

NOVUS RHT-WM and Transmitter



NOVUS RHT-WM and Transmitter User Guide

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NOVUS

NOVUS RHT-WM and Transmitter



Product Information

Specifications:

- Product: RHT-WM and RHT-DM Transmitter
- Brand: NOVUS AUTOMATION
- Model: RHT-WM and RHT-DM

Product Usage Instructions

Safety Alerts

Refer to the safety alerts section in the manual before proceeding with the installation or usage of the transmitter.

Presentation

Understand the components and features of the RHT-WM and RHT-DM transmitters before installation.

Installation

Mechanical Installation

Follow the mechanical installation guide provided in the manual to mount the transmitter securely.

Electrical Installation

Proceed with the electrical installation by following these steps:

Installation Recommendations

Adhere to the installation recommendations to ensure proper functioning of the transmitter.

Sensor Cautions

Take caution while handling the sensor to prevent damage.

Sensor Replacement

Refer to the manual for guidance on sensor replacement when needed.

Configuration

Software and App

Configure the transmitter using the software and app provided:

Signow Software

Utilize the Signow software for initial setup and configuration.

Signow: Dew Point Retransmitting

Follow instructions for dew point retransmitting using Signow.

TXConfig Software

Use the TXConfig software for specific configurations.

TXConfig: Dew Point Retransmitting

Configure dew point retransmitting with TXConfig as per guidelines.

Signow App

Download and use the Signow app for convenient monitoring and adjustments.

Smartphone Connections

Establish connections with smartphones as detailed in the manual for remote access.

FAQ:

Q: How often should the sensor be replaced?




A: Sensor replacement frequency depends on usage and environmental conditions. Refer to the manual for specific guidelines.

Q: Can I configure the transmitter without using the software?

A: While software provides advanced configuration options, basic setup can be done directly on the transmitter following manual instructions.

SAFETY ALERTS

The symbols below are used in the device and throughout this manual to draw the user's attention to essential information related to device safety and use.

		
CAUTION Read the manual fully before installing and operating the device.	CAUTION OR HAZARD Risk of electric shock.	ATTENTION Material sensitive to static charge. Check precautions before handling.

All safety recommendations appearing in this manual must be followed to ensure personal safety and prevent damage to the instrument or system.

If the instrument is used in a manner other than that specified in this manual, the device's safety protections may not be effective.

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-USB communication interface and SigNow and TxConfig software and SigNow app. It is possible to configure the measurement and humidity transmission between Relative Humidity and Dew Point.

INSTALLATION

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:

