RHT-P10 Transmitter

INSTRUCTIONS MANUAL - V1.2x H

CE Mark

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

1   PRESENTATION

The **RHT-P10** transmitter series incorporate the best high accuracy and great stability relative humidity and temperature sensors. They convert the measured values into linear 4 to 20 mA signals and optional 0 to 10 Vdc output can also be offered under request.

The microprocessor based circuit enables full configuration of output range when used with the **TxConfig** PC interface and the *Windows®* software. The humidity signal can be configured to either **Relative Humidity** or **Dew Point** output.

2   INSTALLATION

2.1   MECHANIC INSTALATION

The **RHT-P10** electronic housing is designed for wall mounting, while its remote sensor probe is intended for inserting and screwing in a flange.

Remove the housing front panel to access the two fixing holes, shown in **Fig. 02**.
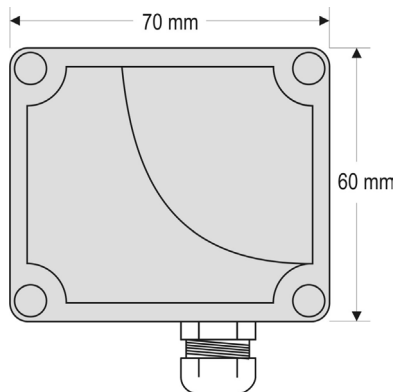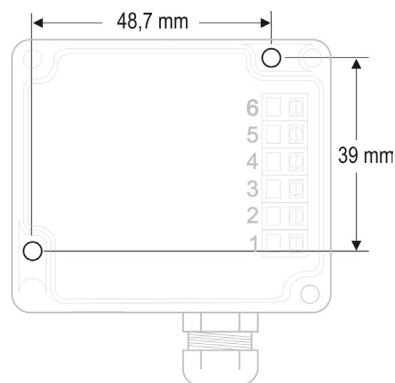

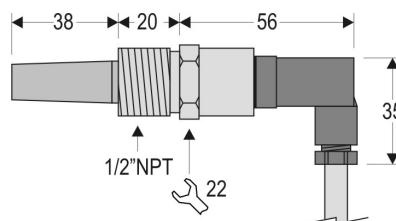**Fig. 01** - Electronic module dimensions

Fig. 02 - Fixing holes
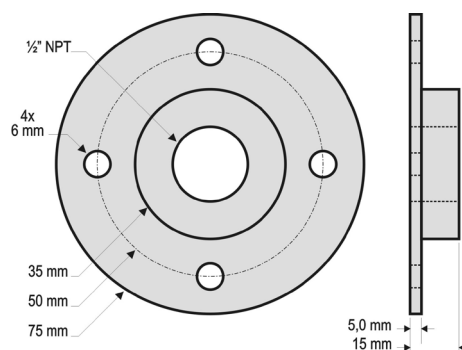

Fig. 03 - Probe dimensions

Fig. 04 – Mounting flange

2.2 ELECTRICAL INSTALLATION

The transmitter can be ordered as **4-20 mA** current output or **0** to **10 Vdc** voltage output. The output signal type is defined at the time of purchase of the transmitter and cannot be changed later.

Variables can be monitored together or separately. Combinations of mobile jumpers **J4** and **J5** within the transmitter case define how variables will be used. The jumpers also define the transmitter terminals with available output signals.

Jumper J5	Jumper J4	OUT1	OUT2
Position **A**	Position **A**	**Temperature**	**Humidity**
Position **A**	Position **B**	**Temperature**	Off
Position **B**	Position **A**	**Humidity**	Off
Position **B**	Position **B**	**Humidity**	**Temperature**

