

# AMS Machine Works

## Version 2.1



- Ultramodern, intuitive, and comprehensive asset health monitoring software application for mechanical and rotating assets
- Supports Emerson’s AMS monitoring technologies, including:
  - AMS 2140 Machinery Health Analyzer
  - AMS Wireless Vibration Monitor
  - AMS 9420 Wireless Vibration Transmitter
  - AMS Asset Monitor
  - AMS 6500 ATG



*AMS Machine Works is relied on by reliability engineers, maintenance technicians, predictive maintenance analysts, asset managers, vibration analysts, plant engineers, maintenance supervisors, industrial automation engineers, and others.*

## Overview

In the past when a problem arose with one of your critical assets you might have had to comb through tons of data, and potentially even different software and databases to identify what's important to you at that moment. Unfortunately, time isn't always on your side in these scenarios. You need relevant information fast, and you need the right tools there to diagnose faults as fast as possible.

AMS Machine Works is a comprehensive software solution that greatly simplifies the fault diagnosis and analysis process by combining predictive maintenance techniques with comprehensive analysis tools to provide easy and accurate assessment of machinery health in your facility.

- One software application and database for all Emerson vibration hardware
- Easy to get started and understand, but contains the power tools necessary for experts
- Scalable and flexible deployment models

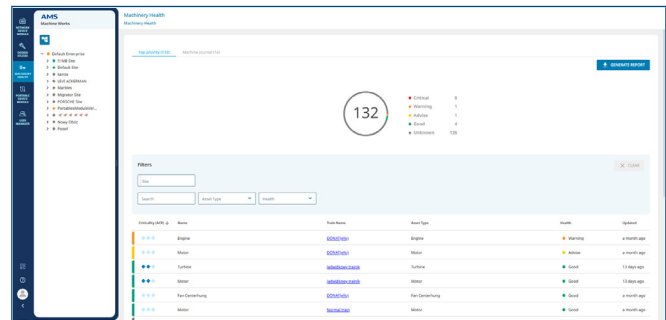
## Powerful Tools in an Intuitive Interface

AMS Machine Works includes a vibration analysis module with familiar, easy-to-use analytical tools such as:

- Scalar value trending
- 1x, 2x, Nx, peak/phase trending, energy in a band trending
- Waveform
- Spectrum
- Spectrum Waterfall and Cascade
- PeakVue™ measurements including overall, waveform, spectrum
- Fault frequencies

- Standard, harmonic, and sideband cursor
- Circular plot
- Orbit
- Bode/Nyquist
- Harmonic family detection
- Sideband frequency detection
- Shaft centerline

## Machinery Health Dashboard Enhancements



The new AMS Machine Works Analysis Dashboard allows users to easily identify what's important and filter by asset type or alert status.



**New:** Native plotting tools on the AMS Machine Works dashboard give enable quick access to trend, spectrum and waveform data for each measurement point.

## Machine Health at a Glance

With the AMS Machine Works Analysis Dashboard you are no longer required to search through alarm logs or dig through hierarchies to find out what machines need your attention. Nor are you required to look through notes and emails to find out what predictive maintenance activities are taking place and what machines need repair.

With one glance at the Analysis Dashboard you can see:

- Machine health
- Device/system health
- Machines that need your immediate attention
- Work recommendations and status

Selecting any of the items on the dashboard allows you to quickly focus in on what’s important, greatly improving workflow and optimizing user experience.

## AMS Wireless Vibration Monitor and AMS 9420 Wireless Vibration Transmitter

Emerson’s AMS Wireless Vibration Monitor and AMS 9420 Wireless Vibration Transmitter’s are integrated into AMS Machine Works through the Emerson Smart Wireless Gateway (1410 and 1420 models). AMS Machine Works then utilizes that data to perform in-depth vibration analysis of the monitored rotating assets.

AMS Machine Works provides wireless vibration users with all of the necessary tools and functionality needed to utilize the wireless vibration transmitters to their full potential. This includes complete vibration data including overall levels, energy bands, high resolution spectra, and waveforms.

