

TZone Temperature and Humidity Sensor

1 Introduction

1.1 About the Functionality

The TZone temperature and humidity sensor can be used to measure temperature and humidity in a van/heavy duty vehicle with a non-detachable trailer. The collected data is then transmitted to the tracking device.

The sensor operates with a $\pm 0.3^{\circ}\text{C}$ and $\pm 0.3\%$ RH accuracy with a 55 m (open field) range and it can work for 1.5 years without replacing a battery.

1.2 Legal Information

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1.3 Compatibility

TZone temperature and humidity sensors are compatible with the following devices with the newest firmware version:

- HCV5
- LCV5
- Pro5

1.4 Contact Information

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1.5 Document Changelog

Version	Date	Modification
1.0	2020-07-16	Initial draft.
1.1	2020-09-	Updated: Testing the Sensor. Updated: Sensor Installation and Maintenance.

1.6 Notations

The following notations are used in this document to highlight important information:

Bold text

Used to indicate user interface elements or for emphasis.

Italic text

Used to indicate items that belong to a list and can be selected.

Note



Used to highlight important information or special conditions.

1.7 References

Datasheet: <https://doc.ruptela.lt/pages/viewpage.action?pageId=37683326>

2 Configuration

 This functionality requires the use of the advanced configurator and a smartphone.

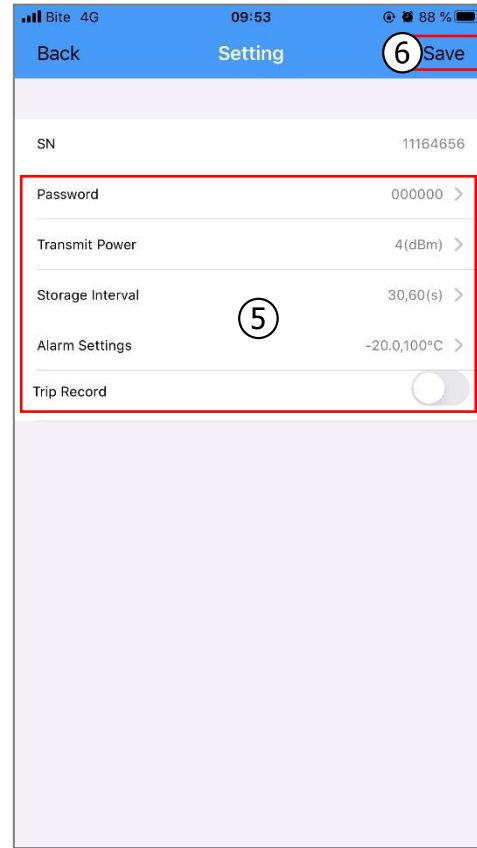
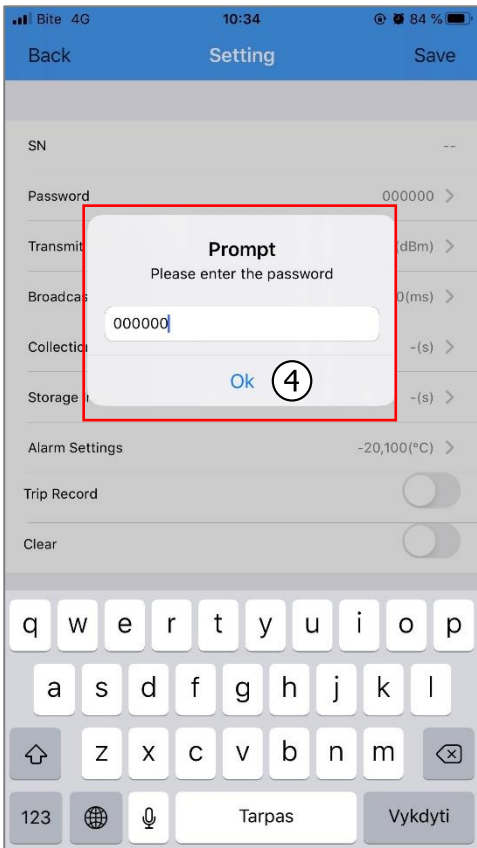
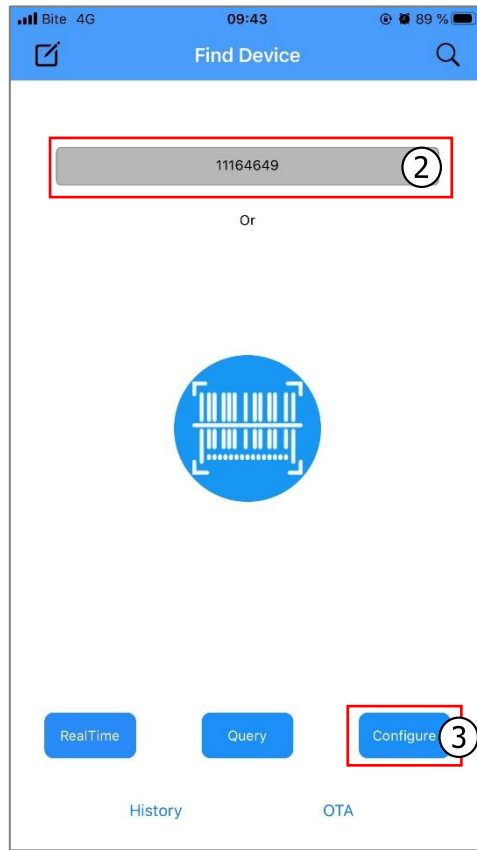
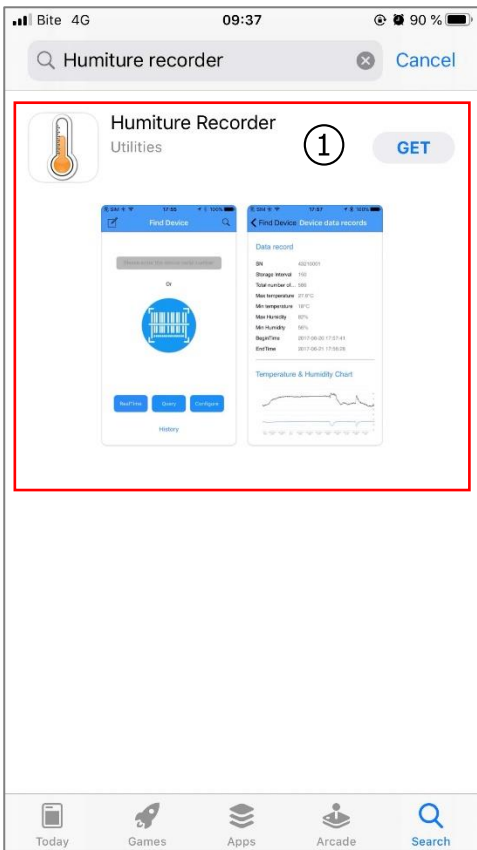
2.1 Configuration through the App

