

# ENGLISH

## User's manual



**CONTENTS:**

<b>1</b>	<b>SAFETY PRECAUTION AND PROCEDURES.....</b>	<b>2</b>
1.1	Preliminary .....	3
1.2	During use.....	3
1.3	After use.....	3
<b>2</b>	<b>PRODUCT DESCRIPTION.....</b>	<b>4</b>
<b>3</b>	<b>PREPARATION TO USE .....</b>	<b>5</b>
3.1	Supply voltage.....	5
3.2	Calibration .....	5
3.3	Storage.....	5
3.4	Note about humidity measure...	6
<b>4</b>	<b>OPERATION.....</b>	<b>7</b>
4.1	Probe description .....	7
4.2	Temperature and Humidity measure .....	8
<b>5</b>	<b>MAINTENANCE .....</b>	<b>9</b>
5.1	General information.....	9
5.2	Check the battery .....	9
5.3	Battery replacement .....	9
5.4	Cleaning.....	10
5.5	End of life .....	10
<b>6</b>	<b>TECHNICAL SPECIFICATIONS.</b>	<b>11</b>
6.1	Technical characteristics.....	11
6.2	General specification.....	12
6.3	Environmental conditions .....	12
6.4	Accessories.....	12

## 1 SAFETY PRECAUTION AND PROCEDURES

For your own safety as well as that of the apparatus, you must follow the procedures described in this instruction manual and especially read notes preceded by the symbol carefully.

Take extreme care for the following conditions measuring:

- Do not operate the probe under humid or wet environment or in presence of explosive gas (material), combustible (material), steam or filled with dust.
- Don't submit the probe to mechanical shock.
- Don't touch or manipulate the sensor.
- Don't expose the sensor to static electricity.
- If the probe has been used for a long time in critical environmental condition (high Humidity, temperature, etc.), put the probe in a atmosphere with humidity below 40%RH for 24 hours before use it again.
- If any unusual condition of the instrument such as deformation, breakage, leakage of substances, fracture, etc., do not conduct any measuring.

The following symbols are used:



Comply with CE mark.



Caution: Refer to the instruction manual. Incorrect use may damage the apparatus or its components.

### 1.1 Preliminary

- This apparatus has been designed for temperature and humidity measuring using.
- Check if the battery is installed correctly.

### 1.2 During use

Read the recommendation which follow and instruction in this manual:



#### WARNING

No compliance with the warnings and/or the instructions for use may damage the apparatus and/or its component.

- Use the probe only in the ranges indicated in this manual.

### 1.3 After use

- Once the measurements are completed, switch off the probe.
- If the probe is not be used for a long period, remove the battery.

## 2 PRODUCT DESCRIPTION

The Temperature/Humidity probes are self-contained relative, humidity and temperature to voltage converters. The probes are battery operated and designed to provide a direct humidity or temperature reading when connected to any high impedance digital multimeter (DMM) that accepts shrouded banana plugs and has 1 mVDC resolution and at least 200mVDC full scale readout capability.

The Temperature/Humidity probe provides a fast and convenient way to measure relative humidity and temperature in normal ambient conditions. It is ideal for spot surveying in any application where humidity or temperature measurements are important.

The output is 1mVDC per % relative humidity (%RH) and 1mVDC per degree of Celsius and 1mVDC per degree of Fahrenheit (selected with a switch).

### **3 PREPARATION TO USE**

#### **3.1 Supply voltage**

The probe is battery supplied; it uses a single battery model 9V NEDA 1604, IEC 6F22, JIS 006P included in packaging. The Battery autonomy is 180 hours.

To avoid battery discharging the instrument is shipped with battery outside of the probe; to insert the battery please follow the indicator of paragraph 5.3.

The “Low BATT” LED indicator light up, when the battery is nearly discharged. In case replace it following the instructions in paragraph 5.3.

#### **3.2 Calibration**

The instrument fulfils the technical characteristics listed in this manual. The performance of the specification is guaranteed for one year.

#### **3.3 Storage**

In order to guarantee the accuracy of the measurements, after a period of storage in extreme environment condition, wait for the time necessary so that the apparatus returns to normal measuring conditions (see paragraph 6.2.1).

### **3.4 Note about humidity measure**

The instrument humidity sensor reacts rapidly to changes in the amount of water vapor in the air. However, the probe temperature changes more slowly. To avoid errors caused by temperature differences the probe must always be left to stabilize to ambient temperature before starting measurements: the bigger the temperature difference, the longer the stabilization time.

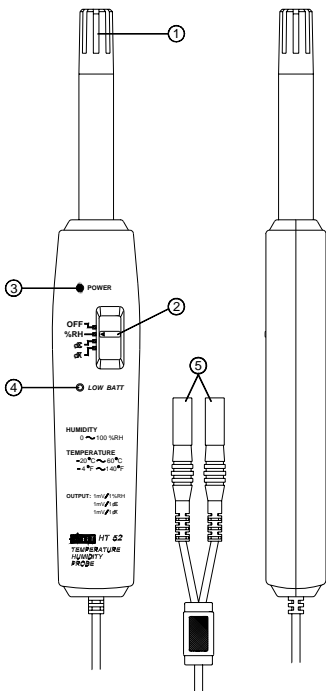
Indoors relative humidity should be measured in a place where the temperature is as close to the average temperature of the room as possible. Measurements made close to heat sources, such as light bulbs or radiators, will not give a true picture of the relative humidity in the whole room.

