TEMP-WM and TEMP-DM Transmitter

INSTRUCTION MANUAL - V1.0x G

We Measure, We Control, We Record

$C\epsilon$

1. SAFETY ALERTS

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

CAUTION	**CAUTION OR HAZARD**	**ATTENTION**
Read the manual fully before installing and operating the device.	Risk of electric shock.	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.

2. PRESENTATION

The **TEMP-WM** and **TEMP-DM** transmitter series have the best high accuracy and great stability 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.

Since they are microprocessor-based devices, they can be configured using the **TxConfig-USB** Configuration Interface and **SigNow** or **TxConfig** software or **SigNow** app.

3. INSTALLATION

3.1. MECHANICAL INSTALLATION

The **TEMP-DM** (Duct Mount) model transmitter should be installed with a flange. This flange is first screwed onto the duct wall and the transmitter probe is then inserted into the flange central hole and locked. **Figure 1** below shows flange dimensions and holes. Available in stainless steel or polyamide 6.6.
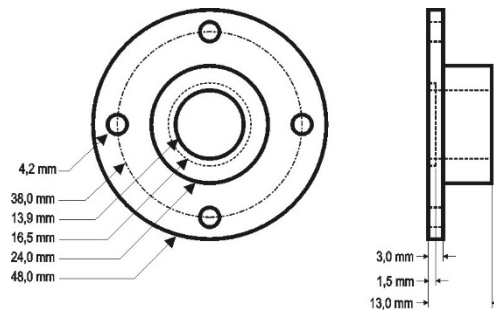

Figure 1 –   Mounting flange for **TEMP-DM**

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

Figure 2 –   Model **TEMP-DM** dimensions
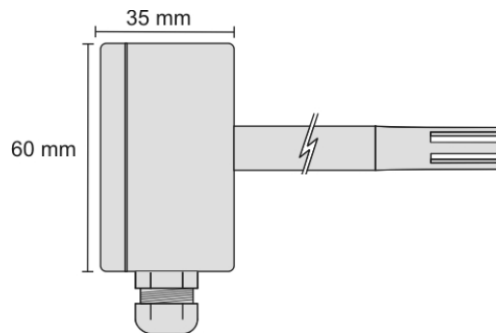
The model **TEMP-WM** (Wall Mount) was designed to be mounted directly onto a wall. With the cover off, the user can access the 2 fixing points and the signal connector, as shown in **Figure 3**. The transmitter sensor capsule must be placed faced down in order to assure the specified accuracy and protection level.
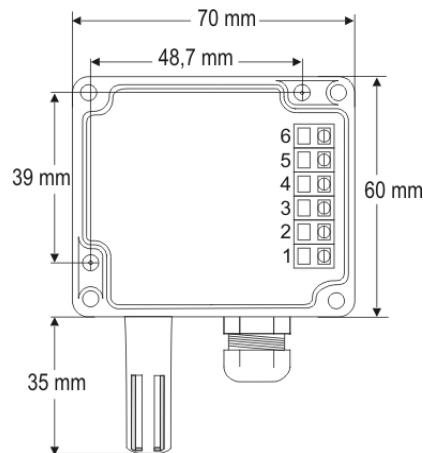

Figure 3 –   **TEMP-WM** fixing holes and housing dimensions

3.2. ELECTRICAL INSTALLATION

The transmitter can have 2 types of output signals: **1)** Electric current from 4 to 20 mA or **2)** Electric voltage from 0 to 10 Vdc. The output signal is defined on purchase and cannot be later changed.

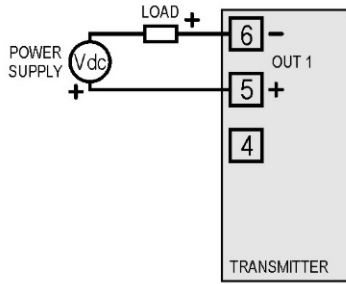Figures below show the required electrical connections:

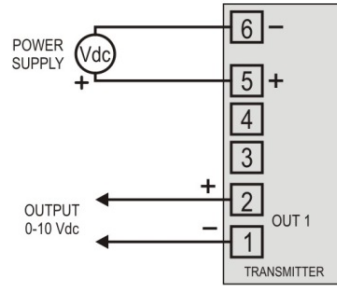|	
Figure 4 – 4-20 mA model	**Figure 5 –** 0-10 Vdc model

LOAD represents the output signal measurement equipment (controller, register, etc).

