Speed and Key Monitor Specifications

The Speed and Key Monitor is designed for high reliability for the plant's most critical rotating machinery monitoring speed, phase, zero speed and direction of rotation. This 1-slot monitor is used together with the CSI 6500 monitors to build a complete API 670 machinery protection monitor. Applications include steam, gas, compressors and hydro turbo machinery.

The Speed and Key Monitor can be configured for redundant mode where automatic switchover from primary to backup tach is possible. Sensor gap voltage and pulse counting/comparison are monitored to trigger switchover. When the Speed and Key Monitor is operating in redundant mode, the main and failover key or speed displacement sensor must be installed in the same axial plane to ensure phase continuity upon failover.

Speed measurements consist of a displacement sensor mounted internally to the machine with the target being a toothed wheel, a keyway or gear rotating on the shaft. The purpose of the speed measurement is to alarm on zero speed, monitor for reverse rotation and provide a speed measurement to track process conditions for advanced analysis.

Key, or phase measurements, also consist of a displacement transducer but must have a once per revolution target, not a toothed wheel or gear for a target. The phase measurement is a critical parameter when looking for machine health changes.

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.

A6312 *A6312-8*

- Two-channel 3U size plug-in modules decrease 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
- Rear buffered proportional outputs, 0/4-20 mA output
- Self-checking facilities include monitoring hardware, power input, hardware temperature, sensor and cable
- Use with displacement sensor 6422, 6423, 6424 and 6425 and driver CON 011/91, 021/91, 041/91
- 6TE wide module used in CSI 6000 19" rack mount chassis
- 8TE wide module used with CSI 6500 19" rack mount chassis

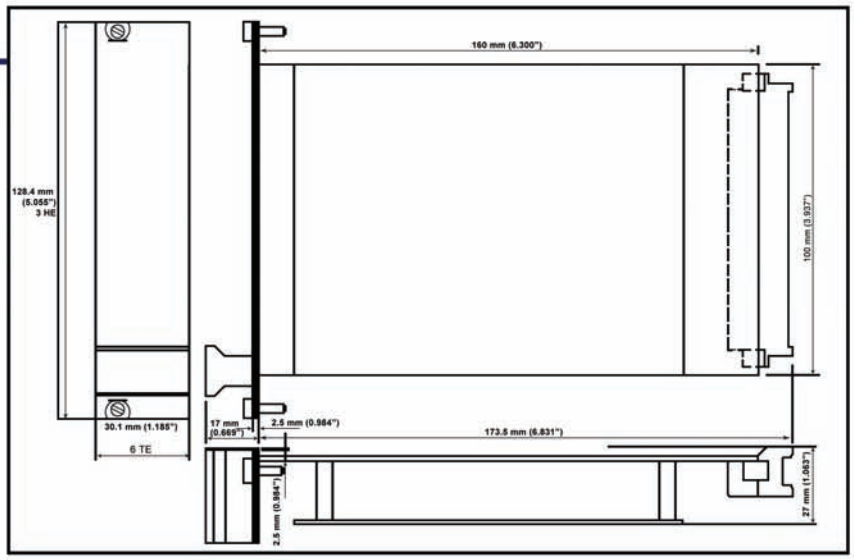
Transducer Inputs	
Number of inputs	Two, independent
Type of inputs	Eddy current differential
Emerson sensor inputs	Part number: 6422, 6423, 6424, 6425
Isolation	Galvanically separated from power supply
Input resistance	>100 kΩ
Input voltage range	0 to ±27.3 VDC
Input frequency range	0 to 20,000 Hz, 65,535 RPM
Measuring Range	
Range	Continuously adjustable with the configuration software
Smallest range	2 V
Largest range	0-30 V
Sensor power supply	Separate buffered sensor supply Galvanically separated from all system voltages and system supply voltage Open and short circuit proof
Nominal voltage	-26.75 VDC
Available current	Nominal 20 mA, maximum 35 mA
Front Panel Outputs	
Green LED's	Two LED's, indicates channel OK separately for each channel
Yellow LED's	Four LED's, indicates alert and danger separately for each channel
Front panel buffered outputs	Two, ±10 V, signal input level reduced by factor 0.15, >100 kΩ load, frequency range 0 Hz-16 kHz (-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
Speed measurements with each channel	Forward and reverse rotation with trigger wheel (1 to 255 trigger marks), max. freq. 20 kHz
Pulse width time window	5 to 10 msec
Key pulse detection with each channel	One key mark on the shaft Possible with multiple key marks, but phase will change with each start-up
Zero speed monitor with each channel	Detects zero speed of trigger wheel with 1 to 255 trigger marks Measures time between two pulses in a configurable range of 1 to 1700 seconds, forward or reverse direction
Both channels in combined use	Detects direction of rotation of two trigger marks of which one is phase shifted Detects a difference between the speed of two trigger wheels, difference adjustable in number of RPM
Rear Outputs Available	
Current mode outputs	0/4-20 mA output for each channel proportional to main value Open/short circuit proof
Permissible load	<500 Ω
Accuracy	±1% of full scale
Settling time	configurable, 0 to 10 seconds
Pulse Outputs	0 Hz-20 kHz output for each channel Open/short circuit proof
Permissible load	>10 kΩ
TTL Pulse Output	0 Hz-20 kHz output signal for each channel, 0-20 kHz Open/short circuit proof
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/s^2, 55-150 Hz
Shock	IEC 68-2, part 29 98 m/s^2 peak, 16 ms
EMC resistance	EN50081-1 / EN50082-2
Power consumption	Max. 6 W, 250 mA at 24 VDC
Configuration	Password protected