Also included is Emerson’s unique PeakVue™ technology that filters out traditional vibration signals to focus exclusively on impacting, a more reliable indication of asset health in specific types of equipment. PeakVue can visualize distress signals on a machine that are simply not visible with other vibration measurements.

The AMS Wireless Vibration Monitor also supports Emerson’s new PeakVue Plus technology which automates analysis and presents the information in a color-coded graphic so that users can, at a glance, identify not only a machinery issue but its severity.



Emerson’s wireless vibration solutions provide best-in-class wireless vibration data and capabilities.

## AMS Asset Monitor

AMS Asset Monitor communicates directly with AMS Machine Works, enabling users to store process and vibration data from the AMS Asset Monitor to perform in-depth analysis of your important assets.

It accommodates up to 12 CHARMS including several Vibration CHARMS as well as DeltaV CHARMS for process inputs. Predicates can be configured to optimize collection of high resolution waveforms and spectra.

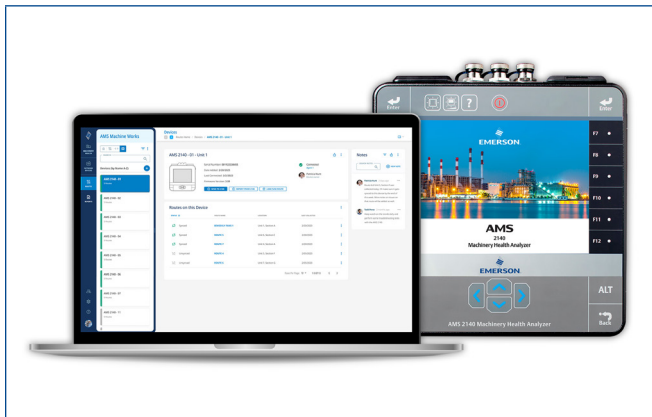


Up to the moment process and condition monitoring results with Store on Alert for automated fault detection.

## AMS 2140 Machinery Health Analyzer

AMS 2140 now joins other AMS condition monitoring data acquisition technology in AMS Machine Works. This includes a new Portable Device Agent, a lightweight service that enables your laptop to sense when your AMS 2140 connects to the USB port. Once the device is sensed and discovered by your laptop, AMS 2140 communication is then routed to the AMS Machine Works server.

Users can now transfer routes and condition monitoring data from AMS 2140 to the AMS Machine Works database. Additionally, the service will also support Wi-Fi and Ethernet communication.



### Improved Resolution of the Native Parameters in the Long-Term Database

- The benefit of AMS Machine Works database consolidation with MongoDB

### Dual Use of Transient Grab

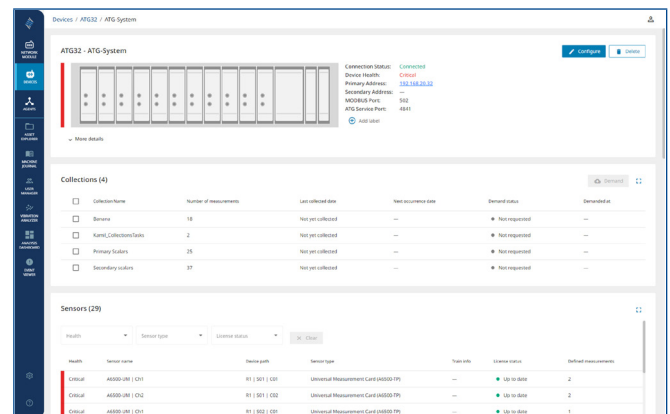
- Transient plotting tools in VibApp, long Transient waveform analysis
- The short waveform extracted from the Transient Grab (with pre-processing tool to define LOR and spectrum averaging)
- Analysis Parameters with Alerts calculated from the short waveform



