

INSTRUCTION MANUAL

Vibration Meter

VM-63A



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<http://www.rion.co.jp/>

Organization of This Manual

This manual describes the features and operation of the Pocket Size Vibration Meter VM-63A.

The manual contains the following sections.

Outline

Gives basic information on the unit.

Controls and Features

Briefly identifies and explains all parts of the unit.

Preparations

Describes how to insert the battery and prepare the unit for measurement.

Display Functions

Explains information appearing on the digital display.

Measurement

Describes the steps for measurement.

Supplied Accessories

Explains how to use the instruction label.

Appendix

Contains a vibration conversion chart and information on the vibration detector attachments.

Specifications

Lists the technical specifications of the unit.

For Safety

In this manual, important safety instructions are specially marked as shown below and next page. To prevent the risk of death or injury to persons and damage to the unit or peripheral equipment, make sure that all instructions are fully understood and observed.

WARNING

Disregarding instructions printed here incurs the risk of death or severe injury to persons.

CAUTION

Disregarding instructions printed here incurs the risk of injury to persons and/or damage to peripheral equipment.

Note

Denotes special information that is helpful in utilizing the capabilities of the unit but that is not directly related to safety.

 **WARNING**

When making measurements on exposed rotating parts or power train parts of machinery, proceed with utmost care to prevent accidents due to getting caught in the machinery.

Precautions

- Operate the unit only as described in this manual.
- Do not drop the unit. Protect it from shocks and vibration.
- Do not store or use the unit in locations where the unit may be subject to
 - splashes of water or high levels of dust, or
 - air with high salt or sulphur content, or other gases or chemicals, or
 - high temperature or humidity (above 50°C, 90% RH), or direct sunlight.
- Remove the battery if the unit is not to be used for an extended period, to prevent possible damage due to battery fluid leaks.
- Do not disassemble the unit or attempt internal alterations.
- Have the unit and the accelerometer checked and serviced about once every 18 to 24 months. (Sensitivity calibration can be performed at the factory for a fee.)
- Do not tap the display with a pen or the like, to prevent malfunction.
- When disconnecting cables, always hold the plug and do not pull the cable.

- In case of malfunction, do not attempt any repairs. Note the condition of the unit clearly and contact the supplier.
- Dispose of the battery in accordance with local laws and regulations.
- The supplied warranty card and User registration card is Valid only in Japan.



The Product described in this manual is in conformity with the following European standards;

EN61000-6-3:2001

EN61000-6-1:2001

Note: CE requirements are met provided that a core filter is fitted to cable.

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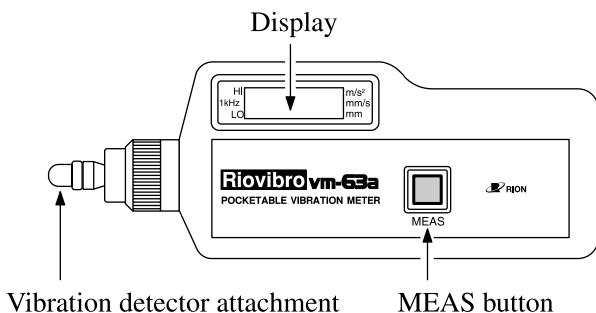
Outline

The VM-63A is a vibration meter designed for easy measurement of vibrations in rotational machinery or the like. Measurement is performed simply by holding the tip of the unit against the measurement object and operating one button. The unit can measure acceleration, velocity, and displacement. For acceleration, two measurement ranges (10 Hz to 1 kHz or 1 kHz to 15 kHz) can be selected.

The unit operates on a single 9-volt battery (6F22). There is no power switch, because the auto power off function shuts the unit off automatically.

Controls and Features

Front View



Display

Shows the measurement value, measurement mode, vibration frequency range, and battery replacement indication.

