

Standard Type Specifications

Model	MODEL-1332A
Compatible sensor type	Supplied with accelerometer Model 2304A Sensitivity: 5pC (m/s ²) (typ.) (Optionally replaceable with another accelerometer)
Input	Charge input BNC connection
Acceleration measuring range	0.1 to 199.9 m/s ² (Peak)
Velocity measuring range	0.1 to 199.9 mm/s (RMS)
Displacement measuring range	0.001 to 1.999 mm (P-P)
Frequency range	Velocity and displacement: 10 to 1000 Hz – 1dB Acceleration: 5 to 5000 Hz ± 1dB
Accuracy	Acceleration: 3%of the reading ± 1 digit Velocity and displacement: 5%of the reading ± 1 digit At 80 Hz , FS/2 and 20°C ± 5°C
Temperature characteristics	+0.15%/°C of the reading (typ.)
AC output	Acceleration: 10 mV/(m/s ²), ± 2V Max Velocity: 10 mV/(mm/s), ± 2V Max Displacement: 2V/mm, ± 2V Max Output resistance: 1 kΩ, with a miniplug Noise level: 1 mV (RMS) or less
Digital display	3 1/2 digits LCD, about three samplings per second
Power supply (battery)	One 006P (9 V) battery, 7 to 10 V, 70 hours of continuous operation or longer
Dimensions and mass (main unit)	75(W) x 130(H) x 24(D) mm (About 250 g)

Outline Drawing



Unit: mm

Optional Type Specifications

Model	MODEL-1332A-01H	MODEL-1332A-02H	MODEL-1332A-01L	MODEL-1332A-00F
Approximate specifications	Ten-fold increase in the measuring range. The acceleration, velocity and displacement resolutions all fall below STD.	Displacement measurement set to 20 mm (P-P). STD acceleration and velocity resolutions, but the displacement resolution set to 10 μm.	Measuring resolutions made 10 times better than STD. The maximum measuring ranges for acceleration, velocity and displacement set to 1/10 of STD.	Lightweight 1 g sensor. Upper-limit frequency set to 1000 Hz. Measuring ranges and resolutions equal to STD.
Compatible sensor type	MODEL-2304A Sensitivity: 5pC (m/s ²) (typ.)	MODEL-2304A Sensitivity: 5pC (m/s ²) (typ.)	MODEL-2369 Sensitivity: 10pC (m/s ²) (typ.)	MODEL-2302B Sensitivity: 1.8pC (m/s ²) (typ.)
Input	Charge input BNC connection	←	←	←
Acceleration measuring range	1 to 1999 m/s ² (Peak)	0.1 to 199.9 m/s ² (Peak)	0.01 to 19.99 m/s ² (Peak)	0.1 to 199.9 m/s ² (Peak)
Velocity measuring range	1 to 1999 mm/s (RMS)	0.1 to 199.9 mm/s (RMS)	0.01 to 19.99 mm/s (RMS)	1 to 199.9 mm/s (RMS)
Displacement measuring range	0.01 to 19.99 mm (P-P)	0.01 to 19.99 mm (P-P)	0.1 to 199.9 μm (P-P)	0.001 to 1.999 mm (P-P)
Frequency range	Velocity and displacement: 10 to 1000 Hz – 1dB Acceleration: 5 to 5000 Hz ± 1dB	Velocity and displacement: 5 to 1000 Hz – 1dB Acceleration: 10 to 5000 Hz ± 1dB	Velocity and displacement: 10 to 1000 Hz – 1dB Acceleration: 5 to 5000 Hz ± 1dB	Velocity and displacement: 10 to 1000 Hz – 3dB Acceleration: 5 to 5000 Hz ± 3dB
Accuracy	Acceleration: 3%of the reading ± 1 digit Velocity and displacement: 5%of the reading ± 1 digit At 80 Hz , FS/2 and 20°C ± 5°C	Acceleration: 3%of the reading ± 1 digit Velocity and displacement: 5%of the reading ± 1 digit At 80 Hz , FS/2 and 20°C ± 5°C	Acceleration: 3%of the reading ± 1 digit Velocity and displacement: 5%of the reading ± 1 digit At 80 Hz , FS/2 and 20°C ± 5°C	Acceleration: 3%of the reading ± 1 digit Velocity and displacement: 5%of the reading ± 1 digit At 80 Hz , FS/2 and 20°C ± 5°C
AC output	Acceleration: 1 mV/(m/s ²), ± 2V Max Velocity: 1 mV/(mm/s), ± 2V Max Displacement: 200 mV/mm, ± 2V Max Output resistance: 1 kΩ, with a miniplug Noise level: 1 mV (RMS) or less	Acceleration: 10 mV/(m/s ²), ± 2V Max Velocity: 10 mV/(mm/s), ± 2V Max Displacement: 200 mV/mm, ± 2V Max Output resistance: 1 kΩ, with a miniplug Noise level: 1 mV (RMS) or less	Acceleration: 100 mV/(m/s ²), ± 2V Max Velocity: 100 mV/(mm/s), ± 2V Max Displacement: 2V/100μm, ± 2V Max Output resistance: 1 kΩ, with a miniplug Noise level: 1 mV (RMS) or less	Acceleration: 10 mV/(m/s ²), ± 2V Max Velocity: 10 mV/(mm/s), ± 2V Max Displacement: 2V/mm, ± 2V Max Output resistance: 1 kΩ, with a miniplug Noise level: 1 mV (RMS) or less
Digital display	3 1/2 digits LCD, about three samplings per second			
Power supply (battery)	One 006P (9 V) battery, 7 to 10 V, 70 hours of continuous operation or longer			
Dimensions and mass (main unit)	75(W) x 130(H) x 24(D) mm (About 250 g)			

