

# AIR TEMPERATURE AND RELATIVE HUMIDITY

Combined sensor

*t026 SMATRH*



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

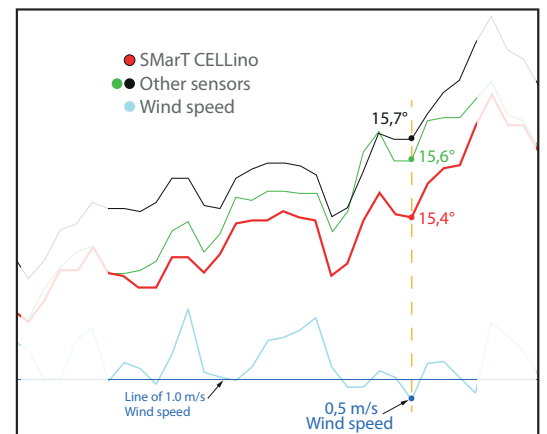
- It measures dew and frost points
- High accuracy
- Naturally ventilated protection shield
- Protect against overvoltages

## Technical Specifications\*

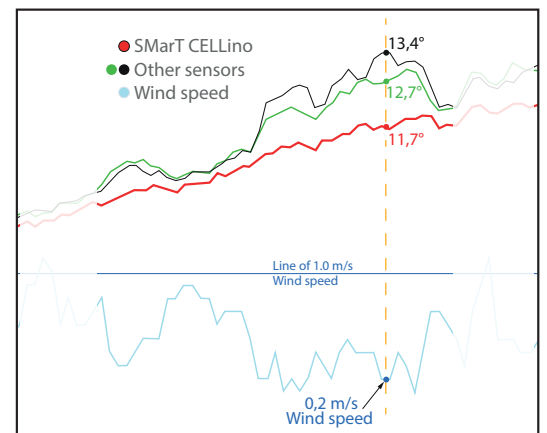
Measurement performance			
Temperature [°C]			
Transducer	Pt100 1/3 DIN 43760		
Measurement range	-30 ÷ +60		
Accuracy <i>natural output</i>	1/3 DIN 43760		
Accuracy <i>serial, tension and current output</i>	1/3 DIN 43760 ± 0.1		
Resolution	0.03		
Relative Humidity [%]			
Transducer	Capacitive		
Measurement 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		
Operating conditions			
Temperature	-30°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