

CALMS AIR INC.

DATA SHEET

CAL-EDGE-8

WIRELESS MESH



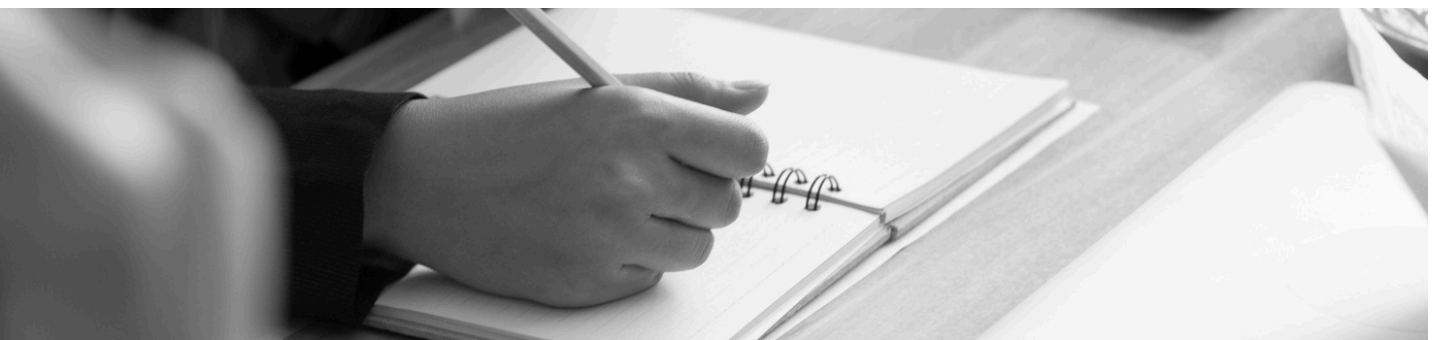
CAL-EDGE-8

WIRELESS MESH NETWORK

is a highly sophisticated and affordable remote data logger with 4G LTE communication for energy management, focus on compressed air systems, designed for experts and auditors. 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. It can be configured for majority of compressors and sensors on the market. Now supports wireless w-modbus mesh sensor box

BENEFITS

- Modbus RTU through reliable wireless mesh
- W-Modbus eliminates the need to run control cables for Modbus RTU installations significantly reducing time-consuming cable installations, installation planning, troubleshooting, and daisy-chaining.
- The easiest and cheapest solution for doing air audit online, designed for auditors;
- Save your time and improve the organization;
- Calculates costs in relation to actual consumption;
- Increases the reliability of your equipment;
- Creates forecast of energy consumption;
- Increases your environmental image;
- Improves the investment process (energy equipment);
- ISO 50001:2011, Energy management systems compliant.