Note: Upper-limit frequencies for velocity and displacement are limited by the acceleration.

* Specifications and designs presented in the product catalog are subject to change without notice for product improvement purposes.

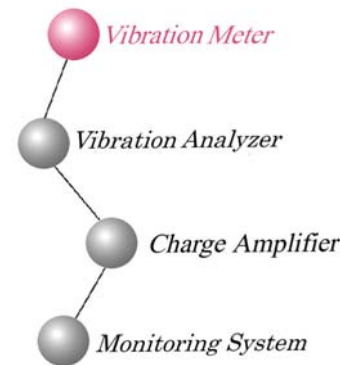


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DEGITAL VIBRATION METER
DIGI – VIBRO
Model – 1332A

The DIGI-VIBRO is a handy, convenient solution to your vibration measurement needs. Designed for maximum simplicity in function, it speeds up measurement tasks.



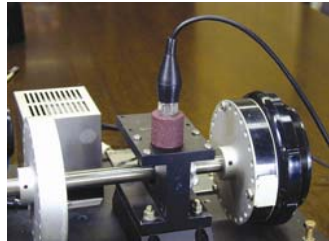
DIGI-VIBRO Applications

As long as rotating or reciprocating machinery is running successfully, it keeps you, as well as itself, safe and secure. But once the machinery gets into trouble, it could produce a high level of vibration to threaten your safety. The DIGI-VIBRO provides vibration measurement for innumerable kinds of machinery, including, but not limited to, pumps, blowers, machine tools, automobiles, and aircraft. Here is a small fraction of the numerous applications of the DIGI-VIBRO:

- Vibration measurement for blowers used to dry automobiles after they are painted
 - Vibration measurement at the location of mainframes
 - Solenoid valve actuation condition checking
 - Machine tool failure inspection
 - Maintenance of general-purpose engines
 - Maintenance of chassis dynamometers used for automotive testing
 - Bearing fault checking on blowers installed at garbage incineration plants
 - Bearing wear checking on automatic grinding machines used to fabricate clock parts
- Amplitude and acceleration measurement for vibration testers
 - Measurement of resonance points on instruments to which engine vibration is imparted
 - Automatic medicine packing machine actuation condition checking
 - Routine checking on pumps and blowers installed at petrochemical plants
 - Transformer howling checking
 - Numeric representation of the actuation conditions of cell phone vibrators
 - Spindle vibration measurement
 - Cooling tower fan maintenance



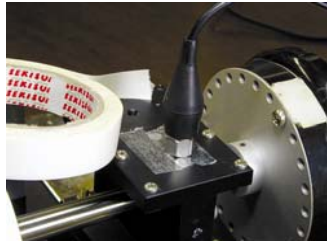
Stick the hand-held sensor to the measured object for measurement.



The sensor can be conveniently clamped using a magnet.



The sensor can also be screwed in position.



Secure the sensor with double-sided adhesive tape.

Start Measurement

- Turn on the power switch.
- Select a measurement mode and press the corresponding button. The DIGI-VIBRO supports three measurement modes: acceleration (ACC), velocity (VEL), and displacement (DISP).
- The unit of acceleration is m/s² (PEAK), which denotes a rate of change of velocity per second. The unit of the gravitational acceleration is G. One G represents 9.8 m/s².
- The unit of velocity is mm/s (RMS). Because vibration is a reciprocating motion, its velocity changes constantly. The vibrometer reads the RMS value of the velocity.
- The unit of displacement is mm (P-P). It indicates the total amplitude of the travel of actual vibration.
- The measurement is complete when you read the meter reading.
- Press the HOLD button when the reading is found to have varied by a wide margin.



Hook Up the DIGI-VIBRO and a Recorder

The DIGI-VIBRO can not only read vibration values but can also observe and record their waveforms. Hook it up to a recorder supporting an FFT facility and you can even launch a frequency analysis.

- Hook up an oscilloscope to the DIGI-VIBRO to observe the waveform of a vibration. Depending on which measurement mode you choose, an acceleration, displacement or velocity waveform can be plotted.



- Import data to a PC. Hook up a commercial A/C converter to your PC to import waveform data to the PC. You may run software to launch a frequency analysis.



