



OP Parameters and Relays Card

PMS-300 PLUS — PMS-330P

KEY FEATURES

- Alarm logic combination and operating parameters acquisition card for PMS-300 PLUS rack system
- Modbus RTU master for up to 4 Slaves with 32 operating parameters values per slave.
- Modbus RTU slave with 32 operating parameters which can be written by a third party Modbus RTU master.
- 8x 4..20mA or +/-10V input channels for machine operation parameters acquisition.
- Individually configurable inputs conditioning mode (mA, V, single-ended or differential)
- Up to 2 alarm levels per static channels with latch and delay function.
- 13x 0-24V digital output freely configurable for alarm logic combination with all available parameters.
- 4x Buffered BNC Outputs for RAW signal up to 29KHz
- 6x 0-24V digital input for OTP mode, Save, Rotation Direction, Spare, Reset Alarm, Reset System function (from PMS-340/341P card)
- Profibus DP v2, Modbus RTU
- Ethernet TCP/IP communication interface to CMS-500 PLUS Orca Condition Monitoring System.

Monitoring solution



Endwinding monitoring



Air gap monitoring



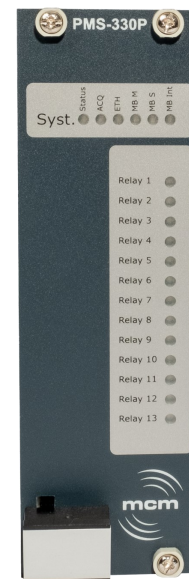
Roller bearing monitoring



Axial thrust position



Shaft & bearing vibration



DESCRIPTION

Introduction

The PMS-330P is an optional card equipped with 8x analog inputs, 13x isolated digital outputs, several Modbus connections and a network Ethernet connection specially designed for operation with the rack based Protection and Monitoring System (PMS) PMS-300 PLUS.

The PMS-300P card allow to :

- Acquisition of analog, digital or serial (via Modbus) information regarding the monitored machine such as temperature, power, hydraulic pressure, and any type of available information, called process signal.
- User-programmable combination of logical conditions on any of the acquired process signals to drive up to 13 digital outputs.
- Forwarding (if needed) the process signals via Modbus as slave or master position

The card is supplied as a part of the PMS-300 PLUS rack based system and is delivered with the PMx-300P Manager real time software for real time data visualization and configuration through Ethernet via TCP/IP protocol. The Ethernet port is also used for the communication with the CMS-500 PLUS Orca for long term trending and machine healthy analysis.

DESCRIPTION (continued)

PMS-300 PLUS rack-based monitoring system

The PMS-300 PLUS rack-based system is the third generation of acquisition system of MC-monitoring SA. Rack-based solution are the most common solution when a centralized monitoring system is required with a large amount of measurement points. PMS-300 PLUS is the ideal solution for monitoring and protection of large turbines and generators or when a large number of smaller machinery such as motors and fans need to be monitored.

The PMS-300 PLUS offers the possibility to use a free slot to include the PMS-330P in addition to the dynamic input card PMS-314P. The PMS-330P will act as a Master through the backplane internal bus and collect status and characteristic values from each PMS-314P installed on the PMS-300 PLUS.

Furthermore the PMS-330P is able to act as Modbus RTU master (4x32values) or slave (1x32values) to collect/receive data from third party device at the rate of 1 value per second.

Finally up to 8x user configurable analogue inputs (current, voltage, differential or single-ended) are available at the rear of the card for low speed analogue signal acquisition with a sampling rate of 1024S/s. Every second, the PMS-330P process the input signal to extract the Min, Max, RMS or Mean value configured by the user.

All the values acquired by the PMS-300P are available to configure up to 13x alarm logic combinations which trigger a 0-24V Digital Output.

All values are forwarded up to the CMS-500 PLUS Condition Monitoring System for long term storage and data analysis.

Alarm and Status

Each values collected by the Analog Inputs or by Modbus RTU per the PMS-330P can be configured to generate two level of alarm (Alert and Danger).

Once the value cross the user configurable limits an Alert or a Danger is triggered. Limits are checked each time a new value is extracted or received by Modbus with a maximum refresh rate of 1s.

