

9330 Vibration Transmitter

- Continuously monitors critical machinery in process applications and other industrial environments
- Interfaces with existing alarm, control and monitoring systems
- Integrates with the AMS 2140 Machinery Health™ Analyzer to create a seamless predictive maintenance environment
- AMS 9330VP-1 detects mechanical faults and provides early warning of bearing and gear faults
- AMS 9330VT detects mechanical faults and increases in temperature

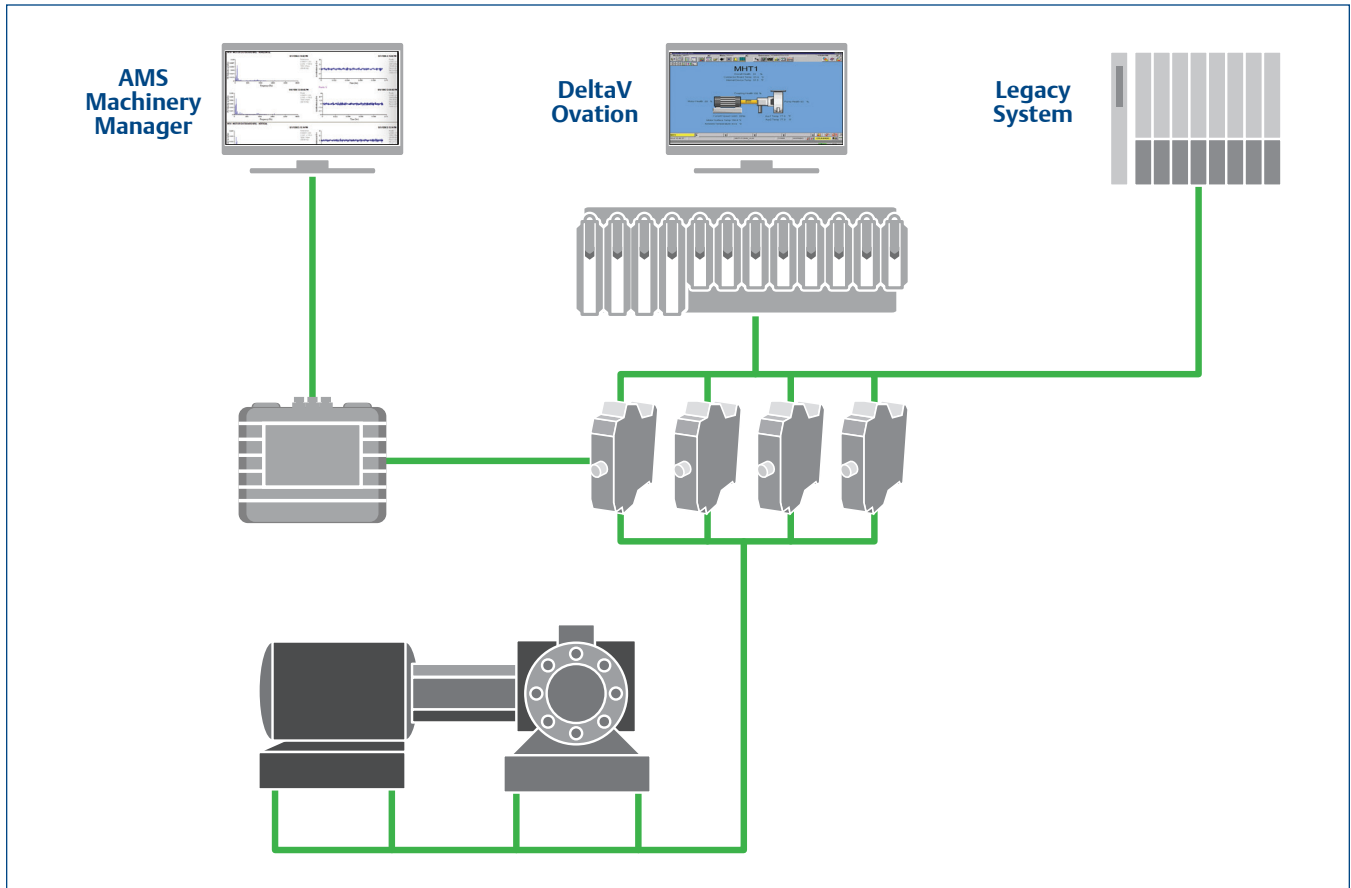


The AMS 9330 interfaces with existing plant monitoring systems while continuously monitoring critical machinery.