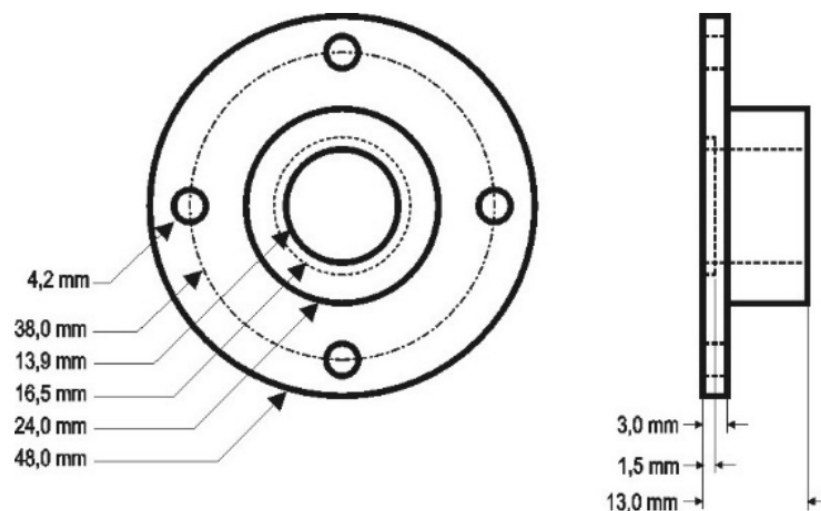


Figure 1 – Mounting flange for RHT-DM

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

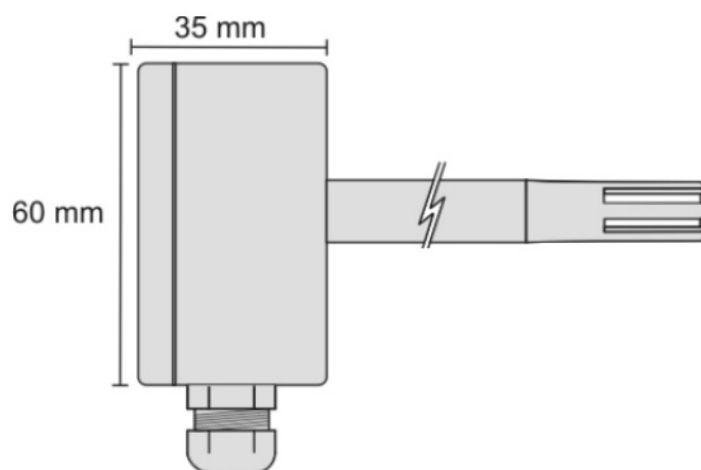


Figure 2 – Model RHT-DM dimensions

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.

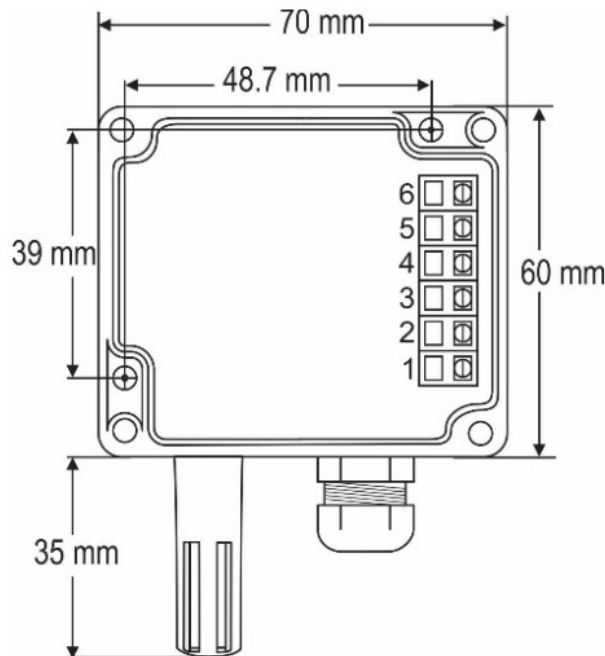


Figure 3 – RHT-WM fixing holes and housing dimensions

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.

Table 1 – OUT1 and OUT2 outputs configuration

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

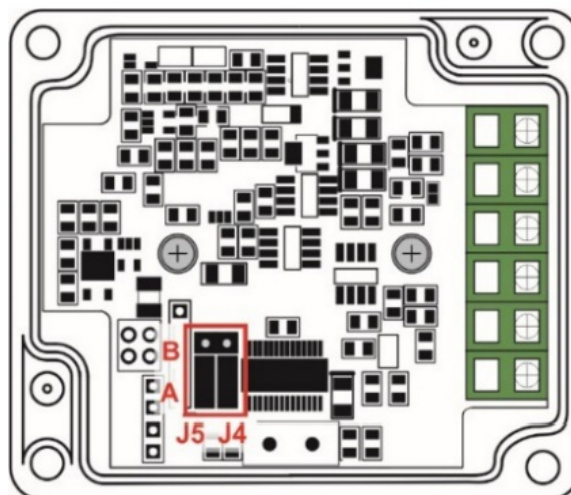


Figure 4 – Location of jumpers J4 and J5 inside the transmitter

Figures below shows the required electrical connections.



Note that loop OUT1 must always be powered!

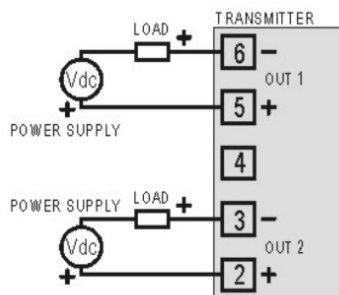


Figure 5 – 4-20 mA connections

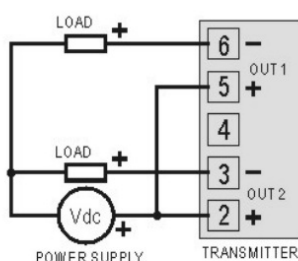


Figure 6 – 4-20 mA connections with a single source

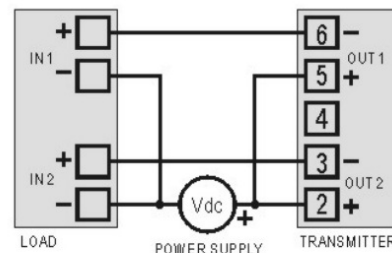


Figure 7 – 4-20 mA model with a single source and load with 2 input channels

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 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 Ω 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 deionized water in case there are solid particles on it.
- For 24 hours, place it within an 80 °C (± 10 °C) oven.
- For 48 hours, place it in a place with temperature between 20 and 30 °C (68 and 86 °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.