## AMS 6500 ATG

### AMS 6500 ATG Agent

- Device configuration and status (not including 6500 ATG rack configuration, only connectivity parameters)
- Collection configuration (native scalars and Transient Grab / long waveform)
- Improved support for Transient Grab data provided by the device with internal triggers. Internal 6500 ATG schedule and events will be the primary data collection drivers
- Store on Alert (alarms from the native parameters, configurable alert level)
- Store on Demand



## Portable Device Module

AMS Machine Works 2.1 Portables Modules Features:

- Dashboard
- User Management
- Route Management
  - Creation and Edit
  - Route Data Transfer
  - Analysis Parameters
  - Filter, search and other editing tools
  - Reporting
    - Configuration (single route)
    - Status Report (all routes, vibration data collection program report)
- Standard Vibration Analysis Module Functionality
- Stand Alone Data Transfer
- Analyze Experts are supported in Route Mode

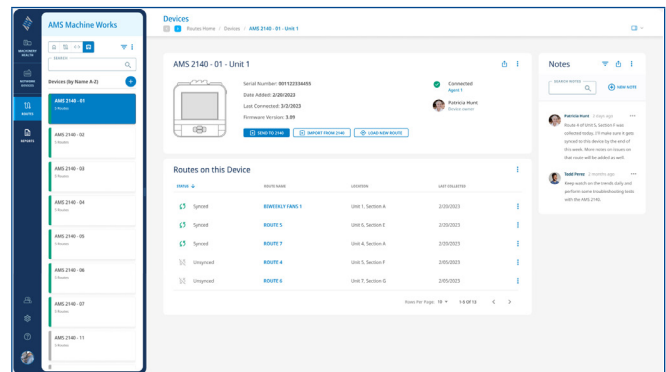
### Portable Device Agent

- Lightweight service that may be installed on a user's laptop listens for the AMS 2140 to be plugged into the USB port, then routes the AMS 2140 communication to the AMS Machine Works server.
  - AMS 2140 device discovery, connection and details
  - Route transfer to AMS 2140
  - Data transfer from AMS 2140 to AMS Machine Works database

- Will also support Wi-Fi and Ethernet communication with the AMS 2140 in addition to USB cable connection
- Standalone Data Transfer (AMS Machinery Manager existing tool) will also be available in AMS Machine Works

### Route

- Route configuration and modification
- Analysis Parameter Sets and Alarm Sets as known from AMS Machinery Manager
- Analytical Jobs related to the Route
- Vibration data analysis (waveform, spectrum, parameter trends) in VibApp and Web VibApp

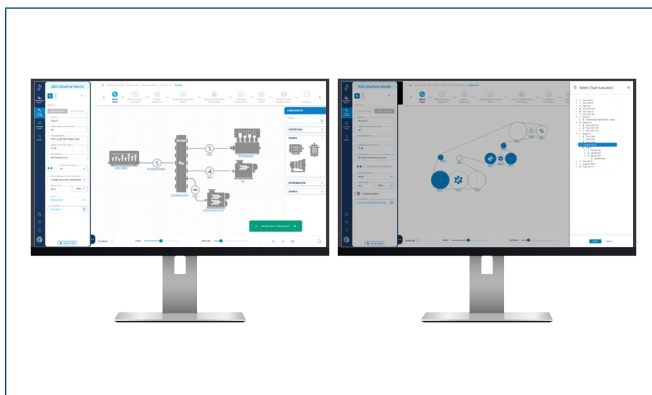


## Design Studio

Version 2.1 incorporates a newer, more user-friendly design, while also offering users of previous iterations of AMS Machine Works (and AMS Machinery Manager) reasonable levels of familiarity. Conversely, brand new users of the software will find version 2.1 an advantageous starting point due to the highly intuitive, user-assisting nature of the software.

In the new Design Studio module, users will have access to an intuitive drag-and-drop diagramming tool, a more streamlined design workflow, redesigned menus, and an extensive library of specialized asset types—reflecting Emerson’s embedded domain expertise. Design Studio improves the process of mapping measurement locations of your sensor devices, setting measurement and analysis alerts and schedules, generating waveform signal processing, configuring portable devices, and finally, “commissioning” the train to activate and initiate machine monitoring.

