CALMS d.o.o.

User manual – CAL-WIRELESS-BOX device

Product:	CALMS CAL-WIRELESS-BOX device
Release date:	November 2025

Contents:

1. Notices

Read this manual thoroughly and follow all notes and instructions during installation, operation, and maintenance. The manufacturer accepts no responsibility for damage caused by disregarding this manual.

The manual must be read attentively by both qualified personnel and the end user. It should be stored with the product and kept accessible whenever required. **By installing or using the product, you confirm that you have read, understood, and agreed to follow the instructions provided.**

2. Warnings

Ignoring the warnings can lead to serious injury and/or cause damage!

When handling, operating, or maintaining this product, personnel must follow safe working practices and comply with all applicable health and safety regulations. Incorrect operation or maintenance may create dangerous situations and could result in equipment damage or personal injury. The manufacturer cannot foresee every circumstance that may pose a hazard. If users apply procedures, equipment, or methods not specifically recommended by the manufacturer, they are responsible for ensuring that such use does not damage or compromise the product's safety, and that it poses no risk to people or property.

Revision history

Revision	Date	Author	Description of changes
1.0.0	11.2025	N. Pavlovska	Release of CAL-WIRELESS-BOX user manual

3. CAL-WIRELESS-BOX device

The **CALMS CAL-WIRELESS-BOX device** is a cost-effective, modern expansion module for compressed air systems, built to seamlessly integrate with the CALMS CAL-EDGE-8 data logger. It communicates with sensors using wireless Modbus, allowing for hassle-free, cableless installation—even in remote or difficult-to-access areas.

It is a plug&play device, used to connect even the most distant sensors to the device CAL-EDGE-8 WITHOUT any cables.

This user manual is focused on helping customers understand the working of the device, avoid common mistakes, and incorporate it into your system as efficiently as possible.

Purchasing the CAL-WIRELESS-BOX includes:

CAL-WIRELESS-BOX device with MODBUS RTU and W-MODBUS protocol, 2x AI, 2x DI, 2x DOR

W-MODBUS antenna

Device supplied with 24VDC (Power adapter included)

4. Mechanical and electrical installation

Installation work must only be carried out by a competent person under qualified supervision.

A fused isolation switch must be fitted between the main power supply and the CAL – WIRELESS-BOX device.

The CAL – WIRELESS-BOX should be mounted in such a location as to allow operational and maintenance access without obstruction or hazard and to allow clear visibility of indicators at all times.

If raised platforms are required to provide access to the CAL – WIRELESS-BOX they must not interfere with normal operation or obstruct access. Platforms and stairs should be of grid or plate construction with safety rails on all open sides

The new wireless Modbus feature on the CAL-EDGE-8 can be implemented on demand. For this option, an additional hardware component has to be purchased, the **CAL-WIRELESS-BOX**. It is a device that acts as a bridge between the CAL-EDGE-8 device and the sensors. On this device the customer can connect the following:

1. Modbus RTU sensors (with the possibility of daisy chaining)
2. 2 x Analog sensors
3. 2 x Digital inputs
4. 2 x Digital reley outputs

The sensors are connected to the CAL-WIRELESS-BOX that communicated with the CAL-EDGE-8 device via Wireless Modbus protocol.

First, the CAL-WIRELESS-BOX has to be powered on. It is powered with 24VDC. To power the device connect **24VDC** to the terminal labeled **1 (on the J1 connector), 0VDC** connect to the terminal labeled **2 (on the J1 connector).** To ensure proper connection, please check the electrical schematic below.