Overview

Gain more visibility to vibration levels in your critical machinery. The AMS 9330 Vibration Transmitter is a continuously-operating vibration transmitter that interfaces with existing plant monitoring systems while automatically detecting vibration levels. When connected to the AMS 2140, you can view the vibration data in AMS Suite: Machinery Health Manager to utilize predictive diagnostics and improve maintenance efficiency. Preserve machinery health while reducing costly downtime.

The rugged AMS 9330 is a quick and easy installation to any machine. Once installed, it converts the analog output of an ICP® accelerometer into a 4-20 mA signal, proportional to monitored vibration. Vibration data is available in plant data historians and/or control systems for trending and analysis with other process parameters. With the AMS 9330, you will gain continuous access to real-time data for early detection of developing mechanical issues.



The AMS 9330 delivers overall data to any control or automation system using industry standard 4-20mA wiring, while the AMS 2140 connects to the analog vibration output to enable spectrum analysis.

Detect Mechanical and Impacting Faults

The AMS 9330 Vibration Transmitter allows for continuous monitoring of a wide variety of plant and mill machinery, including motors, fans, cooling tower fans, pumps, and compressors. The AMS 9330 connects to a standard accelerometer and can be configured to deliver any desired standard vibration and/or temperature value.

The vibration or temperature value can then be delivered to a PLC, SCADA system, or DCS using common 4-20 mA wiring.

The AMS 9330 is available in two configurations. The AMS 9330VT deploys on any measurement location where vibration and/or temperature is desired. It detects mechanical faults such as imbalance and looseness as well as increases in temperature. The AMS 9330VT delivers a vibration value, such as overall

velocity and also a temperature value when connected to an accelerometer that contains an embedded temperature sensor. The AMS 9330VP-1 deploys on rolling element bearings and gear measurement points. It detects mechanical faults as well as impacting faults due to bearing and gear problems. The AMS 9330VP-1 delivers a vibration value, such as overall velocity, and a PeakVue™ value. PeakVue is a patented technology that effectively detects early stage rolling element and gear tooth wear.

Technical Specifications

Model A9330VP-1

Performance	ENGLISH	SI
Input Signal	100 mV/g	10.2 mV/(m/s ²)
Frequency Response (± 3 dB)(Overall Vibration)	10 to 1k Hz	10 to 1k Hz
Frequency Response (± 3 dB)(Fault)	1k or 5k to 100 kHz	1k or 5k to 100 kHz ⁽¹⁾
Measurement Range (Vibration)	5/10/20 g	49.0/98.1/196.1 m/s ²⁽²⁾
Measurement Range (Velocity)	0.5/1/2 in/sec	12.7/25.4/50.8 mm/sec ⁽³⁾
Measurement Range (Fault Detector)	50 g	50 g
Output Range	4 to 20 mA	4 to 20 mA ⁽¹⁾⁽⁴⁾
Sampling Time (± 15 %)	7 sec	7 sec
Span (± 5 %)	16 mA	16 mA
Control Interface		
Power LED	Green	Green
Environmental		
Warm Up	<2 minutes	<2 minutes
Temperature Range (Operating)	32 to 158 °F	0 to 70 °C
Temperature Range (Storage)	-40 to 257 °F	-40 to 125 °C
Electrical		
Supply Voltage	20 to 28 VDC	20 to 28 VDC
Current Consumption	≤ 150 mA	≤ 150 mA
Excitation Voltage (± 1 V)	18 VDC	18 VDC
Constant Current Excitation (± 1 mA)	4 mA	4 mA
Raw Vibration Output	+/-0.01 % of Input	+/-0.01 % of Input
Load Resistance	500 Ohm	500 Ohm

