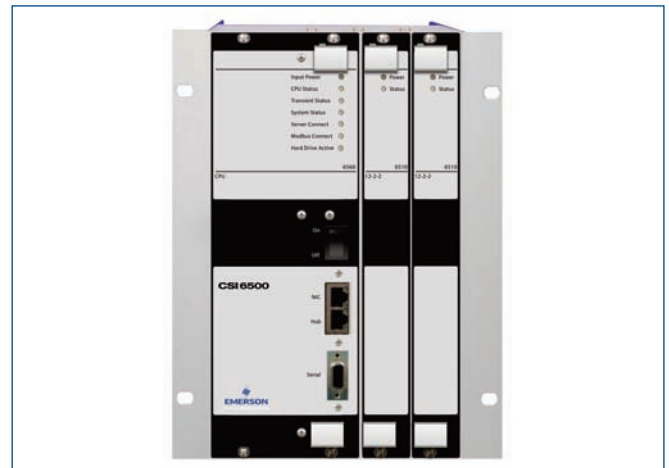


Pre-Configured Packages for Essential Rotating Machinery

- Powerful pre-configured machinery health monitoring package
- Continual monitoring of essential assets without the complex set up of a typical online monitoring system
- Real-time overall vibration updates and machinery health analysis parameters
- Instant notification of vibration alerts
- Earliest detection of gearbox and bearing faults with PeakVue™ technology



What is Essential Equipment?

You can easily justify a machinery shutdown protection system and real-time predictive analysis for critical high-speed turbomachinery like turbine generators and turbo compressors. And route-based portable vibration analysis is the clear industry standard for managing important balance of plant machines.

Essential machinery falls in-between these two categories. Your plant is full of essential equipment – pumps, motors, fans, cooling towers, gearboxes, etc. You don't need a full API 670-compliant protection system on these assets, but monthly route-based monitoring is risky. These machines need frequent monitoring because a malfunction can severely impact your operation and can come with a high repair bill.

Online monitoring of essential machines has been cost-prohibitive in the past. You included them in your walkaround routes and hoped that a malfunction was not missed.

Essential Equipment Monitoring

You need a simple, affordable solution that provides real-time information to operators and reduces route-based monitoring requirements.

Research show that more than 50% of machinery malfunctions can be mitigated through real-time communication with operators, who can adjust the process to minimize the impact on machinery health. Predictive monitoring of essential equipment delivers diagnostic information to your operators to protect both your process integrity and your machinery health.

Applications for the CSI 6500MS

- Essential plant machinery, including compressors, expanders, fans, and blowers
- Machine applications, including excavators, dumper trucks, cranes, conveyors
- Non API 670 protection applications
- Space-restricted installations (half the size of a typical protection system)
- Difficult-to-access, remote, unsafe, or skid mount applications

Valuable Insight for Operators

Timely feedback to operators enables insight into how process variations are impacting machinery health. This is not waveform and spectral analysis; it is simple vibration values and trends. It's that easy! You can reduce half of your machine malfunctions by providing vibration data along with process information to operations.

With simple, real-time vibration feedback to the control room, operators have three courses of action:

1. take immediate action to decrease the impact on machine health, like increasing head level to keep a pump from cavitating
2. make a business decision to maintain production levels high while monitoring the impact on the machine
3. alert a maintenance specialist to take a deeper look at the machine's health

Essential Asset Monitoring Situations

When an operator notifies maintenance of a machinery health issue, vibration analysts can take a closer look at the machine anomalies indicated by the vibration data. Analysts can either run a route to analyze the machine or connect to the CSI 6500MS remotely to use the Online Watch software to perform analysis from the maintenance shop.

- Predictive monitoring on centrifuge detected imbalance that was affecting product quality. The built-in 1X parameter in the CSI 6500MS allowed operators to quickly take action.
- The energy in a frequency range analysis parameter in the CSI 6500MS allowed an operator to take real-time corrective action to address pump cavitations.
- Insight into lube oil process temperature and increased vibration levels enabled operators to bring an auxiliary heater online to prevent further damage to the machine.

Technical Functionality

- Plug-and-play system that you can easily manage in-house – no expensive project or services required
- Up to 6400 line resolution, 40KHz Fmax waveform, spectrum, included analysis parameters — delivered pre-configured
- Overall vibration monitoring at 1 second intervals
- Operator-specific machine health analysis parameters and PeakVue output via Modbus every two minutes
- Modbus integration to the control system and operator graphical user interface
- 100 mV/g accelerometer sensor monitoring
- Speed and phase monitoring
- Optional Online Watch works with the CSI 6500MS built-in memory to update historical trend information automatically
- Optional Transient Analysis package provides continuous, simultaneous channel event recording
- Perfect complement to an AMS Suite: Machinery Health Manager installation

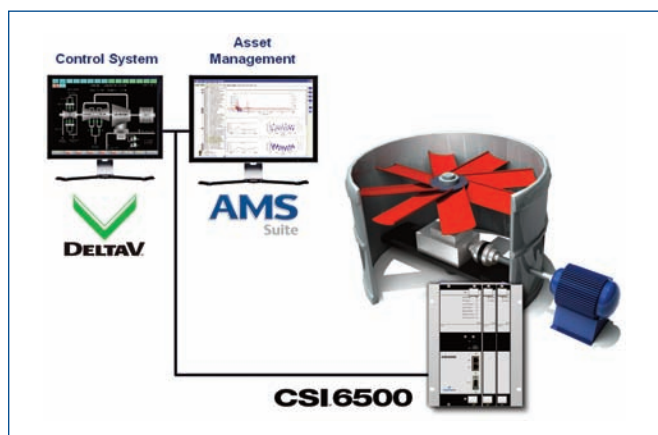
Accessing Machinery Health Information

The CSI 6500MS system includes a Modbus Ethernet output for integration with process control, historian, third party display/storage device, or other Modbus consuming device. A Modbus address print out is also provided to easily facilitate integration. The CSI 6500MS acts as the Modbus slave to your Modbus master device. The CSI 6500MS can serve as many as 4 masters. The CSI 6500MS has two Modbus Ethernet ports. One port is configured as a HUB and the other port is configured as a NIC (network interface card).

