



**A compact combination: Particulate matter sensor with temperature, humidity and pressure measurement.**

Accurately measures:

- Particulate matter values PM10 and PM2.5
- Relative humidity, air temperature and atmospheric air pressure

## Particulate matter-hygro-thermo-baro sensor from the COMPACT series

The particulate matter-hygro-thermo-baro sensor from our COMPACT series are designed to measure particulate matter fractions PM10, PM4, PM2.5 and PM1, relative humidity, air temperature and atmospheric air pressure.

The sensor is intended for outdoor use. Typically, they are used for particulate matter measurements in urban districts. Using multiple sensors, the particulate distribution can be measured across larger areas. Thanks to its universal interface the sensor can also be used as a standalone solution in any suitable application.

The digital interface of the device comprises an RS485 interface in half-duplex mode. Together with the ID-based communication, it can be operated in a bus system with up to 99 sensors.

### Flexible for integration via two data protocols:

- ASCII (THIES format)
- Binary (MODBUS-RTU)

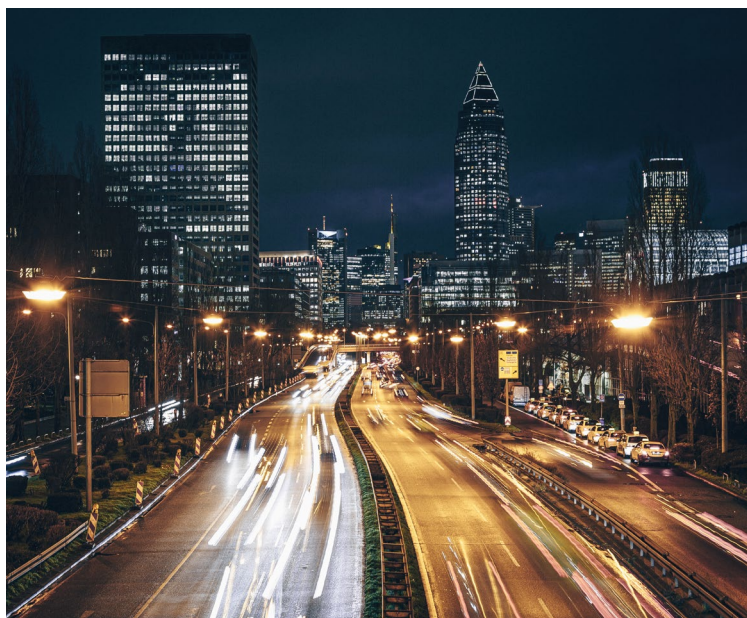


The replaceable hygro-thermo and particulate matter sensors ensure that recalibrating and maintenance are simple.

The hygro thermo sensors are fitted within a forced-ventilated weather and radiation shield, ensuring precise measurements in any weather conditions.

The individual measured values are recorded and analyzed once a second. Internally, the temperature and relative air humidity are used to calculate the dew point and the absolute humidity. These are also output in the data telegram.

