

AIR TEMPERATURE AND RELATIVE HUMIDITY

Combined sensor

t026 SMATRH-E



Very high precision sensor even in extreme environmental conditions



Use of a patented, high-performance natural ventilation protection screen:
SMarT CELLino



Sensor compliant with the performances prescribed by the WMO
(guideline n°8 Annex 1.A)



Optimal long-term stability



Measure the dew and frost point

Description

SMATR_H is a combined sensor for measuring air temperature and relative humidity. Temperature measurement is taken using a platinum Pt100 resistance thermometer with a response curve compliant with the DIN 43760 Class 1/3 standard and with a 4-wire connection. The humidity measurement is obtained using a laser-cut capacitive polymer transducer connected to an electronic signal conditioning board. The sensor is offered either in the SMATR_H-N version with natural output for temperature (4-wire Pt100) and 0-1 V output for humidity, or in the I, V, S, 12 versions (respectively in current, tension, serial Modbus and serial SDI -12 outputs). Serial versions (Modbus or SDI-12) can provide, in addition to the air temperature and humidity measurements, the values of dew and frost points as well. The sensor body is made out of corrosion-resistant aluminum alloy and stainless steel screws. The sensing elements are protected from the external radiation by a special non-hygroscopic screen made of an intrinsically anti-UV plastic material. Moreover, thanks to its curvy-shape in section the internal natural ventilation is improved, ensuring an ideal environment of measure. These features allow the sensor to have a functioning not affected by the climate factors. SMATR_H is supplied with power and signal cable (4 m).



Main features

- **It measures dew and frost points**
- **High accuracy**
- **Naturally ventilated protection shield**
- **Protect against overvoltages**

Technical Specifications*

Measurement performance

Temperature [°C]

Transducer	Pt100 1/3 DIN 43760
Measurement range	-40 ÷ +60
Accuracy <i>natural output</i>	1/3 DIN 43760
Accuracy <i>serial, tension and current output</i>	1/3 DIN 43760 ± 0.1
Resolution	0.03

Relative Humidity [%]

Transducer	Capacitive
Measurement range	0 ÷ 100
Accuracy	±2 (±1 upon request)
Resolution	0.01
Repeatability	0.15
Long-term stability	< 0.25 a year

Other indicators

Dew and frost points	Just on serial version
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Operating conditions

Temperature	-40°C ÷ +60°C
Humidity	0% ÷ 100%

Outputs

Natural	Pt100 4-wires 0 ÷ 1 V ↔ 0% ÷ 100%
RS485-Modbus	Temperature, relative humidity, dew and frost points
SDI - 12	Temperature, relative humidity, dew and frost points
Tension	0 ÷ 2 V ↔ -40 ÷ 60 °C 0 ÷ 1 V ↔ 0% ÷ 100%
Current	4 ÷ 20 mA ↔ -40 ÷ 60 °C 4 ÷ 20 mA ↔ 0% ÷ 100%

Power supply and Consumption

Voltage supply	7 ÷ 30 Vdc		
Power consumption (mA)	Min	Typical	Max
Natural / RS485-Modbus / SDI - 12 / 0 ÷ 2 V	-	1	3
4 ÷ 20 mA	5	-	25

Mechanical specifications

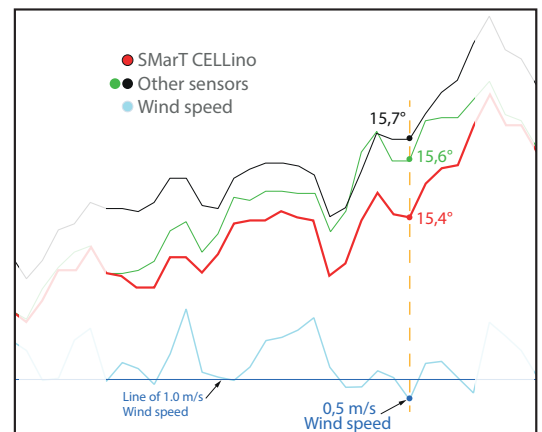
Protective body	Plastic material (ASA) and stainless steel screws
Weight	1.4 kg
Dimensions	Ø = 175 mm; Heigh = 310 mm
Electrical connections	IP67 / 7 pole male connector

Ordering codes

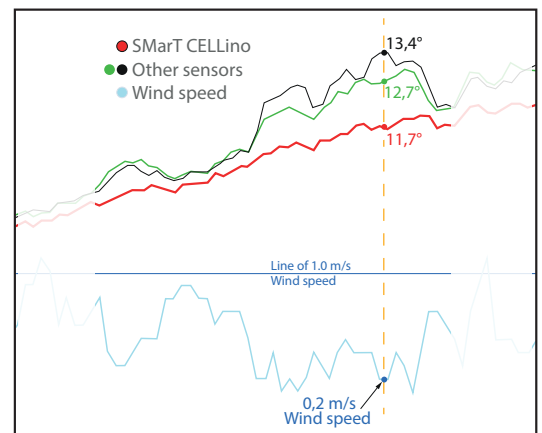
Natural output	PSM-t026n-SMATRH-N
Current output	PSM-t026o-SMATRH-I
Tension output	PSM-t026p-SMATRH-V
RS485-Modbus serial output	PSM-t026q-SMATRH-S
SDI-12 serial output	PSM-t026r-SMATRH-12

*Changes on technical performances can be applied upon request of specific calibration

Comparative tests with reference solar screens



Excellent reactivity even for high temperature gradients



With wind lower than 1 m/s SMarT CELLino guarantees more accurate measurements