The optional Online Watch package delivers the flexibility to edit the monitoring strategy when a more advanced method of data collection is desired. You will gain the hardware and software needed to view live vibration information, trends, waveform, and spectrum when connected. Online Watch can be permanently or periodically connected to the CSI 6500MS.

Your Plan to Reduce Maintenance Expenses by 10% This Year

- Monitor health of machines that haven't been monitored in the past
- Improve machine availability by reducing missed anomalies on monthly route collection
- Save man-hours by increasing automation and reducing route-based vibration data collection
- Improve operation and reduce impact to machinery health through real-time feedback to operators



Example installation of the CSI 6500MS on a cooling tower fan

Achieving your annual reduction in maintenance costs is even more challenging in the face of retiring personnel, so a complex online monitoring systems requiring extensive training and services will not meet your goals. However, a simple essential asset monitoring that can grow as your expertise and needs grow will make a huge impact on your goal.

The CSI 6500MS pre-configured essential asset monitoring packages are available as 1) a basic Modbus transmitter style solution, 2) with the Online Watch software module, and 3) full online monitoring with asset management software.

Package 1: Basic Installation

The pre-configured Basic Installation package is perfect for monitoring widely-spaced machines like conveyors or hard-to-reach machines like cooling tower fans. It is also ideal for unguarded machines where it is unsafe for plant personnel to monitor with a handheld device.

The CSI 6500MS is delivered fully configured, ready to plug-in and turn on. As soon as it powers up, your machines are being monitored. You simply install the accelerometers and connect the monitoring system to your machinery and Ethernet. No configuration or maintenance of monitoring system required.

Pre-Configuration Includes

- Database name assigned*
- CSI 6500MS unit name assigned*
- IP address assigned*
- 12 or 24 accelerometer purchased channels configured, depending on hardware selected
- Channels defined as accel, 100mV/g, AC upper/lower $\pm 35^*$ Gs peak, DC upper lower 14/8* volts
- Hardware integration off*
- 2 or 4 tach, autotrigger, 0 – 120,000 limits*
- 2 or 4 relay outputs, NC*
- Metric* or English* units
- 1 area defined*
- 6 machines defined*
- Defined as constant speed
- Gross scan reporting 1/sec*
- 1 data collection set
 - Timer based, 1 sec* (actual time may vary)
 - Data reporting 1 sec* (actual time may vary)
- APset1 (Normal)
 - Fmax: 1600 Hz*
 - Number of lines: 1600*
 - Number of averages: 4*
 - Overall in in/s or mm/s
 - Energy in a freq range, 0-100, 100-500, 500-1600*

- APset2 (PeakVue)
 - PeakVue*: filter, lines, averages
- Modbus address list will be generated after database configuration
- No relay limits set

*Denotes areas where defaults are assigned, but customer input is welcome before package ships.

Package 2: Online Watch Version

Pre-configured package 2 adds the Online Watch and Online Configuration software and laptop functionality to the basic installation package.

Online Watch allows you to connect the CSI 6500MS to an ethernet network and instantly view machine health in a pre-configured display package:

- View real-time overall vibration values
- View analysis parameters and PeakVue values
- Access historical trend data and watch as the trend continues to build in real-time
- Use spectrum or waveform to perform simple analysis of vibration data
- View instrumentation health

The Online Config software allows you to easily edit your monitoring strategy.

- Add new areas, machines, sensors
- Add new machinery health analysis parameters
- Add and edit your own alert limits
- Configure relay I/O

Package 3: Full Online Monitoring

Package 3 adds an AMS Machinery Manager single user and multi-user license to the Online Watch package.

By adding AMS Machinery Manager asset management software, you can perform in-depth analysis on equipment condition and protect the health of your mechanical assets. Because of the many options available with this software, please contact your local sales representative to customize this package to meet your monitoring needs.

Ordering Information

Part Number	Description
Package 1: Basic Installation	
A6500MS-12-L1	12 channels, 2 tachometer inputs, 2 digital I/O, accelerometer ready, pre-configured
A6500MS-24-L1	24 channels, 4 tachometer inputs, 4 digital I/O, accelerometer ready, pre-configured
Package 2: Online Watch	
A6500MS-12-L2	12 channel option with Online Watch and Online Configuration software
A6500MS-24-L2	24 channel option with Online Watch and Online Configuration software
Package 3: Full Online Monitoring	
A6500MS-12-L3	12 channel option with VibView Online software (single user remote license - English*)
A6500MS-24-L3	24 channel option with VibView Online software (single user remote license - English*)
Call your Emerson sales representative for a detailed quote to meet your online monitoring requirements.	
Accessories	
A6500MS-24-ENCL-A	CSI 6500MS installed inside a pre-configured enclosure (12 or 24 channel)
A0322LC-1**	Stud mount accelerometer, ¼ x 28 thread, 30' cable
V425**	Passive magnetic tachometer, includes mounting bracket (no cable or connector)
A612-I-30**	30' cable and 2 pin mil connector for V425

* Consult factory for other languages
** Specify quantity when ordering

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