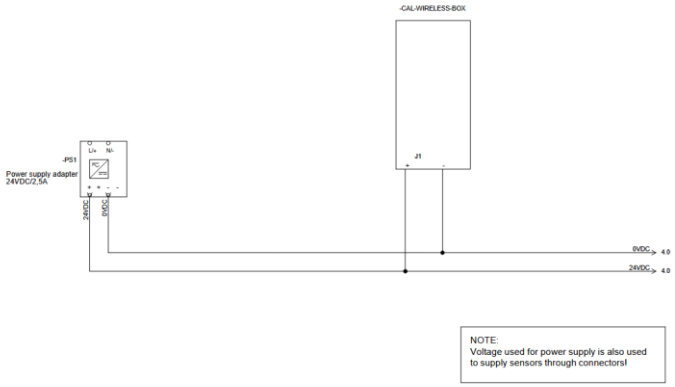

Figure 1 Electrical schematic for the CAL-WIRELESS-BOX

If the device has been properly powered on, the LED **POWER** lights **green.**

Next, for the CAL-EDGE-8 to be able to communicate with the CAL-WIRELESS-BOX, antenna has to be connected on both devices. On the CAL-EDGE-8, you have to connect the antenna provided to the connector labeled **W-MODBUS**.

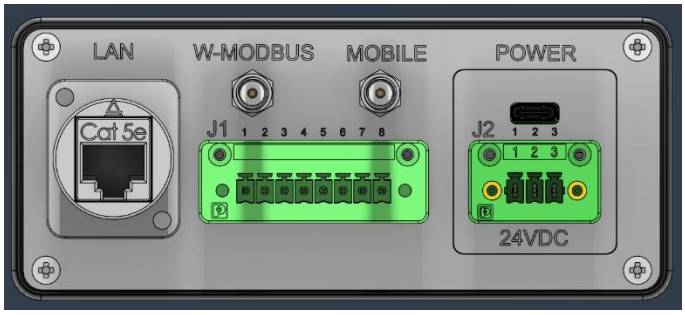

Figure 2 : Front view of the CAL-EDGE-8 device

Also, an antenna has to be connected to the CAL-WIRELESS-BOX on the connector labeled **W-MODBUS.** When communication between the CAL-EDGE-8 and the CAL-WIRELESS-BOX has been established the **STATUS LED** on the CAL-WIRELESS-BOX lights **green.**

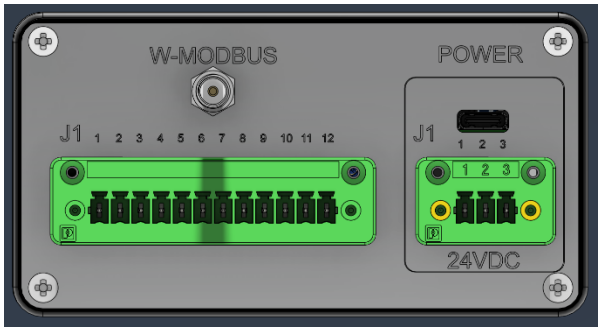

Figure 3 : Front view of the CAL-WIRELESS-BOX

To wire the sensors to the CAL-WIRELESS-BOX, use the **J2 connector with the pinout written on the top plate of the device.**

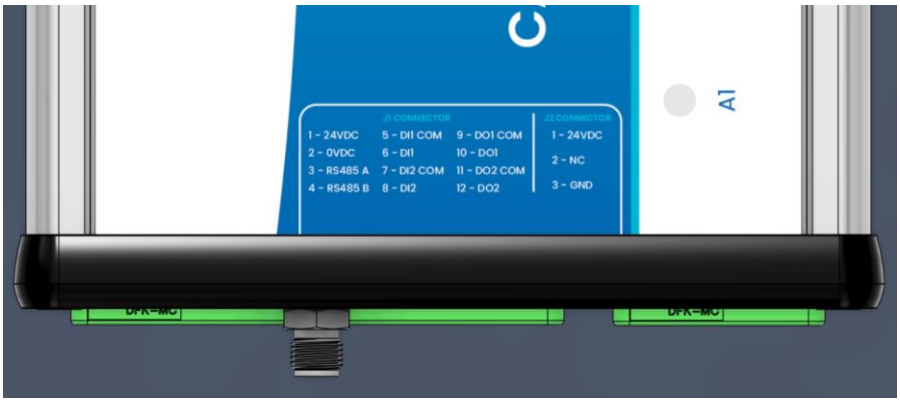

Figure 4 : Pinout of the J2 connector on the CAL-WIRELESS-BOX

To connect a Modbus RTU sensor to the CAL-WIRELESS-BOX, you must first connect it to (external or directly from the CAL-WIRELESS-BOX) power supply and connect **Data + to A** and **Data – to B accordingly,** like shown in the shematic below.