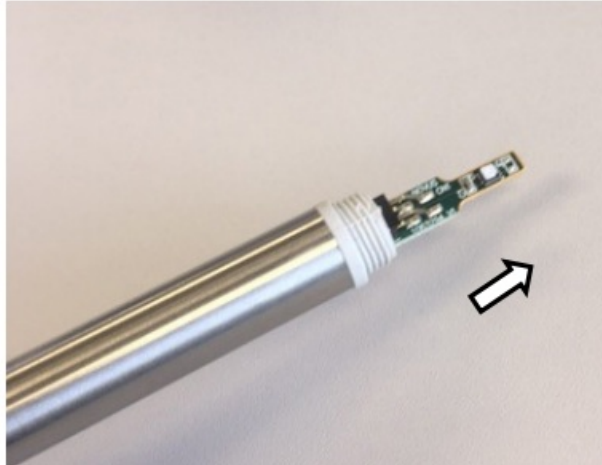
This example shows the sensor replacement of an RHT-DM transmitter. In it, the sensor is located at the end of the probe.



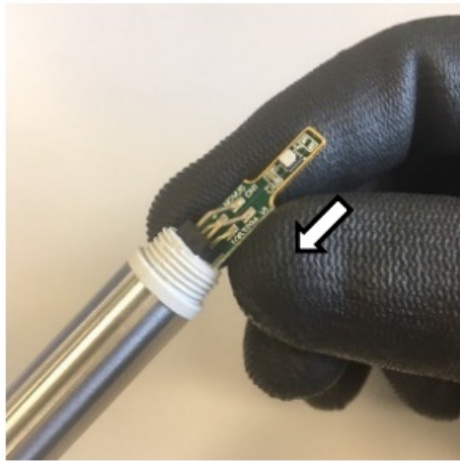
Step 2: Remove the tip by turning it counterclockwise.





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



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. When it is necessary to change the configuration of the equipment, you should use SigNow software, TxConfig software, or SigNow app.

To configure the equipment through any of the software, you must connect the TxConfig-USB Configuration Interface (purchased from the manufacturer or its authorized representatives) to the USB port of the computer used and run the selected software, as shown in Figure 8:

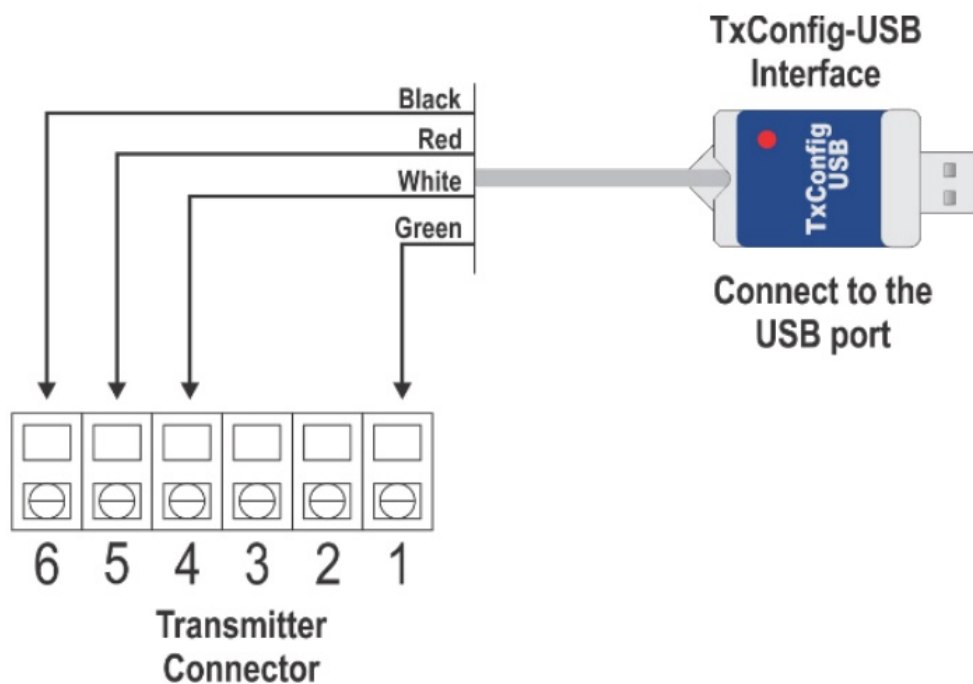


Figure 8 – TxConfig-USB Interface connections

To configure the device via the SigNow app, you need to use an OTG cable with the TxConfig-USB Configuration Interface and proceed with the recognition process (see SMARTPHONE CONNECTIONS chapter). On NOVUS website, you can download the configuration software for free. To install it, simply run the file SigNowSetup.exe or the file TxConfigSetup.exe and follow the instructions in the installer. The SigNow setup application can be downloaded for free from Google Play Store.

