VW-3100

Portable Vibration Meter

ONO SOKKI

Listening to the Voice of Machines

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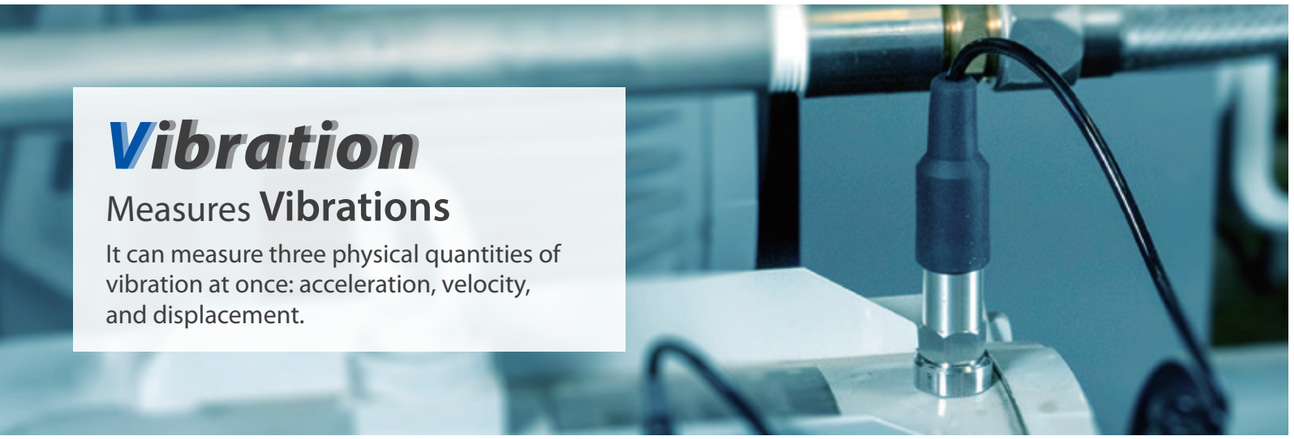
The VW-3100 is a portable vibration meter that realizes all the functions required for on-site vibration measurement: listening, measuring, and judging, all in one device. As a measurement instrument manufacturer, Ono Sokki can provide vibration sensing and signal processing technologies to solve your problems.

The VW-3100 provides you 3*V*s:



Vibration

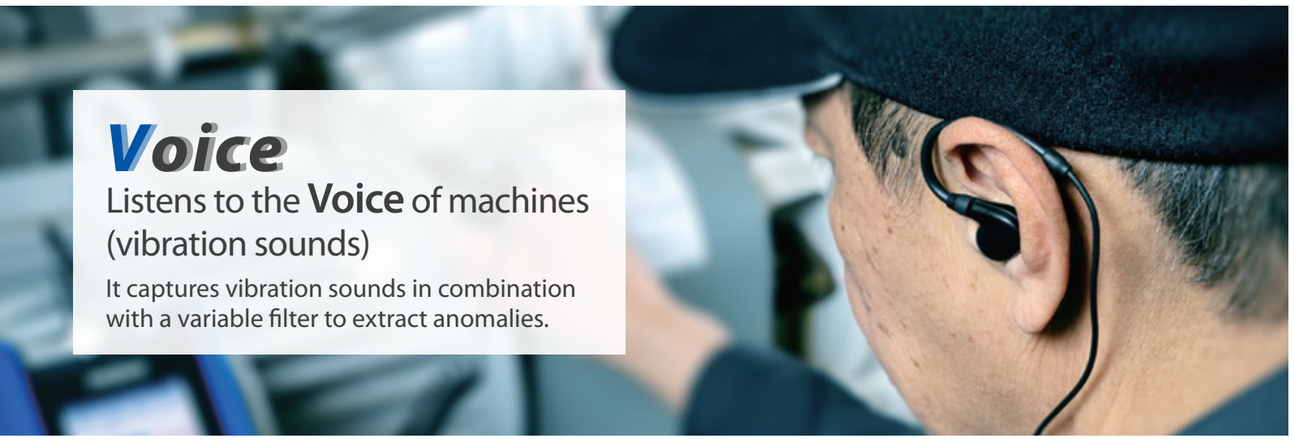
Measures **Vibrations**

It can measure three physical quantities of vibration at once: acceleration, velocity, and displacement.