Follow these steps to configure the sensor:

1. On your smartphone open **Google Play** (Android OS) or **App Store** (iOS) and download the **Humiture Recorder** app.
2. Open the app and scan the sensor barcode, or enter the sensor ID, which can be found on the back of the sensor.
3. Tap **Configure**.
4. You will be required to enter the password (*000000* by default). Tap **Ok**.
5. If required, modify the following values:

Password	Change the configuration password. Default value: <i>000000</i> .
Transmit Power (iOS) / TX power (Android OS)	Set how strong the signal will be. The higher the power, the longer the effective range will be. If the default value is <i>-4 dBm</i> or lower, the transmit power should be set to <i>0</i> or <i>4 dBm</i> .
Storage Interval	Set how often the data is stored in the internal memory. Default value: Normal: <i>30s</i> Alarm: <i>60 s</i>
Alarm Settings	Cannot be modified, as tracking device will not recognize the alarm.
Trip Record (iOS) / Travel Records (Android OS)	Enable, if you need to store the records of a whole vehicle trip. Default value: Disabled.

6. Tap **Save** (iOS) or **Save Settings** (Android OS).



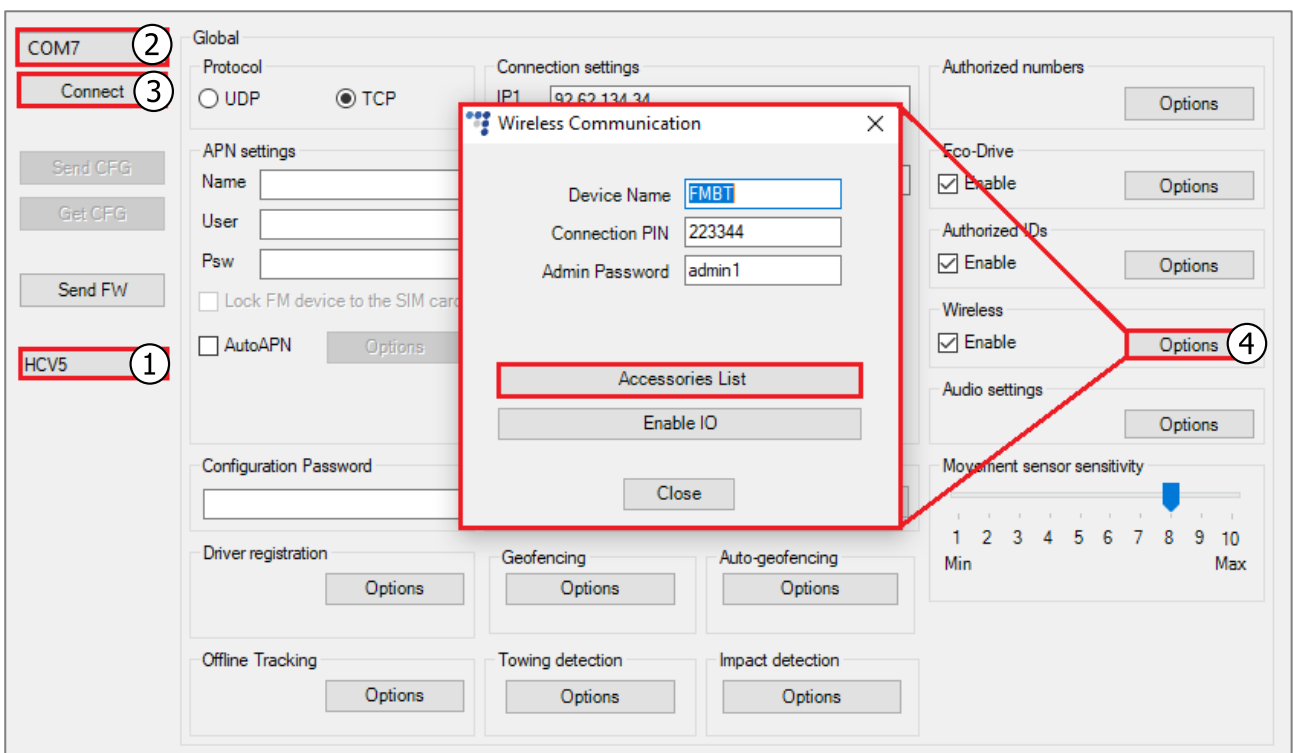
2.2 Configuration through the Advanced Configurator



