

# TH Sense 2.0 Digital Thermo-Hygrometer

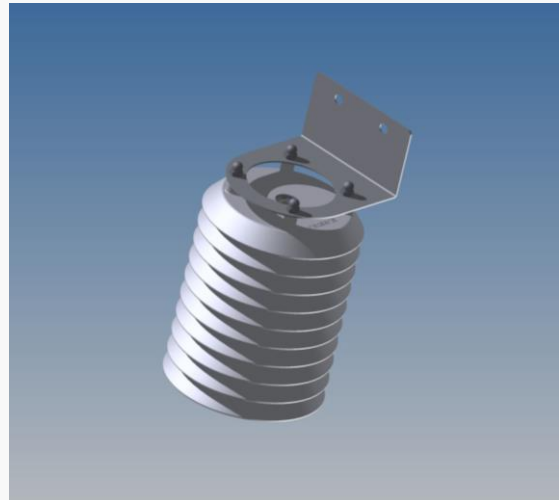
## PS-0090-JG

### Professional air temperature and humidity sensor with radiation shield

- Digital professional transducer
- Supplied with UV-resistant ABS radiation shield
- Anodized aluminum housing
- Replaceable PTFE filter
- Available with serial and analog output
- Small size
- Low Consumption

#### APPLICATIONS:

- Meteorology and Agro-Meteorology
- Meteorological systems for industrial applications
- Frost prediction



### Description

TH Sense 2.0 air the temperature and humidity is a professional and highly reliable instrument, at a very competitive price.

The transducer used and the particular assembly techniques ensure measurement accuracy and stability over time.

All major components (radiation shield, filter, electronic boards) are replaceable during maintenance operations, to ensure a prolonged service life and low operating costs.

The sensor can be supplied with I2C serial interface, compatible with the PS-0062-AD model (v. Compatibility List), or RS485 serial output (MODBUS RTU), or voltage output 0-1 V.

The sensor can be supplied with a steel support, which is also compatible with the PS-0062-AD model.

The sensor can be used with MeteoSense stations, MeteoSense 2.0, AgriSense and VineSense wireless units, and with MeteoSense PRO stations.

### Technical Specification:

Size: 200x120x120 mm  
Parts: aluminum, PTFE, ABS.  
Standard cable: 180 cm (other on request)

Supply voltage: 3 - 15 VDC  
Current consumption: 15 mA (max), typical 6 mA  
Operating range: -25 °C +65 °C  
Operating RH: 0 .. 100 %RH  
Response time (w/o filter): < 30 sec  
Output: I2C, RS485 MODBUS RTU, 0-1V (to be indicated at order time)

#### Air temperature measurement:

Measuring interval: - 25 + 65 °C  
Accuracy: <1 °C (full range)  
Resolution: 0.1 °C  
Stability: < 0.05 °C / year

#### Air relative humidity measurement:

Measuring range: 0 .. 100 %RH  
Accuracy: <3% RH  
Resolution: 0.1 %RH  
Stability: typical 0.05 %RH / year

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### Interconnection and wiring diagram

	OUTPUT MODE		
	I2C (emulation for backward compatibility)	RS485	0-1V
Supply voltage MAX(V):	15		
Supply voltage MIN(V):	3		
Output load Min:	-	-	5000 Ohm
Output load Typical:	-	120 Ohm	10000 Ohm
Output load Max:	-	-	50000 Ohm
Current consumption Max (mA)	< 15 mA		
Wiring			
WHITE	GROUND		
BROWN	VCC		
GREEN	SDA	RS485_B	OUT RH
YELLOW	SCL	RS485_A	OUT TEMP

### Terminal block wiring in I2C mode (compatib. PS-0062-AD)

MeteoSense 2.0:

Terminal block	J7
1	Yellow
2	Brown
3	White
4	Green
5	N.C.

Wireless unit:

Terminal block	JP4
1	Yellow
2	Brown
3	White
4	Green

MeteoSense 1.0 – standard main board:

Terminal block	J15
13	Yellow
14	Green
15	White
16	Brown

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MeteoSense 1.0 – “lite” main board:

Terminal block	J7
1	Green
2	Yellow
3	Brown
4	White

**WARNING:** Take care to correctly connect the sensor cables; the wrong connection could compromise the integrity of the sensor and cause irreversible damage.

