Protection Cards for AMS 6500 Classic Systems

A6740-10 16-Channel Output Relay Module

A6740-12 16-Channel Output Relay Module

A6125 Case Piezoelectric Vibration Monitor

A6120 Case Seismic Vibration Monitor

A6824-R ModBus And Rack Interface, 4TE

A6824 ModBus And Rack Interface, 6TE

A6620 Process Input Monitor

A6140 Shaft Absolute Vibration Monitor

A6220 Shaft Eccentricity Monitor

A6110 Shaft Relative Vibration Monitor

A6312 Speed and Key Monitor

A6312-8 Speed and Key Monitor

A6630 Temperature Monitor

A6210 Thrust Position, Differential Expansion, and Rod Position Monitor

A6410 Valve and Case Expansion Monitor

A6110 Shaft Relative Vibration Monitor for AMS 6500 Machinery Health Monitor

A6110

The Shaft Relative Vibration Monitor is designed for extremely high reliability for the plant's most critical rotating machinery. This 1-slot monitor is used together with other AMS 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 Shaft Relative Vibration monitoring module is to accurately monitor shaft relative vibration and reliably protect machinery by comparing vibration parameters against alarm setpoints, driving alarms and relays.

Shaft relative vibration monitoring consists of a displacement sensor either mounted through the bearing case, or mounted internally on the bearing housing, with the rotating shaft being the target.

The displacement sensor is a non-contact sensor measuring shaft position and movement. Since the displacement sensor is mounted to the bearing, the monitored parameter is said to be shaft relative vibration, that is, shaft vibration relative to the bearing case.

Shaft relative vibration is an important measurement on all sleeve bearing machines for predictive and protection monitoring. Shaft relative vibration should be selected when the machine case is massive as compared with the rotor, and the bearing case is not expected to vibrate between zero and production-state machine speeds. Shaft absolute is sometimes selected when the bearing case and rotor mass are more closely equal, where it is more likely that the bearing case will vibrate and impact shaft relative readings.

The AMS 6500 is an integral part of PlantWeb® and AMS software. PlantWeb provides operations integrated machinery health combined with the Ovation® and DeltaV™ process control system. AMS software provides maintenance personnel advanced predictive and performance diagnostic tools to confidently and accurately determine machine malfunctions early.

Transducer Inputs	
Number of Inputs	Two, independent or combined monitoring modes
Type of Inputs	Eddy current, differential
Emerson Sensor Inputs	Part number: 6422, 6423, 6424, 6425
Isolation	Galvanically separated from power supply
Input Resistance	>100 kΩ
Input Voltage Range	0 to -22 VDC
Input Frequency Range	■ Lower cutoff 1 or 5 Hz ■ Upper cutoff 50 - 2000 Hz adjustable

- 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
- Self-checking facilities include monitoring hardware, power input, hardware temperature, sensor, and cable
- Use with displacement sensors PR6422, PR6423, PR6424, PR6425, and driver CON 011/91, 021/91,041/91

Measuring Range	
Range	Continuously adjustable with the configuration software
Smallest Range	0 - 400 mV
Largest Range	0 - 8000 mV
Sensor Power Supply	■ 0 - 8000 mV ■ Separate buffered sensor supply ■ Galvanically separated from all system voltages and system supply voltages ■ Open and short circuit proof
Nominal Voltage	-26.7 V
Available Current	Nominal 20 mA, maximum 35 mA
Front Panel Outputs	
Green 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 0.1 - 5 ■ kHz (-3 dB) 0 - 16 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	
Measurement Modes	■ Hot configurable ■ Zero to peak ■ Peak to peak ■ Independent dual-channel or combined ■ dual-channel modes ■ Smax (combined) (DIN 45670A) ■ Smax peak to peak (combined) ■ (DIN 45670B, VDI 2059) ■ Smax 0 to peak (combined) (VDI 2059) ■ True S peak to peak Y. X (independent) ■ (API 670)
Analysis Parameters	■ ½x, 1 - 10x and phase angle of same ■ Available via ModBus TCP/IP output

Rear Outputs Available	
Current Mode Outputs	■ 0/4-20 mA output for each channel proportional to main value ● For example, both outputs are identical combined for Smax (combined mode) ● For example, both outputs are independent for Y and X (independent mode) ■ Open/short circuit proof
Permissible Load	<500 Ω
Accuracy	±1% of full scale
Settling Time	Configurable, 0 - 10 seconds
Voltage Mode Outputs	■ 0 - 10 VDC output proportional to main value for each channel ● For example, both outputs are identical combined for Smax (combined mode) ● For example, both outputs are independent for Y and X (independent mode) ■ Open/short circuit proof
Permissible Load	>10 kΩ
Rear Buffered Outputs	■ Raw buffered output signal, AC and DC ■ Open/short circuit proof
Frequency Range	0.1 - 16 kHz (-3 dB) 0 - 16 kHz -3 dB ±20%
Permissible Load	>10 kΩ
DC Voltage Outputs	■ 0 - 10 VDC output proportional to the shaft position (gap) ■ Open/short circuit proof
Accuracy	±1% of range
Permissible Load	>10 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

A6110 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)

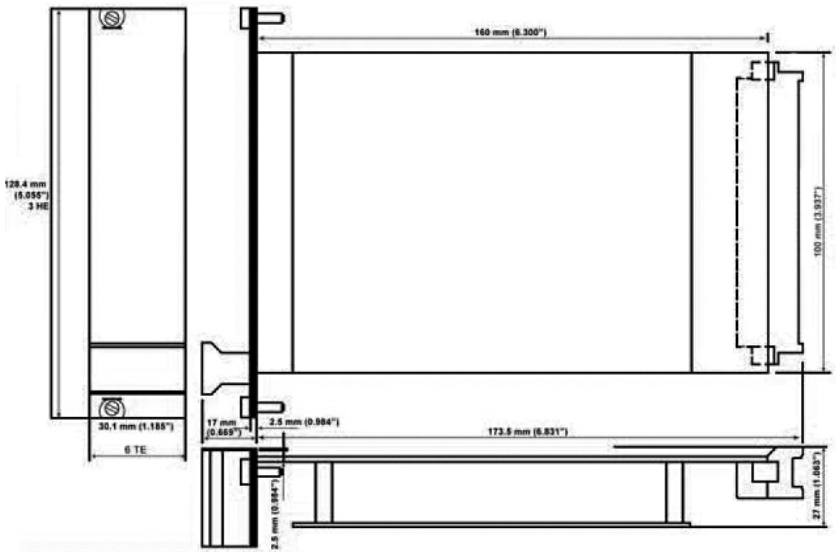
Net Weight: app 320g (0.705lbs)

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
A6110	Dual-channel Shaft Relative Vibration Monitor