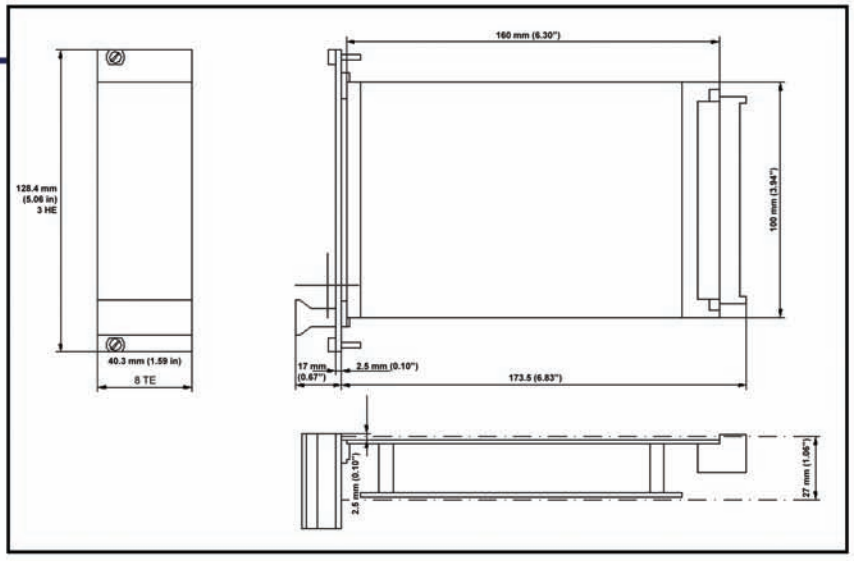
A6312 Dimensions:

PCB/EURO card format according to
DIN 41494, 100 x 160 mm (3.937 x 6.300 in)
Width: 30.0mm (1.181 in) (6 TE)
Height: 128.4 mm (5.055 in) (3 HE)
Length: 160.0 mm (6.300 in)
Net weight: app 320 g (0.705 lbs)
Gross weight: app 450 g (0.992 lbs)
includes standard packing
Packing volume: app 2.5 dm^3 (0.08 ft^3)
Space requirements: 1 slot
14 modules fit into each 19" rack



A6312-8 Dimensions:

PCB/EURO card format according to
DIN 41494, 100 x 160 mm (3.937 x 6.300 in)
Width: 40.3mm (1.59 in) (8 TE)
Height: 128.4 mm (5.055 in) (3 HE)
Length: 160.0 mm (6.300 in)
Net weight: app 320 g (0.705 lbs)
Gross weight: app 450 g (0.992 lbs)
includes standard packing
Packing volume: app 2.5 dm^3 (0.08 ft^3)
Space requirements: 1 slot
14 modules fit into each 19" rack



Specifications Sheet
July 2011

CSI 6500 Machinery Health™ Monitor

Ordering Information

Model Number	Product Description
A6312	Dual-channel Speed and Key Monitor for use in IMR 6000/10 and IMR 6000/30
A6312-8	Dual-channel Speed and Key Monitor for use with CSI 6500 systems

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POWERS PlantWeb

Online Machinery Health Management powers PlantWeb through conditon monitoring of mechanical equipment to improve availability and performance.

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