Table 1 - Configuration of OUT1 and OUT2 outputs
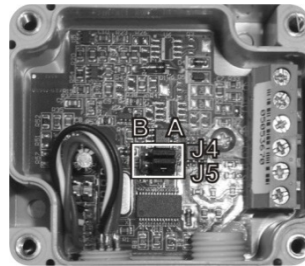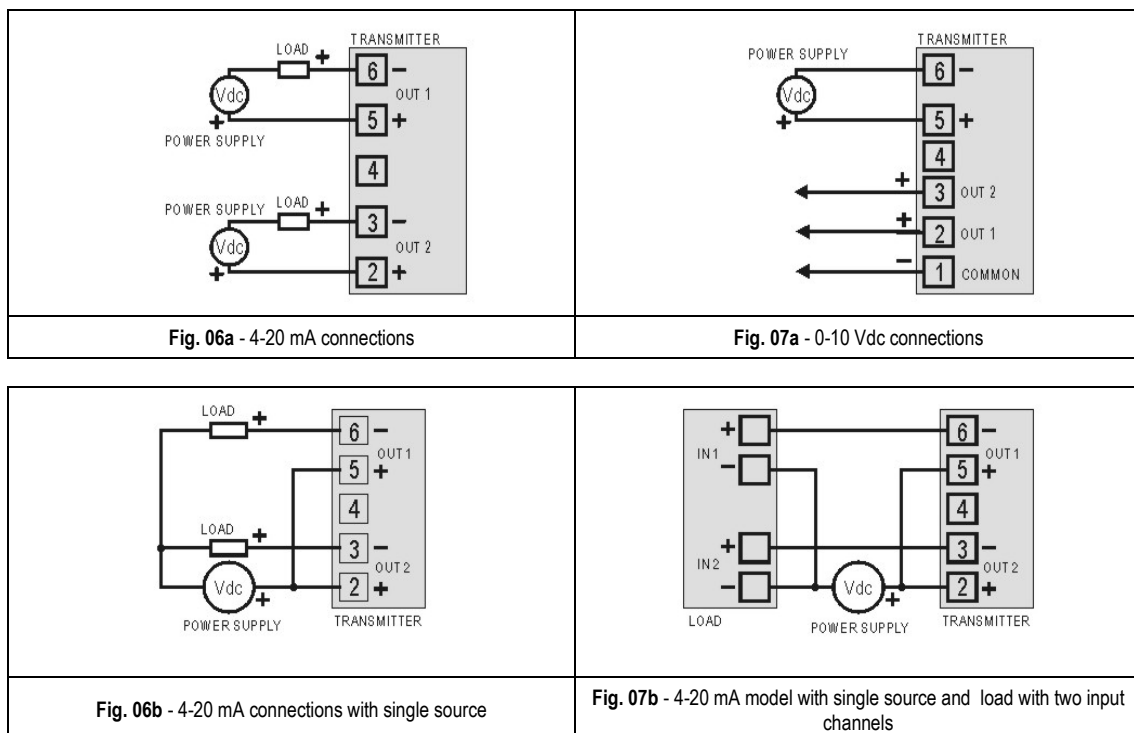

Fig. 05 - Location of J4 and J5 jumpers inside the transmitter

Fig. 06 and **Fig. 07** show the required electrical connections.

> ⚠️ **Note that loop OUT1 must always be powered in the 4-20 mA model!**

Fig. 06a - 4-20 mA connections	**Fig. 07a** - 0-10 Vdc connections

Fig. 06b - 4-20 mA connections with single source	**Fig. 07b** - 4-20 mA model with single source and load with two input channels

In the figures above, **LOAD** represents the measuring instrument of the output signal (indicator, controller, register, etc.).

The connection wires go inside the transmitter trough to the cable gland mounted in the transmitter case.

INSTALLATION RECOMMENDATIONS

- Conductors of small electrical signals must be distant from activation or high-tension/current conductors, preferably passing through grounded conduits.
- A specific electrical power supply network should be provided for instruments use only.
- In controlling and monitoring applications, possible consequences of any system failure must be considered in advance.

- RC filters (47 R and 100 nF, serial) in inductor charges (contactors, solenoids, etc.) are recommended.

