RION

VM-63C

振動計（リオバイブロ）
取扱説明書

Vibration Meter (RIOVIBRO)
Instruction Manual

No. 62552　21-09

English

VM-63C

Vibration Meter (RIOVIBRO)
Instruction Manual

Organaization of This Manual

This manual describes the features and operation of the Vibration Meter (RIOVIBRO) VM-63C.

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

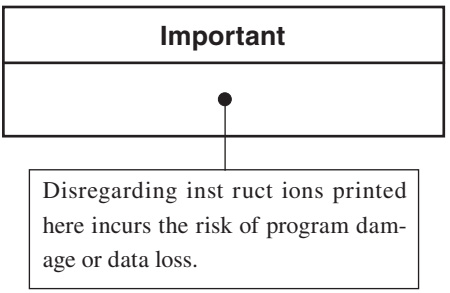
In this manual, important safety instructions are specially marked as shown below and next page. To prevent the risk of death or injury to persons and damage to the unit or peripheral equipment, make sure that all instructions are fully understood and observed.

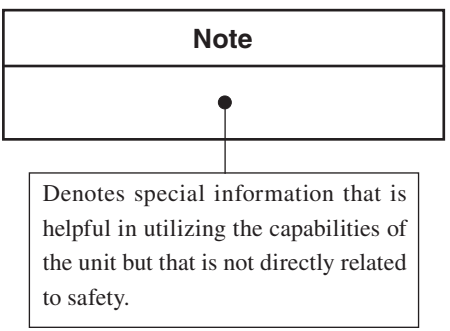
⚠WARNING

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.


Important
Disregarding inst ruct ions printed here incurs the risk of program damage or data loss.


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.

Important

Remove the batteries when not using the unit. Otherwise there is a risk of malfunction and damage by battery fluid leaks.

Always use fresh batteries, and make sure that both batteries are of the same type.

Using a mixture of old and new batteries or batteries of a different type may lead to malfunction and damage.

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 50ºC, 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 12 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.
- 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.

This product can be used in any areas including residential areas.

CE

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

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

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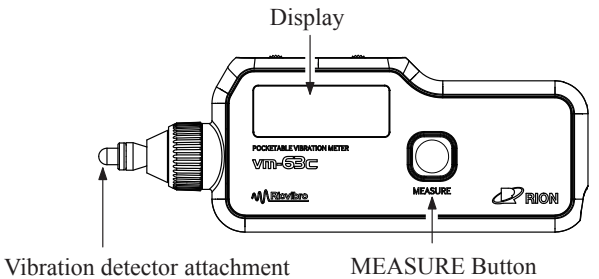
Specifications 57

Outline

The VM-63C 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 vibration measurement range is 10 Hz to 1 kHz for velocity and displacement. For acceleration, two switchable measurement ranges are available: 10 Hz to 1 kHz, and 1 kHz to 15 kHz. The unit is powered by two IEC R6 (size AA) batteries, either alkaline or nickel-hydride rechargeable types. (The use of manganese batteries is also possible.)

This vibration meter is suitable for tasks such as on-site daily inspection and simple diagnosis. For detailed diagnosis and analysis tasks, the use of a general-purpose vibration level meter or vibration analyzer is recommended.

Front View



Display

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

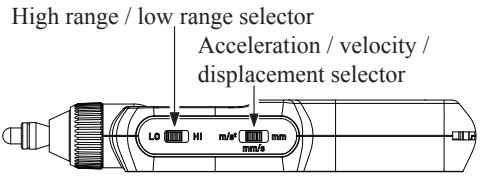
Vibration detector attachment

Press this section against the measurement object.

MEASURE button

Press this button to perform measurement (see page 51).

Top View



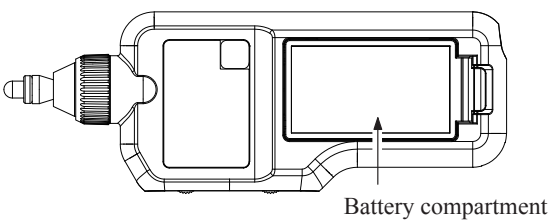
High range / low range selector

For acceleration measurement, this selector allows switching between LO (Low range: 10 Hz to 1 kHz) and HI (High range: 1 kHz to 15 kHz). During velocity or displacement measurement, the position of this selector has no effect and the measurement range is always 10 Hz to 1 kHz.