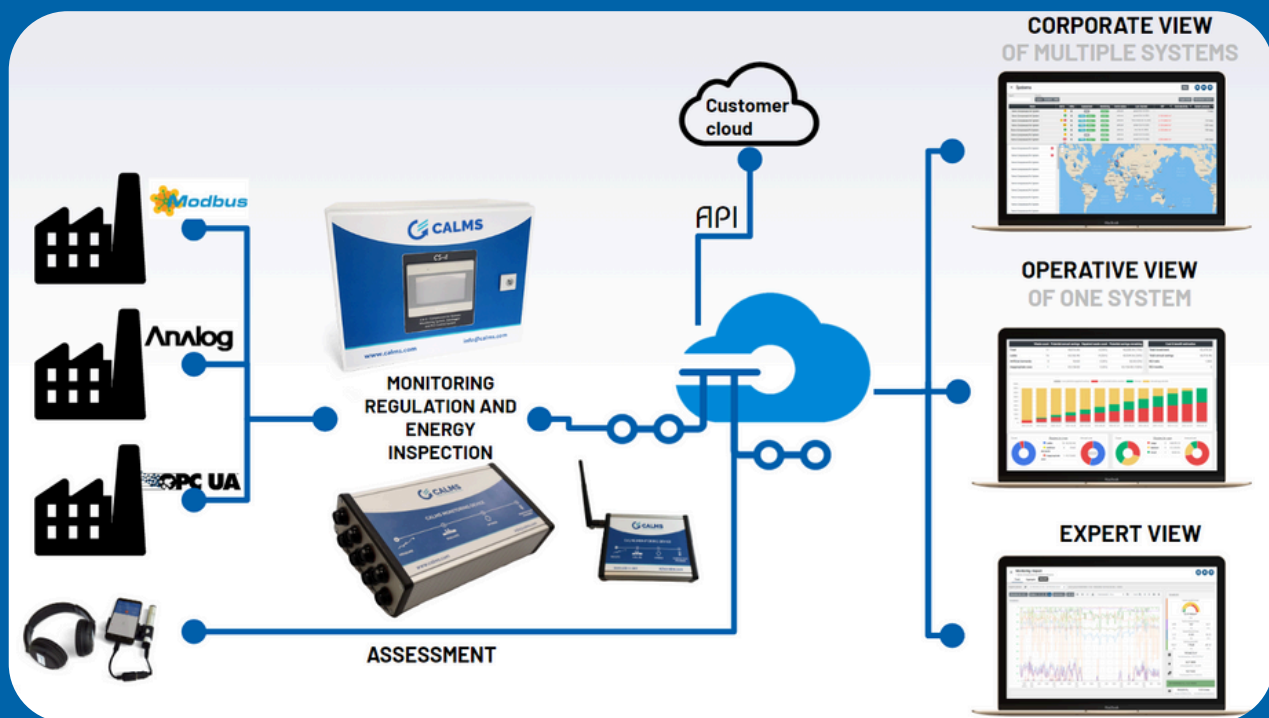
FEATURES

- Plug & Play device, remote monitoring / alarming / reporting / auditing, designed for compressed air systems;
- WEB based application for holistic compressed air management;
- Connect with config to almost any compressor and sensor;
- Data logger for compressed air system provides readings for web based detailed analysis and simulation tools – 1 sec sample rate;
- Energy management tools – Specific power, M/T, CUSUM analysis, duration, treshold graph.;
- Detailed analysis of compressed air system with auto generated reporting, warning of poor efficiency with potential savings calculation compared to best in class efficiency from CALMS knowledge database;
- SIMULATION module integrated;
- Compressed Air Performance Scorecards;
- Expandable;
- Secure internet connection between device and CALMS web application;
- Multiple data export options (CSV, XML), and easy online printing;
- Automated monthly reports sent by email;
- Alarms & Warnings email or SMS notification including analysis data;
- Multiple access for end users and experienced CA service providers;
- Remote software upgrade capability;
- LTE cellular modem 4G;
- Wireless w-mod Mesh sensor connectivity
- No need for local operator panels – access from anywhere with tablet or smartphone;
- Robust industrial design.



CALMS – PROCESS DIAGRAM

Sensors inside the factory are connected to the **CAL-EDGE-8**. You can connect sensors with MODBUS output or analog 4...20 mA sensors via cable or wireless with sensorbox. CAL-EDGE-8 is reading all values from sensors and sending them to the CALMS virtual cloud. All data inside the cloud will be sent to the CALMS platform, where data are shown. That allows you to analyze your compressed air system.



CAL-EDGE-8 SPECIFICATIONS:

| Description | | Remarks |
|----------------------------------|--|--|
| Hardware | Quad core Cortex-A53 (ARM v7) 64-bit | |
| Processor Speed | SoC @ 1.5GHz | |
| RAM | 1GB DDR2 RAM | |
| Protocol | MODBUS RTU, MODBUS TCP/IP, ADS, OPC UA, Database queries | Up to 20 sensors per one device |
| Interface | 1x 10/100 Ethernet adapter | |
| Analog inputs 4...20mA | 8 | Passive or active connection with internal 24Vdc, 12bit resolution, with standard connectors |
| RS485 | Standard: 1x | 2-wire RS485 |
| WEB Management | Yes | |
| Min logging interval | 1 sec (configurable) | |
| CAL to CALMS web upload interval | 1 sec to 24 h (configurable) | |
| Data Storage | eMMC 8 GB | |
| Cloud connection | Mobile 3G/4G / LAN | |
| Operating Range | 0°C - 50°C (32 F - 131 F) | |
| Power supply | 24VDC (power adapter included) | Recommended: 60W . Depends on sensor usage. |
| Cellular modem | LTE (LTE-M) | Depends on network coverage. |
| Wireless Modbus | Frequency band: 2.45 GHz, ISM band (2402-2480 MHz) | w-modbus mesh |
| Antenna interface | 2x Standard SMA interface-antenna included | |
| Size (mm) | H 56 x W 125 x L 250 mm | |
| Size (Inches) | H 2.20 x W 4.92 x L 9.84 inches | |
| Weight | 865 g /1,91 lb | |
| Materials | Enclosure: Aluminum | |
| Mounting | DIN rail or wall mounting | |
| EMC | EN 61000-6-2/EN 61000-6-4 | |
| IP rating | IP54 | |
| Approvals | CE, UL | |

