

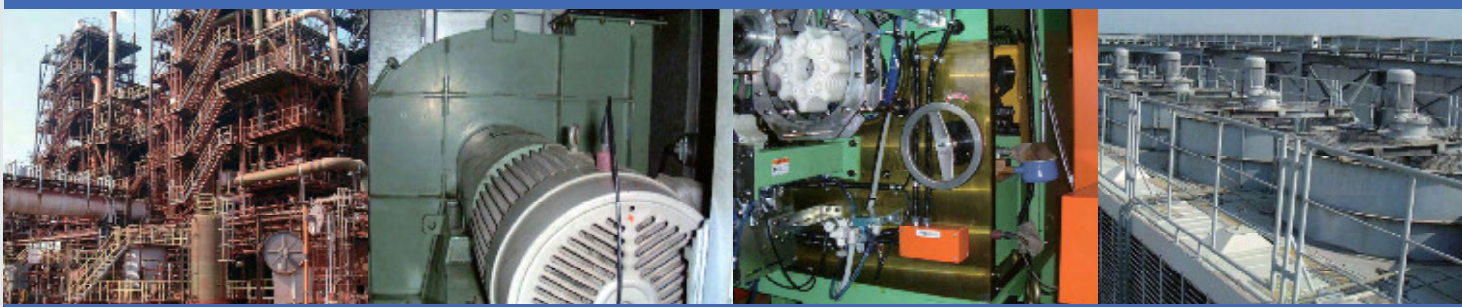
DIGITAL VIBRATION METER DIGI-VIBRO MODEL 1332B

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

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Records and

**VIBRO
Recorder**

Verifies and records waveforms in real-time



In combination with VIBRO Recorder, recording and analyzing vibration waveforms and FFT analysis are enabled.

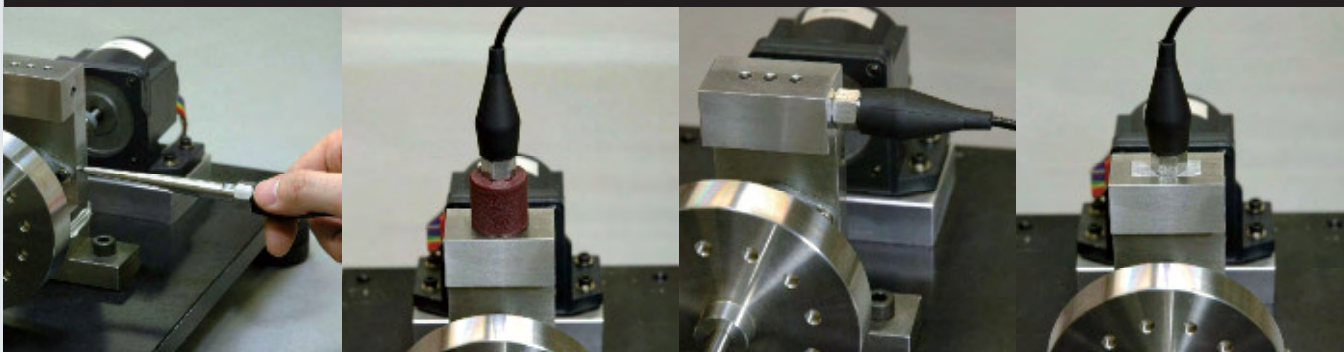
How to Install

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

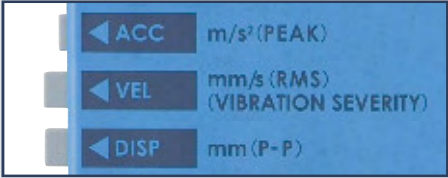
The sensor can be conveniently clamped using a magnet.

The sensor can also be screwed in position.

Secure the sensor with double-sided adhesive tape.