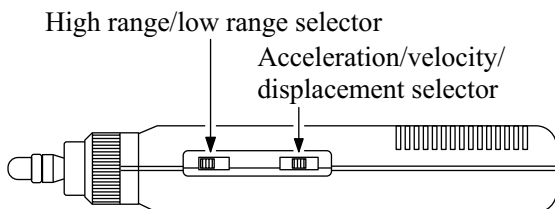
Vibration detector attachment

Press this section against the measurement object.

MEAS button

Press this button to perform measurement (see page 10).

Top View



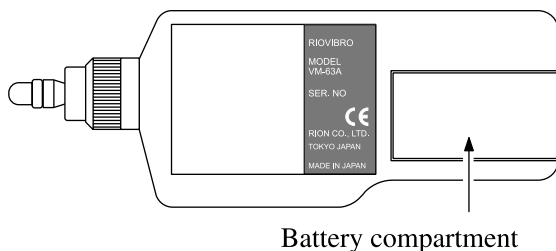
High range/low range selector

For acceleration measurement, set the vibration frequency range to "Lo" (10 Hz to 1000 Hz) or "Hi" (1 kHz to 15 kHz).

Acceleration/velocity/displacement selector

Select the measurement mode with this switch.

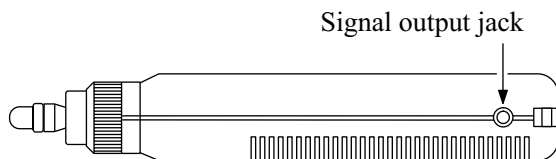
Rear View



Battery compartment

A single 9-volt battery (6F22) is inserted here.

Bottom View



Signal output jack

The AC output signal is supplied at this jack. The signal output is 2-volt peak at full-scale point. It is also possible to connect the optional earphone VP-37 here.

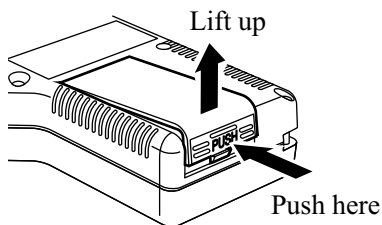
 CAUTION

In case of excessive vibration, the earphone may produce a very high sound pressure level that can be harmful to the ear. Use this function with care.

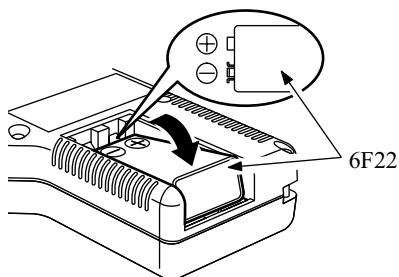
Preparations

Inserting the Battery

1. While pressing down the section marked PUSH, lift the battery compartment lid up to open it.



2. Insert one 9-volt battery (6F22), taking care to observe correct +/- polarity.



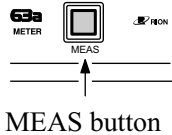
3. Close the battery compartment lid.
On a fresh 9-volt battery (6F22), the unit can operate continuously for about 25 hours.

Measurement Preparations

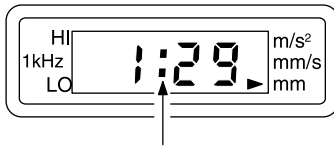
1. Make sure that a 9-volt battery (6F22) is inserted in the battery compartment.

2. Press the MEAS button.

If the mark shown below appears on the display, the battery must be replaced.

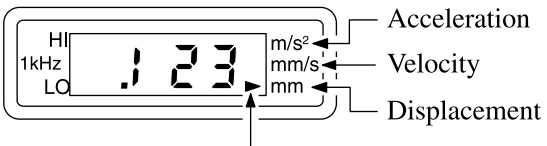


MEAS button



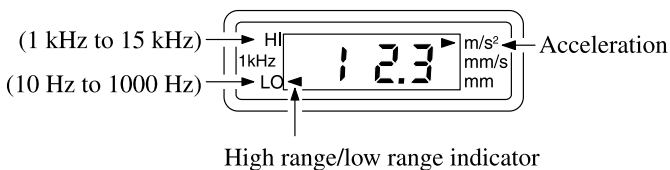
Replace battery mark

3. Use the acceleration/velocity/displacement selector to set the measurement mode.



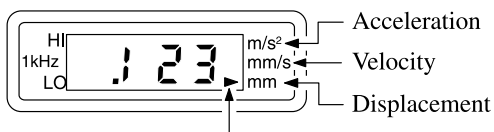
Measurement mode indicator

When acceleration measurement (m/s^2) has been selected, the vibration frequency range can be set to "Lo" (10 Hz to 1000 Hz) or "Hi" (1 kHz to 15 kHz) with the high range/low range selector.



