Emerson EPRO Series Service Manual

A6125

1. Description

Emerson A6125 Two-channel, 3U size, 1 slot plugin module decreases cabinet space

3. Product Information

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Emerson A6125 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

 Self-checking facilities include monitoring hardware, power input, hardware temperature, sensor and cable

 Use with piezoelectric accelerometers and velometer sensors

CSI A6125 Case Piezoelectric Vibration Monitor for CSI 6500 Machinery Health Monitor

The Case Piezoelectric Vibration Monitor is designed for high reliability for your plant's most critical rotating machinery monitoring case vibration from accelerometer sensors. 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 turbo machinery.

The main functionality of the Case Peizoelectric Vibration Monitor is to accurately monitor case vibration and reliably protect machinery by comparing vibration parameters against alarm setpoints, driving alarms and relays.

Case piezoelectric vibration sensors, sometimes called case absolute (not to be confused with shaft absolute), are accelerometers, or velometers, with the output in acceleration or velocity. The case vibration monitor provides vibration monitoring for the bearing case in g's acceleration or velocity, mm/sec (in/sec). Since the sensor is mounted on the case, the resultant vibration of the case can be influenced by many different sources including rotor movement, foundation and case stiffness, blade vibration, adjacent machines, etc.

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When replacing field sensors, many seismic sensors are being replaced with piezoelectric-type. The 6125 monitor is designed for the newer piezoelectric style sensors.

Case measurements are common in nuclear power applications. Case measurements with piezoelectric sensors are also common for rolling element bearing machines and gearboxes. Emerson recommends the piezoelectric sensor and piezoelectric sensor monitor for use when updating both field sensors and monitors.

The CSI 6500 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, differential inputs

Type of Inputs Piezoelectric (accelerometer or velometer)

Input Resistance >100 kΩ

Input Voltage Range -5 to +15 VDC

Signal Input Voltage Range 6125/00, 311 - 9500 mV peak to peak

Signal Input Voltage Range 6125/10 16 - 450 mV peak to peak (special high temperature sensor)

Input Frequency Range (Accelerometer) High: 30 - 8000 Hz

 Med: 10 - 2000 Hz

 Low: 6 - 1000 Hz

Input Frequency Range (Velometer) High: 10 - 2000 Hz

 Med: 6 - 1500 Hz

 Low: 2 - 250 Hz

Sensor Supply Accelerometer, constant current,

2 - 8mA, 30 VDC

Configurable Parameters Measuring range

 RMS or zero to peak

 Sensitivity

 Alert and Danger

 Filter frequency ranges

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

Green LED's Two LED's, indicates channel

OK separately for each channel

Red LED's Four LED's, indicates alert and

danger separately for each channel

Front Panel Buffered Outputs Two, identical to transducer

sensor inputs, ±12 V, >100 kΩ load,

freq. range 0.1 - 0.075 Hz - 10 kHz

-3 dB ±20%

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

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Measurement Modes Hot configurable

 Independent dual-channel

Accelerometer Sensor

(either RMS or 0 to Peak)

 30 - 8 kHz, g's

 10 - 2 kHz, g's or velocity

 6 - 1 kHz, g's or velocity

Velocity Sensor

(either RMS or 0 to Peak)

 10 - 2.0 kHz, velocity or displacement

 6 - 1.5 kHz velocity or displacement

 2 - 250 Hz velocity or displacement

Analysis Parameters ½x, 1 - 10x and phase angle of same

 Available via ModBus TCP/IP output

CSI 4500 Interface 4 channel connector designed

for CSI 4500 plug & play

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 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
Frequency Range 0.075 Hz - 13 kHz -3 dB ±20%
Permissible Load >100 kΩ
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
 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

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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

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