

TRH 12

RELATIVE HUMIDITY AND TEMPERATURE PROBE



OPERATING INSTRUCTIONS Vr. 01 (ENG) - cod.: ISTR 05833

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PREVIOUS STATEMENT

In this manual are contained all the necessary information for a correct installation and the instructions for the use and the maintenance of the product; we recommend, therefore, to read carefully the following instructions.

The maximum care has been used in the realisation of this document, anyway TECNOLOGIC S.p.A. does not assume any responsibility deriving from the use of itself.

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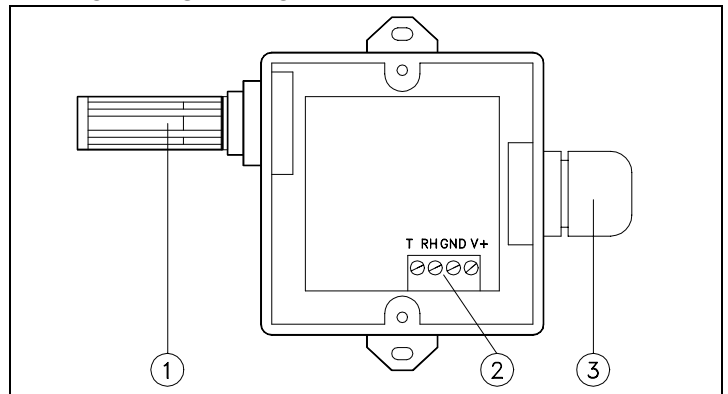
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1 - DESCRIPTION

1.1 - GENERAL DESCRIPTION

TRH 12 is a relative humidity (capacitive type) and temperature (RTD Pt100 type) probe with normalized outputs current signal 0 .. 20 mA.

1.2 - PROBE DESCRIPTION



- 1 - Sensors protective cap
- 2 - Terminal block
- 3 - Cable gland M20x1,5

2 - INSTALLATION AND USE ADVICES



2.1 - USE ALLOWED

The instrument has been projected as measure transductor.

It has to be reminded that the user has to take care that the electromagnetic rules are being respected also after the instrument installing, eventually using

proper filters.

Whenever a failure or a bad functioning of the instrument may cause dangerous situations or damage to people, things or animals it has to be reminded that the plant has to be equipped with additional electromechanical devices in order to grant the safety.

2.2 - MECHANICAL MOUNTING

The instrument, into case 80 x 80 mm , is designed for wall mounting.

Install the instrument as far as possible from electromagnetic sources as motors, power relay, relays, electrovalves, etc.

Avoid to place the probe into places where are present corrosive and polluting gases (see Concentration Maximum Pollutant in the Technical Data) and to do so that the probe are installed in ventilated position.

Should be necessary to remove the protective cap, do not cause any mechanical stress to the sensors and absolutely avoid touching the umidity sensor.

2.3 - ELECTRICAL CONNECTIONS

To access the terminal block remove the cover by unscrewing the two screws on it.

Avoid touching any electronic components and carry out the electrical wiring connecting one wire only for each terminal, according to the following diagrams, checking that the power supply is the same as indicated on the instrument.

Use the cable gland to make the cable exit and check the correct grip of the same and of the cover box to obtain the declared protection degree.

Check then if the measure instrument is equipped with a voltage output 9...30 VDC able to supply at least 50 mA, otherwise connecting the probe with an external voltage supply 9...30 VDC able to supply the necessary current as previously described and connecting it following the wiring diagrams.

It's strongly recommended to use cables with proper insulation, according to the working voltages and temperatures.

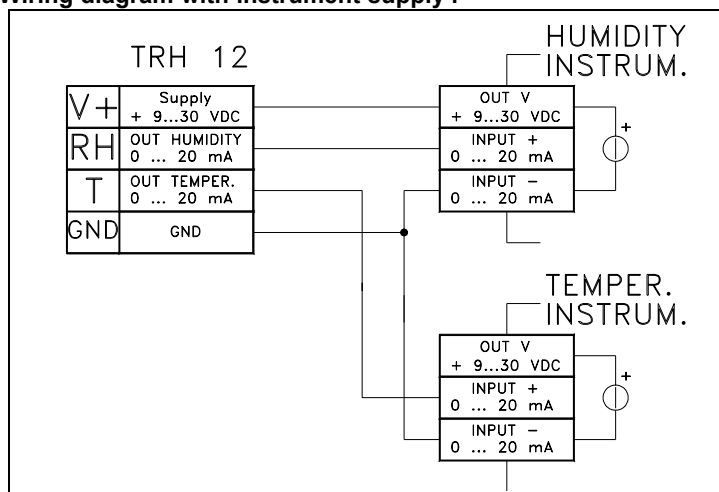
Furthermore, the cable of the probe has to be kept separate from line voltage wiring in order to avoid electromagnetic noises infiltration.

If the input cable of the probe is screened, it advisable to connect it on the ground with one side only.