CARE WITH THE SENSORS

The calibration of the humidity sensor may change in case it is exposed to contaminating vapors or to high humidity and temperature conditions for extended periods. In order to speed up the calibration restoration, proceed as described below:

- Remove the sensor from the capsule.
- Wash it with water in case there are solid particles on it.
- Place it within an 80 °C (±10 °C) oven for 24 hours.
- Place it for 48 hours in a place with a temperature between 20 and 30 °C and humidity over 75 % RH.
- Place the sensor back in the capsule.

3   CONFIGURATION

If the default configuration or the ordered configuration satisfies the application, then no further configuration is necessary and the transmitter is ready to be used. If a new setting is desired, this can be accomplished by the **TxConfig** and sent to the transmitter through the **TxConfig USB** interface.

The **TxConfig** interface and software compose the **Transmitter Configuration Kit**, with can be purchased separately from the manufacturer or one of its distributors. The latest release of this software can be downloaded from our web site. To install, run the ***Tx_setup.exe*** and follow the instructions.

The **TxConfig** interface connects the transmitter to the PC, as shown in **Fig. 08**.
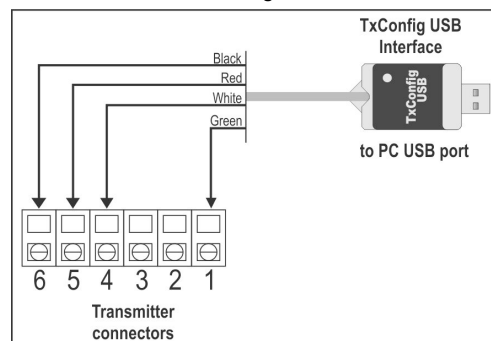

Fig. 08 – TxConfig Interface USB connections

Once the connection is accomplished, the user must run the **TxConfig** software and, if necessary, use the Help topic to arrange the transmitter configuration.

A **Fig. 09** shows the **TxConfig** software main screen.

Fig. 09 – TxConfig software main window
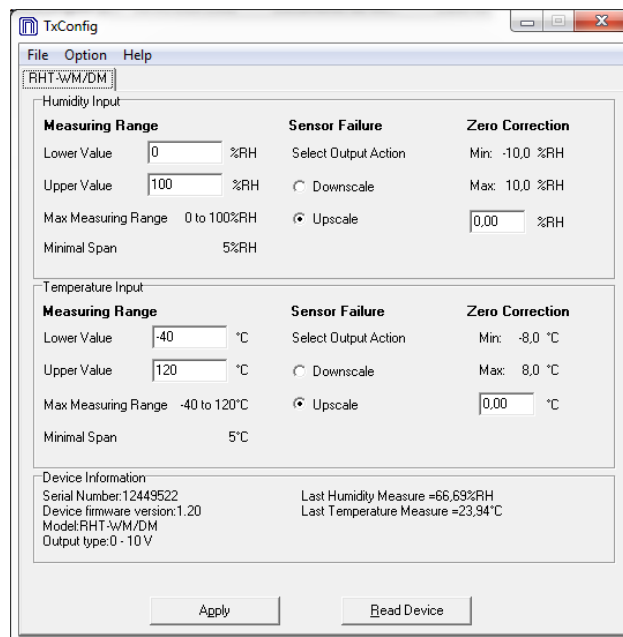
The fields in the screen mean:

1. **Measuring Range**: Define the transmitter humidity and temperature measurement ranges, indicating a **Lower Limit** value and an **Upper Limit** value.

   The defined range cannot exceed the **Sensor Measuring** shown in this same field, and also cannot establish a range with a span less than the **Minimum Range** indicated below in this same field.

When the **Lower Limit** is set to a value higher than the **Upper Limit**, the output current has a decreasing behavior (20 ~ 4 mA or 10 ~ 0 V).

2. **Sensor Failure**: Establish the transmitter output behavior in the presence of a sensor fail. When **Minimum** is selected, the output assumes its minimum value (4 mA / 0 V) (down-scale). When **Maximum** is selected, it assumes its maximum value (20 mA / 10 V) (up-scale).

3. **Zero Correction**: Correct, in the output value, small measurement errors presented by the transmitter.

4. **Device Information**: This field contains data that identifies the transmitter and is important in any queries to the manufacturer.

