DATA SHEET

CAL-PM-X

CALMS AIR INC.

CAL-PM-X Monitoring & Control device

Device CAL-PM-X is for permanent monitoring and PLC control system for compressed air applications. It covers all fields such as remote energy management system, data logger and compressed air control system. System is doing real time access to data from any web browser for end users and their service partner.

Key features and benefits:

> An advanced and integrated system for remote monitoring, auditing, alarming, reporting and PLC control in compressed air applications.
> System customizable according to the customer`s needs;
> Save on energy costs and improve your energy efficiency;
> Improve the reliability of your equipment;
> Improve your environmental image;
> Industrial and robust design;

Specifications

CAL-PM-X represents a hardware that connects compressed air system to web based application for energy management and optimization:

CAL-PM-X DEVICE

PLC with digital input and output terminals, analog input terminals and other additional terminals

CAL-C-IM

Interface module for ON/OFF & VSD compressors

CAL-PM-X Devices:

Specification	CAL-PM-2	CAL-PM-4	CAL-PM-8	CAL-PM-16
S-PLC Controller	Processor Arm® Cortex®-A53, 1.2 GHz micro SD 16GB, internal memory 1GB LPDDR4 RAM6	Processor Arm® Cortex®-A53, 1.2 GHz micro SD 16GB, internal memory 1GB LPDDR4 RAM6	Processor Arm® Cortex®-A53, 1.2 GHz micro SD 16GB, internal memory 1GB LPDDR4 RAM6	Processor Arm® Cortex®-A53, 1.2 GHz micro SD 16GB, internal memory 1GB LPDDR4 RAM6
Analog Inputs	4 (4-20mA)	8 (4-20mA)	8 (4-20mA)	8 (4-20mA)
Digital inputs	8 (24VDC)	8 (24VDC)	8 (24VDC)	8 (24VDC)
Digital outputs	4 (relay output terminal, 125VAC/30VDC, 0.5A AC/2A DC)	4 (relay output terminal, 125VAC/30VDC, 0.5A AC/2A DC)	4 (relay output terminal, 125VAC/30VDC, 0.5A AC/2A DC)	4 (relay output terminal, 125VAC/30VDC, 0.5A AC/2A DC)
Analog outputs	-	-	-	-
Communication Protocol	Modbus TCP	Modbus TCP	Modbus TCP	Modbus TCP
Interfaces	3x Ethernet 10/100Mbit/s (2x network adapter)	3x Ethernet 10/100Mbit/s (2x network adapter)	3x Ethernet 10/100Mbit/s (2x network adapter)	3x Ethernet 10/100Mbit/s (2x network adapter)
UPS	1-second UPS (for 1 MB persistent data)	1-second UPS (for 1 MB persistent data)	1-second UPS (for 1 MB persistent data)	1-second UPS (for 1 MB persistent data)
Max. number of compressors	2	4	8	16
WEB Management	Yes	Yes	Yes	Yes
EMCS, CFC	Yes (optional)	Yes (optional)	Yes (optional)	Yes (optional)
Visualization	10" Touch HMI	10" Touch HMI	10" Touch HMI	10" Touch HMI
Logging interval	5sec (configurable)	5sec (configurable)	5sec (configurable)	5sec (configurable)
CALMS upload interval	5min (configurable)	5min (configurable)	5min (configurable)	5min (configurable)
Cloud connection	3G/4G or LAN (optional)	3G/4G or LAN (optional)	3G/4G or LAN (optional)	3G/4G or LAN (optional)
Operating range	0-50°C 32-131F	0-50°C 32-131F	0-50°C 32-131F	0-50°C 32-131F
Power supply	100 - 240VAC 50-60Hz	100 - 240VAC 50-60Hz	100 - 240VAC 50-60Hz	100 - 240VAC 50-60Hz
Size	H210 x W500 x L500 [mm] H8,26 x W19,69 x L19,69 [inches]	H210 x W500 x L500 [mm] H8,26 x W19,69 x L19,69 [inches]	H210 x W500 x L500 [mm] H8,26 x W19,69 x L19,69 [inches]	H210 x W500 x L500 [mm] H8,26 x W19,69 x L19,69 [inches]
Materials	Enclosure: Steel cabinet, Cable Entry ICOTEK	Enclosure: Steel cabinet, Cable Entry ICOTEK	Enclosure: Steel cabinet, Cable Entry ICOTEK	Enclosure: Steel cabinet, Cable Entry ICOTEK
Approvals	CE	CE	CE	CE
Mounting	Mast or wall mounting	Mast or wall mounting	Mast or wall mounting	Mast or wall mounting

CALMS

Specification	CAL-C-IM
Digital inputs	4 (24VDC, filter 3.0 ms, type 3)
Digital outputs	4 (relay output terminal,125VAC/30VDC; 0.5A AC/2A DC, potential-free make contacts)
Analog inputs	2 (configurable, 4-20mA, 0-10V)
Analog outputs	2 (for VSD compressor regulation,configurable, 4-20mA, 0-10V)
Protocol	EtherCAT (to base station)
Bus Interface	2x RJ 45 switched EtherCAT module
Mounted in	ON/OFF & VSD compressors
Power supply	24VDC, 1A, 24W
Size	H10 x W8 x L15 [cm] H3.9 x W3.1 x L5.8 [inches]
Weight	0.3 kg (0.6 lbs)
Materials	Enclosure: PBT Polycarbonate, ABS plastic
Mounting	DIN Rail mounting in compressor cabinet
EMC	EN IEC 61326-1
Approvals	CE
Power analyzer	3-phase power measurment terminal, max. 690VAC 3~, max. 5A, with 3x measuring current transformers xA/5A Accuracy: ANSI 12.20, 1% accuracy, IEC 62053-22 Class 1S Compatible with CT's from 5 to 32000A, UL listed, CE, ANSI C12.20 3x split core current transformer coils 500A / 5A cl:1

Accessories:

Accessory	Description
CAL-SIM	SIM LTE (3G/4G) subsctription per audit device – charged annualy
CAL-OPT	Fiber optic converter kit with SC duplex connection (1310 nm) for 100Base-TX to multimode fiber optics, DIN rail mountable, without fiber optic cable!
CAL-485-PM	2 port RS422-RS485 expansion for MODBUS RTU communication (First port for 5 slave devices -> up to 10 measurements per slave (if more additional programming needed), second port for external master communication)
CAL-485-IM	1 port RS422-RS485 Expansion for MODBUS RTU communication with compressor controller
CAL-AI4	4 (4…20mA, 12 bit, 4 x 2-wire system)
CAL-AI8	8 (4…20mA, 12 bit, 8 x 2-wire system)
CAL-DI8	8 (24VDC, filter 3.0ms, 2-wire system)
CAL-DOR4	4 (relay output terminal, 4-20mA, 125VAC/30VDC, 0.5A AC/2A DC, potential-free make contacts)
CAL-AO4	4 (4…20mA, 12 bit, 4 x 2-wire system)
CAL-PROFIBUS	PROFIBUS Master/Slave Expansion (without programming labour)
CAL-PROFINET	PROFINET Master/Slave Expansion (without programming labour)
CAL-OPCUA-GW	OPC UA Gateway, installed in CAL-PM-X cabinet (without programming labour)
CAL-PM-LAN	Router to establish internet communication to CALMS cloud via customer`s LAN network
CAL-PM-SCADA	SCADA – Local HMI simple system visualization (ON REQUEST)