

# FAST RESPONSE TEMPERATURE SENSORS WITH A PLASTIC HEAD AND A DIGITAL OUTPUT

108.01en

## DESCRIPTION AND APPLICATION

These temperature sensors are designed for contact temperature measurement of liquid and gaseous substances. The stem design allows the sensor to be used for direct temperature measurement in pipelines and at the same time it provides a fast sensor response to changes in temperature. The temperature sensors are easy to install thanks to the unique "S-head" design of the SENSIT s.r.o. company.

The sensors consist of a plastic head and a metal case, where the sensing element for temperature measurement (sensor) is placed. Part of the metal case is a fitting with a standard G 1/2" thread. In the head, there is a terminal block with a converter located, to which a supply cable for sensor supply and digital output signal according to the sensor type is connected through a cable grommet or a connector. The basic versions of digital outputs are:

**SD 162, SD 162K** – MODBUS/RTU communication protocol, communication via the RS485 bus

**SD 164, SD 164K** – CANopen/CIA DS 301 communication protocol, communication via the CAN bus

The temperature range of sensor use is defined in the table of technical parameters for the individual versions of sensors. The sensors meet the ingress protection of IP 65 according to EN 60529, as amended.

The sensors are designed to be operated in a chemically non-aggressive environment, the use must be chosen with regard to the temperature and chemical resistance of the sensor head.

## ACCESSORIES

- CONEC 43-00092 connection plug
- connection cables with a straight RKT connector or right-angled RKWT or PRKWT connector

## DECLARATION, CERTIFICATES, CALIBRATION

Manufacturer provides **EU Declaration of Conformity**.

**Calibration** – The entire production passes through a final metrological inspection, which is carried out by comparing with standards or working measuring instruments. Continuity of the standards and working measuring instruments is ensured within the meaning of Section 5 of Act No. 505/1990 on Metrology. The manufacturer offers to supply the sensors calibrated in the SENSIT s.r.o. laboratory (according to requirements of the EN ISO/IEC 17025 standard, as amended) or in an accredited laboratory.

## SPECIFICATIONS

Sensor type (K - with connector)	SD 162 SD162K	SD 164 SD 164K
Output signal	RS 485 / MODBUS RTU	CAN / CANOpen-CIA DS 301
Measuring range *)	-50 to 130 °C	
Accuracy of the electronics	± 0.2 °C	
Type / Accuracy of the sensing element	Pt 1000 / ± (0.3 °C + 0.0005 t )	Pt 100 / ± (0.3 °C + 0.0005 t )
Supply voltage (U)	15 to 30 V DC	
Rated supply voltage (Un)	24 V DC	
Consumption / Supply current	maximum: 500 mW typical: 300 mW	
Working conditions	ambient temperature: -30 to 100 °C relative air humidity: max. 100% atmospheric pressure: 70 to 107 kPa	
Ingress protection	IP 65 in accordance with EN 60529, as amended	
Time response	τ0.5 < 4 s (0.2 m/s <sup>-1</sup> in running water)	
Standard length of the stem	50, 100, 160, 220 mm	
Diameter of the stem	4 ± 0.1 mm	
Material of the stem	stainless steel DIN 1.4301	
Standard thread type	G 1/2"	



## OTHER PARAMETERS

Resistance to pressure (impact on the stem with the medium)	PN 25
Insulation resistance	> 200 MΩ at 500 V/DC, 25°C ± 3 °C; humidity < 85 %
Dimensions of the connection head	70 × 63 × 34 mm
Material of the connection head	POLYAMIDE
Connector type in the head (for sensors with a connector)	RSFM4 - M12- Lumberg
Recommended wire cross-section (for sensors with a grommet)	0.14 to 1 mm <sup>2</sup>
Weight	min. 200 g

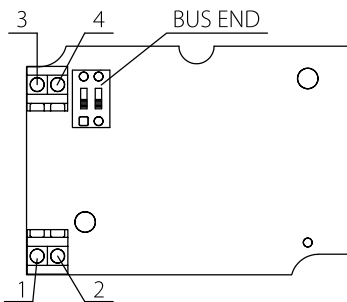
\*) By extending the stem length by 60 mm above the thread, the sensors can be used up to 200 °C.

MAXIMUM FLOW SPEED OF THE MEASURED MEDIUM – AIR AND WATER VAPOUR / WATER [m.s <sup>-1</sup> ]		
Length of the stem	up to 60 mm	> 100 to 160 mm
Values for the stem diameter of 4 mm	8 / 0.8	3.2 / 0.4

## WIRING DIAGRAM

SD 162

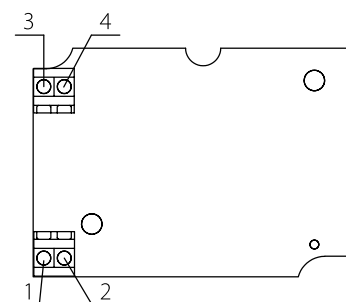
with a grommet



- 1 – power supply
- 2 – power supply
- 3 – data bus – K+
- 4 – data bus – K-

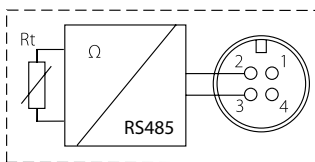
SD 164

with a grommet

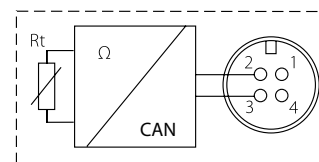


- 1 – power supply - U+
- 2 – power supply - GND
- 3 – data bus - CAN\_L
- 4 – data bus - CAN\_H

with a connector

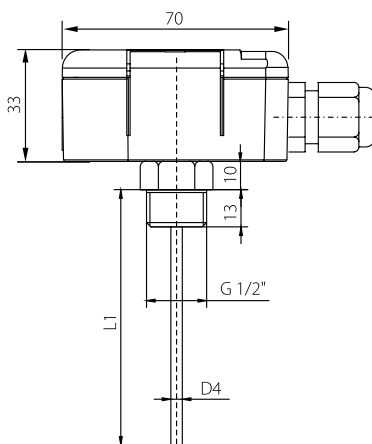


with a connector

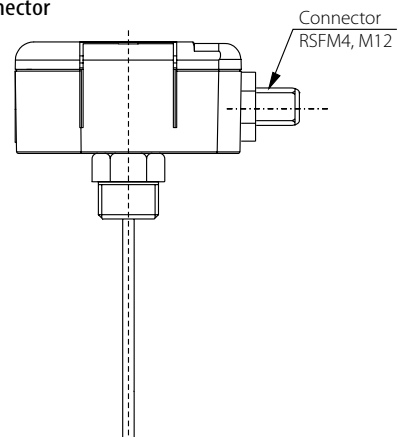


## DIMENSIONAL DRAFT

Sensors with the grommet



Sensors with the connector



## MODIFICATION AND CUSTOMIZATION

- accuracy class A for temperature sensing elements of SD 122A, SD 122AK, SD 124A, SD 124AK sensors
- variable stem design in the area - L1 length, material, diameter
- change of thread type
- by increasing the diameter of the stem to a minimum of 6 mm, it is possible to realize also the following versions:
  - SD 165A, SD 165AK – DS 18B20 digital temperature sensor, communication via the 1-Wire bus
  - SD 166A, SD 166AK – TSIC 206, 506 and 716 digital temperature sensors, ZACWire communication protocol

