



---

## RHT-WM and RHT-DM Transmitter

INSTRUCTIONS MANUAL – V2.0x A

**NOVUS**  
We Measure, We Control, We Record



## 1 PRESENTATION

**RHT-WM** and **RHT-DM** transmitters feature highly accurate and stable sensors for measuring relative humidity and temperature. The measured values are converted into 4 to 20 mA output signals linearly related to their readings.

The microprocessor-based circuit can be configured with the **TxConfig** communication interface and Windows software. It is possible to configure the measurement and humidity transmission between **Relative Humidity** and **Dew Point**.

## 2 INSTALLATION

### 2.1 MECHANICAL INSTALLATION

The **RHT-DM** (Duct Mount) model must be attached with a flange. The flange is attached to the duct wall. After this, the transmitter probe must be inserted into the flange center hole and then fixed. **Figure 1** shows the dimensions and drilling of the polyamide 6.6 flange:

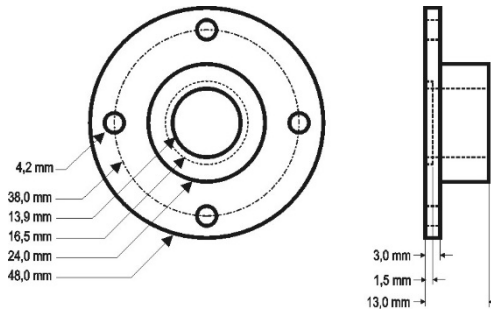


Figure 1 - Mounting flange for RHT-DM

The probe is made of stainless steel, with lengths of 150 mm, 250 mm, or 400 mm:

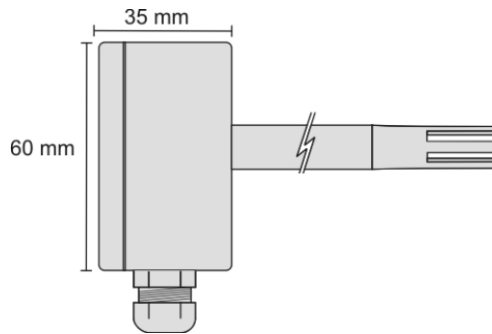


Figure 2 - Model RHT-DM dimensions

The **RHT-WM** (Wall Mount) model must be attached to the wall. By removing the transmitter cover, you can access the two fixing holes and the connector, as shown in **Figure 3**. To ensure the specified accuracy and protection degree, you must mount the transmitter with the sensor capsule facing down.

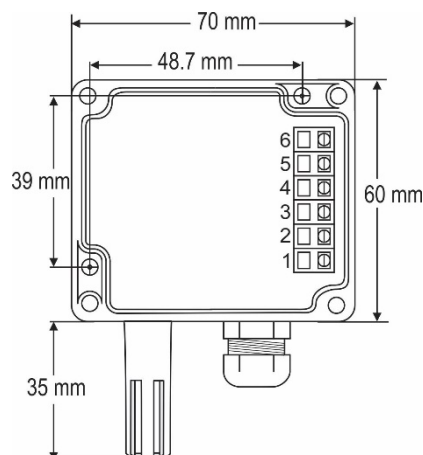


Figure 3 - RHT-WM fixing holes and housing dimensions

## 2.2 ELECTRICAL INSTALLATION

The transmitter has a **4-20 mA** current output.

Variables can be monitored together or separately. Combinations of mobile jumpers **J4** and **J5** inside the transmitter housing 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 - OUT1 and OUT2 outputs configuration