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

3.2.1   INSTALLATION RECOMMENDATIONS

- Sensor signals conductors must go through the plant system separate from power leads (loop). If possible, in grounded conduits.
- The instruments must be powered from the instrumentation power supply circuit.
- In control and monitoring applications is essential to consider what can happen when any part of the system fails.
- RC filters (47 Ω and 100 nF) in inductor charges (contactors, solenoids, etc.) are recommended.

4.   CONFIGURATION

When the transmitter is used with the factory setting, no further action is required, and the transmitter is ready to be installed.

When it is necessary to change the configuration of the equipment, you should use **SigNow** software, **TxConfig II** 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 6**:
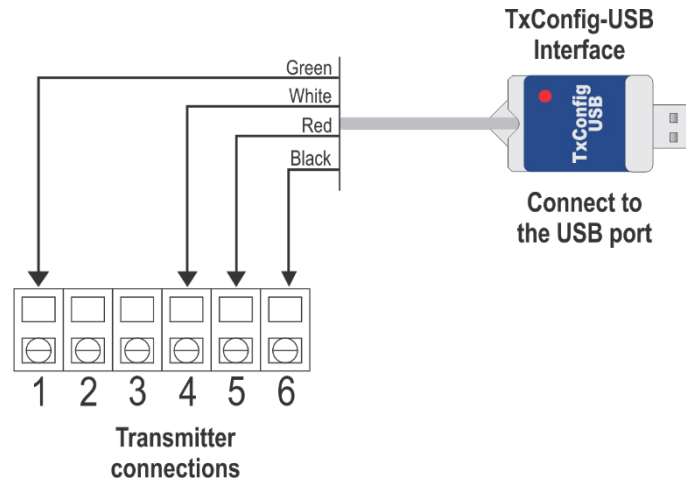
Figure 6 –   **TxConfig-USB** Interface connections

To configure the device via the **SigNow** app, you need to use an OTG cable with the **TxConfig-HRT** 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 *TxConfigIISetup.exe* and follow the instructions in the installer.

The **SigNow** setup application can be downloaded for free from *Google Play Store.*

4.1 SOFTWARE AND APP

4.1.1 SIGNOW SOFTWARE

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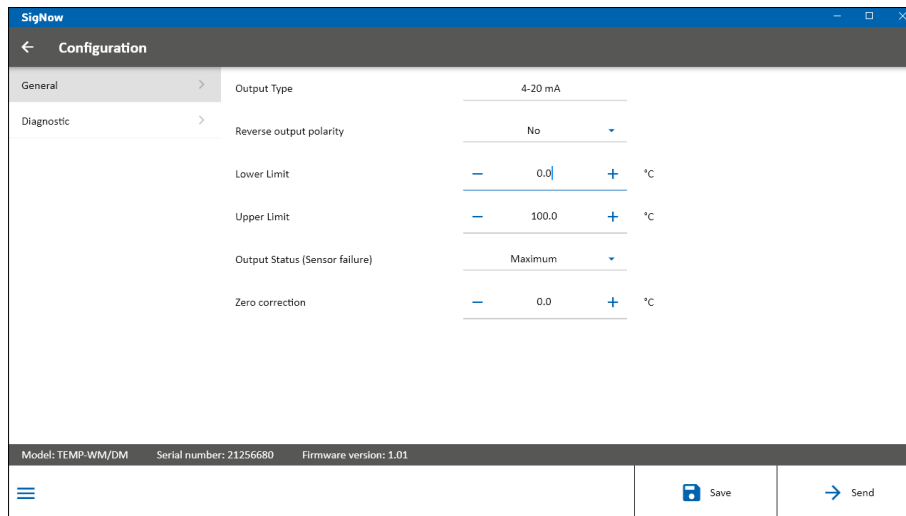

Figure 7 – **SigNow** configuration screen

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

The configuration screen is divided into 2 sections: General and Diagnostic.