### Backward compatibility with PS-0062-AD

The sensor can be used as an replacement for PS-0062-AD on the following models:

- Main unit MeteoSense (MN-0008-LA): Requires firmware Sensor Board V.2.7 or higher
- Main unit MeteoSense 2.0 (MN-0083-HD / MN-0093-KE): Requires firmware V.1.6 or higher
- Wireless units MN-0086-AE
- Wireless Repeater MN-0087-AE

For more information contact Netsens Technical Support ([support@netsens.it](mailto:support@netsens.it))

### RTU Modbus configuration and channel assignment:

Default configuration:

- Serial configuration: 19200,n,8,1
- Modbus device ID: 33
- Registers: request on 30001 to 30004, response on 40001to 40004 ,UINT16 (0x0000 > 0xFFFF)
- Output channels
  - Channel 1: Air Temperature (°K x 10)
  - Channel 2: Air Humidity (Rh%)(%)
  - Channel 3: Dew point (°K x 10))
  - Channel 4: Power supply (mV)

#### Example:

CHN 1, reading 523 >  $AirT = (523 - 273) / 10 = 25^{\circ}C$  (To convert in °C subtract 273 and divide by 10)

CHN 2, reading 51 > AirH=51%

CHN 3, reading 373 >  $DewP = (373 - 273) / 10 = 10^{\circ}C$  (To convert in °C subtract 273 and divide by 10)

CHN 4, reading 12100 > milliVolt=12100

### Voltage output configuration (0-1 Vdc):

Humidity(%): Signal OUT\_RH (V)

To convert from Volt to RH(%) =  $(OUT\_RH - 0,05) / 0,0095$

Example:  $OUT\_RH = 0,356V$   $RH(\%) = (0,356 - 0,05) / 0,0095 = 32,21\%$

Temperature(°C): Signal OUT\_TEMP (V)

To convert from Volt to °C =  $((OUT\_TEMP - 0,05) / 0,008636363) - 25$

Example:  $OUT\_TEMP = 0,496V$   $Temp.(^{\circ}C) = ((0,496 - 0,05) / 0,008636363) - 25 = 26,64^{\circ}C$

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### Installation:

Thanks to the reduced size and the mechanical strength of the solar screen, the Netsens temperature sensor and air humidity is ideal for being installed on meteorological stations, either directly in the field, without problems for the mechanical operations of agricultural vehicles.

The special mounting bracket allows easy installation both on the bracket of meteorological stations MeteoSense / VineSense, both directly in the field among the plants.

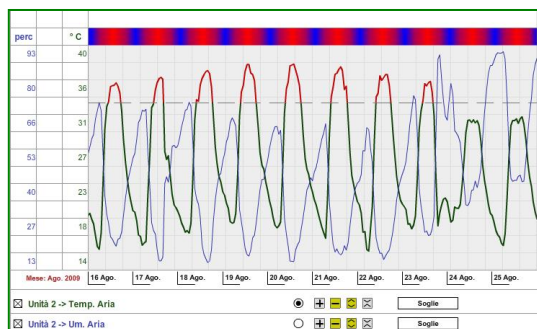


Figura 1



Figura 2

### Traceability, packaging and shipping:

Each sensor PS-0090-JG is individually tested and a unique serial number identification is assigned, which allows tracking over time; this code can be printed on the shipping carton, on the sensor itself or alternatively on the appropriate section of the user manual. Please keep this code carefully, to be communicated to the technician in case of failure or replacement.

The sensors are sold individually equipped with its own package, which will protect the sensor during transport.

If the box is open or visibly damaged, don't accept delivery by courier. Do not open the box with knives, cutter blades, which could damage the sensor or its cable.

### Ordering codes

PS-0090-JG	TH Sense 2.0 air temperature and humidity sensor – I2C version
PS-0090-JG-M	TH Sense 2.0 air temperature and humidity sensor – MODBUS RTU version
PS-0090-JG-A	TH Sense 2.0 air temperature and humidity sensor – Analog version

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### Warranty:

Netsens s.r.l. warrants that the above described components will be free from defects in material and workmanship for the following time period from the purchasing:

- Two years for items purchased by final users for non professional use;
- One year for items purchased by companies and organizations for professional use.

This warranty is valid only if all the components are used accordingly to the Manufacturer's indication and to the recommendations included in this User Manual.

This warranty does not cover: batteries, fuses, lights and any other consumable equipment. Also this warranty does not apply for damages due to neglect, misuse, contamination, alteration, accident or abnormal conditions of operation or handling, including failures caused by use outside Manufacturer specifications.

This warranty covers the original purchaser and it is not transferable.

If one or more components are supposed to be defective, contact Netsens s.r.l. or your local reseller in order to obtain a valid return authorization.

Netsens s.r.l. shall not be liable for any special, indirect, incidental or consequential damages or losses, arising from any cause.

Please contact Netsens s.r.l. for any additional information concerning warranty.

### Disposal of Waste Electrical & Electronic Equipment:



Disposal of Waste Electrical & Electronic Equipment:

The symbol (crossed out wheeled-bin) on your product indicates that the product shall not be mixed or disposed with your household waste at their end of use.

The product shall be handed over to your local community waste collection point for recycling of the product.

For more information, please contact your Government Waste Disposal department in your country.

Inappropriate waste handling could possibly have a negative effect on the environment and human health due to potential hazardous substances.

With your cooperation in the correct disposal of this product, you contribute to reuse, recycle and recover the product and our environment will be protected.

### Revisions:

Date	Release	Page/s	Modifications
14-12-2014	1.0	1-5	First release
10-10-2017	1.1	1-5	Details on MODBUS configuration; ordering codes.