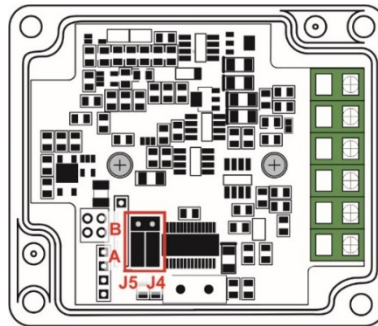
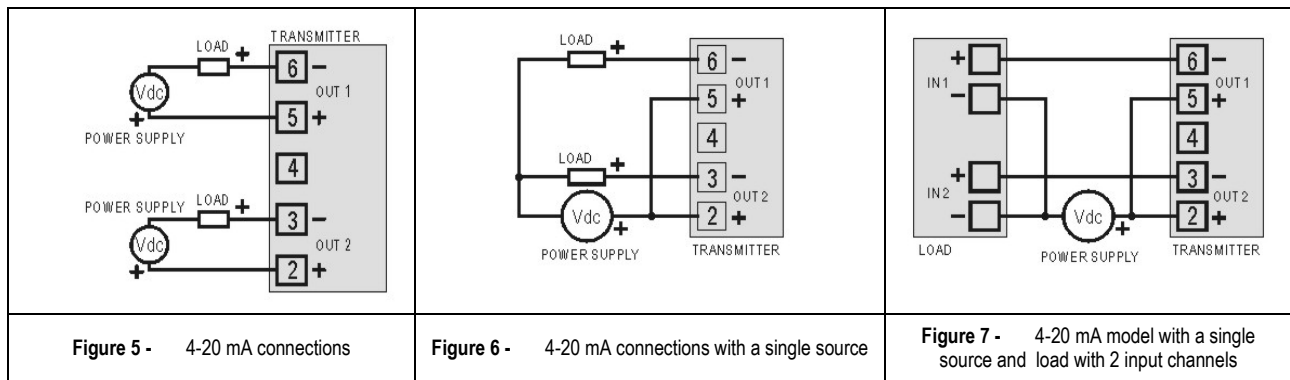


Figure 4 - Location of jumpers J4 and J5 inside the transmitter

Figures below shows the required electrical connections.

**Note that loop OUT1 must always be powered!**



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 housing.

### INSTALLATION RECOMMENDATIONS

- Electronic and analog signal conductors should run through the plant separately from the output and supply conductors. If possible, in grounded conduits.
- The power supply for electronic instruments must come from a network suitable for instrumentation.
- In controlling and monitoring applications, you must consider what can happen when any part of the system fails.
- It is recommended to use RC filters (47  $\Omega$  and 100 nF, serial) in inductor charges (contactors, solenoids, etc.).

### SENSOR CAUTIONS

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

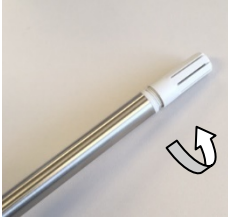
- Remove the sensor from the capsule.
- Wash it with water in case there are solid particles on it.
- For 24 hours, place it within an 80  $^{\circ}\text{C}$  ( $\pm 10$   $^{\circ}\text{C}$ ) oven.
- For 48 hours, place it in a place with temperature between 20 and 30  $^{\circ}\text{C}$  (68 and 86  $^{\circ}\text{F}$ ) and humidity over 75 % RH.
- Place the sensor back in the capsule.

## SENSOR REPLACEMENT

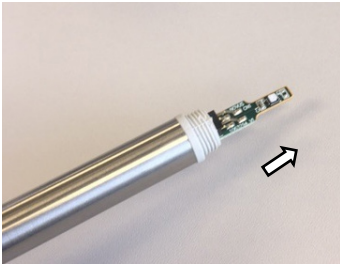
In case of damage, the humidity and temperature sensor may need to be replaced. To perform this procedure, follow the steps below:



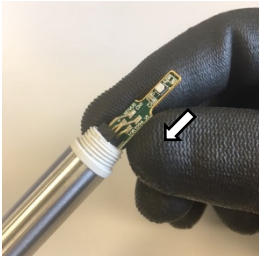
- **Step 1:** Disconnect the transmitter from the power supply. Locate the sensor protective tip. This example shows the sensor replacement of an **RHT-DM** transmitter. In it, the sensor is located at the end of the probe.





- **Step 2:** Remove the tip by turning it counterclockwise.

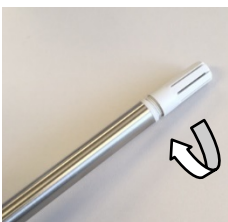


- **Step 3:** Without the tip, the sensor will be exposed. Remove it by pulling it forward to disconnect it.



- **Step 4:** Connect the new sensor to the probe tip connector using clean antistatic gloves or other measures to avoid static discharges. Avoid unnecessary handling.

	
<p>Hold the sensor by the connector or its surroundings. Avoid handling the sensor by the thinner end. Do not touch the sensor.</p>	
<p>For this procedure, it is recommended to use clean antistatic gloves.</p>	



- **Step 5:** Place the protection tip again and turn it clockwise to secure it to the device.

### 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 software can be updated for free on **NOVUS** website. To install it, run the **Tx\_setup.exe** and follow the instructions.