Display Functions

Measurement mode indicator

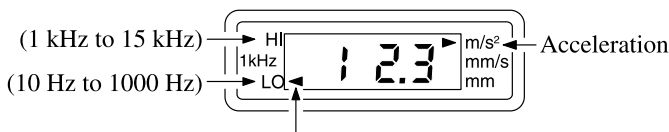


Measurement mode indicator

Shows which measurement mode is currently selected.

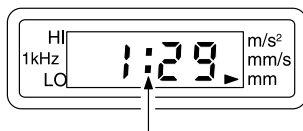
High range/low range indicator

When acceleration measurement (m/s^2) is selected, this indicator shows whether the vibration frequency is set to "Lo" (10 Hz to 1000 Hz) or "Hi" (1 kHz to 15 kHz).



High range/low range indicator

Replace battery mark



Replace battery mark

When this mark is shown, the remaining battery capacity is very low. Replace the battery as soon as possible.

Measurement

1. While keeping the MEAS button depressed, hold the vibration detector against the measurement object. Use a pressure of about 500 g to 1 kg.

If the MEAS button is pressed while power is off, the unit will require about 10 seconds until measurement is possible.



2. The measured vibration value is shown on the digital display.
3. Release the MEAS button and read the measurement value that is being held on the display.
4. When the MEAS button is pressed again, the currently held value is canceled, and a new measurement can be performed.

The unit turns itself off automatically about 1 minute after the MEAS button is released.

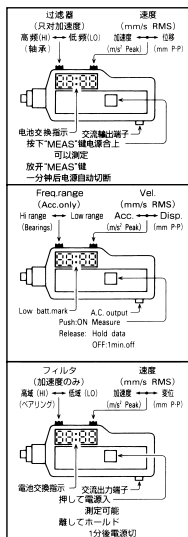
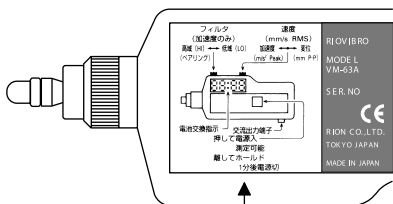
Note

- Vibrations in the range from 10 Hz to 1000 Hz can be measured either with the attachment S or the attachment L (option).
- When making acceleration measurements with the "Hi" range setting, do not use the attachment L.
- Especially when making acceleration measurements with the "Hi" range setting, you should not compare values measured with different attachments on an equal basis.