SENSOR BOX SPECIFICATIONS:

| Description | Remarks | |
|--------------------------------------|---|--|
| Hardware | Cortex-M4, 32-bit SoC Cortex-M3, 32-bit RISC core | |
| Wireless capabilities | BT 5.4, BT mesh, BTLE, Thread, Zigbee, NFC, W-modbus (IEEE 802.15. 4) | |
| Protocol | MODBUS RTU, W-Modbus | Up to 16 Modbus slave devices per node |
| Supported data rates-Wireless | BT 5.4- 125 kbps to 2Mbps IEEE 802.15. 4- 250 kbps Proprietary 2.4 GHz- 2Mbps | |
| Supported data rates-Wired | 1,2 kbps to 1 Mbps | |
| Analog inputs 4...20mA | 2 | Passive or active connection with internal 24Vdc, 12-18 bit resolution, with standard connectors |
| Digital Inputs | 2 | Isolated inputs for 24Vdc. Insulation for up to 850V |
| Digital Outputs | 2 | Isolated outputs for 24Vdc. Max. switching current of 3A @ 230Vac |
| RS485 | Standard: 1x | 2-wire RS485 |
| Operating Range | -40°C - 85°C (-40 F - 185 F) | |
| Power supply | 24VDC (power adapter included) 5 VDC (via USB type C) | Recommended: 60W (power adapter) 25 W (USB type C) <i>(depends on sensor usage)</i> |
| Wireless Modbus | Frequency band: 2.45 GHz, ISM band (2402-2480 MHz) | w-modbus mesh |
| Number of wireless nodes | up to 100 | |
| Range | Indoor: 10-40 meters Outdoor: 240 meters line-of-sight | For single node |
| Antenna interface | Standard SMA interface-antenna included | |
| Size (mm) | H 53 x W 103 x L 120 mm | |
| Size (Inches) | H 2.20 x W 4.92 x L 9.84 inches | |
| Weight | | |
| Materials | Enclosure: Aluminum | |
| Mounting | DIN rail or wall mounting | |
| EMC | EN 61000-6-2/EN 61000-6-4 | |
| IP rating | IP54 | |
| Approvals | CE, UL | |

ORDER CODES AND INFORMATION:

| Order code: | Description: |
|-----------------------|--|
| CAL-EDGE-8 | CALMS EDGE 8 survey device LTE 4G with 8x AI, Modbus RTU & TCP/IP Portable measurement device with Ethernet, RS485 and CAN interface connection Supported protocols: Modbus RTU, TCP/IP, ADS, OPC UA, HTML, MQTT; (without sensors) 3G/4G Modem SMA with external antenna (with SIM card provided EU/Global) |
| CAL-SENSOR-BOX | CALMS RADIO mesh transceiver for Wireless-Modbus RTU signals , for wireless sensor connection; External power supply 24Vdc; Wall mounted; Dimensions: 85x85x25 mm |
| CAL-KIT | CAL-KIT includes: CAL-EDGE-8 with LTE 4G modern, Ethernet, RS485 - Modbus RTU and TCP, 8x analog Inputs 4-20mA with Explorer case CA, Free CALMS platform fee 1 year and accessories: CT Rogowski Amps 4x compressor (4x CT RS 500A / 20 mA) +Pressure transmitter (1x SML - 10) with connection cables + 5 x AI extension cables 10m + 3x AI open end short cable with connector for 4-20mA passive/active sensor) |

| Accessories | Description |
|--------------------|---|
| CAL - SIM | SIM LTE (3G/4G) subscription per audit device - charged annually |
| CAL-EXP | Explorer case CA - carrying case - water proof 30l (7.7 gal); Dimensions: 474x415x214 mm (18,7x16,3x8,5 inches); prepared for CALMS CA-lite installation; Weight: 4,7kg (10,4lbs). |
| CAL-AI | Cable 4-wire with connectors for analog inputs, 10m, optional length |
| CAL-SENSORS | Cable 4-wire with connector on one side and open wires on the other side for custom sensor connection; length 0.5m |
| SENSORS | Measuring equipment |

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LET'S WORK TOGETHER

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