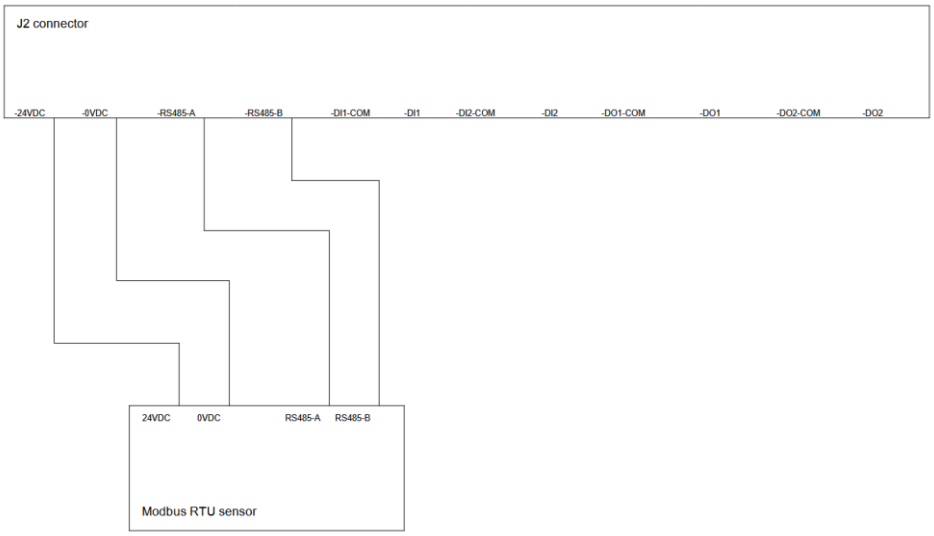

Figure 5 : Connection of a MODBUS RTU sensor to the CAL-WIRELESS-BOX

DISCLAIMER: To make sure the data values from the sensors are efficiently send to CALMS web application, contact the CALMS support team to make sure the Wireless Modbus option has been added to the sensor.

To connect a digital input to the CAL-WIRELESS-BOX, you must connect it according to the electrical schematic below.

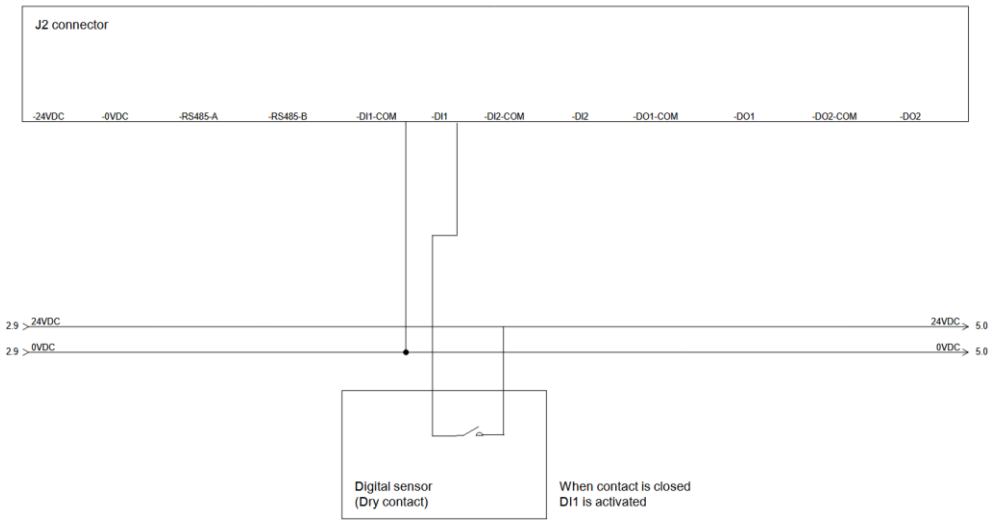

Figure 6 : Connection of digital sensors to the CAL-WIRELESS-BOX

To connect analog sensor to the CAL-WIRELESS-BOX, please follow the electrical schematic provided below.