Select Measurement Modes



Acceleration measurement mode

Acceleration measurement mode is suited for measuring high-frequency vibrations, such as those from a deteriorated bearing. Bearings make several tens to several hundreds of turns each time the rotating machine in which they are used completes one turn. They also generate shock pulses when flawed or chipped. Acceleration measurement is the ideal way of detecting these pulses.

Velocity measurement mode

Velocity is defined as a rate of displacement per unit time, indicating a speed of said vibration. The value of velocity, which is expressed in the unit of mm/s (RMS), is proportional to both displacement and frequency. Velocity is a mode suitable for investigating general machine conditions, as also specified in ISO 10816-1 as a typical indicator of mechanical vibrations. Applicable frequency range is 10 to 1,000 Hz.

Displacement measurement mode

The DIGI-VIBRO reads the actual travel of a vibrating object as a double amplitude, for example, as 30 μmP-P (micrometer peak-to-peak). This measurement mode is the easiest to understand and mostly widely used among the three. Ideal for measuring the vibration of rotational components, such as an imbalance. The frequency range is narrow, from 10 Hz to about several hundreds of Hz.

analyses vibration

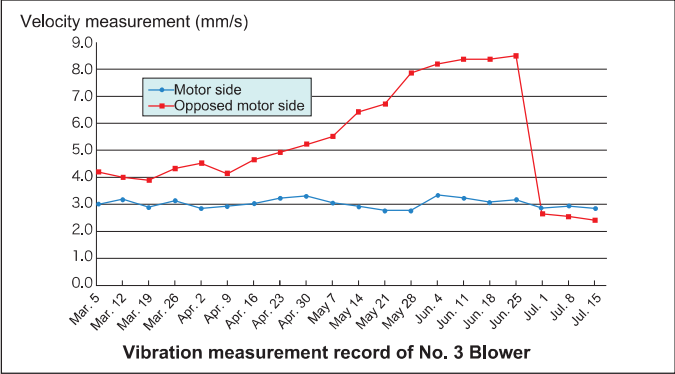
Displays vibration waveform data and FFT analysis by using the attached PC software.

Concept of Acceptance/Rejection Criteria

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

The vibration value criteria for evaluation of machine conditions are classified into "Tendency management," "Similarity comparison," and "Absolute value evaluation."

Tendency management: This is the most steady and practical evaluation method. This method periodically measures vibration values, compares them by old reference vibration values that were obtained when the machine was running in the best conditions, obtains the differences (increases in vibration values), and judges a maintenance time from them. Generally, it is said that the vibration values keep on going up after passing over the vibration value of about 1.6 times of a normal vibration value. When the vibration of a test machine reaches 2 to 3 time of the normal vibration value, the machine must be overhauled. 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.



Similarity comparison: This method compares vibration values of machines of the same type and judges a machine of the higher vibration value (indicating the machine is abnormal).

Absolute value evaluation: This method judges the vibration value according to reference vibration values defined by machine scales by ISO 10816-1.

Vibration severity

ISO 10816-1				
RMS value of vibration velocity (mm/s)	Class 1	Class 2	Class 3	Class 4
0.71 mm/s	A	A	A	A
1.12 mm/s	B	1.12 mm/s		A
1.8 mm/s	1.8 mm/s	B	1.8 mm/s	
2.8 mm/s	C	2.8 mm/s	B	2.8 mm/s
4.5 mm/s	4.5 mm/s	C	4.5 mm/s	B
7.1 mm/s		7.1 mm/s	C	7.1 mm/s
11.2 mm/s	D		11.2 mm/s	C
18 mm/s		D		18 mm/s
			D	D

Machine groups

Class 1	Individual parts of engines or machines (typically electric motors of up to 15 kW) built in as parts of complete machines.
Class 2	Middle scale machines having no particular base (typically electric motors of 15 kW to 75 kW) and engines or machines (300 kW maximum) mounted on a rigid base.
Class 3	Large scale generating machinery or rotating machines mounted on a rigid base.
Class 4	Large scale generating machinery or rotating machines mounted on a comparatively soft rigid base (for example, turbo generator sets and gas turbines of output of 10 MW minimum).