Variable

Identifies abnormalities with the **Variable filter**

Three bandpass filters with arbitrarily variable frequency bands.



Voice

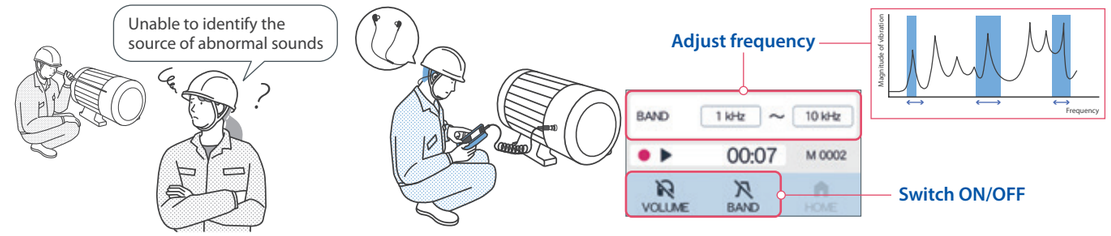
Listens to the **Voice** of machines (vibration sounds)

It captures vibration sounds in combination with a variable filter to extract anomalies.

1 Listen

Even when listening, difficult to identify abnormal sounds.

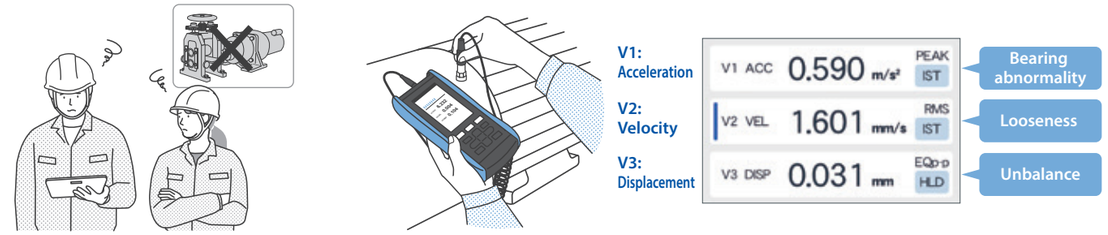
Distinguishing abnormal sounds with the V3 band and listening function



2 Measure

Measured value is normal, but machine is functioning abnormally.

Grasping the condition of machine accurately with the V3 band and physical quantities



3 Judge

Difficult to determine judgment criteria

Evaluating based on ISO standards

4 Share

Hassle to gather at site and check

Recording* any vibration sounds at site and reviewing them in the office.

*Optional function

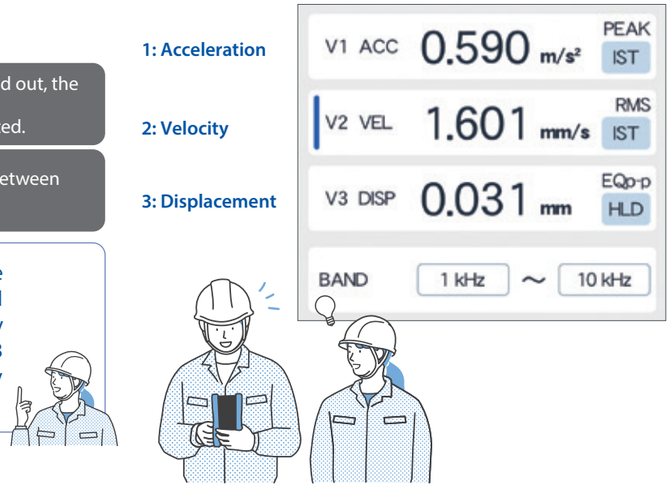
Standard functions Ensure accurate vibration detection and measurement

Simultaneous measurement of arbitrary vibration values

Even though regular inspections are carried out, the machine breaks down.
Machine abnormalities are not fully detected.