Acceleration/velocity/displacement selector

Select the measurement mode with this switch. (see page 48).

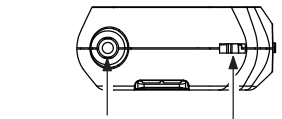
Right Rear View



Battery compartment

Insert two IEC R6 (size AA) batteries here.

Right side View



Strap attachment point

The optional hand strap for use when carrying the unit can be attached here.

Signal output jack

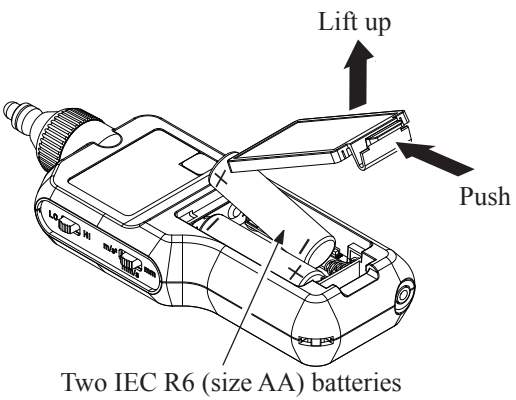
The AC output signal is supplied at this jack. The signal output is 2-volt peak at full-scale point. It is also possible to connect the optional earphone VP-37 here.

⚠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.

Inserting the Battery

The unit is powered by two IEC R6 (size AA) batteries, either alkaline or nickel-hydride rechargeable types. (The use of manganese batteries is also possible.)



1. While pushing the latch of the battery compartment cover on the rear of the unit, lift the cover to remove it.
2. Insert two IEC R6 (size AA) batteries, taking care to ensure correct plus (+) and minus (-) orientation.
3. Close the battery compartment lid.

⚠CAUTION

Take care not to mix up the battery "+" and "-" polarity. Otherwise the battery may explode, or battery fluid leakage may occur. When not using the unit, the batteries should be removed to avoid the risk of battery fluid leakage etc. If battery fluid has come into contact with skin or clothes, immediately flush with plenty of clean water.

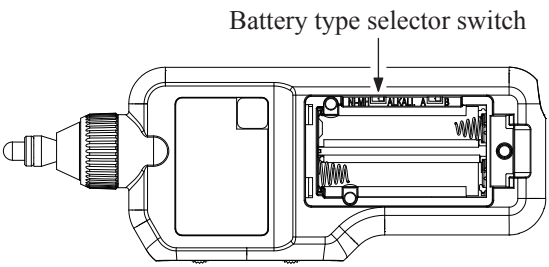
Important

Always use fresh batteries, and make sure that both batteries are of the same type. Using a mixture of old and new batteries or batteries of a different type may lead to malfunction and damage.

Changing the Battery Type Setting

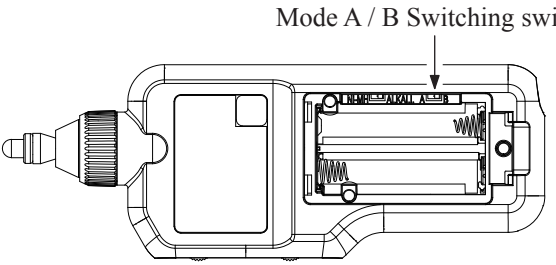
When the battery compartment cover is removed, the battery type selector switch on the top left becomes accessible, as shown below.

Set the switch to the correct position, according to the battery type in use. This will ensure that the battery level indicator on the display of the unit operates correctly. The available settings are "ALKALI." (for alkaline or manganese batteries) and "Ni-MH" (for nickel-hydride rechargeable batteries).



Mode A / Mode B Switching

When the battery compartment cover is removed, the A/B mode selector switch on the top right becomes accessible, as shown below.



Operation in Mode A: (same operation as VM-63A)

When the mode selector is set to "A", the unit operates as follows.

- Pressing the MEASURE button turns power on.
- Keeping the MEASURE button depressed causes the vibration amount to be shown on the display for as long as the button is pressed.
- When the MEASURE button is released, the vibration amount at that point is held on the display, and the "HOLD" indicator is shown.
- If no other operation is performed for 60 seconds, power will automatically be turned off.