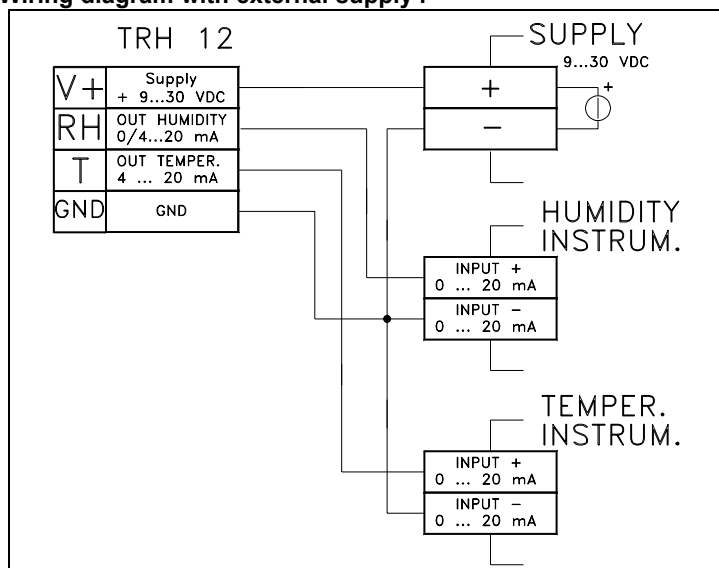
Tecnologic S.p.A. and its legal representatives are not responsible for any eventual damages to people, things or animals deriving from the instrument violation, not proper or wrong use or in any case not in accordance with the instrument features.

2.4 - ELECTRICAL CONNECTION DRAWING

Wiring diagram with instrument supply :



Wiring diagram with external supply :



3 - OPERATING MODE

The instruments to which the probe has to be connected has to be provided with a current input 0 ... 20 mA type.

To have a correct measure indication is necessary to set the lower and upper input limits.

These limits are the corresponding value to 0 mA (lower limit or beginning of scale) and 20 mA (upper limit or ending of scale) which have to be displayed.

See on the operating instructions of the measure instrument the setting mode of these limits.

The set values for TRH 12 probe are:

Lower limit umidity measure (0 mA) : 0

Upper limit umidity measure (20 mA) : 100

Lower limit temperature measure (0 mA) : -30 (°C) or -22 (°F)

Upper limit temperature measure (20 mA) : 70 (°C) or 158 (°F)

It's possible to use instruments with input 4 ..20 mA, in this case the limits to set will be:

Lower limit umidity measure (4 mA) : 20

Upper limit umidity measure (20 mA) : 100

Lower limit temperature measure (4 mA) : -10 (°C) or 14 (°F)

Upper limit temperature measure (20 mA) : 70 (°C) or 158 (°F)

4 - PROBLEMS, MAINTENANCE AND WARRANTY

4.1 - MEASURE ERRORS

Umidity reading errors can occur if settling time is too short, or be caused by steam, sprayed water, air drafts, direct exposure to sunlight, or presence of condensation on the sensor.

To obtain accurate measurements the sensor should be left to settle in the existing atmosphere for some time.

To reduced the possibility of condensation on the humidity sensor place the probe in ventilated position and where there is not a quick and elevation variation of temperature (from cold to warm)

4.2 - CLEANING

It's recommended to clean the box only with a cloth wetted with water or with a detergent neither abrasive nor containing solvents.

Should be necessary to remove the protective cap, do not cause any mechanical stress to the sensors and absolutely avoid touching the umidity sensor.

4.3 - WARRANTY AND REPAIRS

The instrument is under warranty against construction vices or defected material, noticed within 12 months from delivery date.

The warranty is limited to the repairs or to the substitution of the instrument.

The eventual violation of the instrument or the wrong use and installation of the product means the automatic decay of the warranty.

In case of defected instrument, noticed in warranty period or out of warranty, do contact our sales department to obtain the shipment authorisation.

The defected product must be shipped to TECNOLOGIC with the detailed description of the failures found and without any fees or charge for Tecnologic, safe different agreements.

5 - TECHNICAL DATA

5.1 - ELECTRICAL DATA

Power supply: 9 ... 30 VDC

Power consumption: 50 mA MAX

Humidity sensor type: Capacitive

Temperature sensor type: RTD Pt100 (class B)

External load: 250 Ω MAX

Humidity output signal : 0...20 mA (0 ...100 %RH)

Temperature output signal : 0...20 mA (-30 ...70 °C)

Protection class against electric shock: Class III

5.2 - MECHANICAL DATA

Housing: plastic

Dimensions: 80 x 80 mm, depth 52 mm

Weight: 130 g approx.

