CALMS d.o.o.

User manual – CAL-EDGE-PM device

Product: CALMS CAL-EDGE-PM monitoring device

Release date: September 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-PM monitoring device

The **CALMS CAL-EDGE-PM monitoring device** is a highly sophisticated and affordable remote data logger for compressed air systems. It is a wall mounted cabinet with the CAL-EDGE-0 device. Device connects directly to the CALMS web application which provides real time access to data from any web browser for any end users and their service partner. 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.

CAL-EDGE-PM is used for small systems for permanent monitoring only, without options like local HMI display, control, SCADA. Optional add-ons include analog and digital inputs.

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-PM includes:

Base module CAL-EDGE-PM for Permanent monitoring ONLY! With LTE 4G (designed for small systems monitoring only, HMI & control not possible)

Wall mounted Cabinet with CAL-EDGE-0 with Ethernet and LTE 4G with SIM card provided EU or Global

Optional hardware add-ons include:

CAL-EDGE-DI16

Expansion 16-channel digital input terminal 24 V DC, ethernet

CAL-EDGE-AI8

Expansion 8-channel analog input terminal 4…20 mA, 12 bit

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 – PM device.

The CAL – EDGE – PM 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 - PM 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 **110VAC, 60Hz or 230VAC,50Hz**.

On the following photo are shown and described all the components in the CAL-EDGE-PM device:

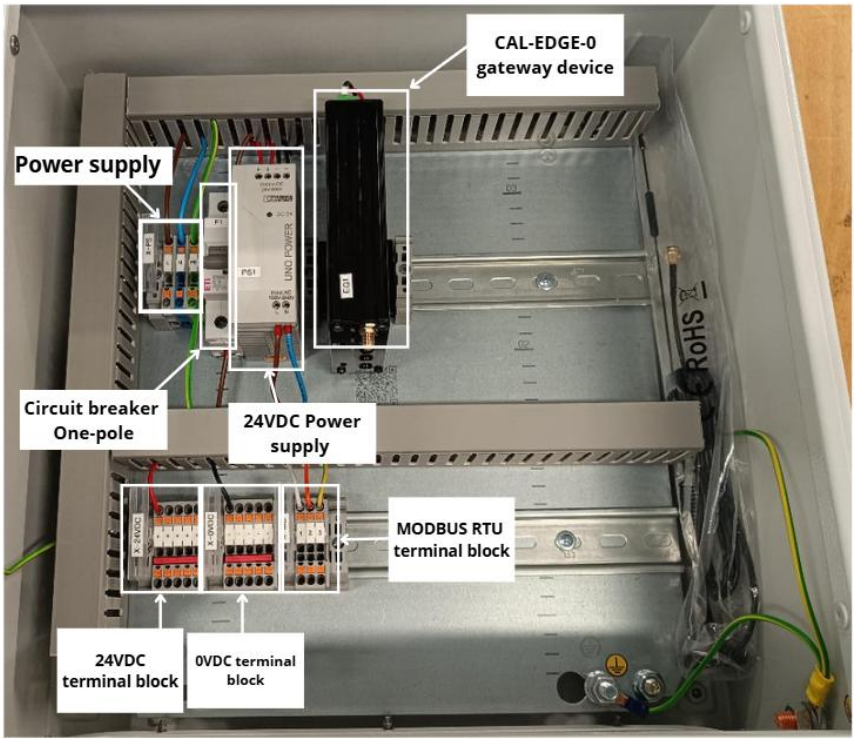


Figure 1: CAL-EDGE-PM device

On *Figure 1* is shown the CAL-EDGE-PM device from the inside where all the electrical components are located.

To power on the device connect **phase, neutral and protective ground to the terminals labeled L,N and PE on the device.** To ensure proper connection, please check the electrical schematic down below.

