CALMS d.o.o.

User manual – CAL-EDGE-0 device

Product: CALMS CAL-EDGE-0 monitoring device

Release date: August 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.

3. CAL-EDGE-0 monitoring device

The **CALMS CAL-EDGE-0 monitoring device** is a highly sophisticated and affordable remote data logger for compressed air systems. The device is designed as plug&play and is the easiest and cheapest solution used for remote monitoring and auditing, alarming and reporting, designed and configured for majority of compressors and sensors on the market.

Device connects directly to CALMS web application which provides real time access to data from any web browser for any end user and their service partner.

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-EDGE-0 includes:

CAL-EDGE-0

CALMS-EDGE-0 survey device LTE 4G with Modbus RTU & TCP/IP;
Portable measurement device with Ethernet, RS485 and CAN interface connection
Supported protocols: Modbus RTU, TCP/IP, OPC UA (without sensors)
3G/4G Modem SMA with external antenna (with SIM card provided EU/Global);
1 x Ethernet port 10/100 Base-T (LAN);
1x RS485 port and 1x CAN port;
Internal memory eMMC 8GB, optional µSD 256 GB
Ambient temperature range: -25°C to +60°C
Power Supply included 24VDC, 2,1A, 50W;
Approval UL / CE / FCC Class A

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 – EDGE – 0 device.

The CAL – EDGE – 0 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 – EDGE - 0 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

For starting up the device, it needs to be powered on, connected to a **power supply.** The device **must be operated at the supply voltage and frequency for which it is designed.** It is powered with 24VDC. When purchasing the device it comes with a power supply included.

What follows is a description of all the terminals on the device:

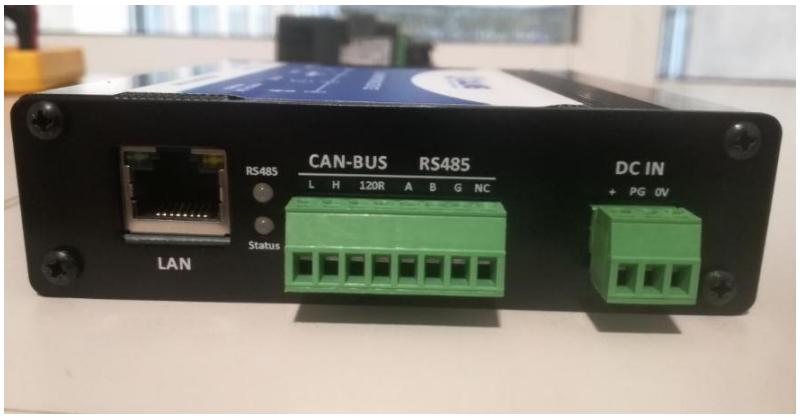


Figure 1 CAL-EDGE-0 (front side)

On *Figure 1* is shown the CAL-EDGE-0 device from its front side where the connectors for power supply, RS-485 fieldbus and ethernet port are located.

To power on the device connect **24VDC** to the **+ terminal** on the connector and **0VDC** on the **OV terminal** on the device. When successfully powering on the device the **Status** LED starts blinking green. To ensure proper connection, please check the electrical schematic down below.

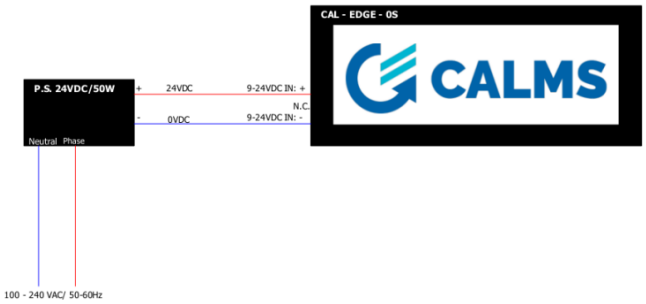


Figure 2 Electrical schematic for the CAL-EDGE-0 device

To ensure the device goes online you must connect an external antenna to the device or connect it to your local network where DHCP server is installed so the device can connect to the internet.

