



DATA SHEET

CALMS - Compressed Air Management System

CALMS CAL-EDGE-0 is a highly sophisticated and affordable remote data logger with 3G/4G communication for compressed air systems. 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.

Benefits

- The easiest and cheapest solution for doing air audit online with independent experts
- Shows where to save on energy costs
- Helps improve your energy efficiency
- 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 total compressed air management
- Connect with config to almost any compressor and sensor
- Datalogger 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
- 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 send 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 3G
- No need for local operator panels – access from anywhere with tablet or smartphone
- Robust industrial design

Compressed Air Key Measurements:









- **Communication protocols**
 - **MODBUS RTU - RS485**
 - **Database queries**
 - **OPC UA client**
 - **ADS client**
 - **MODBUS TCP/IP**

SPECIFICATION:

CALMS CAL-EDGE is a device that connects compressed air system (CAS) to Internet based application for energy management.

Description	CAL-EDGE-0	CAL-EDGE-8	Remarks
			
Computer	Quad core Cortex-A53 (ARM v7) 64-bit SoC @ 1.5GHz, 1GB DDR2 RAM	Quad core Cortex-A53 (ARM v7) 64-bit SoC @ 1.5GHz, 1GB DDR2 RAM	
Protocol	MODBUS RTU, MODBUS TCP/IP, ADS, OPC UA, Database queries	MODBUS RTU, MODBUS TCP/IP, ADS, OPC UA, Database queries	Up to 20 sensor per one device
Interfaces	1x 10/100 Ethernet adapter	1x 10/100 Ethernet adapter	
Analog Inputs 4-20mA	-	8	Passive or active connection with internal 24Vdc, 12bit resolution, with standard connectors
RS 485	Standard: 1x	Standard: 1x	2-wire RS485
WEB management	yes	yes	
Min logging Interval	1 sec (configurable)	1 sec (configurable)	
CAL to CALMS web upload interval	1 sec to 24 h (configurable)	1 sec to 24 h (configurable)	
Data Storage	eMMC 8 GB	eMMC 8 GB	
Cloud connection	Mobile 3G/4G / LAN	Mobile 3G/4G / LAN	
Operating Range	0 – 50 C (32 F – 131 F)	0 – 50 C (32 F – 131 F)	
Power supply	9-24Vdc	24Vdc (power adapter included)	Recommended: 60W . Depends on sensor usage
Cellular modem	LTE (LTE-M)	LTE (LTE-M)	Depends on network coverage
Antenna interface	Standard SMA interface-antenna included	Standard SMA interface-antenna included	
Size	H 30 x W 110 x L 130 mm H 1.18 x W 4.33 x L 5.12 Inches	H 56 x W 125 x L 250 mm H 2.20 x W 4.92 x L 9.84 Inches	
Weight	511 g / 1,13 lb	865 g / 1,91 lb	
Materials	Enclosure: Aluminium	Enclosure: Aluminium	
Mounting	DIN rail or wall mounting	DIN rail or wall mounting	
EMC	EN 61000-6-2/EN 61000-6-4	EN 61000-6-2/EN 61000-6-4	
IP rating	IP54	IP54	
Approvals	CE,UL	CE, UL	

CALMS CAL-EDGE optional accessories, sensors

Part	Description	Picture
CAL-485	Modbus RTU industrial grade RS485 / RS422 to CS-Lite USB converter, 12 bit	
SML-10	Pressure transmitter 0-16 bar 4-20mA, 12 bit	
FS10A	Flow meter – thermal dispersion, 4-20mA output	
CT RS 500A/4-20mA	Current Rogowski CT 0-500A/20mA	
UT-750	Ultrasonic vibration detector with 4 -20 mA output	
CAL-Power	Power Analyzer with 3x Rogowski CT 500A, MODBUS RTU output	
CAL-Dewpoint	Dew point meter -60 to 60C, output signal: 4-20mA	
CAL-PT-PS	PT100 Temperature probe for wall mount applications with 4-20mA output	

CALMS Internet Application Description:

Monitoring Process System

- Table data View
- Chart data View Trend (5sec - 1min, 5 second avg. sample rate)
- Chart data View History (1min – unlimited - 10 minutes avg. sample rate)
- Tag selection
- Selection of measuring period
- Table data export of selected measurement range (XLS)
- Chart PDF printing
- Secure connection
- System Setup

Analytical system:

- Specific power Chart
- Statistical values
- Histograms
- XY Charts
- Cumulative Charts (kWh, m3, EUR)
- CUSUM Charts and analysis based on wanted specific power
- Alarm / Warning Analysis data (5 second sample rate)

Alarms and Warnings:

- Alarm settings
- Warning settings
- Table View of all alarms and warnings
- Alarm & Warning status , confirmation and acknowledge
- Alarm & Warning notification: emails setting, SMS – option
- Auto generated alarms (poor system specific power as CALMS knowledge database, compressor poor operation due to power analyzer (unload, full load, specific power), compressor ultrasound warning, alarm and shutdown)
- Total cost of ownership

Reports:

- Automatic monthly compressed air report for company
- Automatic monthly compressed air report for locations
- Detail audit reports
- Custom reports
- Reports table View
- Reports email setting for auto delivery

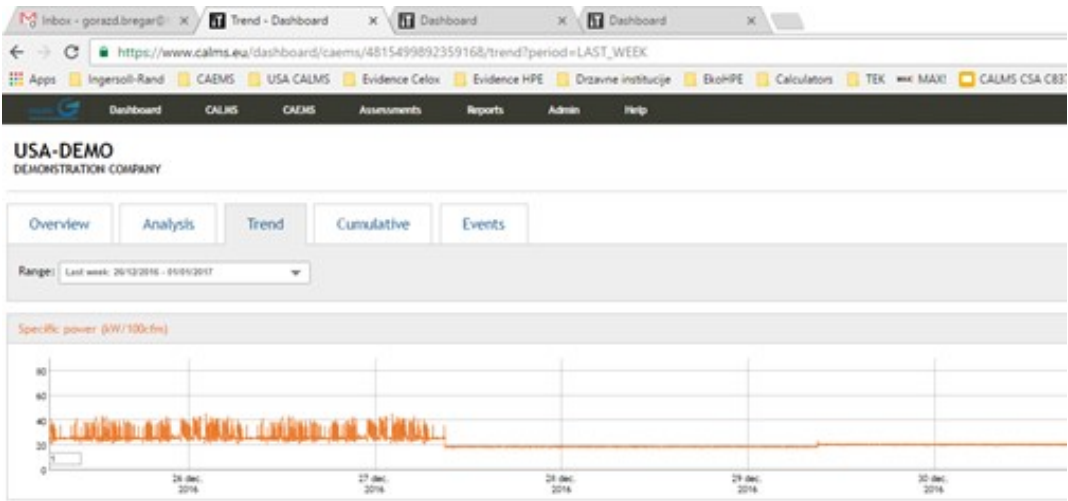
Simulations:

- Performing simulations on real systems with real data
- Comparing simulated data with measured data
- Integrated CAGI database

Services:

- Overview on compressors service intervals and compressors history service data

CALMS – cloud optimization and monitoring software



CALMS – Compressed Air Energy Management System – Process Diagram

CAEMS Process Diagram