In addition, some limits can be applied for the "Sensor OK" check for each values entering in the PMS-330P.

A total of up to 160 Alerts, 160 Dangers, 160 Sensors OK and 1 System OK signals can be generated by the PMS-330P and be optionally mapped on a digital output.

Software, Communication

All PMS-330P cards communicate by Ethernet using TCP/IP protocol with a maximum data transfer rate of 100Mbps with a distance up to 100m using CAT 6a S/FTP or SF/FTP cable.

TCP/IP protocol ensures the communication with PMx-300P Manager which is used to configure and to visualize the real time data or with the CMS-500 PLUS Orca for long term trending and data analysis.

PMS-330P is fully compatible with the CMS-500 PLUS Condition Monitoring Software including storage, display and further processing. Data from PMS-330P are logged to a CMS-500 PLUS Orca Data Server running a PostgreSQL database and can be visualized with the CMS-500 PLUS Data Client Software.

The available plots in the CMS-500 PLUS Data Client for PMS-330P include, but are not limited to, Bargraphe, Tables, Trend, Correlation.

Furthermore, PMS-330P can acts as a Profibus DP slave or Modbus RTU slave for data exchange

Software, Communication (continued)

The diagram illustrates a CAN bus network with five nodes. The nodes are labeled PMS 361, PMS 330, PMS 320, PMS 314, and PMS 314. The first node (PMS 361) is highlighted with a green box and contains a Master (M) and a Slave (S). The second node (PMS 330) contains a Master (M) and a Slave (S). The third node (PMS 320) contains a Slave (S). The fourth node (PMS 314) contains a Slave (S). The fifth node (PMS 314) contains a Slave (S). A legend indicates that a diamond shape represents a Master and a square shape represents a Slave. The diagram shows a CAN bus line connecting all nodes, with a termination resistor (R) at the far right end.

■ External Modbus PMS-330 Master to retrieve data from up to 4 slaves or to control decentralized I/O Modbus slaves.

GLOBAL SPECIFICATION

POWER SUPPLIES

Inputs supply voltage	+24V _{DC} (Delivered by PMS-361P card)
Total power consumption	≤ 8W over all voltage range without active DO
Power supplies to sensors	Not available

MODULE DATA ACQUISITION

Acquisition

A/D type	Successive approximation 8 channels with true simultaneous sampling
A/D converter	16bits at 1024 S/s
Frequency Bandwidth	DC to 400Hz (-3dB)
Anti-aliasing filter	Analog filter 1st order + sinc 1st order, -3dB at 400Hz
Temperature deviation	±2ppm/°C at FS, 2μV/°C offset drift

ANALOGUE INPUT CHANNELS

Available conditioning mode	Voltage, Current (single ended or differential)
Measurement range	
Voltage (AC+DC)	-10 V to +10 V (Maximum -15V to +15V)
Current	0 mA to 20 Ma (Maximum -50mA to 50mA)
Input coupling	DC-coupling
Input impedance	
Voltage	> 100KΩ between SIG+ and SIG- inputs
Current	250Ω +/- 10Ω between SIG+ and SIG- inputs
Measurement Accuracy	
Amplitude	< 1% of full scale between 1Hz and 400Hz

DIGITAL SIGNAL PROCESSING

Windowing	Hanning
Averaging	1024x for Mean value (1s)
Characteristic values	Min, Max, Mean and TRMS
Order tracking	No
Characteristic values refresh rate	1 second

ALARM PROCESSING

Alarms	One Alert and Danger states by collected value.
Alarm range	Four configurable alarm range (Danger Above, Alert Above, Alert Below, Danger Below)
Alarm levels	Up to 16 different levels of alarm depending on OTP mode input (OTP mode selectable by Modbus or Digital Inputs)
Alarm options	User configurable latched and time delayed alarms
Control signals	
OTP Mode	Selectable by digital inputs or by Modbus to switch the alarms levels between 16 predefined levels.
RST AL	Digital Input to reset the latched alarms

GLOBAL SPECIFICATION

SENSOR OK CHECK

Sensor OK range

Two user configurable range (Above and Below) for Sensor OK check based on values or communication.

