STHC 102 TEMPERATURE, RELATIVE HUMIDITY AND CO_2 TO THE INTERIOR WITH RS 485 OUTPUT (MODBUS)

temperature humidity CO_2

DESCRIPTION AND APPLICATION

The STHC 102 temperature, relative humidity and CO_2 sensor is designed to measure the carbon dioxide concentration, temperature and relative humidity of the air in spaces protected against water.
This combined sensor consists of a plastic ribbing head where a printed circuit board with the individual sensors and a converter is placed to establish a communication via the RS 485 bus. The temperature and relative humidity are measured by a common internal sensor whose signal is processed in a microprocessor and is converted to an output signal of MODBUS RTU. The CO_2 value is measured by a NDIR module whose digital signal is also converted to an output signal of MODBUS RTU. For the CO_2 concentration sensor, there is an autocalibration function available to set the sensor at the minimum CO_2 value corresponding to the outside concentration level. The STHC 102 temperature, relative humidity and CO_2 sensor meets the ingress protection of IP 30 according to EN 60529. Suitable design and high-quality material ensure that the sensor does not feel disturbing even in the interiors with high aesthetic requirements.
The STHC 102 temperature, relative humidity and CO_2 sensor is designed to be operated in a chemically non-aggressive environment; its use must be chosen with regard to temperature and chemical resistance of the head and of the individual sensors.

The operating conditions to establish the correct function are:
- ambient temperature in the vicinity of the sensor: 0 to 45 °C
- relative ambient humidity: 0 to 95% (non-condensing humidity)
- atmospheric pressure: 87 to 106 kPa

DECLARATION, CERTIFICATES, CALIBRATION

Manufacturer provides **EU Declaration of Conformity**.
Calibration – The final metrological inspection – comparison with standards or working instruments – is carried out for all the products. Continuity of the standards and working measuring instruments is ensured within the meaning of the Section 5 of Act no.505/1990 on metrology. The manufacturer offers a possibility to supply the sensors calibrated in SENSIT s.r.o.'s laboratory (according to requirements of the EN ISO/IEC 17025 standard) or in an Accredited laboratory.

TECHNICKÉ PARAMETRY

Sensor type	STHC 102
Temperature measurement range **	0 to 45 °C with guaranteed accuracy of CO_2 measurement - 40 to 80 °C without guaranteed accuracy of CO_2 measurement - 40 to 80 °C short-term
Temperature measurement accuracy *	± 0.5 °C
Relative humidity measurement range *	0 to 85 % with guaranteed accuracy of CO_2 measurement 0 to 95 % without guaranteed accuracy of CO_2 measurement
Relative humidity measurement accuracy *	± 3 % in range 10 to 85 % ± 4.5 % in range 0 to 10 %
CO_2 measuring range *	400 to 5000 ppm
CO_2 measuring accuracy *	± 200 ppm *
Time response CO_2 (90%)	90 s
Output signal	RS 485 / MODBUS RTU
Supply voltage U	15 to 30 VDC
Rated supply voltage Un	24 VDC
Consumption	maximum: 500 mW typical: 300 mW
Ingress protection	IP 30 acc. to EN 60529
Dimension of the head	71.9 x 59 x 27 mm
Material of the head	LEXAN
Weight	min 35 g
Recommended wire cross section	0.14 to 1 mm^2

* The stated measurement ranges and accuracies for the individual sensors refer to operating conditions when the supply voltage is connected.

**Temperature sensor can be used in temperature range -40 to 80 °C for a short time.

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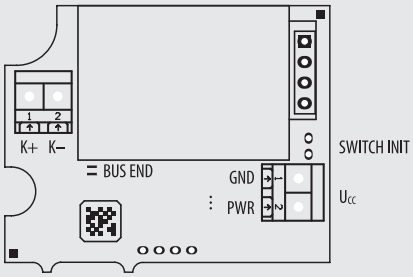
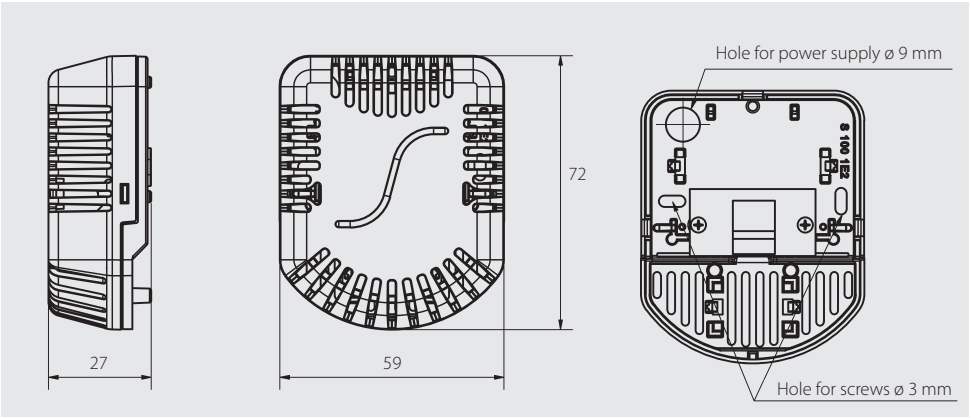
WIRING DIAGRAM

RS 485

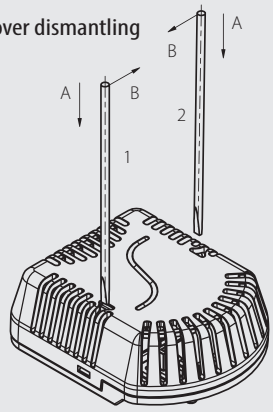


GND, PWR – U_{cc} supply voltage
K+/K- – communication line
BUS END – RS 485 termination

DIMENSIONAL DRAFT



Cover dismantling



SENSOR INSTALLATION AND SERVICING

The sensors are designed to be mounted on a wall or other horizontal surfaces and for the attachment it is necessary to prepare required holes for mounting screws using a template (delivered with the sensor).

1. Before connecting the supply cable, it is necessary to separate the perforated cover from the plastic head base.
2. Remove the cover and insert the power cable through the 9 mm hole, apply the base to the surface and screw on with two screws or bolts. The length of the mounting bolts or screws for fastening must be chosen with respect to the thickness of the plastic head base. **Connect the power cable to the terminals according to the "Wiring diagram"**, position the perforated cover onto the attached base and lock it by clicking in.
3. After installing and connecting to the electrical measuring equipment, the sensor is ready for use. The sensor does not require any special servicing or maintenance.

For more detailed description of the installation, see the operating instructions for the sensor.