Do not keep the probe in your pocket. Your body temperature warms up the probe; if its temperature is not left to stabilize to ambient temperature, its relative humidity reading will not be stable.

## 4 OPERATION

### 4.1 Probe description

- ① Temperature and Humidity probe.
- ② Function Select Switch
- ③ Power ON LED indication.
- ④ Low Battery LED indicator.
- ⑤ Signal Output.





## 4.2 Temperature and Humidity measure

### WARNING



Maximum input voltage is 10 VRMS. Do not attempt to apply any voltage that exceeds the limits indicates in this manual to avoid electrical shock hazard or damage the instrument.

The probe has a switch with four position. When the probe is not used, the switch should be in position OFF to save the battery.

In position %RH the probe outputs a voltage signal proportional to the measured relative humidity (1 mV per %RH). In position °C the voltage output correspond to the measured temperature in Celsius (1 mV per °C).

In position °F, the Voltage output correspond to the measurement temperature in Fahrenheit (1 mV per °C).

## **5 MAINTENANCE**

### **5.1 General information**

1. This probe is a precision instrument. Whether in use or in storage, please do not exceed the specification require to avoid any possible damage or danger during use.
2. Do not place this probe in high temperature or expose to direct sunlight.
3. Be sure to turn the probe off after use. For long time storage, remove the battery to avoid leakage of battery liquid that would damage the interior parts.
4. Long-term exposure to certain chemicals and gases may affect the characteristics of the sensor and shorten its life.

### **5.2 Check the battery**

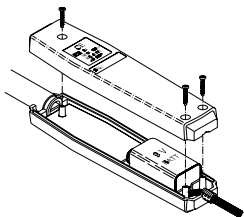
1. When "LOW BATT" LED indicator light up, Replace battery.
2. The condition of the battery can be checked with a DMM. To do this set the power switch to position OFF, connect the probe to the DMM and set the DMM to voltage scale. If the battery voltage is less that 6.0 V<sub>DC</sub>, replace the battery.

### **5.3 Battery replacement**

To change the battery open the cover of the probe;

1. Switch OFF the probe.
2. Remove the three screws at the bottom of the housing.
3. Remove the bottom cover, Note, avoid touching the components on the printed board.

4. Remove the battery from the battery fastener carefully.
5. Set the new battery into battery fastener, and return it to the battery case.
6. Replace the bottom cover and screws.



#### 5.4 Cleaning

For cleaning the probe use a soft dry cloth. Never use a wet cloth, solvents or water, etc.

#### 5.5 End of life



**CAUTION:** this symbol indicates that equipment and its accessories shall be subject to a separate collection and correct disposal.

## 6 TECHNICAL SPECIFICATIONS

### 6.1 Technical characteristics

Accuracy is referred to the following reference conditions:  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$  with  $\text{RH} < 80\%$

#### Relative humidity measure

Operating range	$0 \div 100\% \text{RH}$
Accuracy range	$1 \div 99\% \text{RH}$
Accuracy	$\pm 3\% \text{rdg}$ at $25^{\circ}\text{C}$
Response time (90%)	15sec at $25^{\circ}\text{C}$ ( $77^{\circ}\text{F}$ ) in slowly moving air

#### Temperature measure

Operating range	$-20 \div +60^{\circ}\text{C}$ $-4 \div +140^{\circ}\text{F}$
Accuracy	$\pm 0.7^{\circ}\text{C}$ $\pm 1.4^{\circ}\text{F}$
Response time (90%)	30sec at $25^{\circ}\text{C}$ ( $77^{\circ}\text{F}$ ) in slowly moving air

#### Outputs

Relative humidity	1mVDC per %RH
Output impedance approx. $100\Omega$ ( $1 \div 99\% \text{RH}$ )	
Temperature	1mVDC per $^{\circ}\text{C}$ 1mVDC per $^{\circ}\text{F}$
Output impedance approx. $1\text{k}\Omega$	
DMM input impedance	$1\text{M}\Omega$ (at 100mV scale) minimum

## 6.2 General specification

### Measuring elements

Humidity: Polymer capacitive

Temperature: Semiconductor

### Mechanical characteristics

Dimension: 255(L) x 38(W) x 27(D)mm

Cable length: 2 meter

Probe: 15mm diameter

Weight (including battery): about 175g

### Supply

Battery type: 1 battery x 9V NEDA 1604, IEC6F22, JIS 006P battery.

Low battery indication: "LOW BATT" LED is light up indicator when battery level is too low.

Battery life: About 180 hours.

## 6.3 Environmental conditions

### Climatic conditions

Operation temperature: 0~50°C, 32~122°F

Operation humidity: <80%RH

Storage temperature: -10~60°C, 14~140°F

Storage humidity: <80%RH

Altitude: max 2000m

## 6.4 Accessories

### Standard accessories

The accessories contained inside the packaging Are the following:

- Probe with banana output (HT52)
- Probe with Hypertac output (HT52/05)
- User's manual
- Battery