It takes time to measure while switching between acceleration, velocity, and displacement.

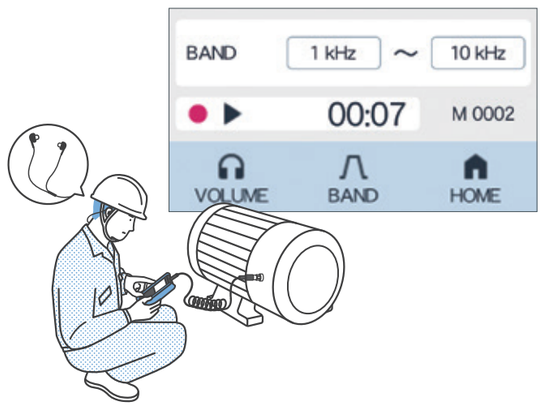
To identify machine failures, it is necessary to use different values for acceleration, velocity, and displacement. The VW-3100 can simultaneously calculate and display these values using the **V3 band**. This allows you to accurately identify abnormalities and improve work efficiency.



Capable of listening to vibration sounds

It is difficult to pass down the experience of skilled workers or share the sounds heard through an auscultation rod with other operators.

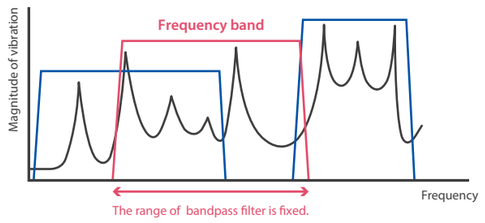
The sensor signal can be converted into sound and listened to. By narrowing the frequency band with a variable filter, it becomes easier to detect abnormal sounds. It can also be used as a tool to listen to "vibration sounds" instead of an auscultation rod.



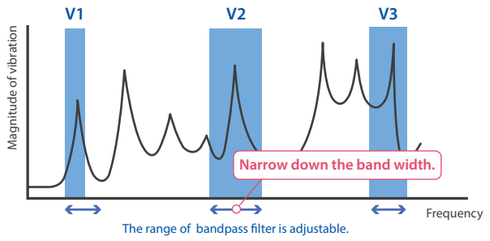
What is V3 band (Variable Three Band)?

Ono Sokki's unique "V3 Band" function uses three variable bandpass filters (BPFs) to enable simultaneous measurement of different frequency bands. You can select a physical quantity (acceleration, velocity, or displacement) for each band, and you can simultaneously calculate effective (rms) values, peak values, and other values.
With the "V3 Band", the frequency band for each physical quantity can be flexibly set according to the abnormal vibration. This allows for more accurate detection of abnormal sounds and quantitative evaluation.

Without V3 Band



With V3 Band



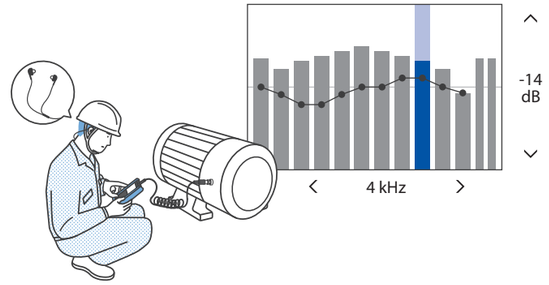
	Displacement	Velocity	Acceleration
Abnormality examples	Looseness/Unbalance/ Misalignment	General rotating machinery vibration	Abnormality of rolling bearings (scratches, poor lubrication)

Options Solve problems in measurement operation

VW-0310 Equalizing function

It is difficult to distinguish abnormal sounds from the overall balance like a skilled worker.