The **TxConfig** interface connects the transmitter to the PC, as shown in figure below:

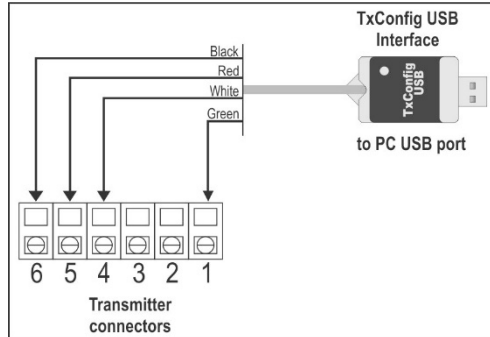


Figure 8 - TxConfig Interface USB connections

Once the connection is accomplished, you must run the **TxConfig** software and, if necessary, use the *Help* topic to arrange the transmitter configuration. Figure below shows the **TxConfig** software main screen:

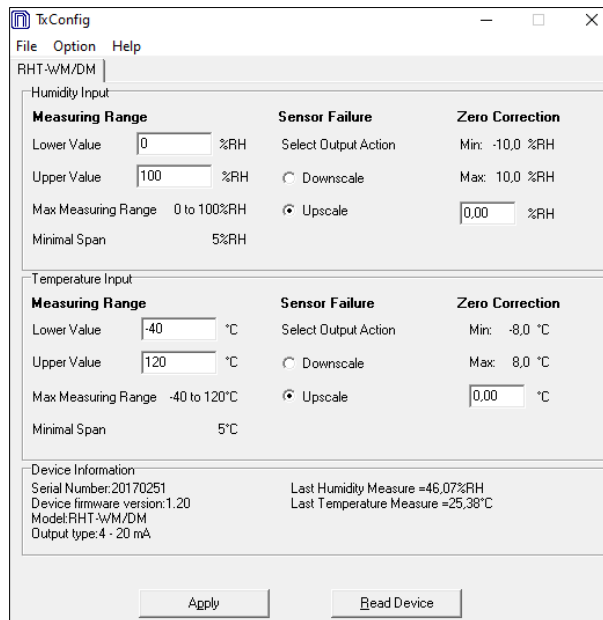


Figure 9 - TxConfig software main window

The fields in the screen mean:

- 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 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).
- 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) (down-scale). When **Maximum** is selected, it assumes its maximum value (20 mA) (up-scale).
- Zero Correction:** Correct, in the output value, small measurement errors presented by the transmitter.
- Device Information:** This field contains data that identifies the transmitter and is important in any queries to the manufacturer.
- Read Device:** When selected, allows you to read the configuration present on the connected transmitter.
- 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.
- Correction zero: 0 °C.
- 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 **Figure 11**. We can have an error of up to 3% RH in any adopted range.

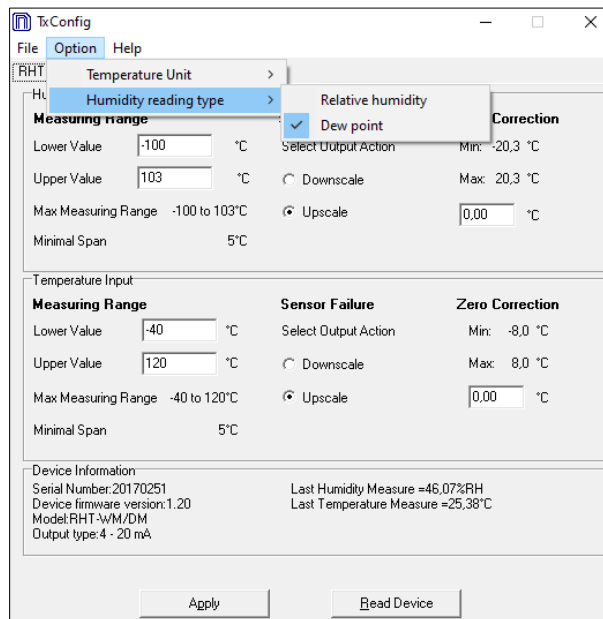
This error is even in a wide range as the maximum (0 to 100% RH) or in a narrower range, such as 20 to 80% RH.

**A serial port configuration error may occur when other software uses the same serial port. Before using it, you must terminate all software that uses the serial port specified for TxConfig.**

### 3.1 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 configuration and send it to the device via the "Apply" button.