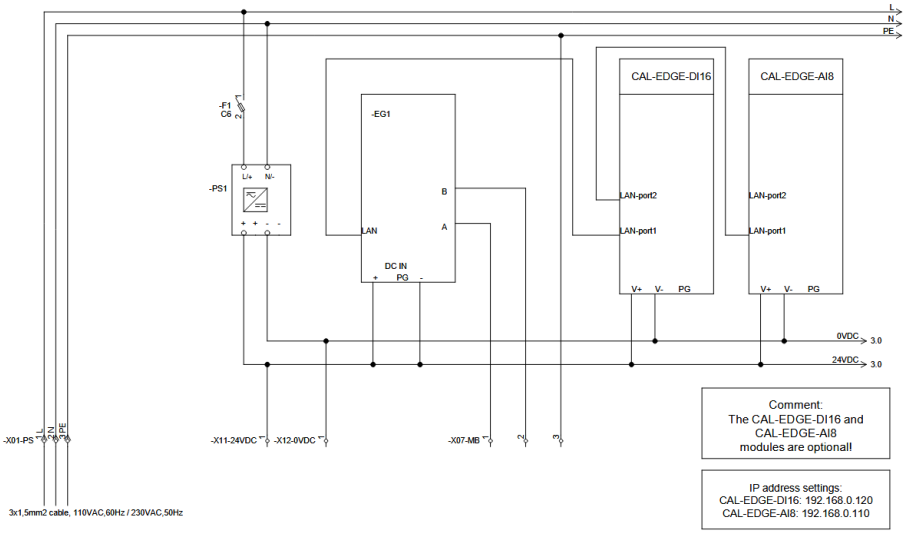


Figure 2 Electrical schematic for the CAL-EDGE-PM device

To ensure the device goes online you must connect an external antenna to the CAL-EDGE-0 device mounted in the enclosure 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 connector on the CAL-EDGE-0** 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…).

The CAL-EDGE-PM device 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-PM you must first connect it to (external) power supply and connect **Data + to terminal 1 (on the terminal block X-MB)** and **Data – to 2 (on the terminal block X-MB) accordingly,** like shown in the shematic below.

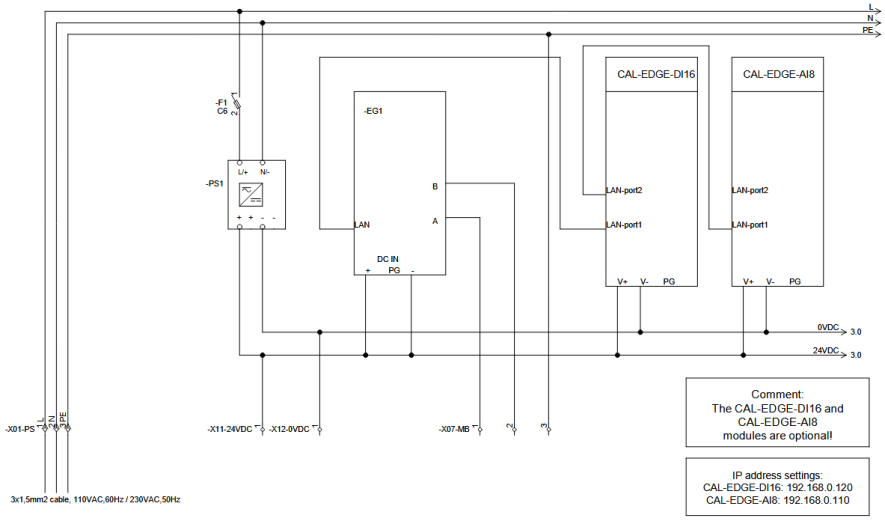


Figure 3 Connection of MODBUS sensors in the CAL-EDGE-PM device

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.