**For your projects and plans, please contact our sales team, who will be happy to advise you.**



**Hygro-thermo sensor**  
Records air temperature  
and relative air humidity

**Pressure sensor**

**Housing material**  
Stainless steel

**Hygro-thermo-baro sensor  
with plug**

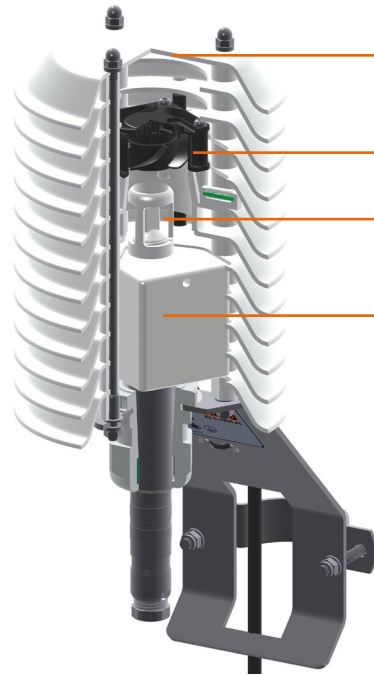


**Ventilated weather  
and radiation shield**

**Fan**

**Sensor element  
in free airflow**

**Replaceable  
particulate matter sensor**



**Ventilated weather  
and radiation shield  
with function control signal**



# PARTICULATE MATTER-HYGRO-THERMO-BARO SENSOR

## TECHNICAL DATA

Order no.: 1.1007.54.78x

Particulate matter	
Measuring range	0 ... 1000 µg/m <sup>3</sup>
Accuracy (when no fog)	PM2.5: ±10 µg/m <sup>3</sup> @ 0 ... 100 µg/m <sup>3</sup> ±10% of measured value @ 100 ... 1000 µg/m <sup>3</sup> PM10: ±25 µg/m <sup>3</sup> @ 0 ... 100 µg/m <sup>3</sup> ±25% of measured value @ 100 ... 1000 µg/m <sup>3</sup>
Long-term stability	Better than ±1.25 µg/m <sup>3</sup> / year
Relative air humidity	
Measuring range	0 ... 100%
Accuracy	Typically ±1.5% rel. humidity @ 25 °C and < 80% rel. humidity, ±2% rel. humidity across entire measuring range
Long-term stability	Typ. better than 0.25% rel. humidity / year
Adjustment time*	35 sec
Air temperature	
Measuring range	-40 ... +60 °C
Accuracy	±0.1 °C @ -40 ... +60 °C @ moving air > 2 m/s
Long-term stability	≤ 0.03 °C / year
Adjustment time*	41 sec
Atmospheric air pressure	
Measuring range	300 ... 1200 hPa
Accuracy	±0.25 hPa @ -20 ... 60 °C @ 800 ... 1100 hPa ±0.50 hPa @ -20 ... 60 °C @ 600 ... 800 hPa
Long-term stability	±0.3 hPa / year
Adjustment time*	5 sec
Dew point temperature	
Accuracy**	Better than ±2.0 °C @ 10 ... 100% rel. humidity, -40 ... 60 °C

Serial interface	
Type	RS485
Operating mode	Half-duplex mode
Data format	8N1, 8N2, 8E1, 8E2, 8O1, 8O2, 7E1, 7N1
Baud rate	2400, 4800, 9600, 19200, 38400, 57600
Resolution (dependent on telegram and interpreter)	Particulate: 0.1 µg/m <sup>3</sup> Air pressure: 0.01 hPa (max.) Humidity: 0.1% rel. humidity Temperature: 0.01 °C (max.)
Power consumption	Measuring electronics: typically 360 mW, max. 500 mW, Fan: 2 W
Miscellaneous	
Electr. supply	Voltage: 12 ... 30 V DC Measurement electronics via socket Ventilation via permanently connected cable
Cable for measurement electronics	LiYCY, 4 x 0.5 mm <sup>2</sup> , shielded, UV-resistant, dia. 6 ... 8 mm
Connection type	Measuring electronics: Connector for data transmission and power supply Ventilation: Permanently connected 5 m cable
Permissible ambient conditions	-20 ... +70 °C 0 ... 100% rel. humidity, including dew
Dimensions	159 x 120 x 317 mm (L x W x H) without clamp
Weight	approx. 1.25 kg
Protection class	IP 53
Housing material	Stainless steel, polycarbonate

\* T<sub>63</sub>

\*\* Derived from the accuracies for humidity and air temperature

### Accessories / spare parts (optional)

Order no.	Description
510641	Connection cable 5 m, 4 x 0.5 mm <sup>2</sup> , shielded, UV-resistant and sea water resistant
510487	Replacement thermo-hygro sensor
510488	Protective cap The protective cap is designed to protect the thermo-hygro sensor from damage.



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