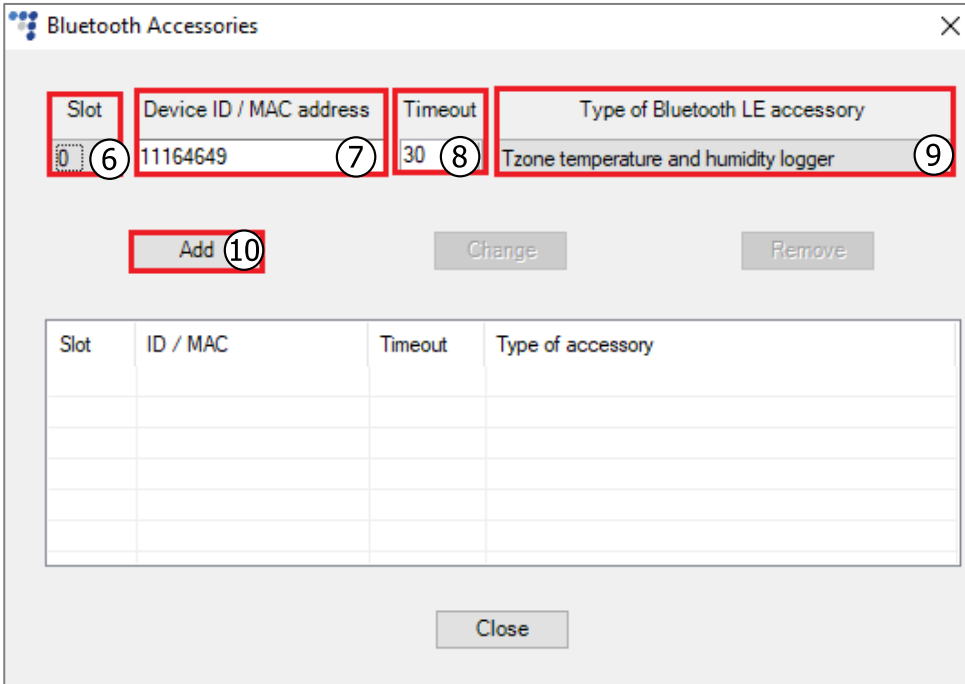
The configuration through the app should be completed before starting the configuration via the advanced configurator.

Follow these steps to configure the sensor:

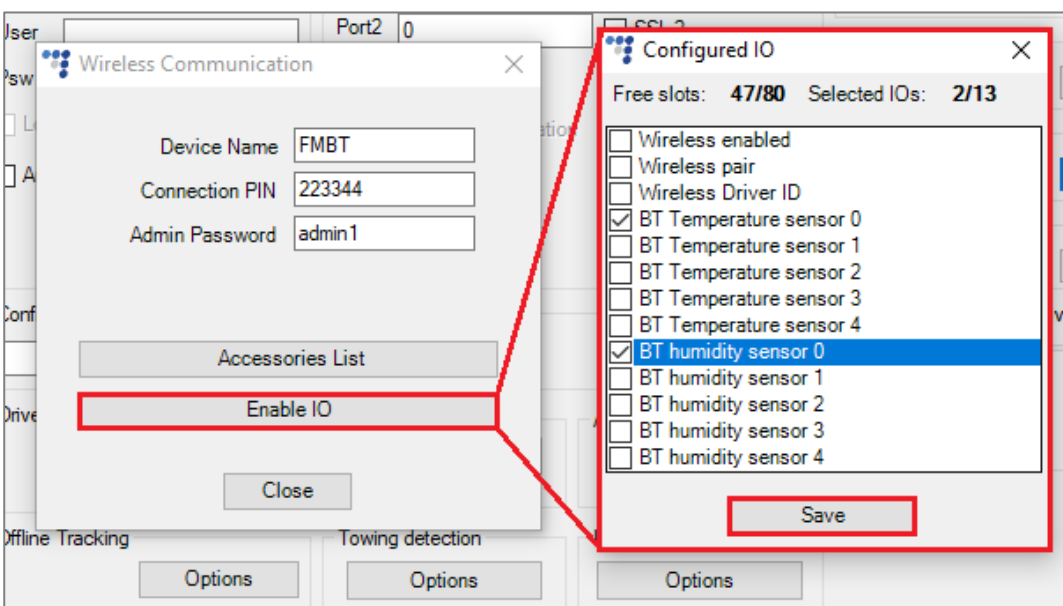
1. Open the advanced configurator. Select your tracking device.
2. Select the COM port to which your device is connected.
3. Click **Connect**.
4. Click **Options** in the **Wireless** section to open the **Wireless Communication** window.
5. Click **Accessories List** to open the **Bluetooth Accessories** window.



6. Select a free slot for the sensor.
7. Enter the sensor ID.
8. If required, set the timeout.
9. Select *Tzone temperature and humidity logger* from drop-down list.
10. Click **Add**.



11. Close the **Bluetooth Accessories** window and click **Enable IO** to open the **Configured IO** window. Select *BT Temperature sensor x* and/or *BT humidity sensor x* (where x – is the slot number from the accessories table).
12. Click **Save**.