5. Start up procedure

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

1. Every CAL-EDGE-PM 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.

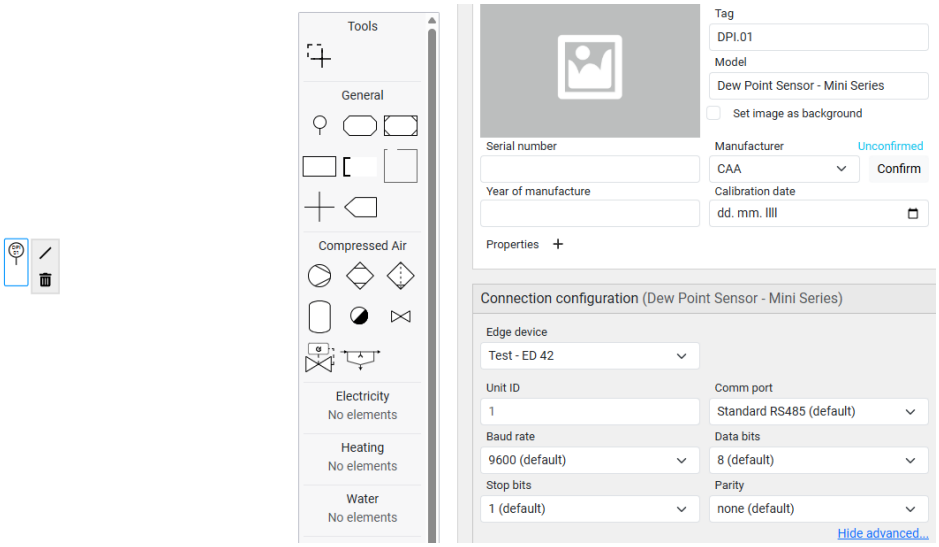


Figure 5 Sensor configuration on CALMS

3. If the device is powered on and the sensor is already connected to it and configured on CALMS, the device immediately establishes connection**.** 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.

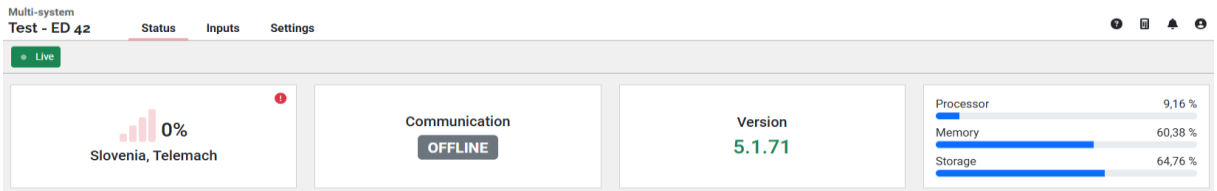


Figure 6 Device dashboard

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-PM is finished.

6. Optional hardware add-ons

To allow the CAL-EDGE-PM connection of digital and analog sensors, two additional modules can be purchased. They are already configured, mounted and prewired in the device.

- **Digital inputs module**

This module consists of 16 digital inputs each connected to a terminal, on a terminal block labeled **X-DI in the device.** An example on how to connect a digital sensor in the CAL-EDGE-PM device is shown below:

