
Max. load	( $U_{aux} - 8.5 V$ )/0.023 A
Ovrange	3.6 ... 23 mA, infinitely adjustable (factory setting: 3.84 ... 20.5 mA)
Error signal (in the event of sensor breakage)	3.6 ... 23 mA, infinitely adjustable (factory setting: 3.6 mA or 22.8 mA)
Damping time	0 ... 30 s
Protection	Against reverse polarity
Resolution	12 bit
Accuracy at 23 °C (73.4 °F)	< 0.1% of measuring span
Temperature effect	< 0.13 %/10 °C (0.13 %/18 °F)
Effect of auxiliary power	< 0.02 % of span/V
Effect of load impedance	< 0.055 % of max. span/100 Ω
Long-term drift	<ul style="list-style-type: none"> <li>&lt; 0.025% of the max. span in the first month</li> <li>&lt; 0.035% of the max. span after one year</li> <li>&lt; 0.05% of the max. span after 5 years</li> </ul>

##### Ambient conditions

Ambient temperature range	-40 ... +85 °C (-40 ... +185 °F)
Storage temperature range	-40 ... +85 °C (-40 ... +185 °F)
Relative humidity	98 %, with condensation
Electromagnetic compatibility	According to EN 61326 and NAMUR NE21

##### Design

Weight	42 g
Dimensions	See dimensional drawing
Material	316L stainless steel
Degree of protection according to IEC 60529	
• Enclosure	IP67

##### Software requirements for SIPROM T

PC operating system	Windows ME, 2000 and XP; also Windows 95, 98 and 98SE, but only in connection with RS232 modem
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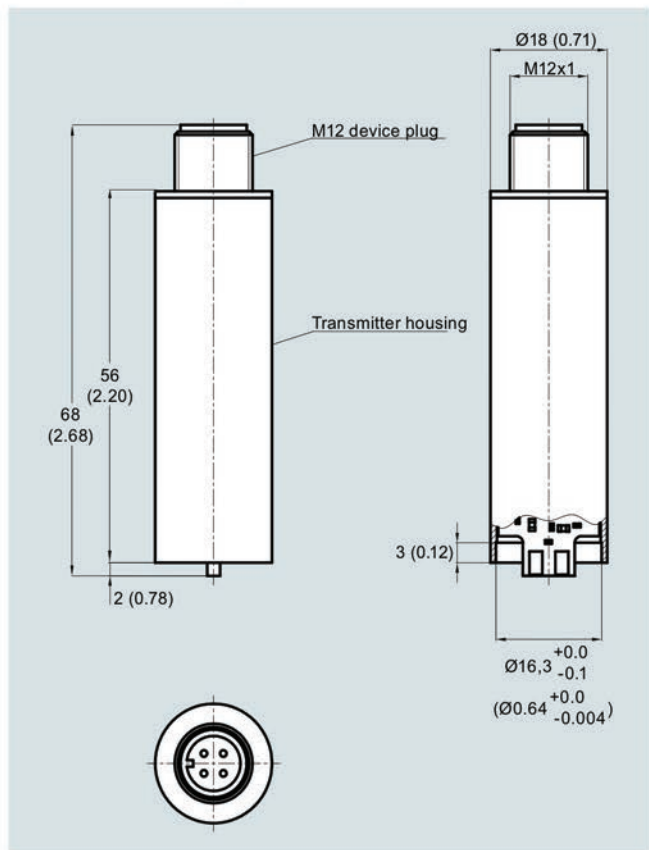
##### Factory setting:

- Pt100 (IEC 751) in the 3-wire connection
- Measuring range: 0 ... 100 °C (32 ... 212 °F)
- Fault current in the event of sensor breakage: 22.8 mA
- Sensor offset: 0 °C (0 °F)
- Damping 0.0 s

#### Selection and ordering data

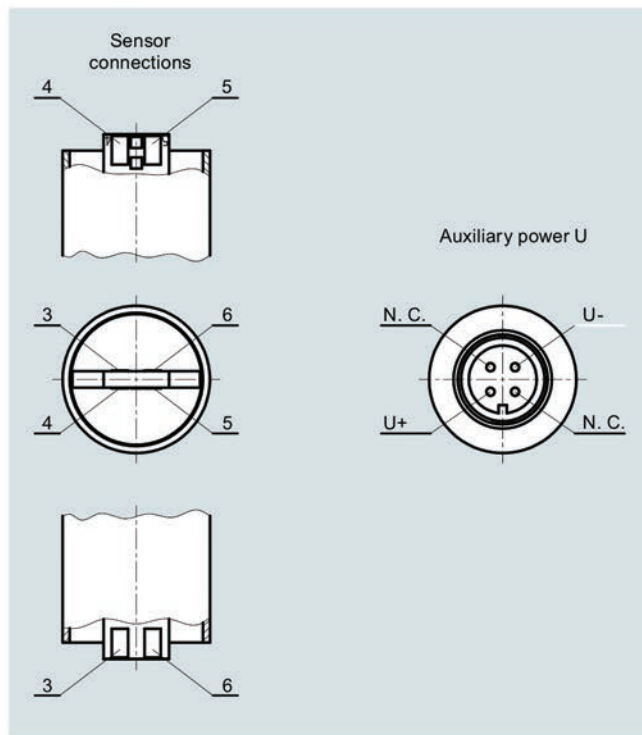
	Article No.
<b>SITRANS TH100 Slim temperature transmitters for Pt100</b> For welding to compact thermometers 2-wire system, 4 ... 20 mA, programmable, without galvanic isolation	
<ul style="list-style-type: none"> <li>• Without explosion protection</li> </ul>	<b>7NG3150-0NN00</b>
<b>Accessories</b>	
<b>Modem</b> Modem with USB interface and SIPROM T software	<b>7NG3092-8KN</b>

**Dimensional drawings**

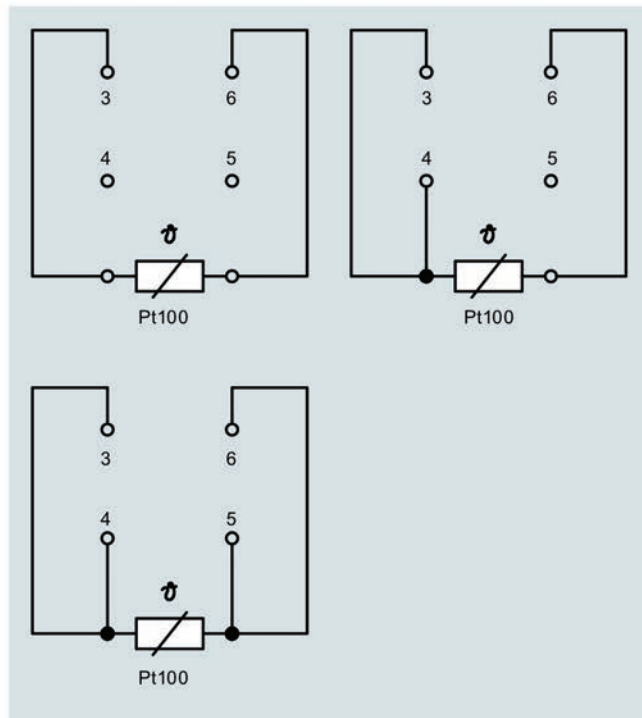


SITRANS TH100 Slim, dimensions in mm (inch)

**Circuit diagrams**



SITRANS TH100 Slim, auxiliary power and sensor connection



SITRANS TH100 Slim, sensor connection assignment