- If you`re connecting an antenna, you need to connect it to **ANT1** and screw it firmly. For best possible signal reception we recommend you mount it as high as possible, or near a window.
- If you`re connecting it to LAN, plug in the ethernet cable into the ethernet port on the device labeled with **LAN.** The LAN port can also be used to connect the device to other TCP/IP protocol capable devices (MODBUS TCP, ADS, OPC UA…). To connect a MODBUS TCP sensor to the device, use the LAN port. Device receives its static IP address (**192.168.0.102**) after start-up if there is not DHCP server in the network.

The CAL-EDGE-0 also supports the widely used protocol in the industry – MODBUS RTU. The unit provides a fully isolated 2-Wire (half duplex) RS485 interface with automatic, transparent hardware flow control. Its easy implementation and configuration ensures that the customer can have a fully operational and functional monitoring device in no time.

To connect a MODBUS RTU sensor to the CAL-EDGE-0 you must first connect it to (external) power supply and connect **Data + to A** and **Data – to B accordingly,** like shown in the shematic below.

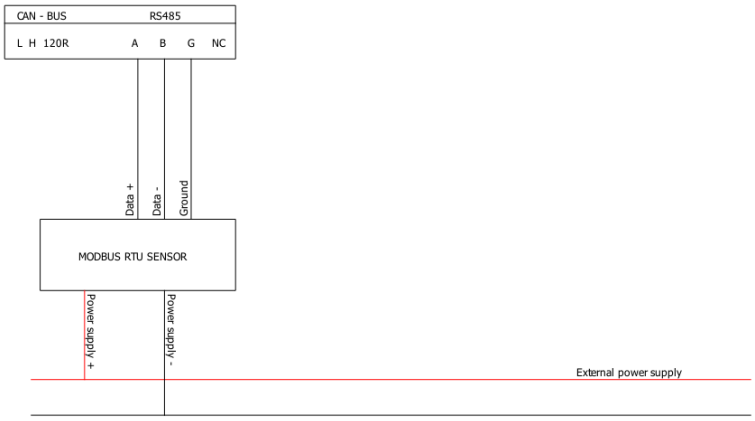


Figure 3 Connection of MODBUS sensors to the CAL-EDGE-0 device

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 sensor is added in the CALMS database. A new sensor must be added in the CALMS database.

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 RS485	○ LED flashes rapidly **red color** – MODBUS communication established; ○ LED flashes **green color** – MODBUS communication searching (devices are not communicating) ○ LED not flashing – MODBUS not connected
LED Status	○ On -> continuous voice call state ○ 125ms ON, 125ms OFF -> Data transmission ○ 1800ms ON, 200ms OFF -> Idle state ○ 1800ms OFF, 200ms ON -> Network searching

The other ports that are not mentioned are not used!

5. Start up procedure

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

1. Every CAL-EDGE-0 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.

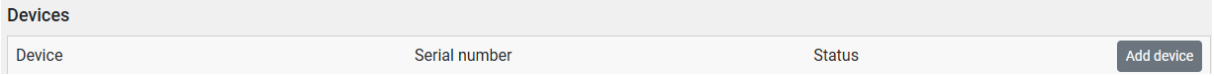


Figure 4 How to add a device on CALMS

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 configure the MODBUS parameters on the CALMS application. 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.

