RION

VM-57 is compliant with the Japan Measurement Act, JIS C 1510:2023 /1517:2014 and Korea Vibration Management Act.

The VM-57 can measure the instantaneous values for vibration level and vibration acceleration level, the time percentile level, the time average level, and the maximum and minimum values in three axes simultaneously.

Vibration Level Meter
VM-57

Newly equipped with a LAN port to enhance connection with communication devices and to networks.

Can be powered by a commercially available portable charger via a USB Type-C port to allow extended measurements even at sites without access to power outlets.

Vibration Level Meter
VM-57

Features

Simultaneous measurement of vibration level (L_V) and vibration acceleration level (L_{va})

Optional program (1/3 Octave Real-time Analysis Program VX-57RT) **allows the calculation of VC values. Suited for measuring vibrations in laboratories, semiconductor plants, and installation sites for precision machinery**

Connection as USB mass storage
(Recognized as removable disk)

Supports high capacity SD cards up to 32 GB.
(Measurement data is saved as CSV files compatible with Microsoft Excel and other spreadsheet software.)

Compatible with portable charger as more sustainable option

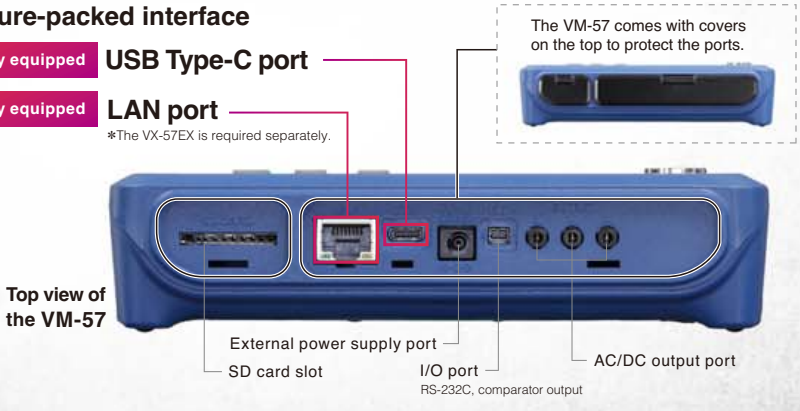
Dust- and water-proofing performance
IP54 rating for the main unit and IPX7 rating for sensors
Reduces risk of malfunctions during sudden rain, etc.

More compact than conventional models!

Feature-packed interface

Newly equipped **USB Type-C port**

Newly equipped **LAN port**
*The VX-57EX is required separately.



System construction

Items other than the main unit, PV-83E, and EC-54S are optional.

Triaxial accelerometer
PV-83E (supplied)

Vibration Level Meter
VM-57

Extension cables

EC-54S	3 m	Supplied
EC-54SA	5 m	
EC-54SB	10 m	
EC-04C	30 m	With reel
EC-04D	50 m	With reel
EC-04E	100 m	With reel

SD card

USB cable (Type-C)
Commercial goods

Computer

RS-232C serial I/O cable
CC-42R

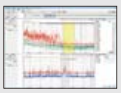
Comparator output → To external device

Comparator cable
CC-43CT

BNC-mini plug cable
CC-24

Extended Function Program VX-57EX

Software



AS-60VM

AS-60VMRT

AS-70

Data Recorder

Signal Analyzer

Multi-Function Measuring System

Level Recorder

Waveform Recording Program VX-57WR

1/3 Octave Real-time Analysis Program VX-57RT

AC adapter
NE-21P

Battery pack
BP-21A*
*Requires CC-43J.

DC Polarity Converter
CC-43J*
*Required for NC-98 series.

List of optional program functions

The following functions can be added by installing optional programs.

Extended Function Program
VX-57EX

512 MB

After installation, the card can be used as a 512 MB SD memory card.

*Once installed, the VX-57EX cannot be uninstalled.

The VX-57WR and VX-57RT can be added by installing the VX-57EX.

VX-57EX → Added function: Auto store function (simultaneous and continuous recording of instantaneous values and processing values); LAN function / four types of marker function / comparator function / continuous data output function (serial communication)

+

VX-57WR → Added function: Vibration waveform recording

+

VX-57RT → Added function: 1/3 octave real-time analysis / 1/3 octave band filter output / VC value measurement function

Waveform Recording Program
VX-57WR

2 GB

Allows simultaneous vibration level processing and waveform recording.
Recorded data can be analyzed on a computer to perform frequency analysis.
(Saved as non-compressed WAVE files)

After installation, the card can be used as a 2 GB SD memory card.

Sampling at 1 kHz, 24-bit or 16-bit selectable

Maximum recording time
(when set to 3-axis, auto store, 16-bit, Lv store cycle of 100 ms)

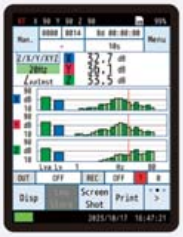
Sampling Frequency \ Memory card	512 MB	2 GB	32 GB
1 kHz	Approx. **14 hours**	Approx. **57 hours**	Approx. **880 hours**

1/3 Octave Real-time Analysis Program
VX-57RT

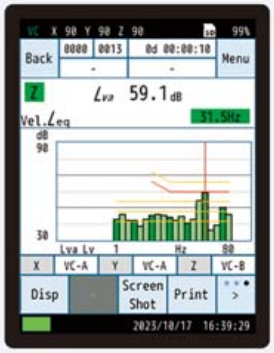
512 MB

Allows real time 1/3 octave band analysis.
Saved analysis results can be read for viewing.

After installation, the card can be used as a 512 MB SD memory card.



1/3 octave band analysis screen



It shows the value for the Z-axis corresponds to VC-B, while the values for the X and Y axes correspond to VC-A.