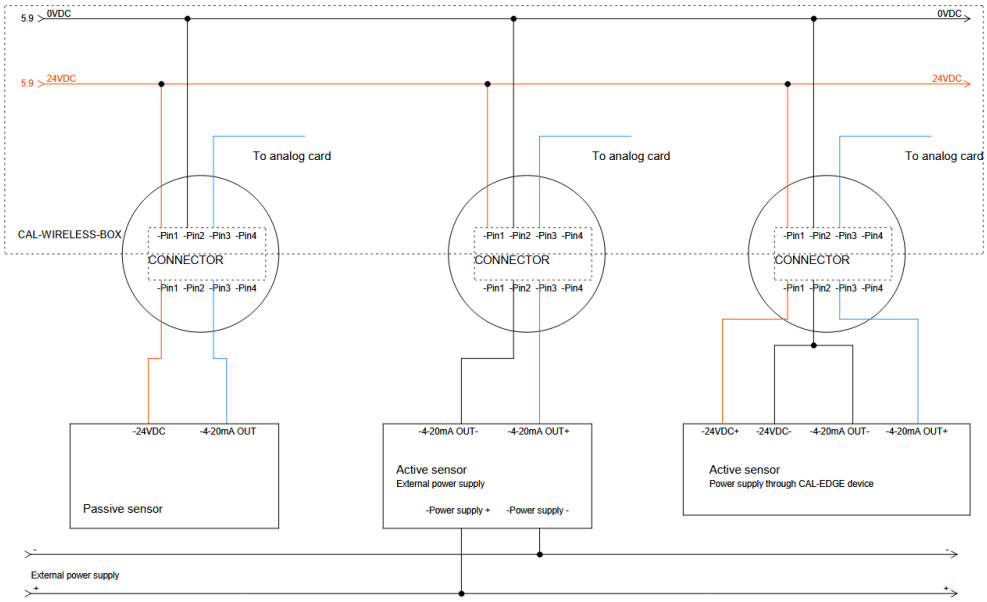

Figure 7 : Connection examples of analog sensors to the CAL-WIRELESS-BOX

A correct connection and configuration of the device can be seen on the LED lights in the front side of the device.

State LED	Description
LED POWER	○ LED lights green – device powered on properly ○ LED off – supply voltage less than 9VDC or more than 30VDC
LED STATUS	○ LED lights blue – device is trying to connect to the CAL-EDGE-8 device ○ LED lights green - device connected to the CAL-EDGE-8
LED RS485	○ LED flashes rapidly **red and green color** – MODBUS communication established and sensor configured on CALMS; ○ LED flashes **green color** – MODBUS communication searching (sensor not configured on CALMS) ○ LED off- Modbus not connected
AI LED	○ LED off – analog input not activated, signal less than 4mA ○ LED lights green – analog input activated, signal more than 4mA
DI LED	○ LED off – digital input not activated ○ LED lights green – digital input activated
DOR LED	○ LED off – digital output not activated ○ LED lights green – digital output activated

The **W-MODBUS SIGNAL STRENGTH** LEDs indicate the strength of the connection to the CAL-EDGE-8 via the Wireless Modbus protocol.

Figure 8 : Top view of the CAL-WIRELESS-BOX

5. Start-up procedure on CALMS

After successfully mounting and wiring the device a proper start-up procedure must be done:

1. Every CAL-EDGE-8 device has its own unique serial number, located on the back of the device. On the web application CALMS the device has to be added in your system. First, you open your system and navigate to the **Setup** page. There you click on **»Add device«** and choose your device.

Figure 9 How to add a device on CALMS

2. On the **Equipment page** add a sensor on your scheme. To »connect« the sensor to your device you have to again choose your device (serial number) and the connection type of the sensor, **wireless Modbus or the W-BOX > MODBUS RTU type**.

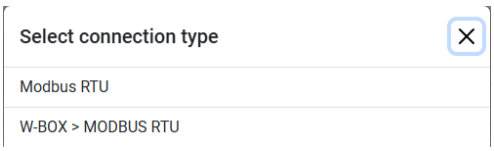

Figure 10 : Choosing the right connection type for the sensors

3. Next, the MODBUS parameters on the CALMS application should be configured. Usually for the Wireless Modbus option they are already set, for the Wired Modbus the customer has the option to change them. The customer is able to change the UnitID of the sensor, the baudrate, parity, data and stop bits so they match with the settings on the sensor.