In version 2.1, machine building and configuration will greatly increase capacity to support a maximum of 72 assets within one machine train. Version 2.1 also adds custom fault frequencies, the ability to set more alarms per measurement point, short and transient waveform collection for AMS 6500 ATG, and more customization for analysis parameters.



## User Management

AMS Machine Works features role-based access control, allowing for customizable, predefined roles with default permissions. Users may also be assigned to one or more roles. The advanced User Management in AMS Machine Works 2.1 features new roles:

### Admin

- All possible privileges and credentials, agent setup and assignment, creation of additional accounts for lower access roles

### Co-Admin

- Admin access to select parts of the hierarchy

### Operator

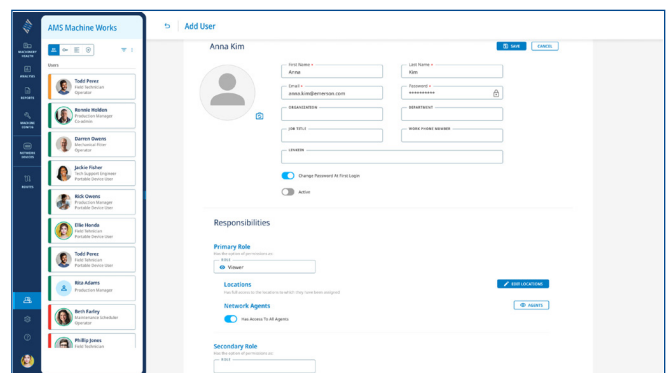
- Edit access to agents, edit access to machine train editor, edit access to VibApp, Network Device Module setup

### Portable Device User

- Portable Device Module setup/config activities, edit access to VibApp and network device module

### Viewer

- View-only access to all applications in the location(s) to which they have been assigned. Cannot perform any configuration actions there
- Machinery Health and VibApp access (data review and analysis)
- Network Device Module (only the agents assigned by the Admin or Co-admin)
- Can see the configurations and device status only
- Can trigger the on-demand collection





## System Requirements

System Requirements: AMS Machine Works Server	
Operating System	<ul style="list-style-type: none"> <li>■ Windows Server 2022 Standard or Datacenter</li> <li>■ Windows Server 2019 Standard or Datacenter</li> <li>■ Windows Server 2016 Standard or Datacenter</li> </ul>
CPU Architecture	64 Bit
Internet Information Services (IIS)	v8.5, v10 (Supplied with OS)
Browsers	<ul style="list-style-type: none"> <li>■ Google Chrome (latest version)</li> <li>■ Microsoft Edge (latest version)</li> </ul>
Processor	Large and Extra-Large Systems — 3.2 GHz, 8-core processor, Intel Xeon-scalable (Gold) or faster (recommended) Small and Medium Systems — 2.4 GHz, 6-core processor, Intel Xeon-scalable (Gold) or faster (minimum)
RAM	<ul style="list-style-type: none"> <li>■ Large and Extra-Large Systems — 64 GB</li> <li>■ Medium Systems — 32 GB</li> <li>■ Small Systems — 16 GB</li> </ul>
Hard Drive	SSD hard drive (recommended) SAS hard drive (10K RPM) (minimum)
Available Disk Space	<ul style="list-style-type: none"> <li>■ 1 TB (recommended)</li> <li>■ 500 GB (minimum)</li> <li>■ 100 GB (for wireless-only setup)</li> </ul>
Screen Resolution	<ul style="list-style-type: none"> <li>■ 4K UHD (3840 x 2160 pixels)</li> <li>■ SXGA (1280 x 1024 pixels) (minimum)</li> </ul>
Network	<ul style="list-style-type: none"> <li>■ 2 x 1 GB NIC (use 2 NICs to isolate Level 3 traffic from Level 2 traffic) (recommended)</li> <li>■ 1 x 1 GB NIC (supported)</li> </ul>