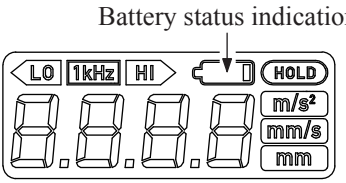
Operation in Mode B:

When the mode selector is set to "B", the unit operates as follows.

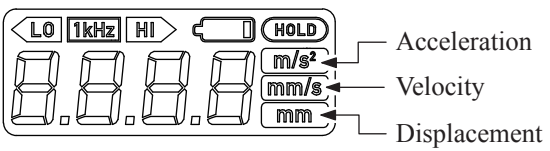
- Pressing the MEASURE button turns power on and causes the vibration amount to be shown on the display.
- When the MEASURE button is pressed during a measurement, the vibration amount at that point is held on the display, and the "HOLD" indicator is shown.
- Pressing the MEASURE button once more during measurement releases the hold condition and resumes measurement.
- Keeping the MEASURE button depressed for about 3 seconds turns power off.

Measurement Preparations

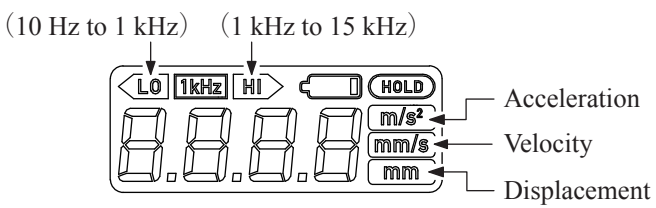
1. Insert two IEC R6 (size AA) batteries.
2. Press the MEASURE button.
   If the battery level indicator on the display is flashing, correct measurement is not possible. Replace the batteries with a fresh set.



3. Use the acceleration/velocity/displacement selector to set the measurement mode. The selected measurement mode is shown by the respective indicator.



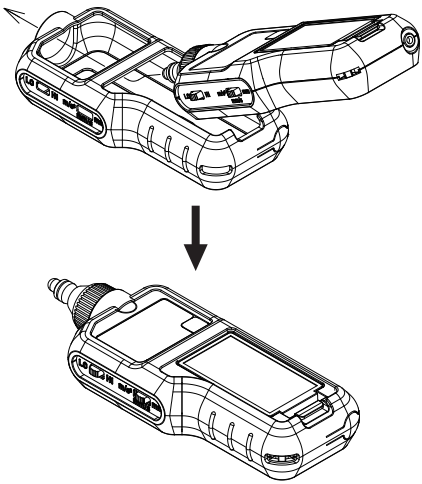
If acceleration measurement (m/s^2) is being performed, one of two vibration frequency ranges can be selected: LO (Low range: 10 Hz to 1 kHz) or HI (High range: 1 kHz to 15 kHz). The selected range is shown by the respective indicator.



Mounting the Silicon Rubber Cover (Supplied)

The case serves to protect the unit from shocks and provides a better grip to avoid dropping it.

Insert the unit into the case as shown below.



Note

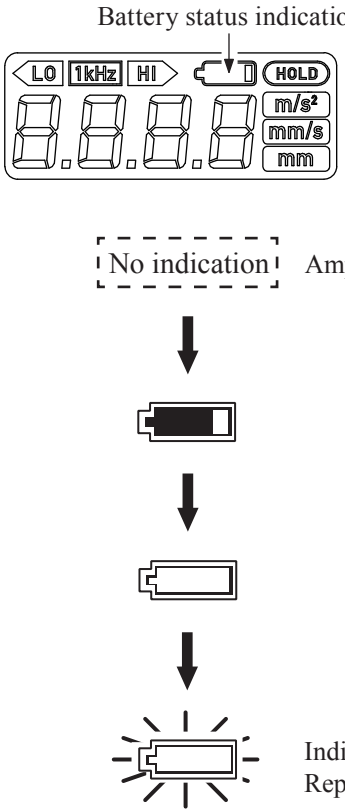
Observe the following precautions when mounting the silicon rubber cover.

- Ensure that the cover is firmly seated and that the slide switch section on the side of the unit is fully accessible.
- Make sure that the strap attachment point is properly aligned with the cutout on the cover.
- Place the cap on the earphone jack.