SOFTWARE AND APP

1. SIGNOW SOFTWARE

When running the SigNow software and connecting to the device, the following screen will appear:

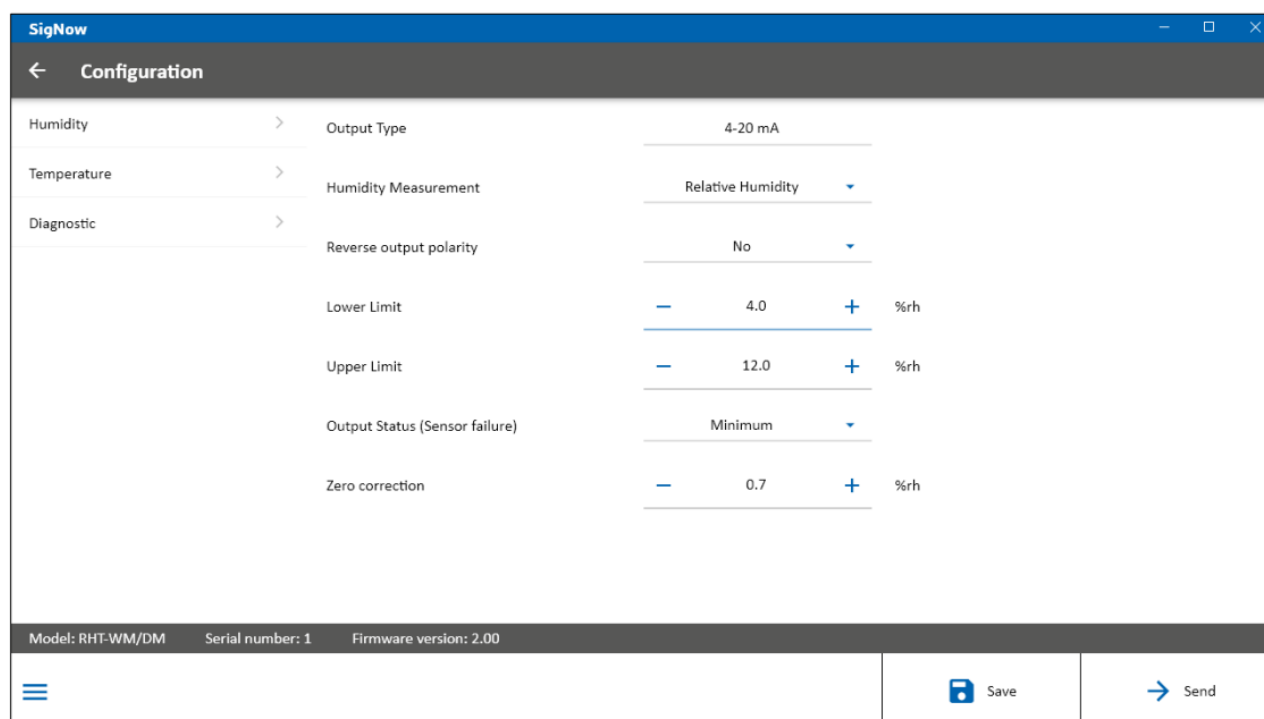


Figure 9 – SigNow configuration screen

The bottom part of the screen displays information about the model, serial number, and firmware version.

The configuration screen is divided into 3 sections: Humidity, Temperature and Diagnostic.

In the Humidity (see above) screen, you can configure the device by setting values and information for the following parameters:

1. Output type: Allows you to define the equipment output type.
2. Humidity measurement: Allows you to define the humidity measurement. The Relative Humidity option is configured by default.
3. Reverse output polarity: Allows you to reverse the output polarity.
4. Lower limit: Allows you to define the minimum desired temperature for the output type configured.
5. Upper limit: Allows you to define the maximum desired temperature for the output type configured.
6. Output status (Sensor failure): Allows you to establish the transmitter output behavior (upscale or down-scale) in the presence of a sensor fail.