2.3 Finishing the Configuration

To finish the configuration, close the **Wireless Communication** window. Click **Send CFG** to send the configuration to the device.

The screenshot displays the Ruptela Configurator software interface. At the top, there is a menu bar with 'File' and 'Tools'. Below it, a 'Configuration file information' section shows: Configuration source: **Configurator**, Target device: n/a, FM device FW version: n/a, CFG Tag: [text input], Advanced Configurator version: n/a, and Last edited: n/a. The Ruptela logo is in the top right corner.

The main interface is divided into several sections:

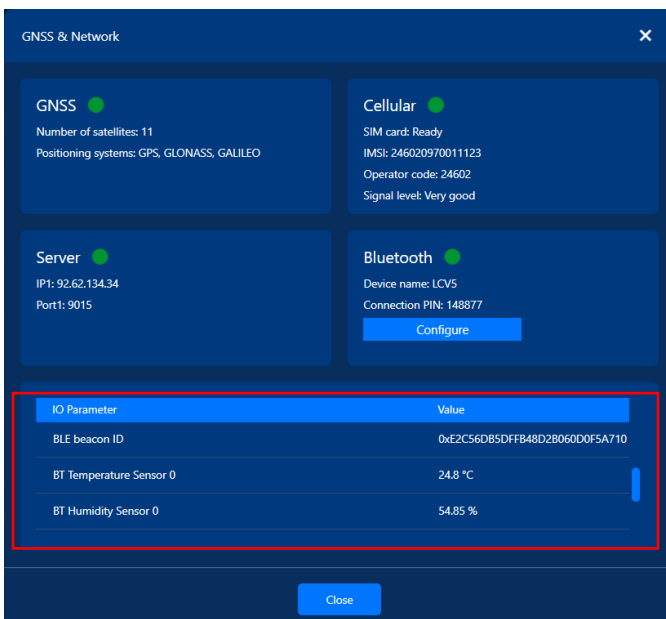
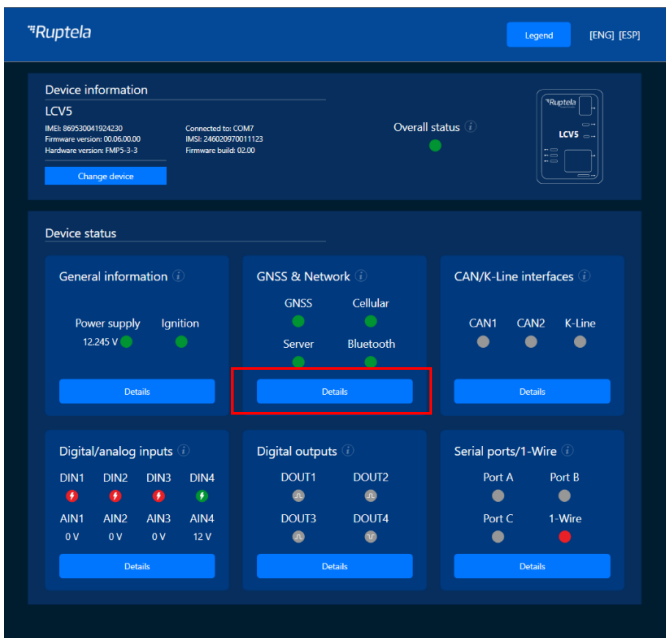
- Global:** Includes a dropdown menu for 'COM3', a 'Disconnect' button, a 'Send CFG' button (highlighted with a red box), a 'Get CFG' button, a 'Send FW' button, and a dropdown menu for 'HCV5'.
- Protocol:** Radio buttons for 'UDP' (selected) and 'TCP'.
- APN settings:** Fields for 'Name', 'User', and 'Psw', a checkbox for 'Lock FM device to the SIM card', and an 'AutoAPN' checkbox with an 'Options' button.
- Connection settings:** Fields for 'IP1', 'Port1' (0), 'IP2', and 'Port2' (0), checkboxes for 'SSL 1' and 'SSL 2', checkboxes for 'Two servers' and 'SSL client authentication', and buttons for 'Periodical redirect' and 'SSL settings'.
- Authorized numbers:** An 'Options' button.
- Eco-Drive:** A checked 'Enable' checkbox with an 'Options' button.
- Authorized IDs:** A checked 'Enable' checkbox with an 'Options' button.
- Wireless:** A checked 'Enable' checkbox with an 'Options' button.
- Audio settings:** An 'Options' button.