System Requirements: AMS Machine Works Vibration Analyzer Client	
Operating System	<ul style="list-style-type: none"> <li>■ Windows Server 2022 Standard or Datacenter</li> <li>■ Windows Server 2019 Standard</li> <li>■ Windows Server 2016 Standard</li> <li>■ Windows 11</li> <li>■ Windows 10 Pro</li> <li>■ Windows 10 Enterprise</li> </ul>
CPU Architecture	64-bit
Internet Information Services (IIS)	v8.5, v10 (supplied with OS)
Browsers	2.2 GHz, 4-core processor Intel Xeon, Intel Core i5 6th Gen (i5 6400T) or better
RAM	<ul style="list-style-type: none"> <li>■ 16 GB (recommended)</li> <li>■ 8 GB (minimum)</li> </ul>
Hard Drive	SAS hard drive (10K RPM)
Available Disk Space	100 GB
Screen Resolution	4K UHD (3840 x 2160 pixels) SXGA (1280 x 1024 pixels) (minimum)

Supported Device Quantities	
Assets	2000 Machine Trains with network devices
Configured Users	250 total users
Concurrent Users	15
Concurrent VibApp Users	10
AMS 9420 Wireless Vibration Transmitter	<ul style="list-style-type: none"> <li>■ 600 devices maximum per system connected across 50 Emerson Wireless Gateways</li> <li>■ 600 devices maximum per AMS Machine Works Wireless Agent</li> </ul>
AMS Asset Monitor	400 AMS Asset Monitors maximum per system and per AMS Asset Monitor Agent
AMS Wireless Vibration Monitor	<ul style="list-style-type: none"> <li>■ 5000 devices maximum per system connected across 120 Emerson Wireless Gateways</li> <li>■ One AMS Machine Works Wireless Agent can be installed per server</li> </ul>
AMS 6500 ATG Agent	100 Single Rack Systems
AMS 2140 Agent	<ul style="list-style-type: none"> <li>■ Maximum number of concurrent users: 15</li> <li>■ Maximum number of concurrent data transfers: 2</li> </ul>

System Requirements: AMS Machine Works Agent Server	
Emerson Wireless Gateway Agent	<b>Refer to AMS Machine Works V2.1 System Guide</b>
AMS Asset Monitor Agent	<b>Refer to AMS Machine Works V2.1 System Guide</b>
AMS 2140 Agent	<b>Refer to AMS Machine Works V2.1 System Guide</b>
AMS 6500 ATG Agent	<b>Refer to AMS Machine Works V2.1 System Guide</b>

## Ordering and Licensing Information

AMS Machine Works can be licensed on a subscription basis. The length of the subscription and renewal terms will be three years unless otherwise set forth in the applicable Emerson proposal. Each license must include an AMS Machine Works Server and a purchased quantity of users and vibration tags. The purchaser may not use the AMS Machine Works software with more than the purchased number of users and vibration tags, all of which as set forth in the applicable Emerson proposal.