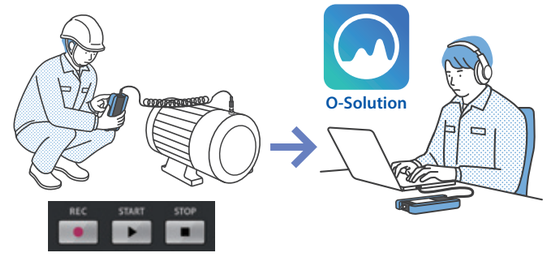
The amplitude of vibration sound can be adjusted in increments of 1/1 octave. By emphasizing only the distinctive sounds and reducing unnecessary ones, it enables to reproduce how experienced workers listen and pass on their sense of critical points.



VW-0320 Recording function

Hassle to prepare a separate recording device.
Hassle to gather all on-site to check abnormal sounds.

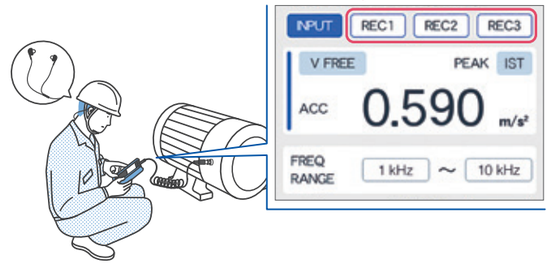
You can record vibration sounds while performing measurements and inspections, and then take the recorded data back to the office, listen to it again, or perform detailed analysis with the O-Solution, etc. It is useful for technical transfer.



Comparison function

Hard to know if the vibration sound has changed.
Compare the sound when an abnormality occurs.

You can instantly switch between the vibration sound measured on-site and the three recorded ones and compare them. Using V3Band makes it easier to determine whether there are any abnormalities.



VW-0330 Filter expansion function

Capture accurately abnormal phenomena
Avoid the influence of noise on measurements

In addition to the standard bands, you can select more specific frequencies.

VW-0330 Filter frequency

Frequency	Increments
10 Hz to 100 Hz	10 Hz
100 Hz to 1 kHz	100 Hz
1 Hz to 10 kHz	1000 Hz

VW-0340 ISO Evaluation and Judgment Function

Eliminating reliance on experience-based maintenance.
Evaluate appropriately while monitoring vibration values.

The Judgment method can be selected from absolute value and relative value evaluation.
Consider the threshold by referring to the general evaluation criteria.

Options Pursue measurement efficiency and assist data management

VW-0350 VW-0360 Vibration Diagnosis Assist Tool

Assistance with measurement and data management using the VW-3100

For those who are starting to measure vibration
When changing conditions for each machine

Prevent errors caused by manual recording and management.
Manage several pieces of equipment and machines.

VW-0350 Assist Tool Communication function

- No need to set conditions on-site
- Capable of measurement under machine-specific conditions
- Route inspection is also available