When selecting the Minimum option, the output current is < 4 mA (down-scale). Typically used for refrigeration.

When selecting the Maximum option, the output current is > mA (up-scale). Typically used in heating systems.

7. Zero correction: Allows you to make small sensor corrections.

In the SigNow manual, available on NOVUS website, you can get more specific information about the buttons and the process of diagnostics and firmware update.

2. SIGNOW: DEW POINT RETRANSMISTTING

To use RHT and transmit dew point instead of relative humidity, the Dew Point option should be selected in the Humidity Measurement parameter. At this point, the scale values will be converted to the dew point unit, that is, degrees (Celsius or Fahrenheit, as selected).

You must proceed with the rest of the configuration and send it to the equipment via the Send.

The screenshot shows the SigNow Configuration screen. The 'Humidity' section is selected, and the 'Humidity Measurement' parameter is set to 'Dew Point'. The 'Output Type' is '4-20 mA'. The 'Temperature Unit' is '°C'. The 'Reverse output polarity' is 'No'. The 'Lower Limit' is '-100.0 °C' and the 'Upper Limit' is '103.0 °C'. The 'Output Status (Sensor failure)' is 'Minimum'. The 'Zero correction' is '0.0 °C'. At the bottom, the model is 'RHT-WM/DM', serial number is '1', and firmware version is '2.00'. There are 'Save' and 'Send' buttons at the bottom right.

Parameter	Value
Output Type	4-20 mA
Humidity Measurement	Dew Point
Temperature Unit	°C
Reverse output polarity	No
Lower Limit	-100.0 °C
Upper Limit	103.0 °C
Output Status (Sensor failure)	Minimum
Zero correction	0.0 °C

Model: RHT-WM/DM Serial number: 1 Firmware version: 2.00

Save Send

Figure 10 – Dew point

3. TXCONFIG SOFTWARE

When running the TxConfig software and connecting to the device, the following screen will appear:

TxConfig

File Option Help

RHT-WM/DM

Humidity Input

Measuring Range		Sensor Failure	Zero Correction
Lower Value	0 %RH	Select Output Action	Min: -10,0 %RH
Upper Value	100 %RH	<input type="radio"/> Downscale	Max: 10,0 %RH
Max Measuring Range	0 to 100%RH	<input checked="" type="radio"/> Upscale	0,00 %RH
Minimal Span	5%RH		

Temperature Input

Measuring Range		Sensor Failure	Zero Correction
Lower Value	-40 °C	Select Output Action	Min: -8,0 °C
Upper Value	120 °C	<input type="radio"/> Downscale	Max: 8,0 °C
Max Measuring Range	-40 to 120°C	<input checked="" type="radio"/> Upscale	0,00 °C
Minimal Span	5°C		

Device Information

Serial Number: 20170251	Last Humidity Measure = 46,07%RH
Device firmware version: 1.20	Last Temperature Measure = 25,38°C
Model: RHT-WM/DM	
Output type: 4 - 20 mA	

Apply Read Device

Figure 11 – TxConfig software main window

The fields in the screen mean:

1. **Measuring Range:** Allows you to 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).
2. **Sensor Failure:** Allows you to define 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).
3. **Zero Correction:** Allows you to make small sensor corrections.
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.
 - 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 17. 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.

4. TXCONFIG: DEW POINT RETRANSMITTING

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-USB Configuration 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 and select the Dew Point option. At this point, the values of the scales will be converted to the dew point unit, i.e., degrees (Celsius or Fahrenheit, as selected).
- Proceed with the configuration and send it to the device via the Apply button.