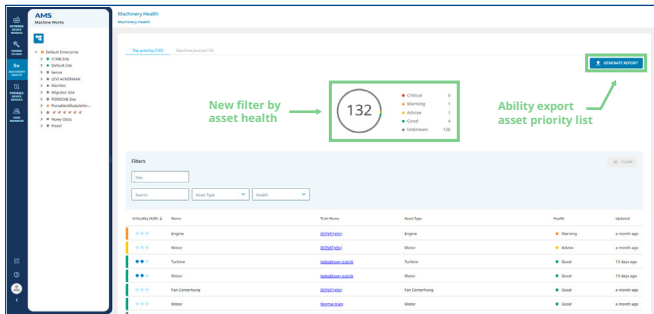
License Options	Options	Subscription Part Number
AMS Machine Works Server	Select 1 per installation	A43-SYSTEM-0
<b>Users (combine for desired amount)</b>		
1 User	Available in Qty 1-4	A43USER-1-0
5 Users	Available in Qty 1-2	A43USER-5-0
15 Users	Available in Qty 1	A43USER-15-0
25+ Users	Available in Qty 1	A43USER-25-0
<b>Vibration Tags</b>		
100	Available in Qty 1	A43TAGS-100-0
500	Available in Qty 1	A43TAGS-500-0
1,000	Available in Qty 1	A43TAGS-1000-0
2,000	Available in Qty 1	A43TAGS-2000-0
5,000	Available in Qty 1	A43TAGS-5000-0
10,000	Available in Qty 1	A43TAGS-10000-0
20,000	Available in Qty 1	A43TAGS-20000-0
<b>Portable Devices</b>		
1 Device (Qty 1-9)	Available in Qty 1-9	A43DEVICE-1-0
1 Device (Qty 10-19)	Available in Qty 10-19	A43DEVICE-10-0
1 Device (Qty 20+)	Available in Qty 20+	A43DEVICE-20-0
<b>Add-on Licenses</b>		
OPC UA (Out)	Optional 1 per installation	A43OPCUA-SVR-0

## AMS Machine Works v2.1 Overview

Several new and improved major functional enhancements have been incorporated into AMS Machine Works v2.1, enhancing the overall workflow for stakeholders monitoring asset health across multiple technologies.

The first of these are around exception reports. Building upon the machinery health dashboard in AMS Machine Works v2.0, AMS Machine Works v2.1 introduces the ability to create a report from the asset priority list. This report ranks machine trains from a combination of asset health status and asset criticality ranking and can be exported as an HTML page for exporting to PDF.

### Machinery Health Dashboard Enhancements



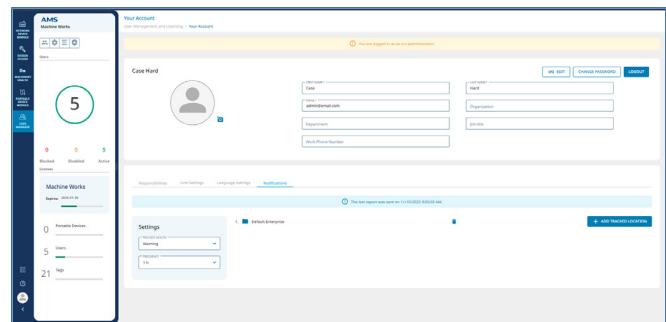
### Asset Priority List Report

CRITICALITY RATING	NAME	TRAIN NAME	TYPE	HEALTH	LAST UPDATED
0.99%	Motor	Paranics	Motor	Critical	9/20/2025 11:58:45 AM
0.91%	Engine	DCON1(Mk)	Engine	Warning	9/20/2025 12:25:49 PM
0.44%	Motor	DCON1(Mk)	Motor	Active	9/20/2025 12:43:08 PM
0.00%	Motor	Normal train	Motor	Good	9/20/2025 1:50:27 PM
0.00%	Fan Centering	DCON1(Mk)	Fan Centering	Good	9/20/2025 12:25:49 PM
0.00%	Bearing Housing	9/20/2025, 14:58:02	Bearing Housing	Unknown	-
0.00%	Motor	9/20/2025, 14:58:03	Motor	Unknown	-
0.00%	PulleyRoll	9/20/2025, 8:47:00 A.	Pulley Roll	Unknown	-
0.00%	Transfer Gear	9/20/2025, 8:47:00 A.	Transfer Gear	Unknown	-

Asset Priority List Report grouping assets by health scores and asset criticality ranking.

In addition to this, AMS Machine Works v2.1 also adds a donut chart filter for grouping assets by their health status, enabling users to quickly narrow down assets of interest, as well as providing additional filters for location, name, and asset type.