Physical		
Size (Width x Height x Depth)	0.9 in x 3.9 in x 4.5 in	22.5 mm x 99 mm x 114.5 mm
Weight	5.2 oz	145.2 gm
Housing Material	Polyamide	Polyamide
Screw Terminal Wire Size	24-14 AWG	0.2 - 2.5 mm ²
Electrical Connector (input/output)	Removable Screw Terminals	Removable Screw Terminals
Electrical Connector (Output, Vibration)	BNC Jack	BNC Jack
Din Rail Mount	1.38 in	35 mm

All specifications are at room temperature unless otherwise specified.

NOTES:

[1] Internal Dip switch selectable

[2] Acceleration mode.

[3] Velocity mode.

[4] Output current voltage will fluctuate at frequencies below 5 Hz.

Model 9330VT

Performance	ENGLISH SI	22.5 mm x 99 mm x 114.5 mm
Channels	Single	Single
Input Signal (Vibration)	+/-100 mV/g	+/-10.2 mV/(m/s ²)
Input Signal (Temperature)	0 to 1.2 VDC	0 to 1.2 VDC
Output Signal (DC Vibration)	4-20 mA/ 0-5 VDC/ 0-10 VDC	4-20 mA/ 0-5 VDC/ 0-10 VDC
Output Signal (Temperature)	4-20 mA	4-20 mA
Frequency Range (-3dB) (Acceleration)	180-600k cpm	3-10k Hz
Frequency Range (-3dB) (Velocity)	210-600k cpm	3.5-10k Hz
Frequency Range (-3 dB) (Displacement)	210-60k cpm	3.5-1k Hz
Output Range (DC Acceleration)	0-5 g pk or rms	0-49.03 m/s ² pk or rms
Output Range (DC Acceleration)	0-10 g pk or rms	0-98.06.03 m/s ² pk or rms
Output Range (DC Acceleration)	0-20 g pk or rms	0-196.12 m/s ² pk or rms
Output Range (DC Velocity)	0-0.5 in/s pk or rms	0-12.7 mm/s pk or rms
Output Range (DC Velocity)	0-1.0 in/s pk or rms	0-25.4 mm/s pk or rms
Output Range (DC Velocity)	0-2.0 in/s pk or rms	0-50.8 mm/s pk or rms
Output Range (DC Displacement)	0-25 mil pk-pk	0-0.635 mm pk-pk
Output Range (DC Displacement)	0-50 mil pk-pk	0-1.27 mm pk-pk
Output Range (DC Displacement)	0-100 mil pk-pk	0-2.54 mm pk-pk

Environmental		
Operating Temperature Range	+32 to + 158 °F	0 to + 70 °C
Storage Temperature Range	-40 to + 257 °F	-40 to + 125 °C
Relative Humidity	< 95% (Non-condensing)	< 95% (Non-condensing)
Electrical		
Power Supply Voltage	23-25 VDC	23-25 VDC
DC power (maximum)	100 mA	100 mA
Settling Time	< 2 min	< 2 min
ICP Sensor Excitation	18 VDC/4 mA, + 1 V/+ 1 mA	18 VDC/4 mA, + 1 V/+ 1 mA
Physical		
Case Dimension (W x H x D)	0.9 x 3.9 x 4.5 in.	22.5 x 99 x 114.5 mm
Weight	6.4 oz	127 grams
Input/Output Electrical Connectors	Removable Screw Terminals	Removable Screw Terminals
Raw Vibration Connector	BNC Jack	BNC Jack
Screw Terminal Wire Size	24-14 AWG	0.2-2.5 mm ²
DIN Rail Mount	1.38 in	35 mm
Power Indicator	Green LED	Green LED
Input Fault Indicator	Red LED	Red LED
Measurement Status Indicator	Green LED	Green LED

