

# AIR TEMPERATURE AND RELATIVE HUMIDITY

Combined sensor

*t026 SMATR<sup>H</sup>-ET*



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<sub>H</sub> 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<sub>H</sub>-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<sub>H</sub> 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 natural output	1/3 DIN 43760
Accuracy serial, tension and current output	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

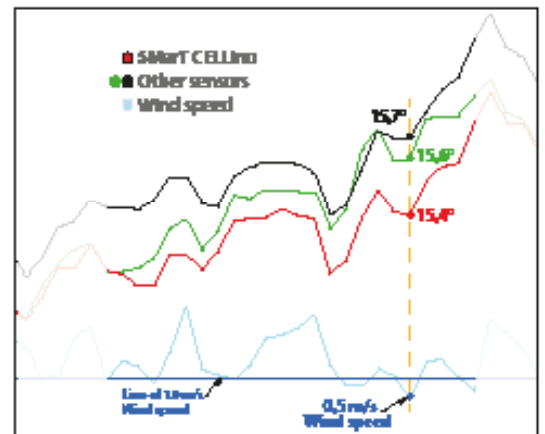
Voltage supply	7 ÷ 30 Vdc		
Power consumption (mA)	Min	Typical	Max
Natural / RS485-Modbus / SDI - 12 / 0 ÷ 2 V	-	1	3
4 ÷ 20 mA	5	-	25

### Mechanical specifications

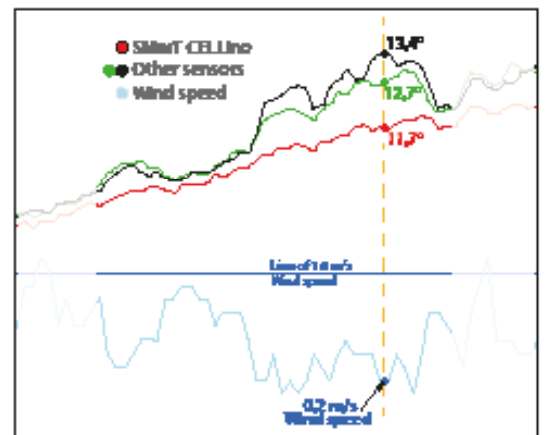
Protective body	Plastic material (ASA) and stainless steel screws
Weight	1.4 kg
Dimensions	Ø = 175 mm; Heigh = 310 mm
Electrical connections	IP67 / 7 pole male connector

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

### Comparative tests with reference solar screens



Excellent stability even for high temperature gradients



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