2.4 Testing the Sensor

You can test if your data is coming successfully from the sensor via Device Center installation assistant tool. Follow these steps:

1. Open Device Center.
2. Click **Test Device**.
3. Select your device by clicking on it.
4. In the appeared installation tool window click **Details** in the **GNSS & Network** section.

If the **Bluetooth** status is green, the tracking device is receiving data from the sensors and other Bluetooth accessories.



3 Sensor Installation and Maintenance

3.1 Installation

There are several points to consider for the sensor mounting:

- The configuration of the sensors;
- The configuration of the tracking device;
- The mounting location of the sensors and tracking device.



All of the points mentioned above are related and must be carefully evaluated to achieve a fully working solution. Check that the sensor is sending correct data using the installation assistant before mounting the sensors. You can do that using the Device center installation tool / Advanced configurator live IO data.





Mounting location recommendations:

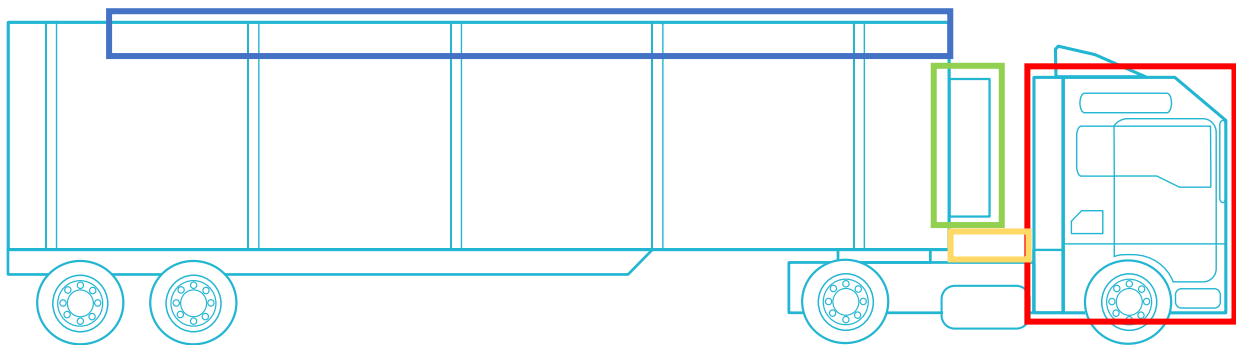
- Avoid mounting near thick metal parts, as it may cause reflections and/or attenuation of the signal.
- Take moving parts into consideration – truck partitions, curtains. They might damage or dismount the sensor when moved.
- Take into account how the cargo might be loaded and positioned. Mount the sensor at the top, as lower positions are more vulnerable to damage during loading/unloading of the cargo. Also, from lower positions, the signal might be attenuated more by the cargo itself.

Sensor configuration recommendations:

- For the sensors, that are mounted at the back of the truck, it is recommended to set signal strength to +4 dBm.
- For the sensors, that are mounted at the front of the truck, use the recommended default value (0 dBm). You must check if the tracking device can receive the data.
- When testing the signal strength, you must take into account the attenuation that might be caused by the cargo, so it is always more reliable to use higher signal strength.

The following image shows the recommended locations for mounting **the tracking device** to ensure connectivity with the sensor:

Color	Definition
	Most favorable locations, mainly inside of the refrigerator's controller compartment. This placement ensures data accuracy and the proper connectivity with the sensor.
	Not optimal locations, as there is more probability for metal obstacles to cause interference.
	Mounting the device inside the cabin is not viable, because the metal reflects any signals and will not receive any data at all.
	Sensor mounting location suggestions based on the mounting location recommendations above.



3.2 Battery Replacement

Follow these steps to replace the battery:

1. Unscrew and open the housing.
2. Remove the PCB.
3. Push out the old battery and insert a new CR2450 type of battery.
4. Put the PCB with the new battery back in place.