In the General (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. **Reverse output polarity:** Allows you to reverse the output polarity.
3. **Lower limite**: Allows you to define the minimum desired temperature for the output type configured.
4. **Upper limit**: Allows you to define the maximum desired temperature for the output type configured.
5. **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.
6. **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.

4.1.2   TXCONFIG SOFTWARE

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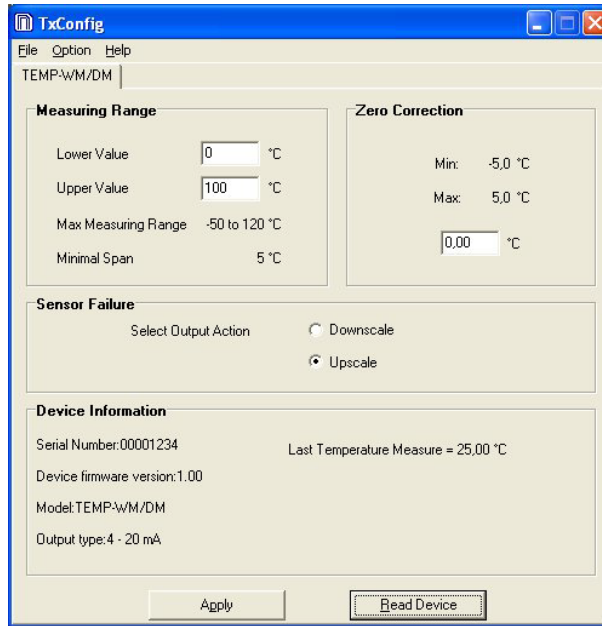

Figure 8 –   TxConfig software main screen

The fields in the screen mean:

1. **Measuring range**: Allows you to define the output scale for the input sensor. Program here the measurement **Lower Value** and the **Upper Value**.

   When the lower limit is defined with a value higher than the **High Limit**, the output current operates from 20 to 4 mA.

   The values configured in these fields cannot be beyond the sensor measuring range. The minimal span value has to be observed as well.

2. **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.

3. **Zero correction**: Allows you to make small sensor corrections.

4. **Device information:** This field contains data that identifies the transmitter and is important during any inquiries to the manufacturer.

5. **Read device**: When selected, allows you to read the configuration present in 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):

- Temperature span: 0 a 100 °C.
- 0 °C of zero correction.
- Upscale when sensor fails.

Serial port configuration errors may occur when other software are sharing the same serial port. Close all serial port applications prior to using the TxConfig software.

4.1.3 SIGNOW 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 9 – Using **TxConfig-USB**

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

Figure 10 – Main screen

Just click the **Configuration** button to show the main screen of **TEMP-WM** or **TEMP-DM** Configuration section:
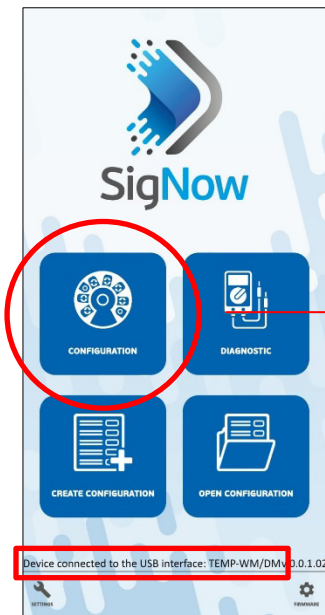

Figure 11 – Information screen

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.

