

# Symphony Plus

## S+ Turbine: Machinery Condition Monitoring MCM800

### Highlights

The MCM800 provides a complete set of functions designed to address the monitoring and protection needs of your rotating machinery. The MCM800 incorporates all monitoring, protection and communication into a single module. This single module concept provides a common interface reducing hardware by combining functions and reduces the need for spare parts.

The MCM800 integrates into DCS systems or operates standalone. The module may be installed in a centralized or remote location. Communication to the module is accomplished through the on-board Profibus and Ethernet interfaces. Monitoring and configuration is available with both communication ports.

The MCM800 reports the measured values for monitoring and protection along with synchronous speed and harmonic (orders) data used for detecting machine defects. In addition, the MCM800 provides waveform data for more extensive analysis, such as FFT's, waterfall plots, orbits, shaft centerline plots, bode plots, etc.



Machinery Condition Monitoring MCM800

Machinery Condition Monitoring MCM800 features include:

- Independent Monitoring Device
- Universal Module
- Provides Monitoring and Protection
  - Vibration
  - Eccentricity
  - Thrust (Rotor) Position
  - Differential (Relative) Expansion
  - Case (Absolute) Expansion
- Profibus DP Controller Interface
- Ethernet TPC/IP 10/100 Base T
- Interfaces to all common sensor types
  - Proximity (eddy current) probes
  - Moving Element Velocity probes
  - Piezoelectric Velocity probes
  - Accelerometers
  - DC LVDT's
- Integrates into DCS system or operates standalone
- Installs in centralized or remote locations
- DIN Rail Mountable

# S+ Turbine: Machinery Condition Monitoring MCM800

## Specifications

Property	Characteristic/Value
<b>Field I/O</b>	
Power Input	Supply voltage: +24 / -24 VDC +/-5% Operating Current: 300 mA each supply (typical) Maximum Current (short circuit): 535 mA (+24V), 545 mA (-24V) Power consumption: 7.2 Watts each supply (typical) Parallel terminals for use in daisy-chaining modules
Analog Inputs	System Power: +24VDC, -24VDC current limited to 30mA. Individually fused Constant current 4.7mA available for piezoelectric devices Range: +/- 20 VDC with 10 VAC peak-to-peak maximum amplitude Accuracy 0.25% of Full Scale
Event Marker Input	System Power: -24 VDC current limited to 30mA Adjustable pulse detection (3 V p-p minimum)
Relay Outputs	
Alert Dry Contact (Form C)	2A @ 24 VDC / VAC (resistive load) Normally deenergized/energized selectable
Danger Dry Contact (Form C)	2A @ 24 VDC / VAC (resistive load) Normally deenergized/energized selectable
Buffered Outputs	One BNC connector per channel plus Event Marker +/- 24 Volt range, current limited to 40 mA Accuracy 1% Fixed 50KHz 2-pole Low Pass Analog Filter
<b>Physical</b>	
Dimensions	187 mm width, 210 mm height, 122 mm depth 7.37 in. width, 8.28 in. height, 4.8 in. depth
Weight	MPM810 wt. 0.35 lbs (150 gr) + TBU850 wt. 1.70 lbs (775gr)
I/O Module Mounting	One slot in Modular Termination Unit (TBU850)
I/O Termination	200 mm x 215 mm (maximum) 7.87 in.x 8.46 in. (maximum)
TBU Mounting	Standard 35 mm DIN Rail
TU Terminal Blocks	
24 A / 250 V Compression	0.14-1.5 mm <sup>2</sup> [solid] 0.14-1.5 mm <sup>2</sup> [stranded] 28-16 AWG
Ethernet	RJ-45
Profibus / Modbus	DSub9F (input), DSub9M (output)
<b>Communication</b>	
RS-485	
Profibus DP v 1 (Redundant)	Configuration, Control, and Reporting Values
Modbus RTU (Redundant)	Reporting Values
Ethernet	
10/100 BaseT	Configuration, Control, and Reporting Values. Firmware Upgrades
RS-232	
Debug	Debugging and Firmware Upgrades

## Specifications

Property	Characteristic/Value
<b>Operation</b>	
Microprocessors	MCF5282 @ 64 MHz PLL MC56321 DSP @ 250 MHz PLL
Data sampling	Sample rate 50K samples / sec Vibration evaluation period 250 msec (4 Hz)
Orders	0.5X amplitude and phase 1X amplitude and phase 2X amplitude and phase NX amplitude and phase (where N=3 to 10 user selectable) Not1X amplitude Accuracy 0.25% amplitude Phase +/- 3 degrees with phase correction
Filters	
Anti-aliasing	Fixed 20 KHz 4-pole Butterworth Analog Low Pass Filter
High Pass	1 to 1000 Hz 4-pole Butterworth Digital Filter
Low Pass	100 to 15KHz 4-pole Butterworth Digital Filter
Integration	Velocity to displacement (in/s to mils or mm/s to um) Acceleration to velocity (g's to in/s or g's to mm/s)
Speed	0 – 30,000 RPM
Alarming	High / Low Alert per channel (Full range in EU) High / Low Danger per channel (Full range in EU) Alert Delay 0.1 to 300 seconds per channel Danger Delay 0.1 to 300 seconds per channel
<b>DIP Switches</b>	
Profibus Address	Seven switches for address selection; one for mode selection
Option Switch	Used for calibration, startup mode, diagnostics, and input type
Profibus termination	Two switches for termination of Profibus line A and line B.
<b>Environmental</b>	
Installation	This card was designed for use as process control equipment in an ordinary (non-hazardous) location.
Ambient Temperature	0° to 55° C (32° to 131° F)
Humidity	5% to 90% RH up to 55°C (non-condensing)
Atmospheric Pressure	Sea level to 3 km (1.86 miles)
Air Quality	Non-corrosive
Installation Category	Category II per ANSI/ISA-S82.01-1994

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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