

MVX

ONLINE MONITORING SYSTEM

Monitoring And Diagnosis Of Critical Machines

The self-contained and intelligent ONEPROD MVX system is intended for continuous multi-channel monitoring of rotating machinery, enabling the early detection of faults, even on the most complex machines. It is the culmination of ONEPROD's 30 years' experience of machinery monitoring throughout the industrial sector.

ONEPROD MVX is a versatile system offering 8 to 32 data acquisition channels for all signal types (IEPE, AC voltage, DC voltage, 4–20 mA, impulses). With its flexible configuration options and extensive calculation capacity, this system makes it possible to implement intelligent and targeted localized monitoring.

GENERAL

Monitoring

Number of channels	8, 16, 24 or 32
Type of inputs	IEPE AC, IEPE DC, 4–20 mA, voltage input (AC+DC, DC), impulse counter
Logical inputs	4 or 8 logical inputs
Long-time waveform option (DAT)	Up to 10 operating conditions per machine (including a default condition in case of communication loss with the PLC or OPC server)
Management of variable operating conditions	< 1 % of full scale
Number & type of operating parameters	Up to 6 parameters (3 process scalar information + 3 logical inputs)
Monitoring frequency	Up to real-time capabilities



Low-speed shaft monitoring	Suited for low-speed shafts starting from a few RPM. Automatic early fault detection with Shock Finder algorithm
Storage to database	Periodic, condition-based, alarm-based, triggered manually
Prevention against false alarms	Customizable parameters: Hysteresis management, stabilization delay, operating condition time-out

Interfaces

Modbus	I/O (RS485 or TCP/IP)
OPC	I/O

Physical

Dimensions	MVX-160: 350 x 171 x 86 mm MVX-320: 350 x 171 x 100 mm
Weight	about 3.1 kg (or 6.8 lbs)
Casing matter	galvanised steel
Mounting	DIN TS 35 rail; optional: pre-equipped cabinet
Transportable version	Check our ONEPROD VMS datasheet (transportable case with BNC inputs)
Compliances	EC : ATEX II 3 G Ex nA II T4 ; CSA : Class 1, Div2, Group A,B,C,D

Environmental

Protection	IP 20
Operating temperature	from -20 to +60°C
Humidity	95% max, with no condensation
Storage temperature	from -20 to +75°C
Vibrations	NF60-002 compliant according the following limits: 0.4 m/s between 5 Hz and 20 Hz 5g pick between 20 Hz and 120 Hz
Cooling system	through forced air

PROCESSING DETAILS

Monitoring

Frequency range	50 Hz; 100 Hz; 200 Hz; 500 Hz; 1 kHz; 2 kHz; 5 kHz; 10 kHz; 20 kHz.
Number of lines	400; 800; 1,600 or 3,200
Number of averages	from 1 to 4,096
Multichannel acquisition type	independent or synchronous
Type of average	linear, exponential, peak
Overlap	0%; 50%; 75%
High-pass filter	2 Hz; 10 Hz; 3 kHz
Integration	none, 1 or 2
Zoom factor	none; x2; x4; x8; x16; x32; x64; x128; Maximum resolution: 30 MHz
Windowing	Hanning; Rectangular; Flat-top
Synchronous analysis	yes / no
Envelope detection	yes / no

Embedded post- processing of time waveforms

SFI (Shock Finder)	Automatic abnormal periodic shock detection; binary result; number of shocks. requires DAT option
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Embedded post- processing of FFT

Number max of post-processed parameters	Up to 10 indicators can be defined from a spectrum
Broadband indicators	RMS, equivalent peak or equivalent peak-to-peak level between two fixed frequencies
Narrow band indicators	RMS, equivalent peak or equivalent peak-to-peak level defined over a few spectral lines centered on a fixed or variable frequency the number of lines can be parameterized the center frequency is defined by two coefficients, A and B (integer), and by the following formula: $F_c = A \cdot F_0 + B$ (with F_0 = rotation frequency)