5. **Read Device**: When selected, allows you to read the configuration present on the connected transmitter.

6. **Apply**: When pressed, allows you to send the configuration to the connected transmitter.

Note: The factory default configuration is (unless otherwise specified or ordered):

- Measuring ranges: 0 to 100 °C and 0 to 100 % RH;

- 0 °C of correction zero;

- Upscale when sensor fails.

It is important to notice that the transmitter accuracy is always based on the total span of the used sensor, even if a narrower range is configured. Example:

The humidity sensor has a maximum range of 0 to 100 % RH and an accuracy of 3 % at 25 ° C, as shown in **Fig. 11**. We can have an error of up to 3 % RH in any adopted range.

This error is even in a wide range as the maximum (0 to 100 % RH) or in a narrower range, such as 20 to 80 % RH.

Serial port configuration error may occur when other software uses the same serial port. Finalize all software that uses the serial port specified for TxConfig before using it.

RETRANSMITTING THE DEW POINT

To use the RHT and transmit the dew point instead of relative humidity, you must follow the following steps:

- Connect the device to the **TxConfig** interface and run the software.

- The software will recognize the RHT model, read its configuration and make it available to the user.

- In the "Options" menu, enter "Humidity Reading Type" (only available when an RHT model is detected) and select the "Dew Point" option. At this point, the values of the scales will be converted to the dew point unit, ie degrees (Celsius or Fahrenheit, as selected).

- Proceed with the rest of the configuration and send the device via the "Apply" button.
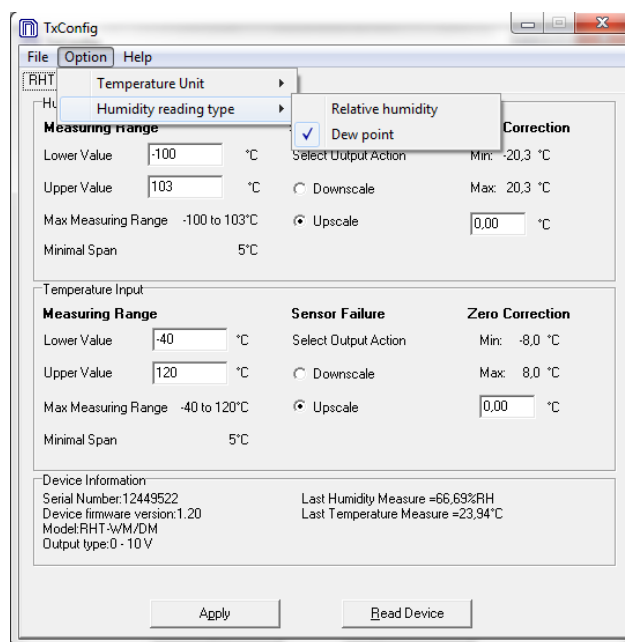

Fig. 10 – Dew point

If the "Humidity Reading Type" option does not appear even after the RHT transmitter is correctly detected, the **TxConfig** software version is probably old and does not support this feature. In this case, download and update the latest version.

4   SPECIFICATIONS

Humidity measurement	**Total accuracy**: See **Fig. 11**; **Measuring range**: Configurable between 0 and 100 % RH or -100 and 103 °C for dew point; **Response time (1/e (63 %))**: 8 seconds @ 25 °C (is slow moving air 1 m/s).
Temperature measurement	**Total accuracy**: See **Fig. 11**; **Total accuracy**: Configurable between -40 and 120 °C; **Response time (1/e (63 %))**: up to 30 s (is slow moving air 1 m/s).
Power supply	**4-20 mA model**: 12 Vdc to 30 Vdc **0-10 V model**: 18 a 30 Vdc / 15 mA max.
Outputs	4-20 mA or 20-4 mA current, 2-wire loop power supply; 0-10 Vdc tension / 2 mA max.
Output Load (RL)	**4-20 mA model**: RL (Ohms max.) = (Vdc - 12) / 0.02 let: Vdc= Power supply in Volts. **0-10 Vdc model**: 2 mA max.
OUT1 output resolution	0.006 mA (4-20 mA) or 0.003 V (0-10 V).
OUT2 output resolution	0.022 mA (4-20 mA) or 0.015 V (0-10 V).
Isolation between loops	The 4-20 mA outputs are isolated from each other. The 0-10 V is not isolated from each other.
Provides protection against power supply polarity inversion	Yes
Protection	**Electronic circuit case**: IP65; **Sensors capsule**: IP40.
Cable entrance	Compress fitting PG7.
Operating limits	**Sensor (RHT-P10)**: See **Fig. 11**.
Electronic circuit	**Electronic circuit (RHT-P10)**: -10 to +65 °C, 0 to 95 % RH.