Supplied Accessories

Instruction Label

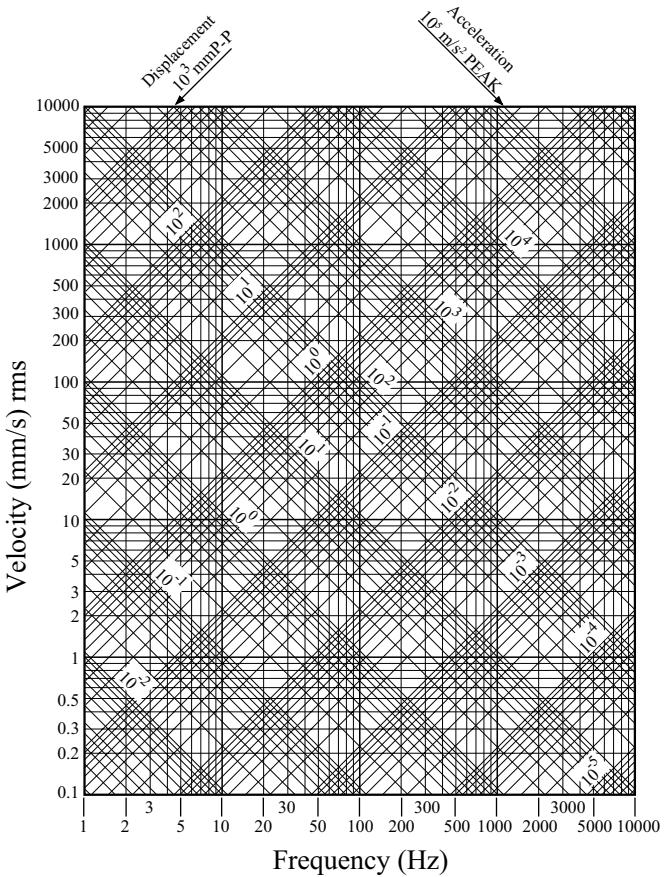
The unit is delivered with instruction labels in English, Chinese, and Japanese. Select the appropriate label and attach it to the unit as shown below.



Instruction Label

Appendix

Vibration Conversion Chart

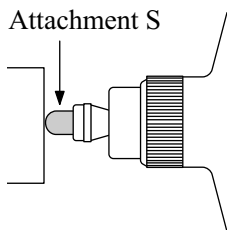


Vibration Detector Attachments

The vibration detector of the VM-63A can be used without an attachment or with two kinds attachments, S (supplied) and L (option), to fit the respective measurement requirements.

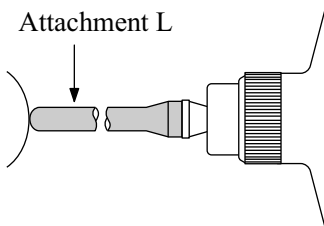
With attachment S

The unit is delivered in this condition. It provides good response and reproducibility over a wide range. Unless there are special requirements, the unit should be used in this condition.



With attachment L (option)

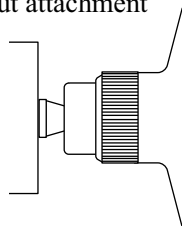
This is suitable for measurement in cases where access space to the measurement object is limited.



Without attachment

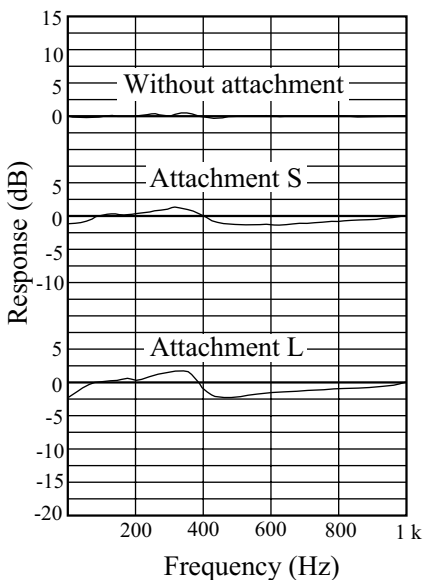
In this condition, best high-range response is achieved (10 Hz to 15 kHz), but planar contact with the measurement object is required.

Without attachment

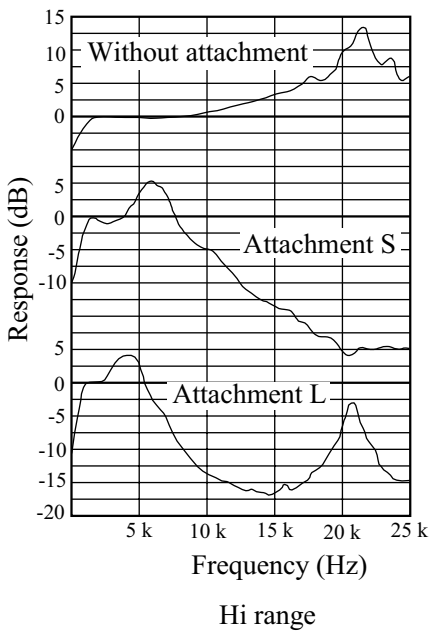


Contact resonance in acceleration measurement

(measured with Rion FFT Signal Analyzer)