Sending measurement conditions to the vibration meter

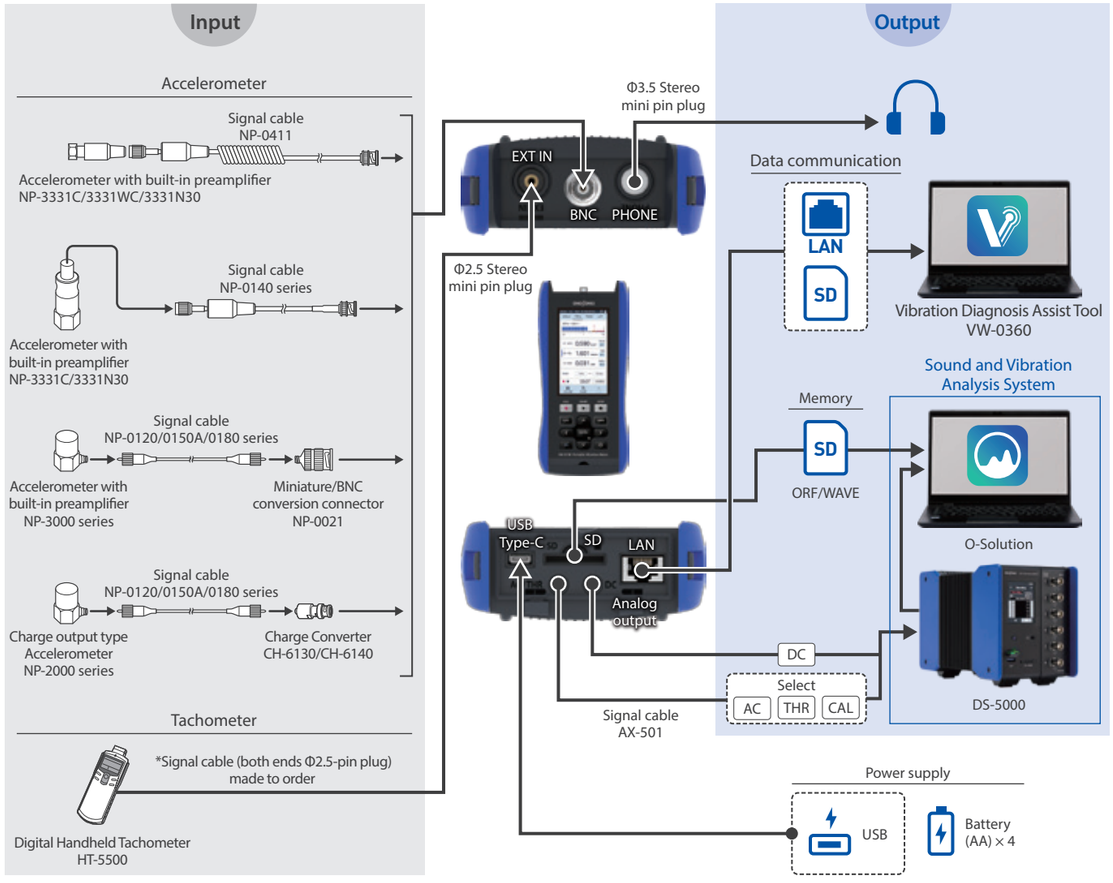
LAN SD

Sending measurement data to the PC

VW-0360 Vibration Diagnosis Assist Tool

- Register and send measurement conditions
- Trend management graph display
- Playback of vibration sound (when recorded data is available)

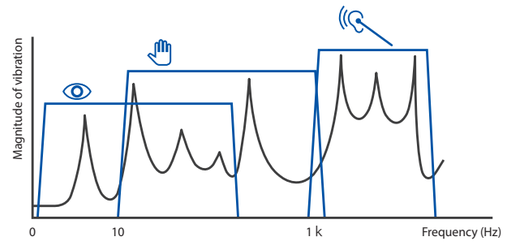
System configurations & sensors



Q & A about measurement

What is Acceleration, Velocity and Displacement?

Abnormal vibrations in rotating machinery appear in different frequency bands depending on their cause.
In vibration measurement, different physical quantities - acceleration, velocity, and displacement - are used depending on the frequency range.
For example, shaft misalignment or looseness is more easily detected in the low-frequency range using displacement.
Overall machine deterioration is typically observed in the mid-frequency range using velocity, while bearing defects or damage are best captured in the high-frequency range using acceleration.



	Displacement	Velocity	Acceleration
Cause of the abnormality	Displacement and movement itself	Vibration energy and fatigue level	The magnitude of impact force, etc.
Type of the abnormality	•Vibration of machine chattering •Looseness of rotating equipment •Unbalance •Misalignment	•General rotating machinery vibration •Vibration of belt devices, etc. •Gear abnormality	•Rubbing bearing •Rolling bearings (scratches, poor lubrication) •Cavitation

What is Vibration Severity?

It is a practical index of the magnitude of vibration in rotating equipment and assessed based on the rms value (mm/s) of vibration velocity between 10 Hz and 1 kHz. (good/alert/danger) The VW-3100 is equipped with a filter that complies with vibration severity ISO2954:2012 and complies with the following standards.