**Figure 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

<b>Humidity measurement</b>	<b>Total accuracy:</b> See Figure 11. <b>Measurement range:</b> Configurable between 0 and 100 % RH or -100 and 103 °C (-148 to 217.4) for dew point. <b>Response time (1/e (63 %)):</b> 8 seconds @ 25 °C (is slow moving air 1 m/s).
<b>Temperature measurement</b>	<b>Total accuracy:</b> See Figure 11. <b>Total accuracy:</b> Configurable between -40 and 120 °C (-40 to 248 °F). <b>Response time (1/e (63 %)):</b> Up to 30 s (is slow moving air 1 m/s).
<b>Power supply</b>	12 Vdc to 30 Vdc.
<b>Sensor reading range</b>	< 1.5 seconds
<b>Outputs</b>	4-20 mA or 20-4 mA current, 2-wire loop power supply.
<b>Output Load (RL)</b>	RL (Ohms max.) = (Vdc - 12) / 0.02 let: Vdc = Power supply in Volts.
<b>OUT1 output resolution</b>	0.006 mA (4-20 mA)
<b>OUT2 output resolution</b>	0.022 mA (4-20 mA)
<b>Isolation between loops</b>	4-20 mA outputs are isolated from each other.
<b>Provides protection against power supply polarity inversion</b>	Yes
<b>Protection</b>	<b>Electronic circuit case:</b> IP65. <b>Sensor capsule:</b> IP40.
<b>Cable entrance</b>	Cord grip PG7.
<b>Operating limits</b>	<b>Sensor and Probe (RHT-DM):</b> See Figure 11.
<b>Electronic circuit</b>	<b>Electronic circuit (WM/DM):</b> Operating temperature: -10 to 65 °C (14 to 149 °F), 0 to 95 % RH. Storage temperature: -20 to 80 °C (-4 to 176 °F).

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:

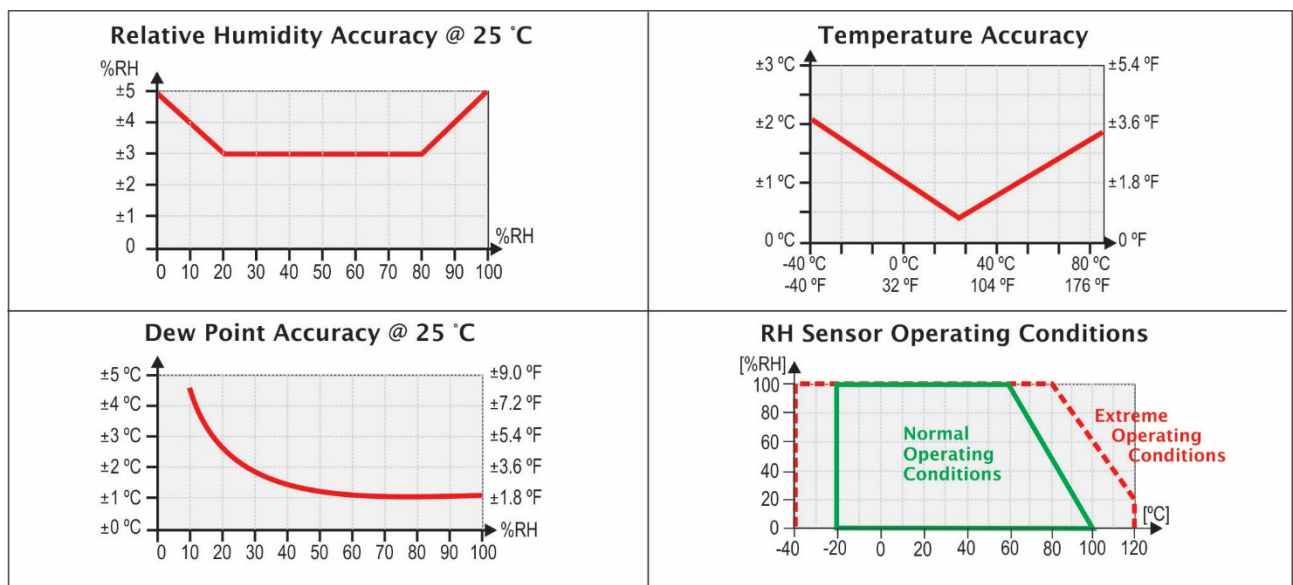


Figure 11 - Humidity and temperature accuracies

## 4.1 CERTIFICATIONS

### 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.

## 5 WARRANTY

Warranty conditions are available on our web site [www.novusautomation.com/warranty](http://www.novusautomation.com/warranty).