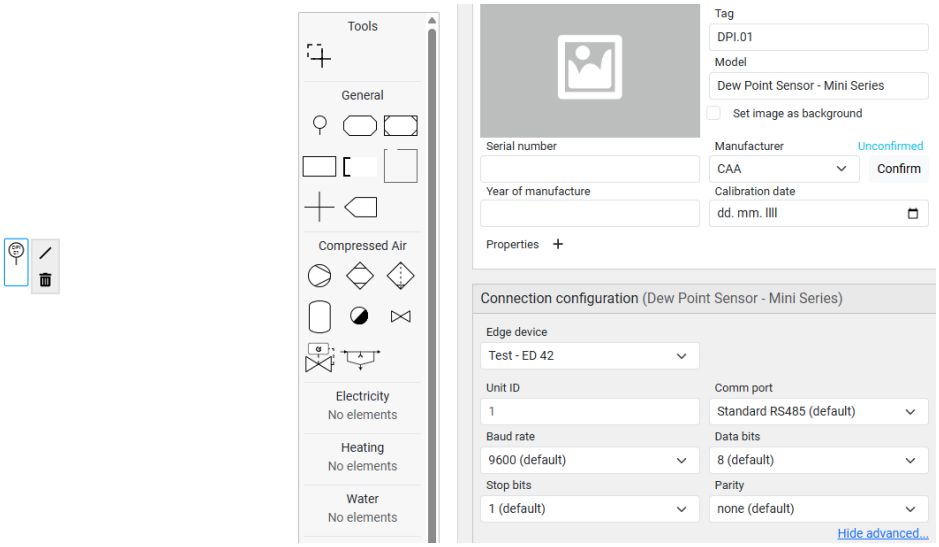


Figure 5 Sensor configuration on CALMS

3. 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 6 Device dashboard

4. 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 7 Monitoring page on CALMS

5. With this the process of adding, configuring and getting data from the CAL-EDGE-0 is finished.

6. Troubleshooting

Below are some troubleshooting tips in case you encounter some of these situations:

- **Status LED blinks green and is more time OFF than ON:**

The device is not connected to any network. Check that the antenna is firmly connected to the modem (the connector labeled **main**) of the device (see photo below), make sure the SIM card is inserted in the device and make sure it is enabled.

DISCLAIMER: If the customer uses custom SIM cards, CALMS cannot access the SIM and support in case of bad (or no) connection.