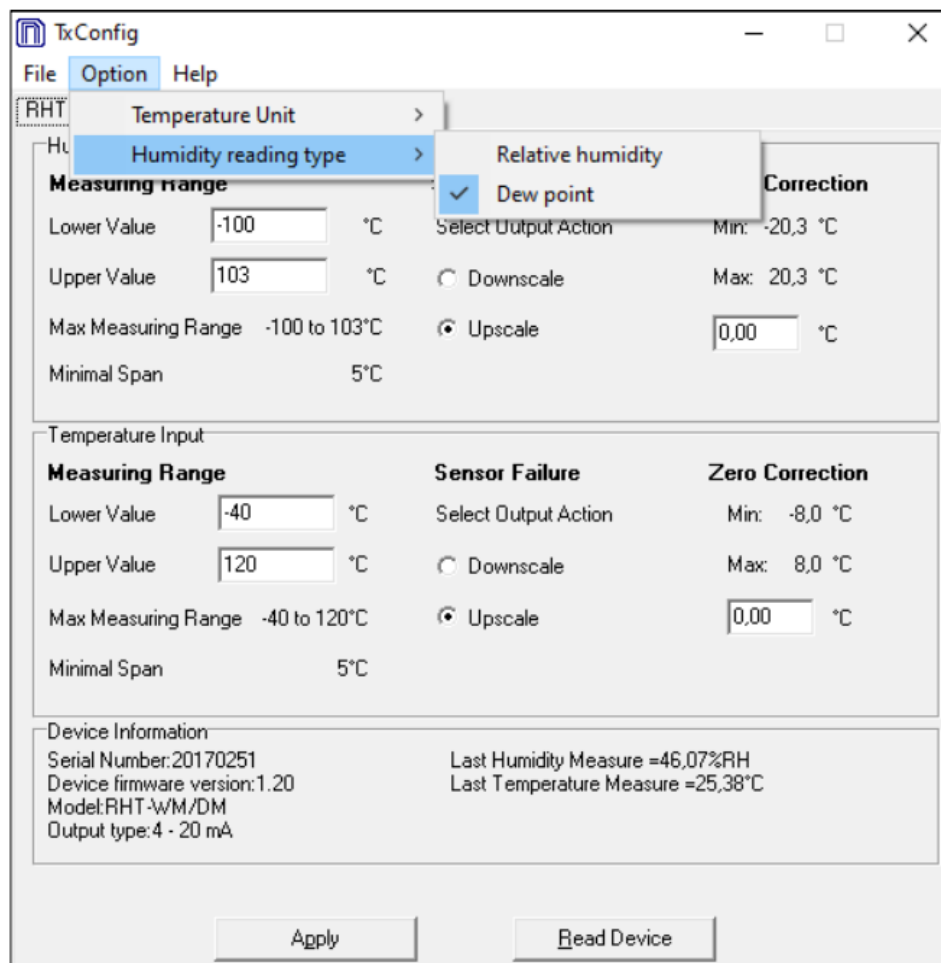


Figure 12 – Dew point

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

5. SIGNED APP

When using an OTG cable and the TxConfig-USB Configuration Interface to connect the equipment to your smartphone and run the SigNow app (see SMARTPHONE CONNECTIONS chapter), you must first enable the use of TxConfig-USB.

The interface will act as an intermediary for the connection:

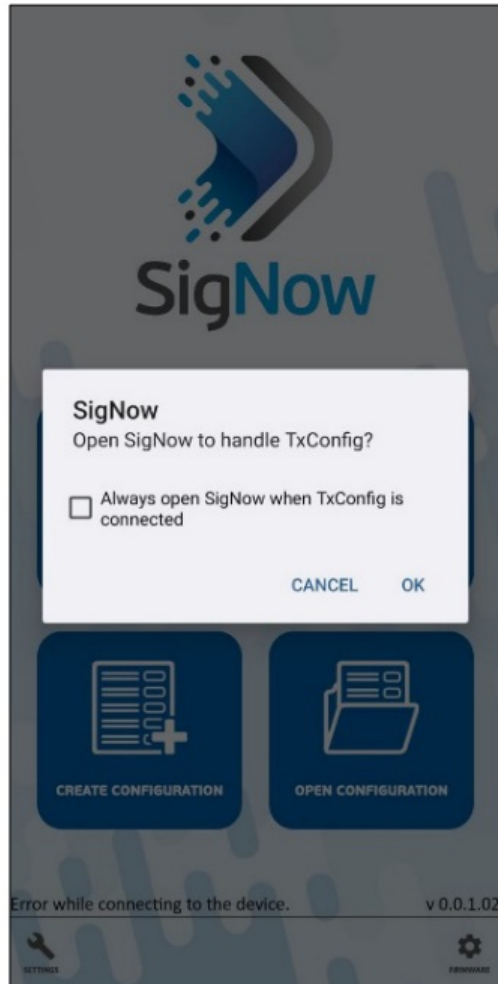


Figure 13 – Using TxConfig-USB

After that, the app will recognize the equipment and show the main screen:



Figure 14 – Main screen

Just click the **Configuration** button to show the main screen of RHT Configuration section:



Figure 15 – Information screen

This screen shows information about the equipment, such as name, serial number, and firmware version. When you open the Config section, you can configure the parameters displayed in the SIGNOW SOFTWARE section. In the SigNow manual, available on NOVUS website, you can find more information about the buttons and the diagnostic process.