Mounting: Wall mounting

Connections: 2,5 mm² screw terminal block
Recommended connection cable: 4x0,5 or 4x 75 mm²
Box protection : IP 65
Air filter: Polyethylene
Operating temperature : -30 ... 70 °C
Operating humidity: 0 ... 100 RH%
Storage temperature: -30 ... 80 °C

Maximum workplace pollutant concentration:

Acetone (CH ₃ COCH ₃)	1000 ppm	2400 mg/m ³
Ammonia (NH ₃)	25 ppm	18 mg/m ³
Petrol	300 ppm	1200 mg/m ³
Chlorine (Cl ₂)	1 ppm	1,5 mg/m ³
Acetic Acid (CH ₃ COOH)	10 ppm	25 mg/m ³
Ethyl Acetate (CH ₃ COOC ₂ H ₅)	400 ppm	1400 mg/m ³
Ethanol (C ₂ H ₅ OH)	1000 ppm	1900 mg/m ³
Ethylene Glycol (HOCH ₂ CH ₂ OH)	100 ppm	260 mg/m ³
Formaldehyde (HCHO)	1 ppm	1,2 mg/m ³
Isopropanol ((CH ₃) ₂ CHOH)	400 ppm	980 mg/m ³
2-Butanone (C ₂ H ₅ COCH ₃)	200 ppm	590 mg/m ³
Hydrochloric Acid (HCl)	5 ppm	7 mg/m ³
Sulphur Dioxide (SO ₂)	5 ppm	13 mg/m ³
Hydrogen Sulphide (H ₂ S)	10 ppm	15 mg/m ³
Nitrogen Oxides (NO _x)	5 ppm	9 mg/m ³
Toluene/Xylene (C ₆ H ₅ CH ₃)	100 ppm	380 mg/m ³

Humidity overall accuracy : +/- 1,5 % (10...95%RH), +/- 2 % (0...10 / 95...100 %RH) ; (without pollutant presence, at 23 °C and with an air speed of 3 m/s)

Additional error with pollutant presence: +/- 2 %RH

Temperature overall accuracy : +/- 0,9 %

Response time : 30 sec. to reach a 63 % of an humidity change (at 23 °C and with an air speed of 3 m/s)

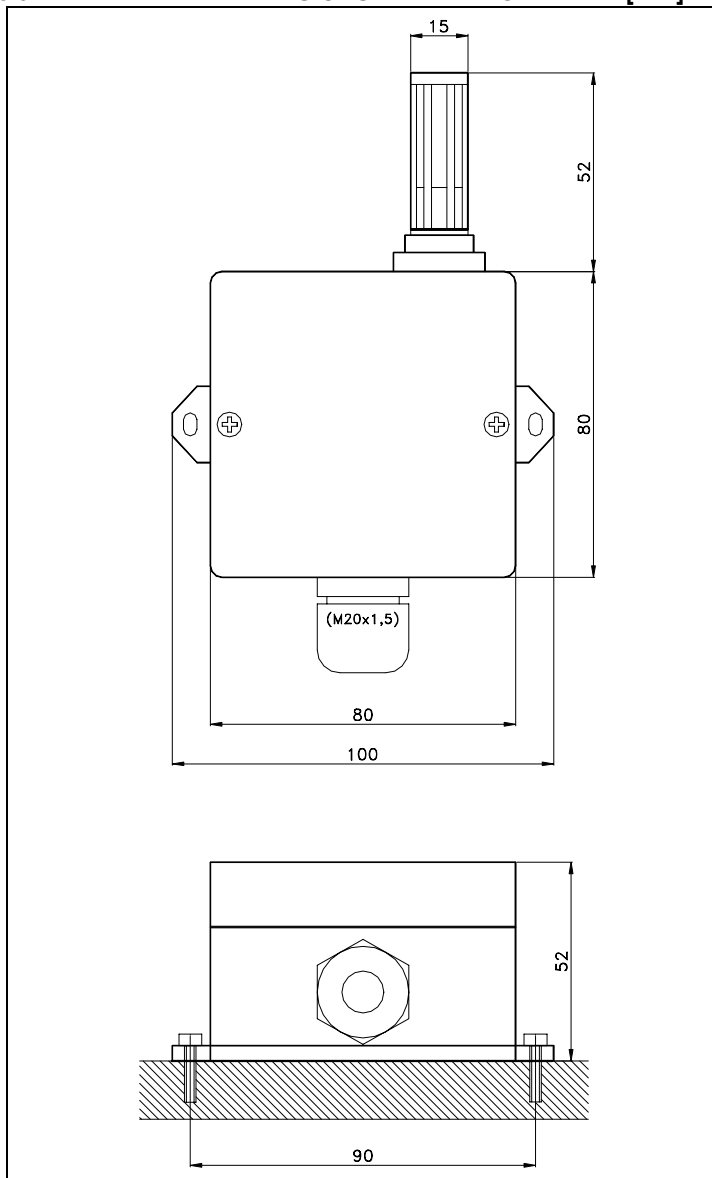
Recovery time after saturation: 90 sec. approx.

Maximum air speed: 20 m/s

Temperature compensation: By Pt100 probe

Compliance: ECC directive EMC 89/336 (EN 61326), ECC directive LV 73/23 and 93/68 (Instrument operating under 50 VDC and 75 VAC)

5.3 - MECHANICAL DIMENSIONS AND FIXING DEVICE [mm]



5.4 - FUNCTIONAL DATA

Humidity measurement range: 0 ... 100 %RH (0...20 mA)

Temperature measurement range: -30 ... 70 °C (0...20 mA)