Model 9330PS Power Supply

Input Data	ENGLISH	SI
Power Supply Voltage (Auto Sensing)	85 - 264 VAC/ 95-350 VDC	85 - 264 VAC/ 95-350 VDC
Input Frequency	45 - 63 Hz	45 - 63 Hz
Inrush Current (@ 25°C)	< 15A	< 15A
Current Consumption	0.3/0.5A (230/120 VAC)	0.3/0.5A (230/120 VAC)
Input Fuse	1.25A/250V	1.25A/250V
Main Buffering	> 20/110ms (120/230 VAC)	> 20/110ms (120/230 VAC)
Surge Volatage Protection	Varistor	Varistor
Output Data		
Nominal Voltage/Current	24 VDC/ 1.0A	24 VDC/ 1.0A
10 - 90% Load Tolerance	+/-3%	+/-3%
Turn On Delay	< 0.5/1s (230/120 VAC)	< 0.5/1s (230/120 VAC)
Internal Surge Voltage Protection	35 VDC +/-5%	35 VDC +/-5%
Parallel Switching	Redundant Systems Only	Redundant Systems Only
Turn Off Delay	< 150 ms	< 150 ms
Ripple Voltage	< 100mVpp	< 100mVpp
Maximum Power Loss	0.9/4.5W (No Load/Load)	0.9/4.5W (No Load/Load)
DC OK (Active)	24V/20mA	24V/20mA
Environmental		
Operating Temperature Range	-13 to + 158 °C	-25 to + 70 °C
Storage Temperature Range	-40 to + 188 °C	-40 to + 85 °C
Relative Humidity	< 95% (Non-condensing)	< 95% (Non-condensing)
General Data		
Insulation Voltage	3 kV	3 kV
Conductor Cross Section	AWG 14 - 24	0.2 - 2.5 mm ²
MTBF	> 500000h	> 500000h
Efficiency	7.4 oz	0.21 kg
Dimensions (W x H x D)	0.89 x 3.90 x 4.51 in	22.5 x 99 x 114.5 mm
Display	Green LED	Green LED
Shock (3 directions for 18ms)	30 g	30 g

Model 9330EN Enclosure

Physical Characteristics	ENGLISH	SI
Channels (Maximum)	8	8
Number of Cord Grips (PGME 07)	15	15
Number of Cord Grips (PGME 13)	15	15
Enclosure Type	Nema 4X	IP 66
Enclosure Size (With Cord Grips) (H x W x D)	11.5 x 9 x 6.5 in	292 x 229 x 165 mm
Enclosure Weight	5.5 lbs	2.5 kg
DIN Rail	1.38 in	35 mm

Ordering Information

Model	Product Description
9330	Vibration Transmitter
Code	Transmitter Type
VT	Vibration and Temperature
VP-1	Vibration and PeakVue
Code	Measurement
S1	Accelerometer
S2	Accelerometer with Embedded Temperature

Typical Model Number: 9330 VT S1

Model	Optional Accessories
9330EN	Enclosure
9330PS	24V Power Supply
Model	Sensor Description
A0322LC	Accelerometer with Screw Mount, Top Exit, 10' Cable
A0322LC-1	Accelerometer with Screw Mount, Top Exit, 30' Cable
A0322RA	Accelerometer with Armor Jacket, Right Angle, 10' Cable
A0322RA-1	Accelerometer with Armor Jacket, Right Angle, 30' Cable
A0322RI	Accelerometer with Yellow Jacket, Right Angle, 10' Cable
A0322RI-1	Accelerometer with Yellow Jacket, Right Angle, 30' Cable
A0322DR	Accelerometer with Red Jacket, Right Angle, 10' Cable
A0322DR-1	Accelerometer with Red Jacket, Right Angle, 30' Cable
A0322DS	Accelerometer with Red Jacket, Low Cost, 10' Cable
A0322DS-1	Accelerometer with Red Jacket, Low Cost, 30' Cable

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