SMARTPHONE CONNECTIONS

Smartphones with On the Go (OTG) technology can be directly connected to the device via the USB input. Using the TxConfig-USB Configuration Interface, it is possible to recognize and configure RHT by running the SigNow app.

To do this, as shown in Figure 16, you need to observe how to connect the OTG cable to the equipment:

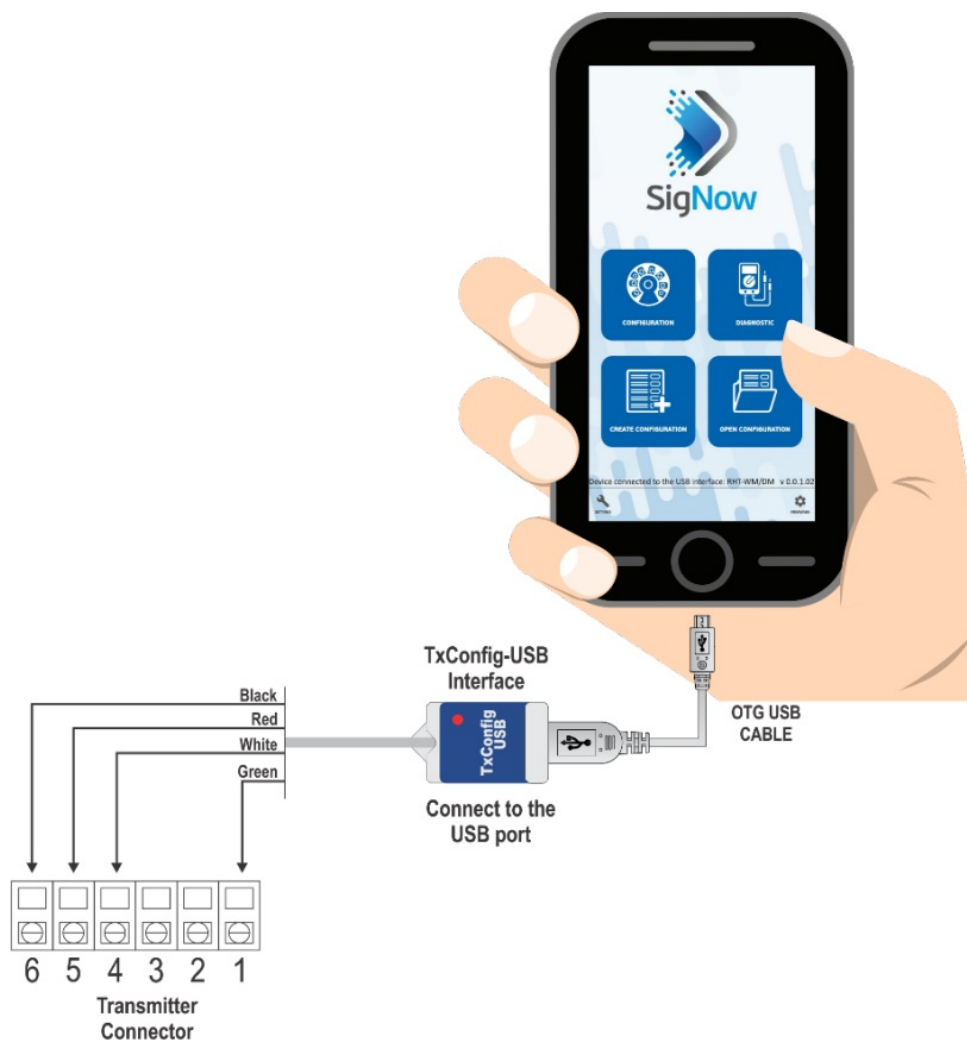


Figure 16 – OTG cable

If you position the cable end incorrectly, it is possible that the device will not be recognized by the application.