Table 2 – Technical specifications

IMPORTANT

The transmitter sensor may be damaged or lose calibration if it is exposed to aggressive atmospheres with high concentrations as Chloride Acid, Nitride Acid, Sulphuric Acid and Ammonia. Acetone, Ethanol and Propylene Glycol may cause reversible measurement errors.

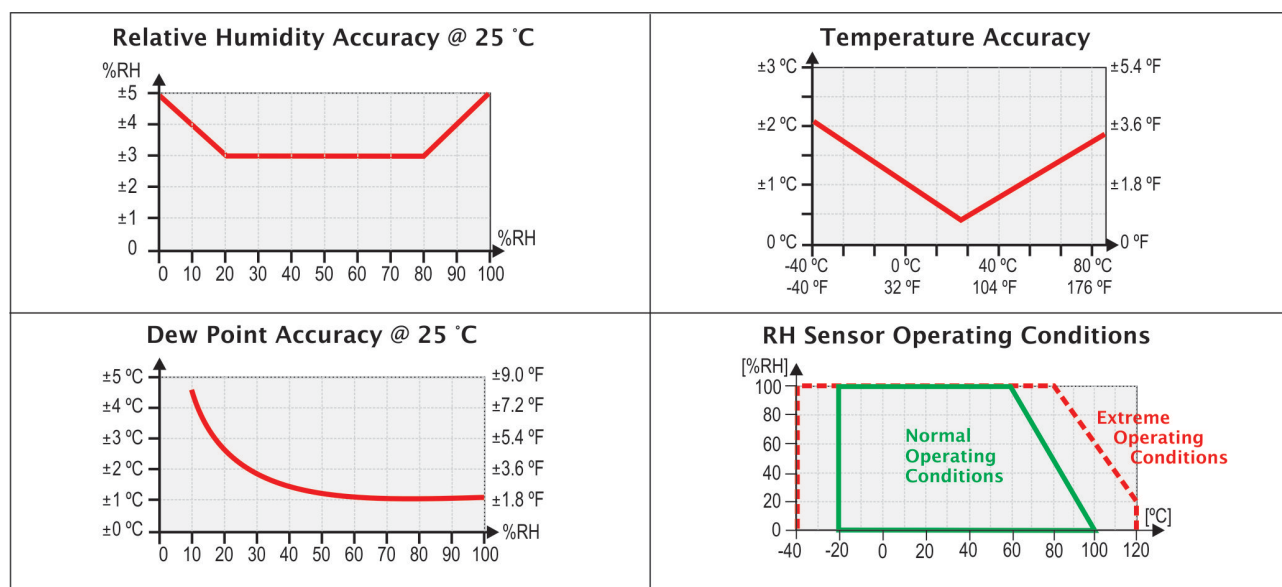**Measures accuracy and sensor operating limits:**

Fig. 11 - Humidity and temperature accuracies

PRC Technologies Corp., Ltd. ลาดพร้าว 101 กรุงเทพ 10240   www.prct.asia
โทรศัพท : 02 530 1714, 02 932 1711 มือถือ : 086 360 8600
อีเมล : contact@prctech.net   LINE ID1 : prctec-info, LINE ID2 : @prctec

5 WARRANTY

Warranty conditions are available on our web site www.novusautomation.com/warranty.