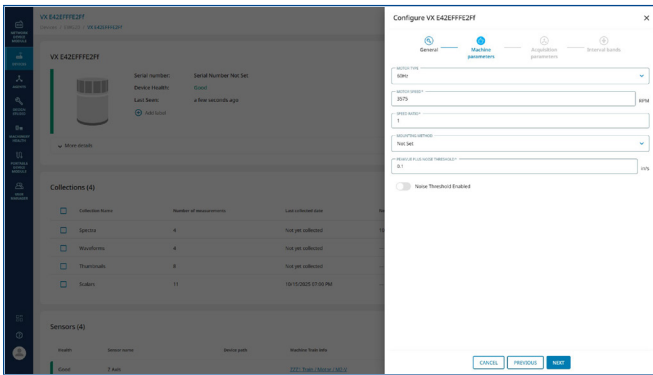
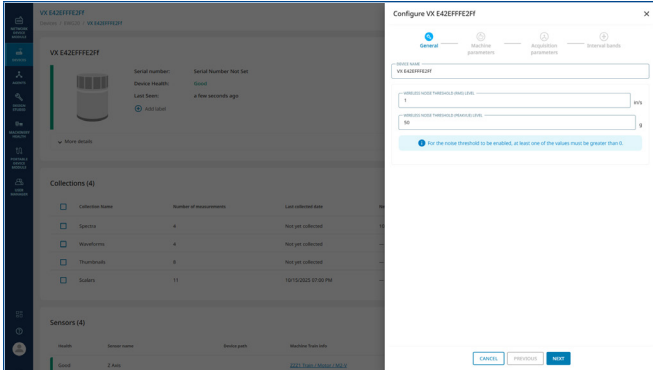
The next major enhancement in AMS Machine Works v2.1 is around email notifications. Users can now subscribe to email alerts and customize the frequency and trigger (advise, critical, warning) for functional location. Emails will be generated upon tripping the selected alarm level, at a customizable duration. The email alert will contain key metrics on the measurement point value, alert threshold, location, and date and time, as well as a copy of the alert history report, showing past events in the system.



Users can subscribe to email alerts by location, and customize the frequency and pre-conditions by alert status.

Exception Report						
04 November 2025 09:00 - 04 November 2025 10:00						
Event Stats						
CRITICAL	WARNING	ACTIVE	DEACTIVATION			
1	1	0	0			
DATE	HEALTH CHANGE	PREV	TYPE	PARAMETER NAME	VALUE	UNIT
04 November 2025 09:59	Unknown -> Critical	Default EmersonDefault Str/...	Network	Velocity Overall Pk Pk	0.09	mm/s
04 November 2025 09:59	Unknown -> Warning	Default EmersonDefault Str/...	Network	Velocity Overall RMS	0.00	mm/s

Another key addition to AMS Machine Works v2.1 is added flexibility to configure the AMS 9530/9420 wireless vibration monitors and transmitters directly from the software. Configuration parameters include wireless noise threshold for velocity and PeakVue amplitude, machine parameters, spectrum and waveform acquisition settings, and interval band definitions.



## AMS Machine Works Connect

### Condition Monitoring-as-a-Service

**AMS Machine Works Connect** is Emerson's, cost-conscious condition monitoring bundle combining industry-leading vibration sensors, edge analytics, machinery health software, and global deployment services.

AMS Machine Works Connect offers users the same powerful machine health analysis software in the cloud with minimal investment in costly and burdensome infrastructure procurement, maintenance, and cybersecurity. This Emerson hosted asset management solution for monitoring industrial rotating machinery offers hardware (sensor, gateway, router, SIM card, enclosure) software, cloud services, installation, and configuration services.



## Software Support

Standard support including 24x7 call support, hotfixes, and updates to the software is included for the current and previous major software versions.

## Asset Condition Monitoring Services (now part of AMS Machine Works Connect)

Emerson's team of machinery monitoring experts can supplement plant programs with **Asset Condition Monitoring Services**. Specialists are available to monitor and analyze data from Emerson's route-based vibration analyzers, wireless vibration devices, and online systems. They follow up with easy-to-read, actionable periodic reports for your maintenance department. With some changes made recently to the AMS Machine Works Connect program, asset condition monitoring services are now included by default for all AMS Machine Works Connect bundles.

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