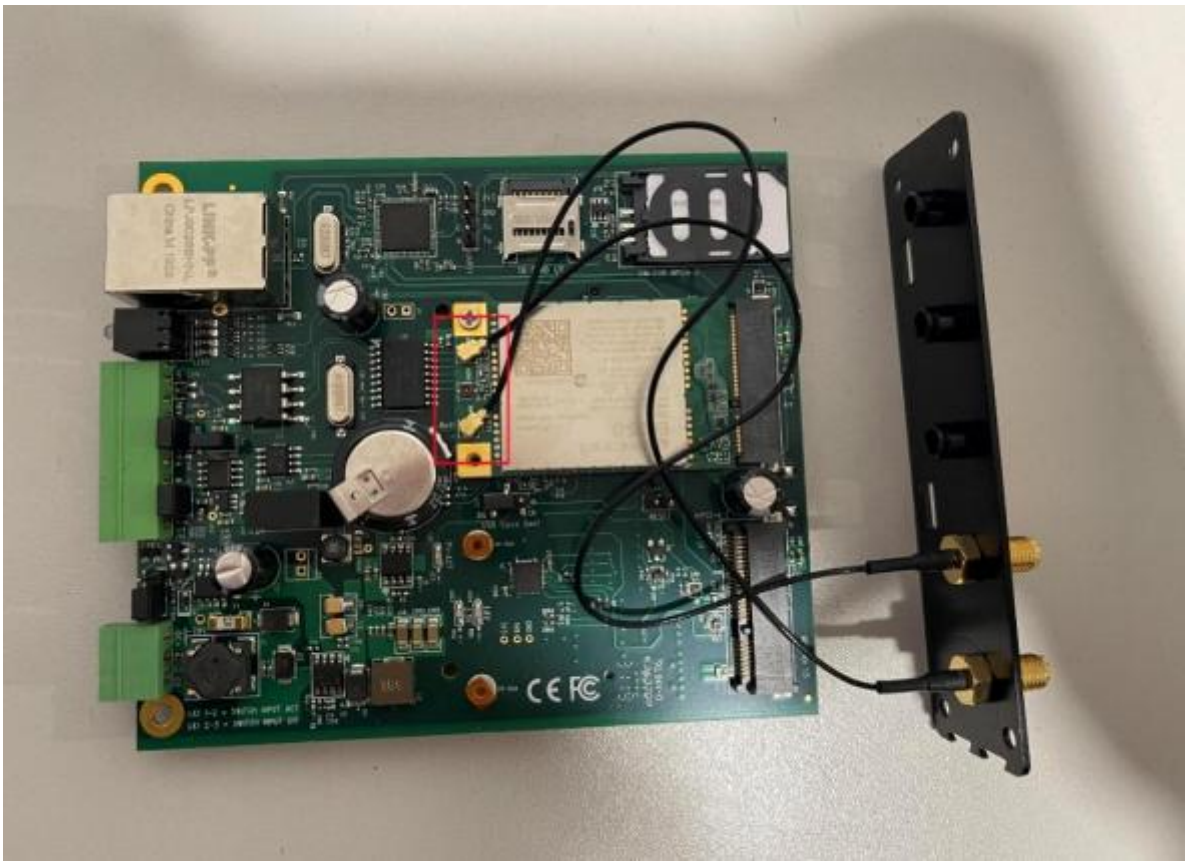


Figure 8 Antenna connection on modem

- **Status LED blinks green and is more time ON than OFF:**

The signal is very weak or non-existant. Check if the external antenna is tightly screwed on the SMA connector, move the antenna to a higher place, or near a window for better signal, restart the device.

- **Status LED is constantly OFF:**

Check the power supply. The device is powered with 24VDC.

- **RS485 LED is flashing green:**

A MODBUS slave device has been connected to the master, but they are not communicating. Make sure the MODBUS parameters on CALMS are the same as the slave device (check the manual for the slave device), swap the **Data A** and **Data B wires on the CAL-EDGE-0 device.**

- **RS485 LED is constantly OFF:**

  No MODBUS communication is present. Check the power supply for the slave device. They have to be externally powered on. Check the configuration on CALMS: make sure the correct slave device is added and the correct device (serial number) is assigned to the slave device.

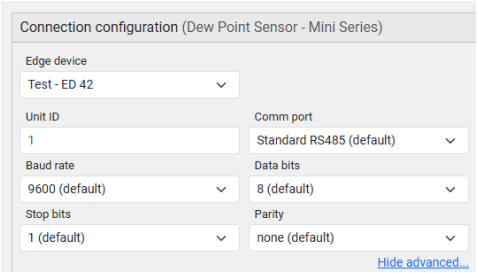


Figure 9 Sensor configuration on CALMS

- **RS485 LED is constantly red:**

Contact the CALMS team. Wrong sensor configuration. Make sure the signal list is the correct one for the particular sensor.

- **Can`t find the sensor on CALMS:**

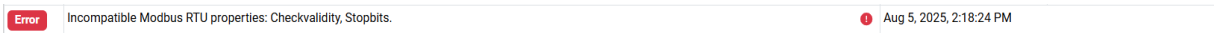
Contact the CALMS support team. For a new sensor on CALMS the customer has to inform the CALMS support team beforehand, on what sensor it is and provide the documentation for the sensor so it can be successfully added to the CALMS database.

- **CAL-EDGE-0 device is outdated:**

Contact the CALMS support team. The device has to be updated. For a successful update the device has to be connected via the ethernet port to LAN during the update.

- **CALMS logs:**

If a sensor is configured incorrectly on CALMS: check the sensor configuration and MODBUS parameters.



If a device goes OFFLINE: : if that wasn`t supposed to happen check the power supply and **Status LED state.**

- **MODBUS sensor connected and configured but still not communicating with CAL-EDGE-0 device:**

If a MODBUS sensor is correctly connected to the device and configured on CALMS, but there still isn`t communication established, restart the device.

For more instructions and troubleshooting scan the QR code!

6. 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

Website:	www.calms.com
E-mail:	support@calms.com
Phone:	info@calms.com (EU): +386-1-563-20-63 (US): +1-864-705-2571