

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 piezoelectric-type 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.



A6120

- Two-channel, 3U size, 1-slot plug-in 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

Transducer Inputs	
Number of Inputs	Two, independent channels
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	<ul style="list-style-type: none"> ■ Lower cutoff 1 or 5 Hz ■ Upper cutoff 50 - 2000 Hz adjustable

Measuring Range	
Range	<ul style="list-style-type: none"> ■ Continuously adjustable with the configuration software ■ Vrms (metric) = 5 - 100mm/s (± 25 to $\pm 500 \mu\text{m}$) ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ $\pm 0.5\%$ of full scale range, $\pm 0.5\%$ of configured value
Max Permissible Load	3.4 k Ω at 2 mA
Min Dynamic Input Voltage	311 mV peak to peak
Max Dynamic Input Voltage	9500 mV peak to peak
Sensor Power Supply	<ul style="list-style-type: none"> ■ Separate buffered sensor supply ■ Galvanically separated from all system voltages and system supply voltage. ■ Open and short circuit proof
Front Panel Outputs	
LED's	<ul style="list-style-type: none"> ■ Two LED's, indicates channel OK separately for each channel
Red LED's	<ul style="list-style-type: none"> ■ Two LED's, indicates alert and danger separately for each channel
Front Panel Buffered Outputs	<ul style="list-style-type: none"> ■ Two, identical to transducer sensor inputs ■ ± 10 V, >100 kΩ load, freq. range 0.1Hz - 5kHz (-3 dB)
Mini DIN Configuration Socket	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Hot configurable ■ Independent dual-channel ■ Vrms (VDI 2056) ■ Zero to peak ■ Peak to peak (DIN 45666 and ISO 3945)
Analysis Parameters	<ul style="list-style-type: none"> ■ 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 <ul style="list-style-type: none"> ■ 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 <ul style="list-style-type: none"> ■ For example, 5 zero to peak or peak to peak ■ Open/short circuit proof
Rear Buffered Outputs	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<p>Self checking (normally closed):</p> <ul style="list-style-type: none"> ■ Power supply, sensor, cable, module checking, overload, internal temperature, system watchdog <p>Green LED:</p> <ul style="list-style-type: none"> ■ 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

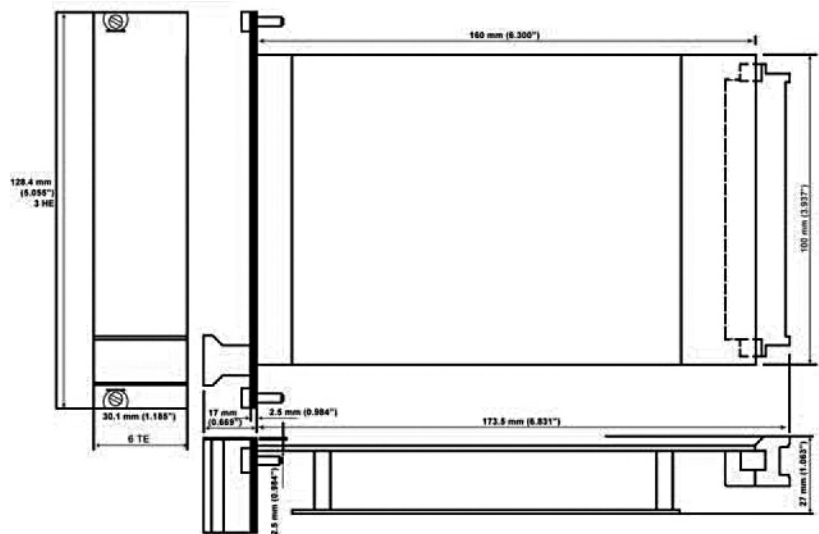
Environmental, General	
Module	IP 00, DIN 40050
Front Plate	IP 21, DIN 40050
Climate	DIN 40040 class KTF
Operating Temperature	0° - 65°C (32° - 149°F)
Storage Temperature	-30° - 85°C (-22° - 185°F)
Relative Humidity	5 - 95%, non-condensing
Vibration	<ul style="list-style-type: none"> ■ IEC 68-2, part 6 ■ 0.15 mm, 10 - 55 Hz ■ 19.6 mm/s², 55 - 150 Hz
Shock	<ul style="list-style-type: none"> ■ 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