Real-time processing

High-pass filter	2 Hz or 10 Hz
Signal integration	0 or 1
Low-pass filter	1,000 Hz or no filter (i.e., 20 kHz)
Averaging	continuous exponential with time constant between 1 s and 25 s averaged DC level (for process and GAP signals)
BGI indicator (Blade Guard Index)	Specific indicator dedicated to the monitoring of structural resonance, particularly suitable for wind turbine blades
GCI indicator (Gearbox Condition Index)	Oil particle counting interface with GASTOPS METALSCAN unit. The following indicators are available: GCI-h: number of particles detected in the last hour - GCI-d: number of particles detected in the last 24 hours (performed in a slipping mode) - GCI-t: Total number of detected particles
Broad band and narrow band extraction on real-time FFT	FFT 400 pts, 800 pts, 1,600 pts or 3,200 pts FFT 1 kHz, 2 kHz, 5 kHz, 10 kHz or 20 kHz, FFT with 50% fixed overlapping

Time wave on event

Fixed sampling rate	51.2 kHz.
Length	1s to 30 s on 32 channels. Up to 480 s on 2 channels
Pre-trigger duration	0 to total time wave length

Communication Details

Ethernet	10/100 base T ports can be used; compatible with Wi-Fi, 3G modems.
Number of Ethernet ports	2 ports Typical use: 1 for the PLC Modbus TCP, 1 for the office network and communication with NEST software
Modbus mode	MVX is Modbus Slave. In this case MVX can exchange data in both directions (input and output) with one PLC. MVX is Modbus Master. In this case MVX can read data (input) on 1 to 3 PLCs.
Available data on Modbus output	Number of indicators, Values of indicators, Status of indicators, Units of indicators, Values of operating parameters
Available data on Modbus input	Values of operating parameters; Values of indicators
Logical output	4 or 8 logical alarm outputs + 1 integrity relay
OPC Server (through NEST software)	Publishing of machine alarm status and expert advice; publishing of parameters values and alarm statuses
CMMS interface (through NEST software)	Automatic triggering of work requests, monitoring of updates on work orders
Management of Comm. Loss	Data integrity guaranteed with embedded storage and automatic retry in case of communication failure. 3G compatible.
SMS / E-mail sending	On any alarm status change or aggravating status change only, through NEST software.

List of standard indicators:

- Broad-band 2 Hz / 20 kHz acceleration
- HF 3 kHz / 20 kHz acceleration
- 2 Hz / 1,000 Hz velocity
- 10 Hz / 1,000 Hz velocity

VERSIONING

Function	EASY	PREMIUM
Time acquisition	Yes	Yes
Spectral acquisition	Yes	Yes
Continuous monitoring	Yes	Yes
Periodic acquisition	Yes	Yes
Taking into account of operating conditions	Yes	Yes
Elaboration of “standard” indicators” (*)	Yes	Yes
Elaboration of indicators based on other filters	-	Yes
Elaboration of Kurtosis indicators	-	Yes
Elaboration of Smaxpp indicators	-	Yes
Elaboration of Blade Guard Index (BGI)	-	Yes
Elaboration of Shock Finder Index (SFI)	-	Yes
Elaboration of Gearbox Condition Index (GCI)	Yes	Yes
Calculation of the RMS value	Yes	Yes
Calculation of the “equivalent peak” value	Yes	Yes
Calculation of the “equivalent peak-to-peak” value	Yes	Yes
Calculation of the “true peak” value	-	Yes
Calculation of the “true peak-to-peak” value	-	Yes
Calculation of broad-band indicators from spectrum	-	Yes
Calculation of narrow-band indicators from spectrum	-	Yes
Envelope spectra	-	Yes
Short term trend	Yes	Yes
Real-time monitoring capability: 100% of signal	-	Yes
Time wave on event with pre-trigger	-	Yes
RECORDER: long-time signal	-	Yes

- 2 Hz / 1,000 Hz absolute displacement
- 10 Hz / 1,000 Hz absolute displacement
- 2 Hz / 20 kHz relative displacement
- Relative position (GAP)
- Bearing defect factor

SPECIFIC VERSION AND ACCESSORIES



ONEPROD VMS transportable case

16 or 32 channels with BNC connectors

(Available with different functionality levels and with or without PC)



ONEPROD MVX

Pre-equipped cabinet

(solution on request)



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CREATING ENVIRONMENTS OF POSSIBILITY

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