ORBIT 60 SERIES
Protection Processor Module
Datasheet

Bently Nevada Machinery Condition Monitoring

142M8515 Rev. -

Description

The Protection Processing Module (PPM) serves as the computational engine for the Orbit 60 monitoring system. It extracts all machinery measurements for the protection system and performs alarm determinations. The PPM analyzes signals from transducers, generates measurements\statuses and publishes them to other modules for data collection and external communication. Each PPM occupies a single slot within the system.

Each PPM provides capacity for a large number of sensors and can support typical monitored machine trains. The PPM capacity is a function of the type of processing required on each input. If the system requires more processing than a single PPM can provide additional PPMs can be added to the system for complex monitoring deployments. . For protection systems, redundant PPMs are recommended.

The Orbit Studio Configuration Software provides a System Utilization Calculator to evaluate the remaining capacity of the PPMs in your system. If your processing capacity reaches 90%, a warning indicator displays and we recommend adding another PPM, or 2 PPMs if the system is redundant.

Bently Nevada
a Baker Hughes business

Protection Processor Module

Protection Processor Module (PPM)	
Channel Types	
• Radial Vibration • Acceleration • Velocity • Thrust • Speed • Dynamic Pressure • Temperature	
Measurements and Signal Processing	
Direct	Set based on the bandwidth of the selected transducer
Bandpass	Adjustable lowpass and highpass corners based on the frequency range of the transducer. Number of poles selectable from 1, 2, 4, 6 or 8.
1X/2X/nX Amplitude and Phase	Supported for machine speed ranges from 50 to 120,000 rpm.
Gap	Applicable to Proximitor sensor inputs
Bias	Applicable to Acceleration and Velocity sensor inputs
SMAX	Supported for ranges down to 50 rpm.
Speed	1 rpm to 120,000 rpm
Reverse Speed	Valid when the machine is spinning backwards. This measurement behaves like a typical speed measurement.
Reverse Peak Speed	Valid when the machine is spinning backwards and has exceeded the reverse speed setpoint, storing the highest achieved reverse speed.

Protection Processor Module (PPM)	
Number of Reverse Rotation	Valid when the machine is spinning backwards and has exceeded the reverse speed setpoint, counting revolutions.
Rotor Acceleration	Rotor acceleration is a ramp rate of a rotor (in rpm / min) as its speed increases from zero rpm to the machine's running speed value.
Integration/RMS	Available for Velocity and Acceleration channels to be applied to Direct, Bandpass, 1X, 2X, nX an SMAX measurements.
Alarming	
Alarm Time Delays	100 ms to 60 sec for vibration and position measurements. 1 sec to 60 sec for speed measurements
Setpoints	Four setpoint levels available at a each measurement.
Protection States	Up to 32 Protection States that be controlled by Discrete contacts or configurable measurement ranges. Alarm setpoints are adjustable for different Protection States.

Compliance and Certifications

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EMC

European Community Directive:

EMC Directive 2014/30/EU

Standards:

EN 61000-6-2; Immunity for Industrial Environments
EN 61000-6-4; Emissions for Industrial Environments

Electrical Safety

European Community Directive:

LV Directive 2014/35/EU

Standards:

EN 61010-1;
EN 61010-2-201;

RoHS

European Community Directive:

RoHS Directive 2011/65/EU

Cyber Security

Designed to meet IEC 62443

Maritime*

ABS Rules for Condition of Classification, Part 1

- Steel Vessels Rules
- Offshore Units and Structures

Functional Safety*

SIL 2

* Approvals pending

Hazardous Area Approvals

For the detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide* (108M1756) available from Bently.com.

CSA/NRTL/C

Class I, Zone 2: AEx/Ex ec nC IIC T4 Gc;
Class I, Zone 2: AEx/Ex nA nC IIC T4 Gc;
Class I, Division 2, Groups A, B, C, D T4;
Class I, Division 2, Groups A, B, C, D T4 (N.I.);

T4 @ Ta= -30˚C to +65˚C (-22˚F to +149˚F)

ATEX/IECEx

Ex II 3 G
Ex ec nC IIC T4 Gc
Ex nA nC IIC T4 Gc

T4 @ Ta= -30˚C to +65˚C (-22˚F to +149˚F)

Ordering Information

For the detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide* (108M1756) available from Bently.com.

Protection Processor Module

Ordering Option	Description
60R/PPM01-AAA-BB • Protection Processor Module	
AAA – Hazardous Area Certifications	
00	No Hazardous Area
01	CSA/NRTL/C (Class I, Div 2)
02	Multi (CSA, ATEX, IECEx)
XXX	Country Specific Approvals
BB – SIL Level	
00	No SIL
02	SIL 2

Baker Hughes

1631 Bently Parkway South, Minden, Nevada USA 89423
Phone: 1.775.782.3611 (US) or Bently.com/support
Bently.com