SPECIFICATIONS

Table 2 – Technical specifications

FEATURES	RHT-DM / RHT-WM
Humidity measurement	Total accuracy: See Figure 17 . Response time (1/e (63 %)): 8 seconds @ 25 °C (is slow moving air 1 m/s). Measurement range: Configurable between 0 and 100 % RH or -100 and 103 °C (-148 to 217.4 °F) for dew point.
Sensor temperature measurement	Total accuracy: See Figure 17 . Response time (1/e (63 %)): Up to 30 s (is slow moving air 1 m/s). Measurement range: <ul style="list-style-type: none"> DM Model: Configurable between -40 and 120 °C (-40 and 248 °F). WM Model: Configurable between -10 and 60 °C (14 and 140 °F).
Transmitter operating temperature	Operating temperature: -10 to 65 °C (14 to 149 °F), 0 to 95 % RH Storage temperature: -20 to 80 °C (-4 to 176 °F)
Power supply	12 Vdc to 30 Vdc
Sensor reading range	< 1.5 seconds
Outputs	4-20 mA or 20-4 mA current, 2-wire loop power supply.
Output Load (RL)	$RL \text{ (Ohms max.)} = (V_{dc} - 12) / 0.02 \text{ let: } V_{dc} = \text{Power supply in Volts.}$
OUT1 output resolution	0.006 mA (4-20 mA)
OUT2 output resolution	0.022 mA (4-20 mA)
Isolation between loops	4-20 mA outputs are isolated from each other.
Provides protection against power supply polarity inversion	Yes
Protection	Electronic circuit case: IP65. Sensor capsule: IP40.
Cable entrance	Cord grip PG7.
Operating limits	Sensor and Probe (RHT-DM): See Figure 17 .

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, Sulfuric Acid, and Ammonia. Acetone, Ethanol, and Propylene Glycol may cause reversible measurement errors.

MEASURES ACCURACY AND SENSOR OPERATING LIMITS

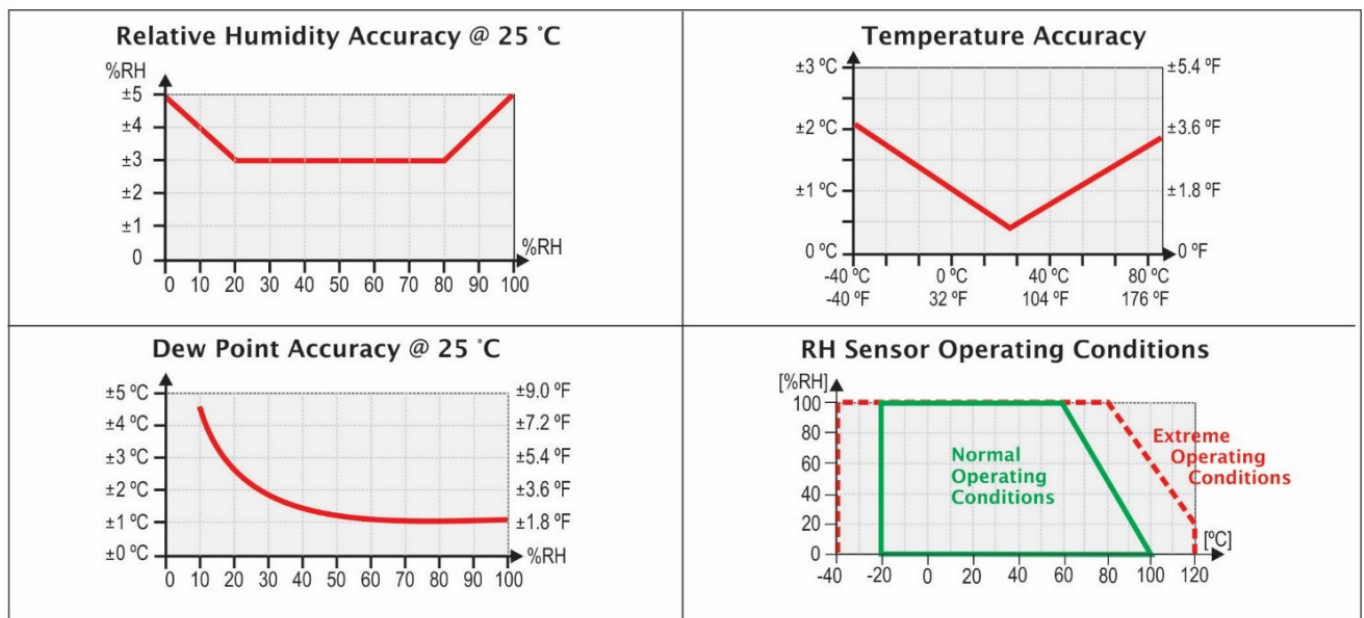


Figure 17 – Humidity and temperature accuracies

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.

WARRANTY

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

Documents / Resources

	<p>NOVUS RHT-WM and Transmitter [pdf] User Guide RHT-WM and Transmitter, RHT-WM and, Transmitter</p>
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References

- [Warranty - Company - NOVUS Automation Inc.](#)
- [User Manual](#)

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