Applicable standards (A/B/C/D evaluation criteria)
ISO 20816-3:2022
ISO 20816-1:2016
JIS B0906:1998

(Vibration velocity RMS (mm/s))

ISO 20816-1 :2016	ISO 20816-3:2022			
	Group 2		Group 1	
	Rigid	Flexible	Rigid	Flexible
0.71	A			
A/B		1.4		
1.8	B	2.3	2.3	3.5
B/C	2.8			
4.5	C	4.5	4.5	4.5
		7.1	7.1	7.1
4.5				11
C/D				
9.3				
14.7	D			

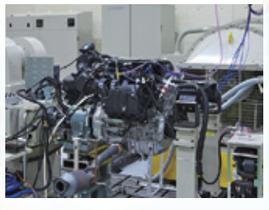
Application examples

This portable vibration meter is useful in a variety of situations, including inspection, testing, and troubleshooting.

Simple equipment diagnosis

Quality inspection on the production line

Inspection of test equipment



On-site troubleshooting of equipment problems

Other related products

Related products

Accelometer
NP-2000/3000 series

Sensors of different sizes are available for the built-in preamplifier type (3000 series) and the charge output type (2000 series), each of which can be selected according to the target.

Sensitivity Calibrator
VX-1100A

It is a simple type sensitivity calibrator that is designed for use with piezoelectric accelerometers. The sensitivity value can be read directly by connecting an accelerometer to the VX-1100A.

Digital Handheld Tachometer
HT-5500

Both contact and non-contact types are supported, and highly accurate rotation measurements can be performed with simple operations. Both analog and pulse output are equipped as standard.

Monitoring, Judgment

Simple diagnosis

Vibration Comparator
VC-2200/3200

This is a stationary type, high-performance signal processor used for monitoring machinery abnormalities and assessing product quality.

1-ch
Vibration

High performance Sound Level Meter
LA-7000 series

It has frequency analysis and listening functions as standard, and can be operated like a smartphone.

1-ch
Sound

Precise diagnosis

FFT Comparator
CF-4700A

This is a stationary type, judgment system equipped with FFT-based frequency analysis, capable of identifying characteristic frequencies from abnormal sound or vibration and making accurate pass/fail judgment.

1-ch
Vibration
Sound
Rotation

Noise Testing Software
GN-1200

This software has a comparator function for abnormality diagnosis based on sound/vibration analysis. You can perform simultaneously the frequency analysis/rotational tracking analysis and pass/fail judgment.

Multi-ch
Vibration
Sound
Rotation

Recording, Analysis

Cause analysis

Sound and Vibration Measurement System
O-Solution/DS-5000

It measures sound and vibration phenomena with high precision and even carries out detailed analysis on the spot.

Multi-ch
Vibration
Sound
Rotation

Portable FFT Analyzer
CF-9200A/9400A

They are all-in-one portable FFT analyzers, which can be performed with the integrated hard keys and touch panel without an external PC for analysis.

2,4-ch
Vibration
Sound
Rotation

JCSS Calibration Service

Ono Sokki provides reliable and high level calibration results, based on the international reference "General requirements for the competence of testing and calibration laboratories" and the skills and know-how of quality assurance system that has been acquired through many years of practices.
Under the JCSS of calibration laboratory accreditation system, Ono Sokki is assessed and accredited as Accredited Calibration Laboratories to meet the requirements of the Measurement Law, relevant regulations and ISO/IEC.
We support 7 accreditation scopes, which is industry-leading in measurement instruments manufacturers.

*1 JCSS: Japan Calibration Service System
*2 ilac: International Laboratory Accreditation Conference
*3 MRA: Mutual Recognition Arrangements

Accreditation Scope

- Acoustics & Ultrasound
- Acceleration
- Torque
- Fluid flow
- Electricity (Direct Current & Low Frequency)
- Speed
- Time & Frequency & Rotational speed

JCSS 0170

Ono Sokki can issue the calibration certificates with the JCSS accreditation symbol, which assures the traceability to National Measurement Standards as well as a laboratory's technical and operational competence, and is acceptable in the world through the ilac*2-MRA*3.
(Under the calibration laboratory accreditation system JCSS, Ono Sokki is officially certificated by NITE.)

★Outer appearance and specifications are subject to change without prior notice. **URL: https://www.onosokki.co.jp/English/english.htm**

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