novus RHT-DM Humidity and Temperature Transmitters Instruction Manual

Contents

NOVUS

novus RHT-DM Humidity and Temperature Transmitters

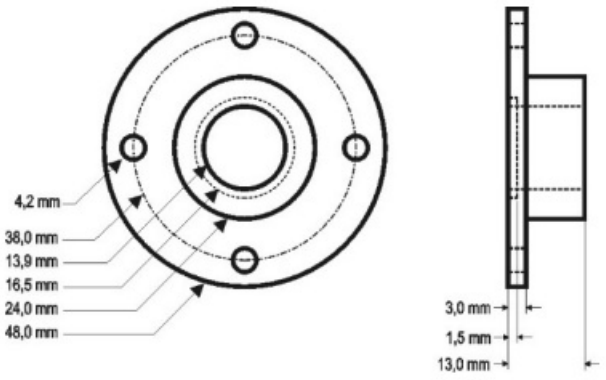
PRESENTATION

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.

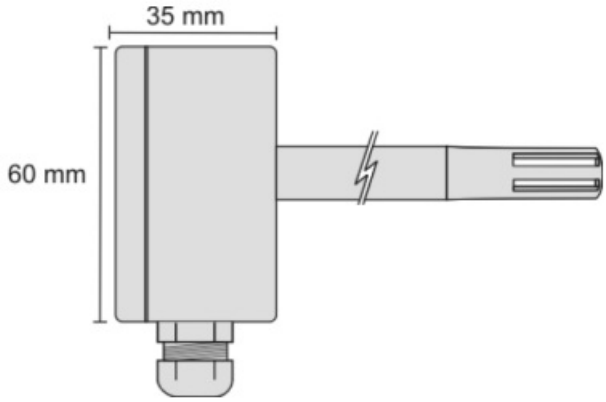
INSTALLATION

MECHANICAL INSTALLATION

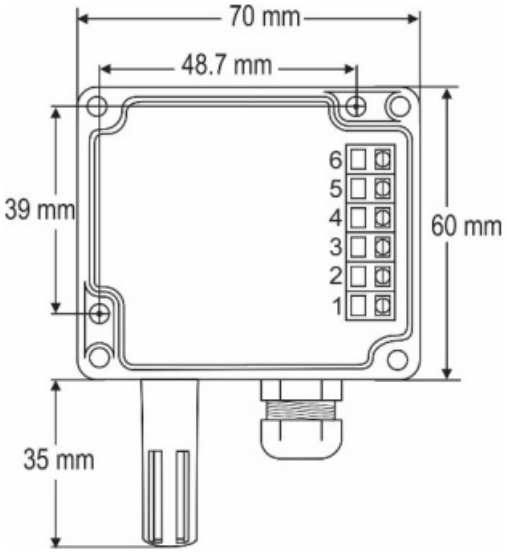
The RHT-DM (Duct Mount) model must be attached with a flange. The flange is attached to the duct wall. After this, the transmitter probe must be inserted into the flange center hole and then fixed. Figure 1 shows the dimensions and drilling of the polyamide 6.6 flange



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



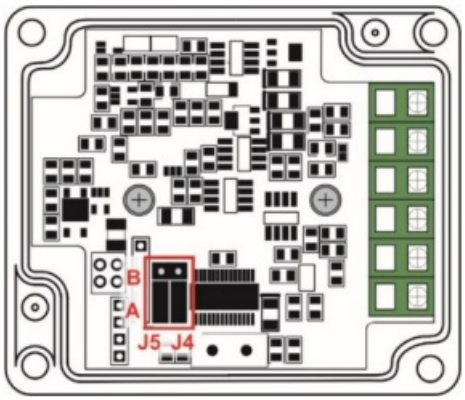
The RHT-WM (Wall Mount) model must be attached to the wall. By removing the transmitter cover, you can access the two fixing holes and the connector, as shown in Figure 3. To ensure the specified accuracy and protection degree, you must mount the transmitter with the sensor capsule facing down.



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**



The figures below shows the required electrical connections.

