

TEMPERATURE SENSORS WITH A STEM, A STAINLESS STEEL HEAD AND A DIGITAL OUTPUT

109.01en



DESCRIPTION AND APPLICATION

These temperature sensors are designed for contact temperature measurement of liquid and gaseous substances. In combination with a central holder, the sensor is suitable for temperature measurement in air conditioning ducts. The combination of a sensor and thermowell is suitable for measurement in pipelines. The material composition of the temperature sensor meets the requirements of Decree 38/2001 Coll., as amended, and thanks to the new design, the sensor can be easily cleaned. Due to these properties, the temperature sensors can be used in the food industry.

The sensors consist of a metal head and a metal case, where the sensing element for temperature measurement (sensor) is placed. An integral part of the head is M12 series connector to which the sensor power supply cable and the digital output signal are connected according to the sensor type. The basic versions of digital outputs are:

- SD 182K** – MODBUS/RTU communication protocol, communication via the RS485 bus
- SD 185K** – DS 18B20 digital temperature sensor, communication via the 1-Wire bus
- SD 186K** – TSic 206, 506 and 716 digital temperature sensors, ZACWire communication protocol

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

- JS 130 stainless steel thermowell
- metal holder K 120
- CONEC 43-00092 connection plug
- connection cables with a straight RKT connector or right-angled RKWT or PRKWT connector
- fitting with a collet or with cutting rings – for setting of different immersion lengths of the temperature sensor stem

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	SD 182K	SD 185K	SD 186K
Output signal	RS 485 / MODBUS RTU	1-Wire / DS18B20	ZacWire / TSic x06
Measuring range *)	-50 to 150 °C	- 40 to 125 °C	"TSic 206 and 306 -30 to 100 °C TSic 506 and 716 -10 to 60 °C"
Accuracy of the electronics	± 0.2 °C		
Type / Accuracy of the sensing element	Pt 1000 / ± (0.3 °C + 0.0005 t)	± 0.5 °C in the range of -10 to 80 °C ± 2 °C in the range of -30 to 100 °C	"TSic 206 ± 0.5 °C in the range of 10 to 90 °C TSic 306 ± 0.3 °C in the range of 10 to 90 °C TSic 506 ± 0.1 °C in the range of 5 to 45 °C TSic 716 ± 0.07 °C in the range of 25 to 45 °C"
Supply voltage (U)	15 to 30 V DC	3 to 5.5 V DC	



OTHER PARAMETERS

Rated supply voltage (Un)	24 V DC	5 V DC	3.3 V DC
Consumption / Supply current	maximum: 500 mW typical: 300 mW	1 mA	30 μ A
Working conditions	ambient temperature: -30 to 70 °C relative air humidity: max. 100% atmospheric pressure: 70 to 107 kPa		
Ingress protection	IP 67 in accordance with EN 60529, as amended		
Resistance to pressure (impact on the stem with the medium)	without a thermowell PN 25	with a thermowell PN 63	
Time response	τ 0.5 < 9 s (0.2 m.s-1 in running water)		
Standard stem lengths	70, 120, 180, 240, 300, 360, 420 mm		
Standard stem diameter	6 \pm 0.1 mm		
Measuring stem material	stainless steel DIN 1.4301		
Insulation resistance	> 200 M Ω at 500 V DC, 25 °C \pm 3 °C		
Type of the connector	RSFM4 - M12- Lumberg		
Material of the head	stainless steel DIN 1.4301		
Dimensions of the head (without a connector)	D 21.7 x 71.5 mm	D 21.7 x 23 mm	
Weight	min. 200 g	min. 100 g	

*) by extending the stem length by 60 mm, the SD 182K sensors can be used up to 200 °C

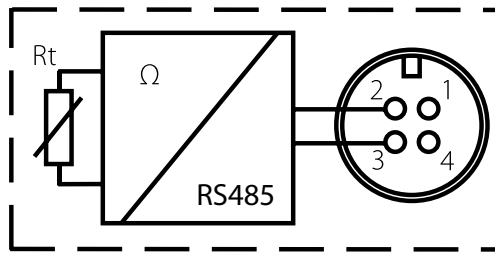
Maximum speed of water / air flow or water vapour flow when measuring the temperature in the pipelines:

Length of the case in mm	Flow speed of water / air without a thermowell	Flow speed of water / air with a thermowell
up to 60	2 / 20 m-1	3.5 / 35 m-1
> 70 to 120	1.5 / 15 m-1	3.0 / 30 m-1
> 120 to 180	1.0 / 8.0 m-1	2.0 / 15 m-1
> 180 to 240	0.6 / 2.5 m-1	1.2 / 5 m-1
> 240 to 420	0.3 / 0.6 m-1	0.8 / 1.6 m-1

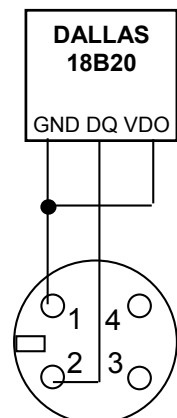
WIRING DIAGRAM

SD 182K

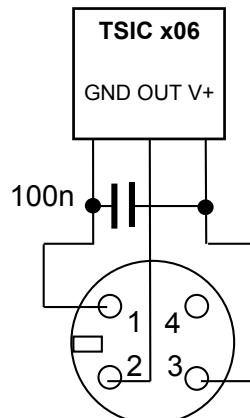
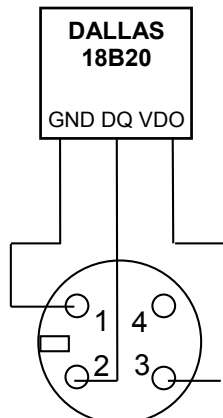
- 1 – power supply
- 2 – power supply
- 3 – data bus – K+
- 4 – data bus – K-



SD 185K

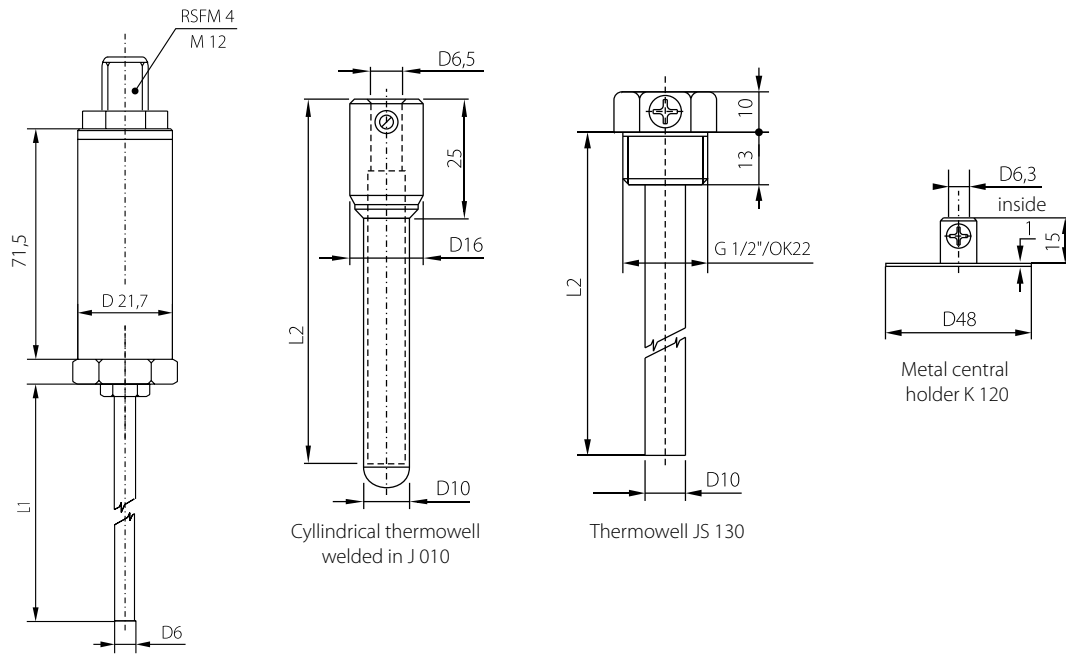


SD 186K



DIMENSIONAL DRAFT

SD 18xK



MODIFICATION AND CUSTOMIZATION

- variable stem design in the area – $L1$ length, material, diameter, possibility of threaded design
- the length of the sensor cable for the version with a grommet
- thermowell thread type