Evaluation zones

Zone A	Vibration zone including vibration values of a new installed machine (Good)
Zone B	Vibration zone in which a machine can run long without any limitation (Acceptable)
Zone C	Vibration zone in which a machine cannot be expected to run long (Unsatisfactory)
Zone D	Vibration zone in which a machine may be damaged (Unacceptable)

External View 		Standard type Has a standard measuring range. Best suitable for general, universal measurement.	Large input type Provides the acceleration and velocity measuring ranges of 10 times those for the Standard type. Best suitable for a large vibration measurement.	High resolution type Has the resolution of 10 times the one for the Standard type. Best suitable for micro vibration measurement.	Lightweight sensor type Uses a small lightweight type sensor weighing 1.3 g. Best suitable for vibration measurement of small objects.
Model		1332B	1332B-01H	1332B-01L	1332B-00F
Acceleration measuring range	Hi (Peak)	0.1 to 199.9 m/s ²	1 to 1999 m/s ²	0.01 to 19.99 m/s ²	0.1 to 199.9 m/s ²
	Lo (Peak)	0.01 to 19.99 m/s ²	0.1 to 199.9 m/s ²	0.001 to 1.999 m/s ²	0.01 to 19.99 m/s ²
Velocity measuring range	Hi (RMS)	0.1 to 199.9 mm/s	1 to 1999 mm/s	0.01 to 19.99 mm/s	0.1 to 199.9 mm/s
	Lo (RMS)	0.01 to 19.99 mm/s	0.1 to 199.9 mm/s	0.001 to 1.999 mm/s	0.01 to 19.99 mm/s
Displacement measuring range	Hi (P-P)	0.01 to 19.99 mm	0.01 to 19.99 mm	1 to 1999 μm	0.01 to 19.99 mm
	Lo (P-P)	0.001 to 1.999 mm	0.001 to 1.999 mm	0.1 to 199.9 μm	0.001 to 1.999 mm
Frequency range	Acceleration	5 to 5,000 Hz (±1 dB), 5 to 10,000 Hz (±3 dB)		5 to 5,000 Hz (±1dB)	5 to 1,000 Hz (±3dB)
	Velocity	10 to 1,000 Hz (complies with ISO 2954 - Requirements for instruments for measuring vibration severity)			10 to 1,000 Hz (±3dB)
	Displacement	10 to 1,000 Hz (±1 dB)			10 to 1,000 Hz (±3dB)
Measurement accuracy 80Hz 20±5°C 1/2FS	Acceleration	±3%±1 digit			
	Velocity	±5%±1 digit			
	Displacement	±5%±1 digit			
Temperature range		Sensor: -20°C to +110°C; Amplifier: -10°C to +50°C			
AC output		±2V (full scale)			
Power supply		LR6, 2 pc, continuously operable for 30 hours or more			
Dimensions & mass (main unit)		75 (W) x 130 (H) x 24 (D) mm Approx. 230 g			
Sensor		MODEL-2304A	MODEL-2304A	MODEL-2369	MODEL-2302B

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



Configuration of DIGI-VIBRO MODEL-1332B Standard type

- Main unit, MODEL-1332B, 1 pc
- L contact pin, LC-90, 1 pc
- Portable case, 1 pc
- Piezoelectric acceleration sensor, MODEL-2304A, 1 pc
- Magnet, MG-1, 1 pc
- Operation manual, 1 copy
- Low noise cable (1.5 m), LNC-3F-1.5, 1 pc
- LR6, 2 pc

Options

	Low noise cable (3 m) LNC-3F-3 					
Low noise cable (5 m) LNC-3F-5 			Small size magnet. Mountable on a curved surface.	Higher resonance point than Standard		

VIBRO Recorder set MODEL-1332B-R

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Note: VIBRO Recorder MODEL-9801 alone cannot be sold.

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