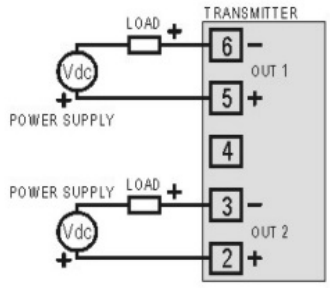


Figure 5 - 4-20 mA connections

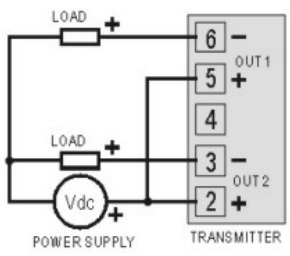


Figure 6 - 4-20 mA connections with a single source

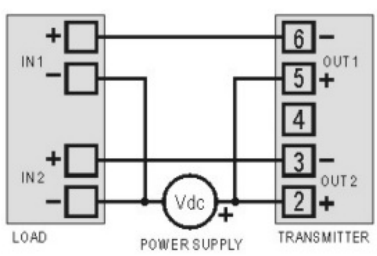


Figure 7 - 4-20 mA model with a single source and load with 2 input channels

INSTALLATION RECOMMENDATIONS

- Electronic and analog signal conductors should run through the plant separately Trom the output and supply conductors. IT is 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 2 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 °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.

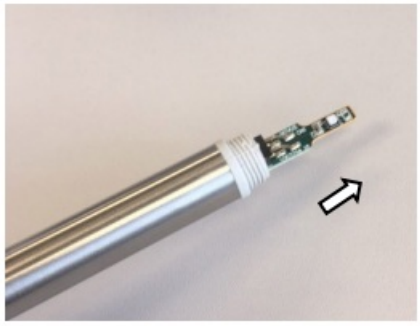
SENSOR REPLACEMENT

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

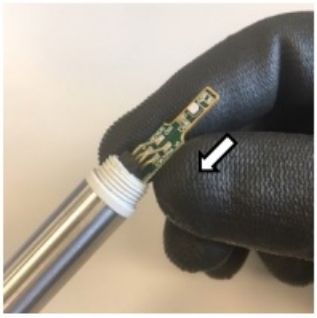
- **Step** 1: Disconnect the transmitter from the power Supply. Locate the sensor protective tip. This example shows the sensor replacement of an RHT-DM transmitter. In it, the sensor is located at the end of the probe.

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

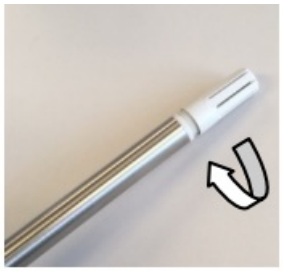
- **Step** 3: Without the tip, the sensor will be exposed. Remove it by puling it forward to disconnect it.



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

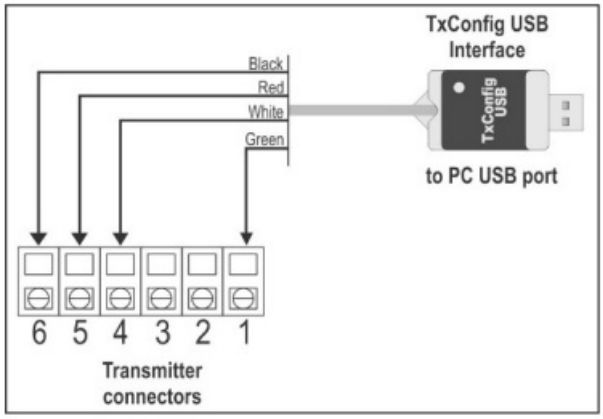


- **Step** 5: Place the protection tip again and turn it clockwise to secure it to the device

