

PARTICULATE-HYGRO-THERMO-BAROMETRIC SENSOR



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

Accurately measures:

- Particulate matter values 10 and 2.5
- Relative humidity, air temperature and atmospheric air pressure

Particulate-hygro-thermo-barometric sensor from the COMPACT series

The particulate-hygro-thermo-barometric sensors from our COMPACT series are designed to measure particulate matter values 10 and 2.5, relative humidity, air temperature and atmospheric air pressure.

The sensors are intended for outdoor use. Typically, they are used for particulate measurement in urban districts. Using multiple sensors, 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.

Properties:

- High long-term stability
- High linearity
- Excellent dynamic behavior
- Small temperature coefficient
- Low hysteresis

The digital interface to 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)

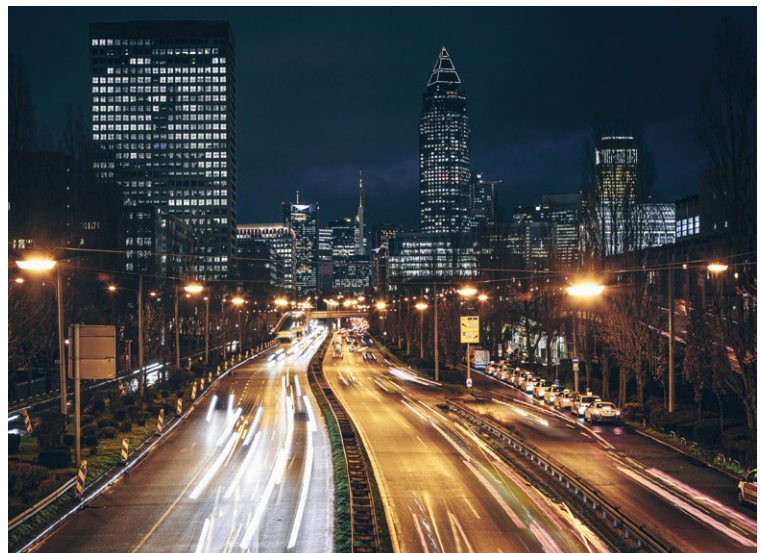


All sensors are synchronized and calibrated at the factory. The replaceable thermo-hygro and particulate modules ensure recalibrating and maintenance is simple.

The sensor is 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 module
Records air temperature
and relative air humidity

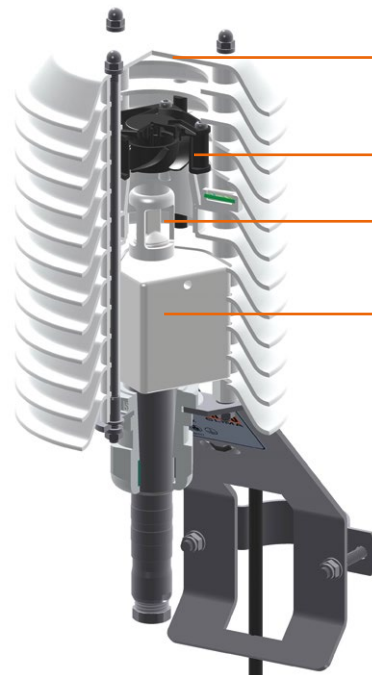
Pressure sensor

Housing material
Stainless steel

Hygro-thermo-barometric sensor
with plug



Sintered filter
Optional



**Ventilated weather
and radiation shield**

Fan

**Sensor element
in free airflow**

**Replaceable
particulate sensor**



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

PARTICULATE-HYGRO-THERMO-BAROMETRIC SENSOR

TECHNICAL DATA

Order no.: 1.1007.54.78x

Particulate	
Measuring range	0 ... 1000 µg/m³
Accuracy (when no fog)	PM2.5: ±10 µg/m³ @ 0 ... 100 µg/m³ ±10% of measured value @ 100 ... 1000 µg/m³ PM10: ±25 µg/m³ @ 0 ... 100 µg/m³ ±25% of measured value @ 100 ... 1000 µg/m³
Long-term stability	Better than ±1.25 µg/m³ / 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*	≤ 10 sec
Air temperature	
Measuring range	-40 ... +60 °C
Accuracy	±0.1 °C @ -40 ... +60 °C @ moving air > 2 m/s
Long-term stability	Max. ≤ 0.03 °C / year
Adjustment time*	≤ 20 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*	≤ 8 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
Discrimination (dependent on telegram and interpreter)	Particulate: 0.1 µg/m³ 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 0.25 mm², shielded, UV-resistant, dia. 3 ... 5 mm
Connection type	Measuring electronics: Connector for data transmission and power supply Ventilation: Permanently connected 5 m cable
Permissible ambient conditions	-40 ... +85 °C 0 ... 100% rel. humidity, including dew
Dimensions	159 x 120 x 317 mm (L x W x H)
Weight	approx. 1.25 kg
Protection class	TBC
Housing material	Stainless steel, polycarbonate

* 163%

** Derived from the accuracies for humidity and air temperature

Accessories / spare parts (optional)

Order no.	Description
510641	Connection cable 5 m, 4 x 0.25 mm², shielded, UV-resistant and sea water resistant
510307	Replacement thermo-hygro module
510314	Sintered filter cap The filter is designed to protect the thermo-hygro module from dust and salty air during outdoor operation.
510488	Protective cap The protective cap is designed to protect the thermo-hygro module from damage.
1.1005.54.903	Wall bracket ZA50



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