DIGITAL INPUTS (From PMS-340/341P card)

Logical Level

+24V logic level (<3V : Low level and >12V : High level)

Isolated

No

DI Name

RST AL

A high level resets the latched alarms.

OTP

A high level switches the alarm level from OTP 0 to OTP 1.

ROT D

A high level means clockwise direction

SAVE

A high level saves a dataset of raw signal.

Digital IN

Use for OTP mode combination

Reset System

A high level restarts the PMS-330P card

DIGITAL OUTPUTS

Outputs

13x +24V Digital outputs

Mapping

User configurable

Maximum current load

250mA for all outputs

Refresh rate

Default 1 second

Levels

0V / +24V logic level

COMMUNICATION INTERFACES

Ethernet
10/100 Mbit/s

Configuration & Commissioning with PMx-300P Manager
Monitoring & Analysis with CMS-500 PLUS Orca

Fieldbus
RS485

Profibus DP v2 / Modbus RTU Slave (configurable: 19200 to 115200)
Common interface for all PMS-330P on PMS-340/341P card.

LED INDICATOR

Status (1x)

Indicates the Status of the PMS-330P (System OK)

Acquisition (1x)

Indicates if the data acquisition is running

Ethernet (1x)

Indicates the Ethernet communication status

Modbus Master (1x)

Indicates if the Modbus Master interface is running

Modbus Slave (1x)

Indicates if the Modbus Slave interface is running

Modbus Internal (1x)

Indicates if the internal Modbus Master is running

Relay (13x)

Indicates DOs is energize

GLOBAL SPECIFICATION

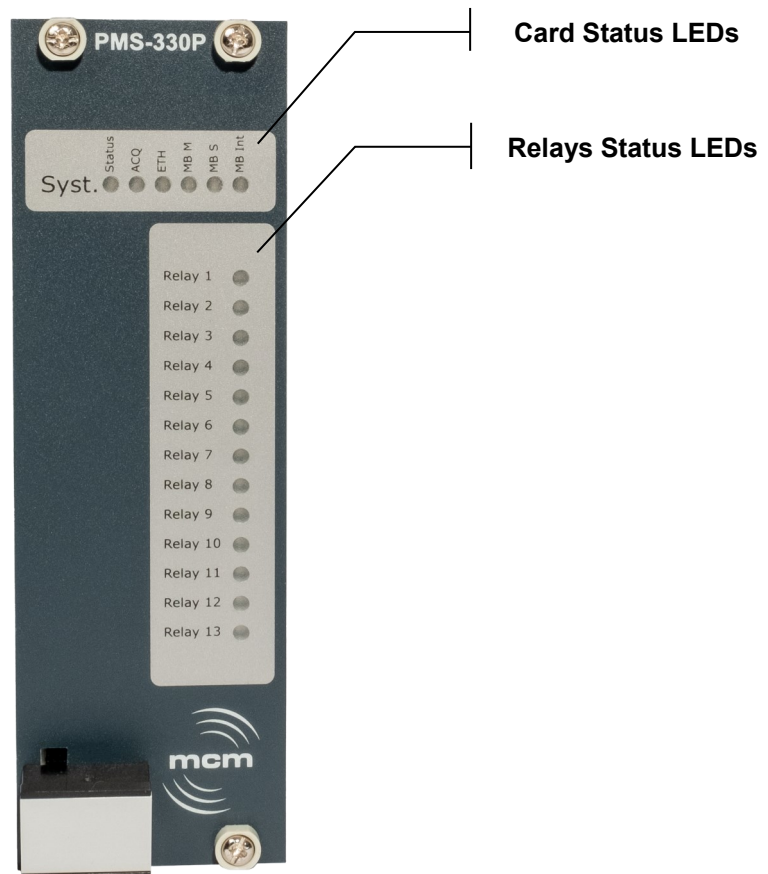
ENVIRONMENTAL CHARACTERISTICS (when used with PMS-300P rack system)

Temperature range	
Operation	0°C to +55°C
Storage	-20°C to +70°C
Humidity	Up to 90% (non-condensing)
Protection rating (IEC 60529)	IP30

APPROVALS (when used with PMS-300P rack system)