Lo range



Specifications

Built-in accelerometer

Piezoelectric accelerometer (shear-type)

Measurement range

Acceleration: 0.1 to 199.9 m/s² peak (rms $\times \sqrt{2}$)

Velocity: 0.1 to 199.9 mm/s rms

Displacement:

0.001 to 1.999 mm p-p (rms $\times 2\sqrt{2}$)

Velocity and displacement range is limited by acceleration 199.9 m/s².

Measurement accuracy (80 Hz)

Acceleration: $\pm 5\% \pm 2$ digits

Measurement frequency range

Acceleration: 10 Hz to 1 kHz (Lo)

1 kHz to 15 kHz (Hi)

Velocity: 10 Hz to 1 kHz

Displacement: 10 Hz to 1 kHz

Display 3-1/2 digit digital display

Display update cycle

1 s

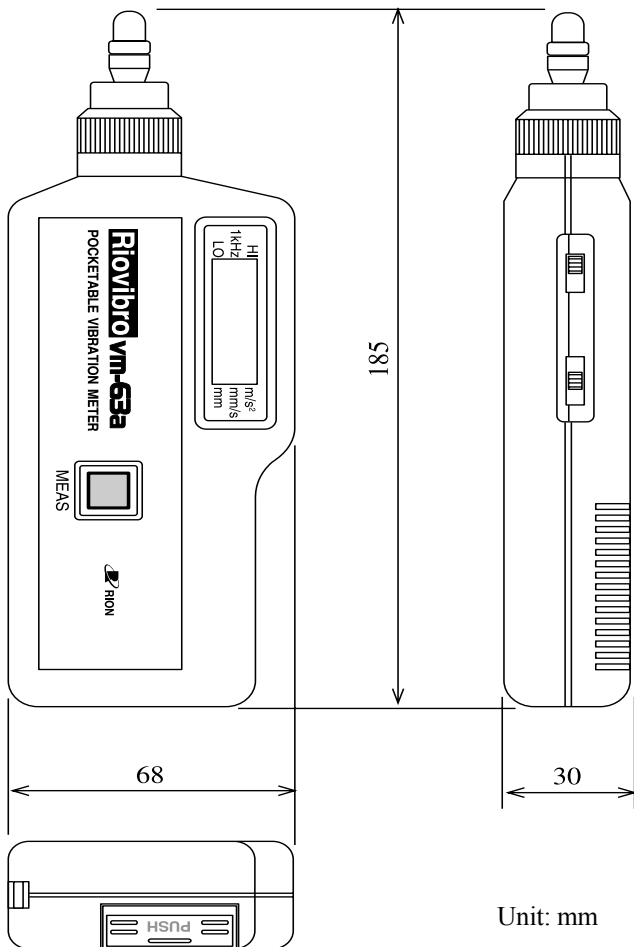
Value updated while MEAS button is pressed and held when button is released.

Signal output AC output 2 V peak (display full scale)

Load impedance 10 k Ω or more

Earphone (VP-37) can be connected

Power supply	6F22 9 V battery × 1	
Current consumption	Approx. 7 mA at 9 V	
Battery life	About 25 h continuous use (at 25°C, with manganese battery)	
Auto power-off function	Operates when no control is operated for 1 minute	
Ambient conditions	-10 to +50°C, 30 to 90% RH (no condensation)	
Dimensions	185 (H) × 68 (W) × 30 (D) mm	
Weight	Approx. 250 g (including battery)	
Supplied accessories		
	Soft case	1
	Battery 6F22	1
	Attachment S	1
	Instruction label	1
	Instruction manual	1
	Inspection certificate	1
Optional accessories		
	Attachment L	VP-53Y
	Earphone	VP-37



Dimensional Drawings

