

TH 161 – TEMPERATURE AND HUMIDITY SENSORS WITH CABLE AND I2C DIGITAL OUTPUT

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DESCRIPTION AND APPLICATION



The temperature and relative humidity sensors are designed to measure temperature and relative humidity of the air in spaces protected against ingress of water. The sensors consist of a polyamide case containing an SHT30F temperature and relative sensor and an input cable with PVC insulation. Free access of air is ensured to the temperature and relative humidity sensor, which ensures its very fast response to changes in both measured variables. Communication with the sensor is ensured by means of an I2C bus with the communication speed up to 1 MHz and with the possibility of up to two distinguishable and user-selectable addresses.

Recommended operating conditions for ensuring the most precise output values:

- ambient temperature around the sensor: 5 to 60 °C
- relative ambient humidity: 20 to 80%
- atmospheric pressure: 87 to 106 kPa

The temperature and relative humidity sensor is protected by a special PTFE membrane, which increases the resistance of the sensor against the impact of dust and water, ensures the minimum protection level of IP 65 according to EN 60759, as amended and enables the sensor to be used in severe conditions with higher occurrence of dust or spraying water.

The temperature and relative humidity sensors are designed for operation in chemically non-aggressive environments; their manner of use must be chosen with regard to the temperature and chemical resistance of the case and the supply cable.

Warnings and restrictions:

The sensors shall not be used for temperature measurement in areas:

- where the specified technical parameters and operating conditions are not adhered to
- where there is a mechanical impact on the sensor
- with a risk of explosion
- with chemically aggressive environment
- where the sensor could be exposed to permanent immersion in a liquid
- where the sensor could be exposed to the impact of electrostatic discharge (ESD)

A failure to observe the stated recommendations and a long-term exposure to conditions outside the recommended operating conditions will have a negative impact on measurement accuracy and the service life of the temperature sensor. Especially at high humidity there can be an offset of RH output signal (e.g., + 3 % RH after 60 hours maintained above the value of 80 % of RH). When the standard range of temperature and humidity is re-established, the sensor automatically returns to the calibrated status.

ACCESSORIES

- different variants of connectors --- HIRSCHMANN, LEMO, MOLEX, JST, etc.

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

Type of sensor	TH 161
Type of T + RH sensing element	SHT30F
Communication bus	I2C, maximum communication speed 1 MHz
Temperature measuring range	maximum: -20 to 80 °C recommended: 5 to 60 °C
Temperature measuring accuracy	± 0.2 °C in the range of 0 to 65 °C ± 0.5 °C in the range of -20 to 80 °C

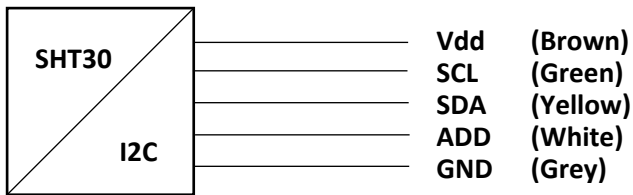


SPECIFICATIONS

Relative humidity measuring range	maximum: 0 to 100 % recommended: 20 to 80 °C
Relative humidity measuring accuracy	± 2 % in the range of 10 to 90 % ± 4 % in the range of 0 to 100 %
Vdd power supply	2.15 to 5.5 V
Ingress protection	IP 65 in accordance with EN 60529, as amended (with an applied PTFE membrane only)
Time response (25°C, 1m/s)*	temperature: $\tau_{0.63} > 2$ s relative humidity: $\tau_{0.63} > 8$ s
Case material	polyamide-based plastic - THERMELT 867
Diameter of the case	8 ± 0.1 mm
Case length	40 mm
Supply cable type	PVC unshielded 5 x AWG 28, diameter 4.0 ± 0.3 mm
Supply cable length	maximum 3 m
Weight	30 for 1m cable

*) response time is influenced by the sensor case design and sensor position in a specific application

WIRING DIAGRAM



The assignment of wire insulation colours is specified in the user manual under the individual sensor versions.

DIMENSIONAL DRAFT