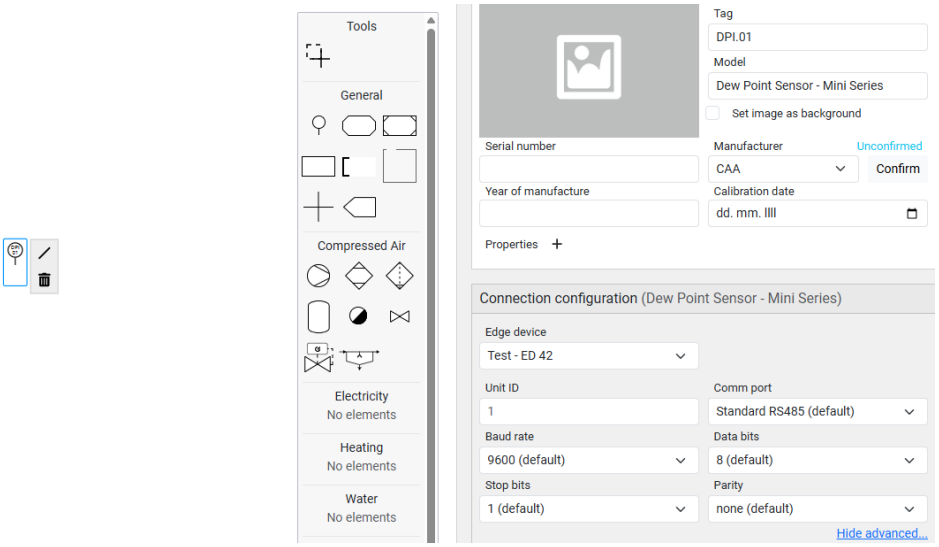

Figure 11 Sensor configuration on CALMS

4. If the device is powered on and the sensor is already connected to it and configured on CALMS, the device immediately establishes connection by flashing the **RS485 LED red rapidly.** Also, the device already starts sending data to the web application. The customer has the option to view the live values from the sensors as they are changing by navigating to the **Device dashboard page** and **clicking the Live button**, to enable the live monitoring of the data.

Figure 12 Device dashboard

5. The data collected from the sensor for periods of time can be checked on the **Monitoring page.** There the customer has the option to choose which channels (inputs) to monitor, view them in a graph, choose the inspect period and aggregation.

Figure 13 Monitoring page on CALMS

6. With this the process of adding, configuring and getting data from the CAL-WIRELESS-BOX to the CAL-EDGE-8 and then to the CALMS application is finished.

7. Troubleshooting

When wireless MODBUS option is added, there are NO indicatiors on the CAL-EDGE-8 if there are any problems in the communication with the CAL-WIRELESS-BOX.

CAL-WIRELESS-BOX troubleshooting tips:

- **POWER LED is constantly OFF:**

Check the power supply. Device accepts 9-30VDC.

- **Device does not want to connect to CAL-EDGE-8:**

Check if the antenna on the connector labeled WIRELESS is firmly on the port of both devices: the CAL-EDGE-8 and CAL-WIRELESS-BOX.

- **STATUS LED is burning RED:**

Contact the CALMS support team.

- **Rx-Tx LED is constantly OFF:**

Check if the antenna is firmly on the »**WIRELESS**« port. Place the antenna near windows and on higher places to get the best possible signal.

- **Device doesn`t communicate with the Modbus sensor:**

Check the wiring. Swap data **A and B** if necessary. Check the configuration of the sensor on CALMS (Modbus parameters).

- **AI LED constantly OFF:**

Check the wiring of the analog sensor, check the sensor if working. Check the configuration on CALMS of the analog sensor.

For more instructions and troubleshooting scan the QR code!

8. Contact and support

If you experience any issues that cannot be resolved using this manual, please contact the CALMS support team support@calms.com.

For technical assistance, please, provide the following information when reaching out:

- Serial number (located on the device label)
- Description of the issue
- Steps already taken to resolve the issue

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