Battery status indication

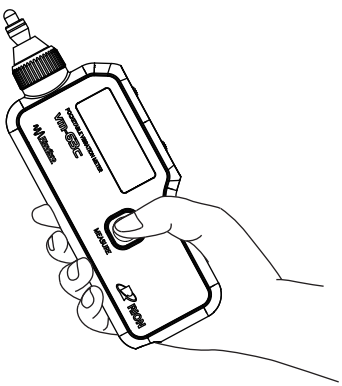
This indicator changes according to the remaining battery capacity. When the remaining capacity is high, nothing will be displayed.

When the indicator starts to flash, correct measurement can no longer be performed. Replace the batteries with a fresh set.



Measurement Procedure

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.



Subsequent operation differs, depending on the selected mode (see page 14).

When Mode A is selected (same operation as VM-63A)

2. Holding down the MEASURE button causes the vibration amount to be shown on the display.
3. Releasing the MEASURE button causes the vibration amount at that point to be held on the display, for easy reading.

4. Holding down the MEASURE button again causes measurement to be resumed, allowing repeated measurement.
5. If no other operation is performed for 60 seconds, power will automatically be turned off.

When Mode B is selected

2. The vibration amount is shown on the display.
3. Pressing the MEASURE button during measurement causes the vibration amount at that point to be held on the display, for easy reading.
4. Pressing the MEASURE button again cancels the hold condition and causes measurement to be resumed, allowing repeated measurement.
5. Keeping the MEASURE button depressed for about 3 seconds turns power off. There is no automatic power shutdown in this mode.

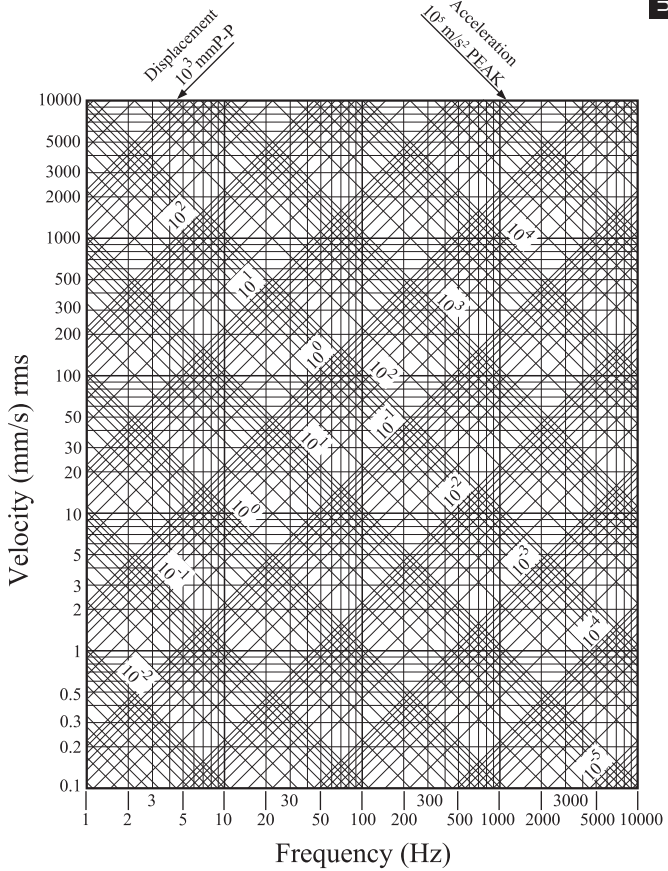
Note
Vibrations in the range from 10 Hz to 1000 Hz can be measured either with the attachment S or the attachment L (option).
When making acceleration measurements with the High range setting, do not use the attachment L. Even a slight misalignment of the measurement point will prevent correct measurement.
Especially when performing relative evaluation of acceleration with the High range setting, comparing measurement values for different objects and attachments should be avoided, because vibration frequency characteristics and reproducibility will differ.

Appendix

Vibration Conversion Chart

This chart is intended mainly for use with sine wave vibrations.

It will not be possible to make vibration frequency conversions for all kinds of vibrations.

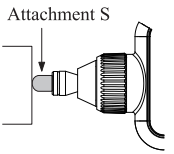


Vibration Detector Attachments

The vibration detector of the VM-63C 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

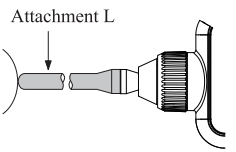
The unit is delivered in this condition. It provides good response and reproducibility over a wide range. Unless there are special requirements, the unit should be used in this condition.