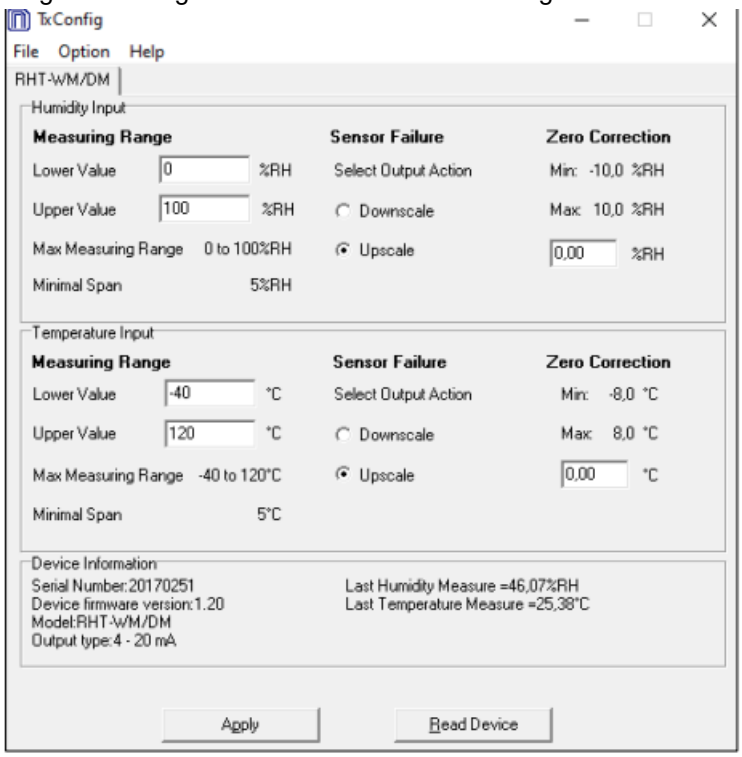


Configuration

If the default configuration or the ordered configuration satisfies the application, then no further configuration is necessary, and the transmitters ready to be used. Ií 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:



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



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 Maxinmum 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 identfies 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.

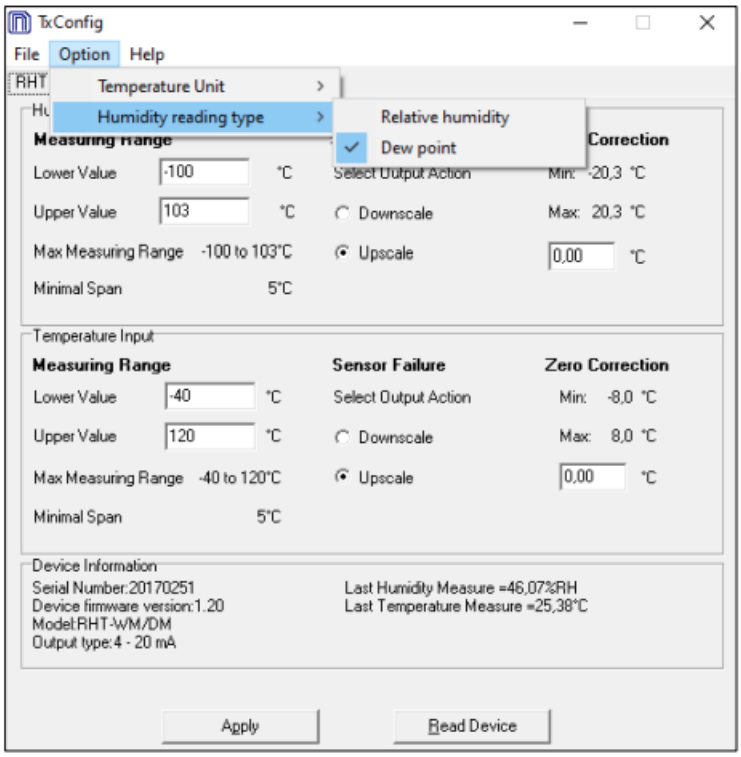
It is important to notice that the transmitter accuracy is always based on the total span of the used sensor, even if a narrower range is configured.

Example:

- The humidity sensor has a maximum range of0 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.

RETRANSMITTING THE DEW POINT

- To use the RHT and transmit the dew point instead of relative humidity, you must follw 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.



SPECIFICATION

Humidity measurement	**Total accuracy**: See **Figure 11**. **Measurement range**: Configurable between 0 and 100 % RH or -100 and 103 °C (-148 to 217.4) for dew point. **Response time (1/e (63 %))**: 8 seconds @ 25 °C (is slow moving air 1 m/s).
Temperature measurement	**Total accuracy**: See **Figure 11**. **Total accuracy**: Configurable between -40 and 120 °C (-40 to 248 °F). **Response time (1/e (63 %))**: Up to 30 s (is slow moving air 1 m/s).
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 (Ohms max.) = (Vdc - 12) / 0.02 let: Vdc = 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 11**.
Electronic circuit	**Electronic circuit (WM/DM)**: Operating temperature: -10 to 65 °C (14 to 149 °F), 0 to 95 % RH. Storage temperature: -20 to 80 °C (-4 to 176 °F).

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

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

	**novus RHT-DM Humidity and Temperature Transmitters** [pdf] Instruction Manual RHT-DM, Humidity and Temperature Transmitters, RHT-DM Humidity and Temperature Transmitters, Temperature Transmitters, Transmitters

References

- **Warranty - Company - NOVUS Automation Inc.**