Conformity	European Union (EU) declaration of conformity (CE marking)
	United Kingdom (UK) declaration of conformity (UKCA marking)
EMC	EN 61326-1
Electrical Safety	EN 61010-1
Environment management	RoHS compliant (2011/65/EU)

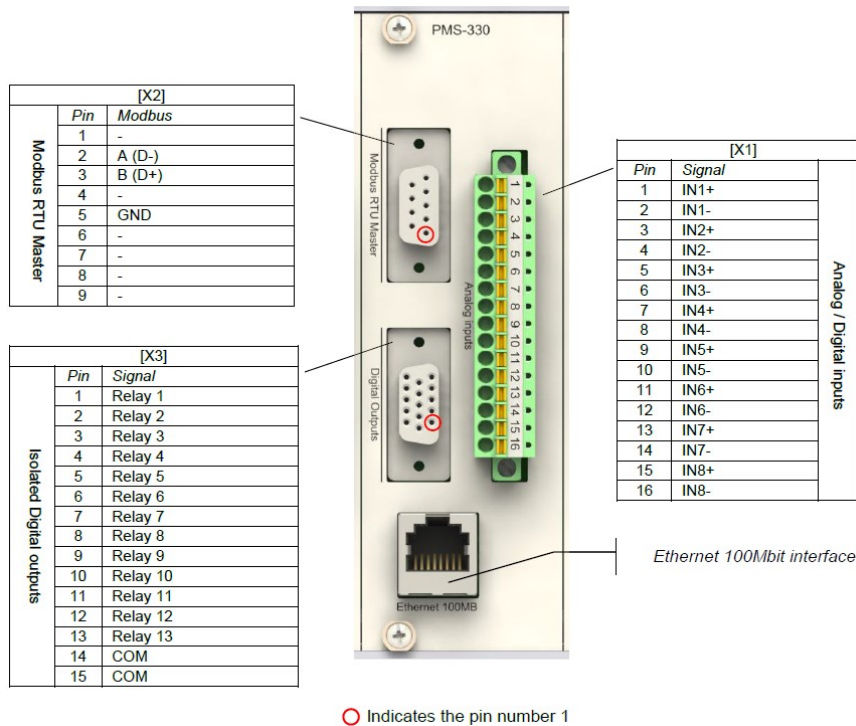
PINOUT DESCRIPTION



INDICATORS

Card Status LEDs	Card Status
Relay Status LEDs	Indicate if the Digital outputs to drive the relays are energize or not.
	OFF: Not Energize / SOLID GREEN: Energize

PINOUT DESCRIPTION



CONNECTORS

X1	16-pin terminal strip header, push-in spring connection, clamping range 0.34mm ² to 1.5mm ²
X1.1 to X1.16	Static channels inputs 1 to 8
X2	D-Sub 9
X2.1 to X2.19	Modbus RTU Master— RS-485 (no termination resistor)
X3	D-Sub 15
X3.1 to X3.15	Isolated Digital Outputs +24V for relays
COM	8P8C RJ45 connector female
Eth	TCP/IP communication and data exchange

PHYSICAL CHARACTERISTICS

Mounting	19" / 3U Rack Mounting
Terminals	Input and Output via push-in terminals , D-Sub14 and BNC
Size	Approx. h: 130mm L: 235mm l:40mm
Weight	300g
Ethernet cabling	Up to 100m with Augmented category 6 (Cat 6A), type S/FTP or SF/FTP

ORDERING INFORMATION

Part type	Ordering code	Description
PMS-330P	20.330.401	PMS-330P Process Monitoring Card with standard FW
PMS-330P PB	20.330.402	PMS-330P Process Monitoring Card with standard FW + Profibus DP V2 card

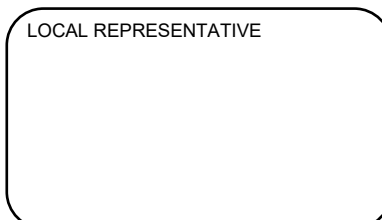
Accessories

Part type	Ordering code	Description
	<i>Coming soon</i>	

MC-monitoring Quality certifications



LOCAL REPRESENTATIVE



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