Sample Measurement Result Displays



Displacement display
0.126 mm (126 μm)



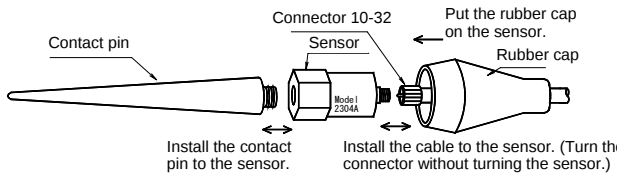
Acceleration display
26.6 m/s²



Velocity display 8.5 mm/s

Assemble and Install Accessories

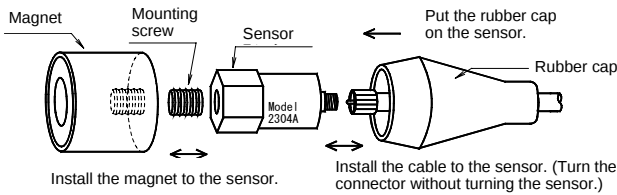
<Assemble the contact pin>



<Final drawing>



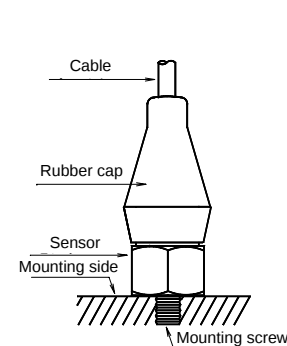
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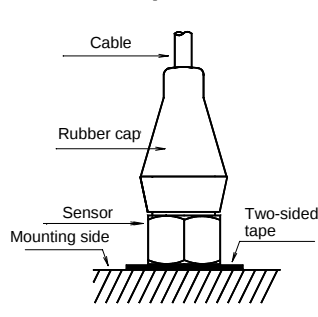
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<Install with screw>



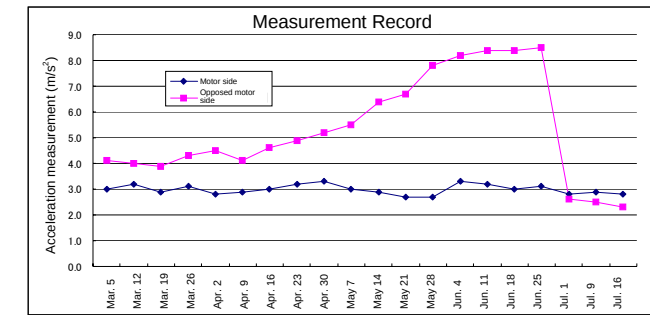
<Install with double-sided adhesive tape>



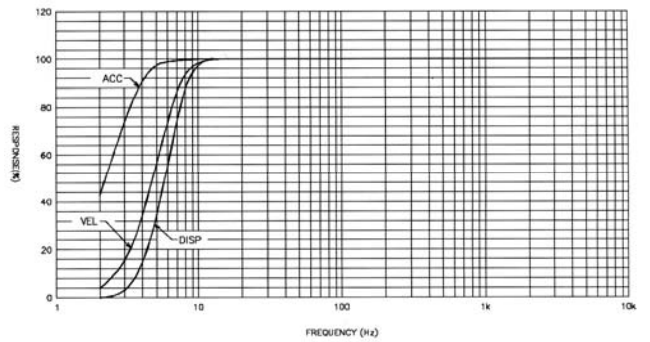
Concept of Acceptance/Rejection Criteria

When it comes to vibration measurement, one question always confronts me; how should I make acceptance/rejection decisions?

Three broad techniques exist to this end. One is consulting an established standard. In JIS and ISO, for example, safe and dangerous regions split on both sides of a velocity RMS value of about 4 mm/s. This criterion, however, should not be taken as being absolute because it is also a function of the kind of target machinery and the condition in which that machinery is installed. Second, where multiple machines of the same kind are installed, one that demonstrates a singularly high level of vibration can be identified through comparative measurements of the corresponding parts of these machines. Lastly, the most reliable technique, and one that is of greater practical value than the rest, is trend management. With this technique, you note a vibration value of the target machine while it is in good condition. This vibration value may be established at a skilled worker's discretion or alternatively it may be determined with reference to a value observed with a new machine of the same type or one observed with the target while it is being overhauled. Then, carry out measurement at a predetermined point at regular time intervals, for example, once each week. While changes that occur in the vibration measurement normally settle within a certain range, it may happen that the vibration measurement starts increasing continuously past a certain point. This condition should deserve special attention. Typically, the vibration measurement is said to increase continuously when it passes 1.6 times higher than the normal value, dictating an overhaul of the machine when it reaches two to three times higher than the normal value. The graph shown below is a record of periodic vibration measurements of a certain blower. Since faults were detected on the side opposed to the motor, but not in the motor itself, the machine has been overhauled to return to normalcy.



Frequency Response Chart



Configuration

- DIGI-VIBRO/Model 1332A 1 unit
- Accelerometer/Model 2304A 1 unit
- Contact pin.....1 pc
- Low-noise cable/LNC-3F-1.5..... 1 pc
- Magnet holder/MG-1 1 pc
- Output cable (1 m, with a plug) 1 pc
- Battery (006P) 1 pc
- Shoulder case 1 pc
- User's manual1 copy