Emerson EPRO Series Service Manual

A6120

1. Description

Emerson CSI A6120 Case Seismic

3. Product Information

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Emerson CSI A6120 Case Seismic
Vibration Monitor for CSI 6500
Machinery Health Monitor
The Case Seismic Vibration Monitor, for use with electromechanical seismic transducers, is designed for high reliability for the plant's most critical rotating machinery. This 1-slot monitor is used together with other CSI 6500 monitors to build a complete API 670 machinery protection monitor. Applications include steam, gas, compressors and hydro turbomachinery. Case measurements are common in nuclear power applications.
The main functionality of the Case Seismic Vibration Monitor is to accurately monitor case seismic vibration and reliably protect machinery by comparing vibration parameters against alarm setpoints, driving alarms and relays.
Case seismic vibration sensors, sometimes called case absolute (not to be confused with shaft absolute), are electro-dynamic, internal spring and magnet, velocity output type sensors. The case seismic vibration monitor provides overall vibration monitoring for the bearing case in velocity, mm/sec (in/sec).
Since the sensor is mounted on the case, the resultant vibration of the case could be influenced by many different sources including rotor movement, foundation and case stiffness, blade vibration, adjacent machines, etc.
When replacing field sensors, many sensors are being updated with piezoelectrictype sensors that provide internal integration from acceleration to velocity. The piezoelectric-type sensor is a newer style electronic sensor, instead of an older electromechanical sensor. The Case Seismic Vibration Monitor is backward-compatible to the electro-mechanical sensors installed in the field.
The CSI 6500 Machinery Health Monitor is an integral part of PlantWeb® and AMS Suite. PlantWeb provides operations integrated machinery health combined with the Ovation® and DeltaV™ process control system. AMS Suite provides maintenance personnel advanced predictive and performance diagnostic tools to confidently and accurately determine machine malfunctions early.
Transducer Inputs
Number of Inputs Two, independent channels
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Type of Inputs Electro-dynamic (electro-mechanical), differential
Emerson Sensor Inputs Part number: 9266, 9267, or 9268
Isolation Galvanically separated from power supply
Input Resistance >100 kΩ
Input Voltage Range -5 - +15 VDC
Input Frequency Range Lower cutoff 1 or 5 Hz
 Upper cutoff 50 - 2000 Hz adjustable
Measuring Range
Range Continuously adjustable with the configuration software
 Vrms (metric) = 5 - 100mm/s (±25 to ±500 µm)
 Vrms (English) = 0.197 in/sec to 3.937 in/sec (±0.984 mils to ±19.685 mils)
Frequency Range 10 - 1000 Hz (VDI 2056, DIN 4566, ISO 3945)
Selectable Frequency Range 5 - 50 Hz, 10 - 50 Hz, 50 - 1000 Hz, or 50 - 1600 Hz
Lifting Coil Current 0 - 8 mA configurable in steps of 40 µA
Lifting Coil Current Accuracy ±0.5% of full scale range, ±0.5% of configured value
Max Permissible Load 3.4 kΩ at 2 mA
Min Dynamic Input Voltage 311 mV peak to peak
Max Dynamic Input Voltage 9500 mV peak to peak
Sensor Power Supply Separate buffered sensor supply
 Galvanically separated from all

system voltages and system
supply voltage.
 Open and short circuit proof
Front Panel Outputs
LED's Two LED's, indicates channel
OK separately for each channel
Red LED's Two LED's, indicates alert and
danger separately for each channel
Front Panel Buffered Outputs Two, identical to transducer
sensor inputs
 ±10 V, >100 kΩ load, freq. range
0.1Hz - 5kHz (-3 dB)
Mini DIN Configuration Socket Module interface connection
for configuration and parameter
and status monitoring
 RS-232
Handle Easily remove card and provide plate
for module and sensor identification
Analysis
Measurement Modes Hot configurable
 Independent dual-channel
 Vrms (VDI 2056)
 Zero to peak
 Peak to peak
(DIN 45666 and ISO 3945)
Analysis Parameters ½x, 1 - 10x and phase angle
of same
 Available via ModBus TCP/IP output
Rear Outputs Available
Mode Current Outputs 0/4-20 mA output for each channel
proportional to main value
 For example, RMS or 0 to peak
 Open/short circuit proof
Permissible Load <500 Ω
Accuracy ±1% of full scale
Settling Time Configurable, 0 - 10 seconds
Mode Voltage Outputs 0 - 10 VDC output proportional
to main value for each channel
 For example, S zero to peak
or peak to peak
 Open/short circuit proof
Rear Buffered Outputs Raw buffered output signal,
0 - 12 V peak to peak
 Open/short circuit proof
Frequency Range 0.1Hz - 15 kHz (-3 dB)
Permissible Load >10 kΩ
CSI 4500 Interface 4 channel connector designed
for CSI 4500 plug & play
Alarm Setpoints Alarm Time Delays
Alert Selectable normally open,
normally closed
 0 - 5 second delay per channel
 0 - 36 second delay with
A6740 relay card
 Selectable to be blocked
on channel not OK
 Adjustable range 5 - 100%
of full scale value
 Resolution 1% of full scale value

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 Alarm hysteresis on decreasing
signal value, 0 - 20% of full scale value
Danger Selectable normally open,
normally closed
 0 - 5 second delay per channel
 0 - 36 second delay with
A6740 relay card
 Selectable to be blocked
on channel not OK
 Adjustable range 5 - 100%
of full scale value
 Resolution 1% of full scale value
 Alarm hysteresis on decreasing
signal value, 0 - 20% of full scale value
OK Self checking (normally closed):
 Power supply, sensor, cable,
module checking, overload, internal
temperature, system watchdog
Green LED:
 Off when not OK
 During delay time, LED flashes
 Reason for not OK can be
read from communication bus
Limit Multiply Remote, relay input, 1.00-4.99 factor
Trip Bypass Remote, relay input
Environmental, General
Module IP 00, DIN 40050
Front Plate IP 21, DIN 40050
Climate DIN 40040 class KTF
Operating Temperature 0° - 65°C (32° - 149°F)
Storage Temperature -30°- 85°C (-22° - 185°F)
Relative Humidity 5 - 95%, non-condensing
Vibration IEC 68-2, part 6
 0.15 mm, 10 - 55 Hz
 19.6 mm/s2, 55 - 150 Hz
Shock IEC 68-2, part 29
 98 m/s2 peak, 16 ms
EMC Resistance EN50081-1 / EN50082-2
Power Consumption Max. 6 W, 250 mA at 24 VDC
Configuration Password protected
A6120 Dimensions:
PCB/EURO card format according to
DIN 41494, 100 x 160mm (3.937 x 6.300in)
Width: 30.0mm (1.181in) (6 TE)
Height: 128.4mm (5.055in) (3 HE)
Length: 160.0mm (6.300in)
Net Weight: app 320g (0.705lbs)
Gross Weight: app 450g (0.992lbs)
includes standard packing
Packing Volume: app 2.5dm3
(0.08ft3
)
Space
Requirements: 1 slot
14 modules fit into each 19” rack
Ordering Information
Model Number Product Description
A6120 Case Seismic Electro-dynamic
Vibration Monitor

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Two-channel, 3U size, 1-slot plugin module decreases cabinet space requirements in half from traditional four-channel 6U size cards

 API 670 compliant, hot swappable module

 Remote selectable limit multiply and trip bypass

 Front and rear buffered and proportional outputs, 0/4-20 mA output, 0 - 10 V output

 Use with electro-dynamic (electro-mechanical) sensor 9266, 9267, or 9268

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