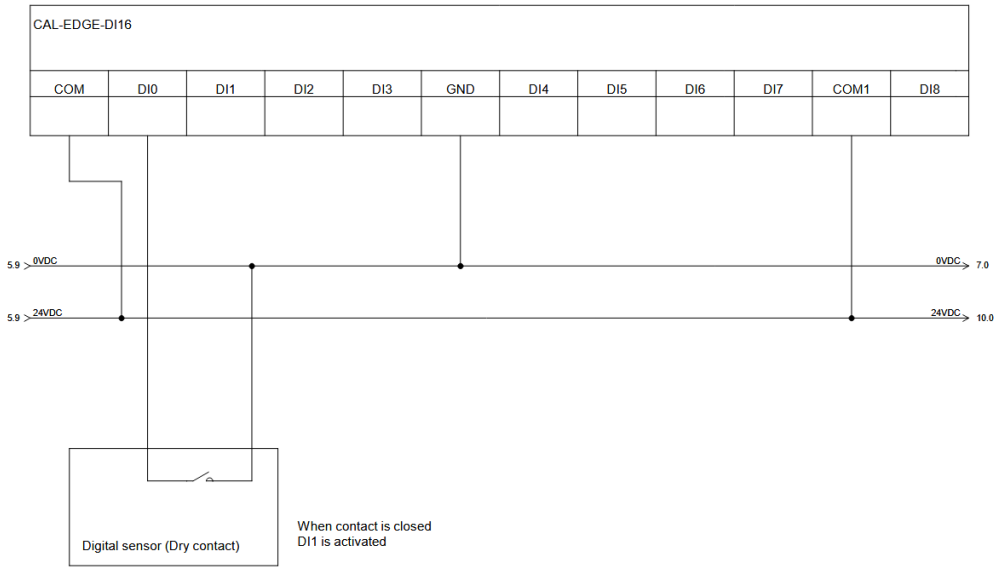


Figure 8 : Example connection of a digital sensor

- **Analog inputs module**

This module consists of 8 analog inputs, each connected to a terminal, on a terminal block labeled **X-AI in the device.** An example on how to connect an analog sensor in the CAL-EDGE-PM device is shown below:

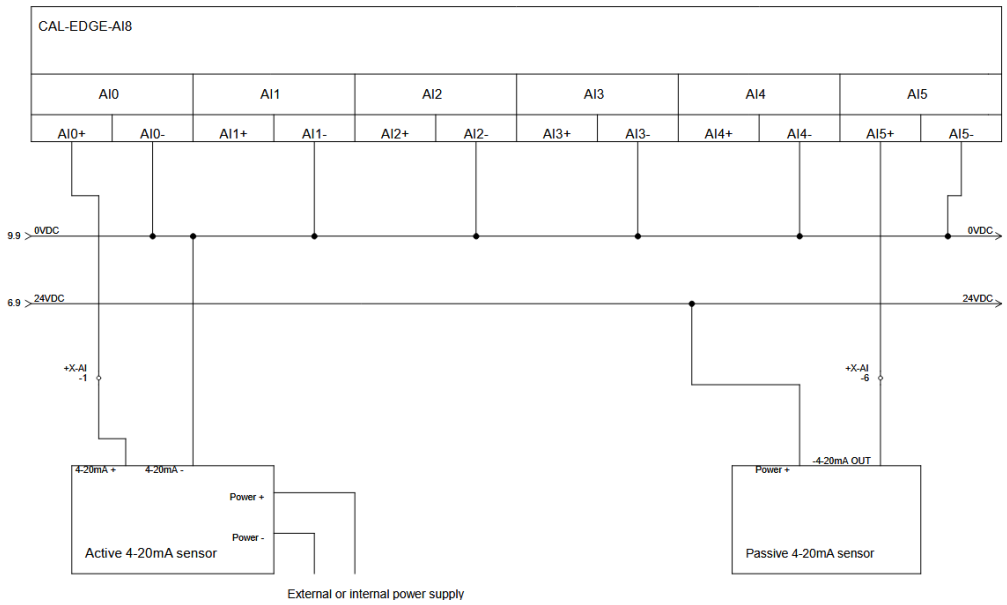


Figure 9 : Example connection of analog sensors (active and passive)

7. Troubleshooting

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

- **No MODBUS communication established:**

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.

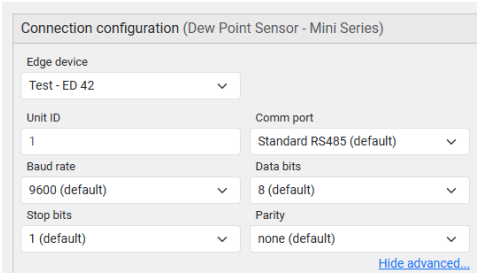


Figure 10 Sensor configuration on CALMS

- **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.

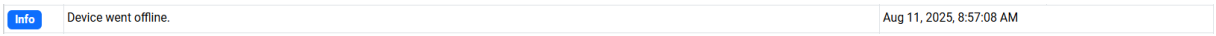
- **CAL-EDGE-PM device is outdated:**

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**.**



- **MODBUS sensor connected and configured but still not communicating with CAL-EDGE-PM 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 by switching the circuit breaker labeled **F1 off and then back on**.

www.calms.com

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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