4.2 SMARTPHONE CONNECTIONS

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

To do this, as shown in **Figure 12**, you need to observe how to connect the OTG cable to the equipment:
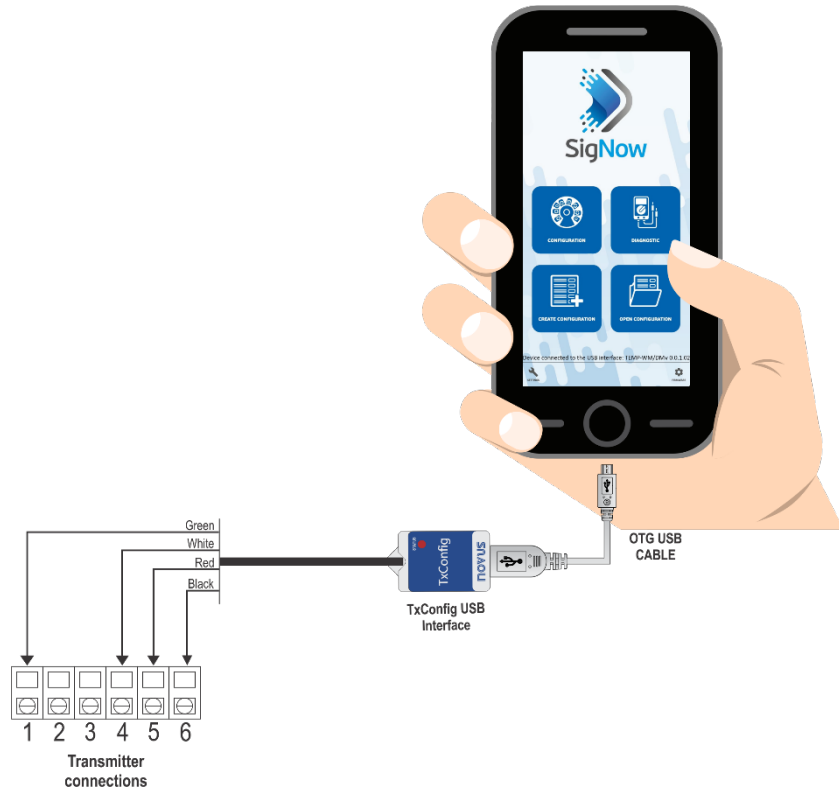

Figure 12 – OTG cable

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

5.   SPECIFICATIONS

FEATURES	TEM-WM / TEMP-DM
Temperature measurement	**Total accuracy**: 0.5 °C @ 25 ºC (1.6 ºC for the entire measurement range) **Measuring Range**: Configurable between -50 and 120 °C (see Operating limits) **Factory setting**: 0 and 100 °C
Operating limits	**TEMP-WM model**: Electronic circuit: -20 to 65 °C **TEMP-DM model**: Electronic circuit: -20 to 65 °C Sensor and Probe: -40 to 100 °C **Note**: For temperatures above 65 °C or below -20 °C, a maximum of 50 % of the probe length (**TEMP-DM**) should be exposed to this temperature, to avoid conducting extreme temperatures to the electronic module.
Response time	Up to 30 seconds in slow moving air.
Power supply	• **4-20 mA model:** 12 Vdc to 30 Vdc • **0-10 V model:** 18 to 30 Vdc / 15 mA max.
Outputs	• 4-20 mA or 20-4 mA current, 2-wire – loop power supply • 0-10 Vdc voltage
Output load (RL)	• **4-20 mA model:** RL (Ohms max.) = (Vdc – 12) / 0.02 let Vdc = Loop power supply (12 to 30 Vdc) • **0-10 Vdc model:** 2 mA max.
Output resolution	• **4-20 mA model:** 0.006 mA • **0-10 Vdc model:** 0.003 V
Protection	Electronic circuit case: IP65 Sensor capsule: IP40
Cables entrance	Compress fitting PG7.
Internal protection against reverse polarity of the supply voltage	Yes
Sensor, output, and power supply electrically isolated	No

Table 1 – Technical specifications

IMPORTANT

An identification label, on the transmitter body, shows the characteristics of this model.

No accuracy improvement results from narrowing the range for the 4-20 mA output. For example, the specified accuracy will be achieved for a transmitter configured to a -50 to 100 °C or to a 20 to 40 °C range.

You can correct any sensor measurement errors with **SigNow** or **TxConfig** software or the **SigNow** application. You can connect the **TxConfig** Interface to the transmitter even when it is connected to the process and operating. See software or app **Zero Correction** field.

It is possible that some temporary oscillations occur on the transmitter output when it is powered on and some changes are applied on its configuration.

5.1.   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.

6. WARRANTY

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