With attachment L

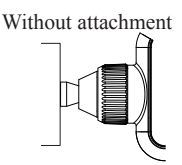
This is suitable for measurement in cases where access space to the measurement object is limited.

The attachment cannot be used for acceleration measurements with the High range setting.



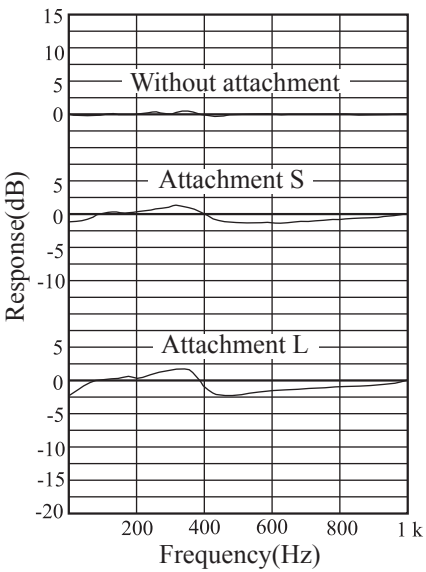
Without attachment (No attachment used)

Best suited for measuring vibration characteristics in the high range (10 Hz to 15 kHz).

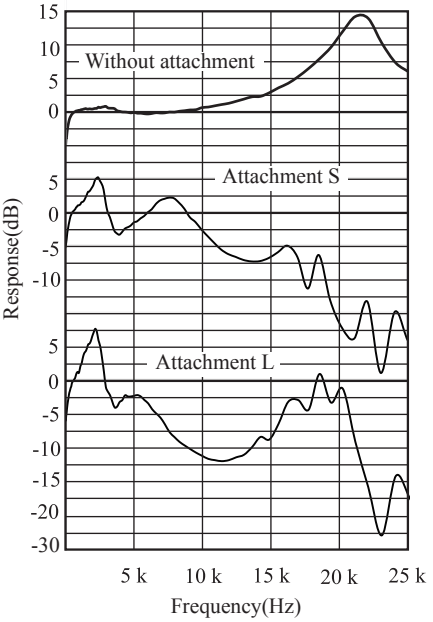


Note
Only for cases where the tip can be brought into full surface contact with the measuring object. If necessary, use grease or similar to achieve a flat surface. Otherwise correct measurement may not be possible.
Do not use excessive force when fastening the attachment.

Typical characteristics for acceleration measurement



Low range


15
10
5
0
Without attachment
5
0
-5
-10
Attachment S
5
0
-5
-10
-15
-20
-30
Attachment L
Response(dB)
5 k
10 k
15 k
20 k
25 k
Frequency(Hz)

High range

Specifications

Applicable standards

China RoHS
CE marking
UKCA marking
KC marking

Built-in accelerometer

Piezoelectric accelerometer (shear-type)

Measurement range

Acceleration: 0.1 to 199.9 m/s^2 PEAK (RMS×$\sqrt{2}$)

Velocity: 0.1 to 199.9 mm/s RMS

Displacement: 0.001 to 1.999 mm P-P (RMS×2$\sqrt{2}$)

Velocity and displacement range is limited by acceleration 199.9 m/s^2 PEAK.

Measurement accuracy (80 Hz)

10ºC to +50ºC 90%RH	Acceleration:	±5% ±2 digits
	Velocity:	±5% ±2 digits
	Displacement:	±10%±2 digits
Outside of the abovementioned operating temperature range	Acceleration:	±8% ±2 digits
	Velocity:	±8% ±2 digits
	Displacement:	±15%±2 digits

Measurement frequency range

Acceleration: 10 Hz to 1 kHz (Low range)
1 kHz to 15 kHz (High range)

Velocity: 10 Hz to 1 kHz

Displacement: 10 Hz to 1 kHz

Display Monochrome segmented LCD

Indication characteristic

Acceleration: EQ PEAK (RMS×$\sqrt{2}$)

Velocity: RMS

Displacement: EQ P-P (RMS×2$\sqrt{2}$)

(P-P=PEAK×2)

Measurement value 3-1/2 digit digital display (LCD)

Display update cycle 1 sec

Hold function

Mode A (same as VM-63A)

Display value is updated while MEASURE button is kept depressed and is held when button is released.

Mode B

Display value is held when MEASURE button is pressed and hold state is canceled when MEASURE button is pressed once more.

Battery status Indicates remaining battery status, flashes when correct measurement is not possible ( symbol at top right of display flashes).

Filter status Indicates the vibration frequency range during acceleration measurement.

HI : 1 kHz to 15 kHz

LO : 10 Hz to 1 kHz

Signal output(ϕ 3.5 mm plug)

AC output 2 V peak (display full scale)

Output impedance About 170Ω

Load impedance About 10 kΩ or more

Earphone (VP-37) can be connected (Optional)

Operation part

MEASURE button

Serves for turning power on and off, and for displaying and holding the vibration amount.

High range/low range selector switch

Changes the vibration frequency range for acceleration measurement (HI /LO).

Acceleration/velocity/displacement selector switch

Changes the measurement mode.

Available measurement modes
m/s^2 (Acceleration)
mm/s (Velocity)
mm (Displacement)

Battery type selector switch

To be set according to the battery type in use (ALKALI.: alkaline batteries / Ni-MH: nickel-hydride rechargeable batteries).

A/B mode selector switch

Changes the operation mode (A/B).

Power supply

Two IEC R6 (size AA) batteries (alkaline / manganese or nickel-hydride rechargeable batteries)

Auto shutdown function (Mode A)

Pressing the MEASURE button turns power on.

Power is automatically shut down when no operation is performed for 60 seconds.

Continuous operation (Mode B)

Pressing the MEASURE button turns power on.

Keeping the MEASURE button depressed for about 3 seconds turns power off.

Current consumption Approx. 35 mA

Battery life About 50 h
(23℃ 50%RH, Use of ALKALI.: alkaline batteries, unused earphone)

Environmental conditions for operation

-20℃ to +60℃ , to 90%RH (no condensation)

Environmental conditions for storage

-20℃ to +60℃ , to 90%RH (no condensation)

Dimensions 178 mm (H) ×64 mm (W) ×27 mm (D)

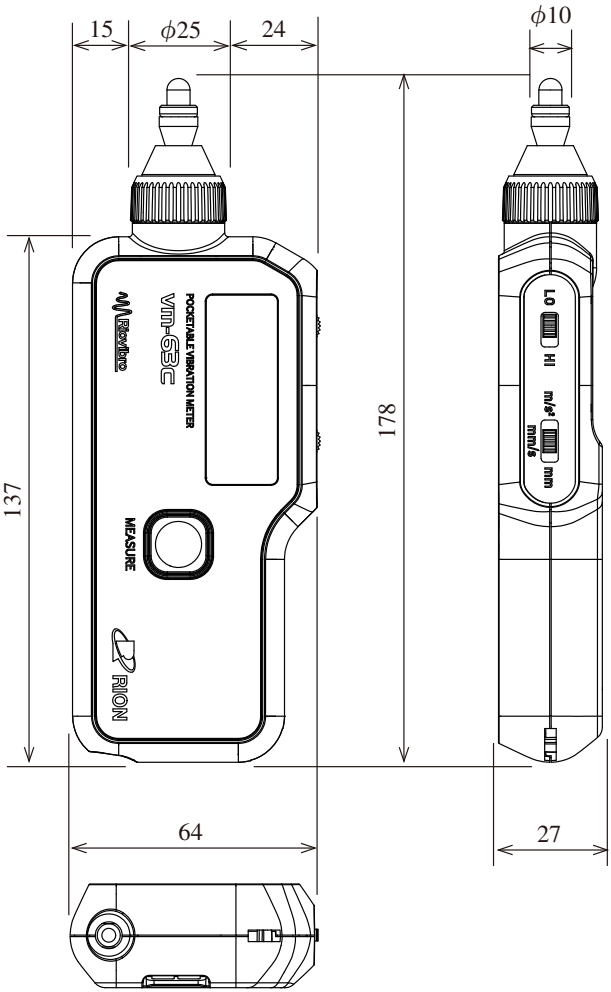
Weight 200 g (including battery)

Supplied accessories

Alkaline battery, IEC R6 (size AA)	2
Silicon rubber cover	1
Attachment S	1
Instruction label	1
Special viewer	1
How to verify product with VM-63C authentication label	1
Instruction manual	1
Inspection certificate	1

Optional accessories

Attachment L	VP-53Y
Earphone	VP-37



Unit : mm

Dimensional Drawings

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https://www.rion.co.jp/english/

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