New Feature

Allows easy calculation of evaluation values (VC values) from vibration criterion (VC) curves*.

Performs vibration measurements at precision machinery installation sites to assess the impact of vibrations.

Precision machinery such as semiconductor manufacturing equipment and processing machines requires high processing accuracy. Even the slightest environmental vibrations can impact product quality and work efficiency, which makes it essential to measure vibrations at sites where precision machinery is installed.

*VC curves are used as a method of evaluation that specifies the minimum vibration criteria for proper machine operation. Evaluation is based on the 1/3 octave band analysis value of the vibration velocity measured on the floor surface on which the machine is installed.

Source : Generic Vibration Criteria for Vibration-Sensitive Equipment, Colin G. Gordon, SPIE99. Evolving criteria for research facilities: I-Vibration

Specifications

Applicable standards	Vibration Level Meter compliant with the Japan Measurement Act JIS C 1510:2023 JIS C 1517:2014 CE Marking • EMC Directive Directive 2014/30/EU EN 61326-1:2021 • RoHS Directive Directive 2011/65/EU EN IEC 63000:2018 • Low Voltage Directive Directive 2014/35/EU EN 61010-1:2010/A1:2019 WEEE Directive 2012/29/EU China RoHS, KC mark
Measurement function	1 direction (Z) or simultaneous measurement in 3 directions (X, Y, Z) Vibration level L_V and vibration acceleration level L_{va} Maximum value hold for vibration level and vibration acceleration level
Calculation measurement	Equivalent continuous level of vibration level and vibration acceleration level L_{eq} Percentile levels of vibration level and vibration acceleration level L_N (5, 10, 50, 90, 95) Maximum value of vibration level and vibration acceleration level L_{max} Minimum value of vibration level and vibration acceleration level L_{min}
Measurement frequency range	Vibration level: 1 Hz to 90 Hz, Vibration acceleration level: 1 Hz to 90 Hz
Measurement level range	Vertical direction of vibration level: 25 dB to 129 dB, Horizontal direction of vibration level: 30 dB to 122 dB, Vibration acceleration level: 30 dB to 129 dB
Self-generated noise level	Vertical direction of vibration level: Up to 19 dB, Horizontal direction of vibration level: Up to 24 dB, Vibration acceleration level: Up to 24 dB (Extension cable 208 m or less)
Frequency weighting	Vertical vibration characteristics (according to the Japan Measurement Act and JIS), Horizontal vibration characteristics (according to JIS), Flatness characteristics (according to JIS)
Level range	6-range switching in 10 dB steps with 3-axis independence 0 dB to 70 dB, 10 dB to 80 dB, 20 dB to 90 dB, 30 dB to 100 dB, 40 dB to 110 dB, 50 dB to 120 dB
Sampling interval	Equivalent continuous level, maximum value, minimum value, maximum hold: 125 µs (sampling frequency 8 kHz), Percentile level: 100 ms
Store	
Manual store	Manually START/STOP measurement and simultaneously calculate L_{eq}, L_{max}, L_{min}, and L_N values for both Vibration level L_V and Vibration acceleration level L_{va} and store them in internal memory or on SD card.*1
Number of data	Internal memory: Can store up to 1 000 data sets SD card: Can save up to 1 000 data sets for each store name
Measurement time	500 s, 10 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 8 h, 24 h, User Setting (1 s to 24 h)
Auto*2	From the start of measurement until the measurement is stopped or the total measurement time is reached, the instantaneous value (L_V) and the calculated value (L_{eq}) are continuously stored on the SD card for each set time.*1
L_V store	OFF, 100 ms, 1 s
L_{eq} store	OFF, 500 s, 10 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 8 h, 24 h, or User Setting (1 s to 24 h)
Total measurement time (Auto)	500 s, 10 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 8 h, 24 h, or User Setting (1 s to 1 000 h)
Marker*2	There are four types of marker functions. Effective only when L_V store interval is set in Auto and Timer Auto.
Data recall	Browses stored data and screenshot images.
Memorizing and recalling settings	Setting information can be saved to the internal memory or SD card and recalled at startup or at a specified time. Recorded settings can be renamed to suit the application.
Output	
AC output	Output voltage: 1 Vrms at output full scale Frequency response can be selected from "L_V", "L_{va}" and "Linked"
DC output	Output voltage: 2.5 V (25 mV/dB) at output full scale
Comparator*2	Open collector output when comparator band (L_V, L_{va}) of specified channel(X, Y, Z) exceeds specified value. Comparator level: 30 dB to 120 dB can be set in 1 dB increments Maximum applied voltage: 24 V, Maximum current: 60 mA Allowable power dissipation: 300 mW, Internal resistance: Approx. 480 Ω
Display	Backlit 3.5-inch TFT-LCD QVGA *With touch panel function (resistive membrane type) Numeric value update cycle: 1 s, Time-Level graph update cycle: 100 ms
USB	
Communication control	Measurement values can be acquired and settings can be changed by using communication commands.
Data transfer	Enables the transferring of data by making the computer recognize the SD card as a removable disk.
LAN*2	Communicates with an IP address specified by the user or automatically obtained from the router to provide the following functions:
Communication control	Measurement values can be acquired and settings can be changed by using communication commands.
Data transfer	SD card can be accessed and data transferred with or without measurements.
RS-232C communication	
Communication control	Measurement values can be acquired and settings can be changed by using communication commands.
Power supply (8 × AA batteries, power supply to DC jack and USB port)	
Operating time (in continuous measurement at 23 °C, output and communication off, screen off)	Alkaline battery LR6: Approx. 16 hours (Manual store, Eco setting ON), Approx. 20 hours (Auto store, Eco setting ON, with VX-57EX installed)* Ni-MH rechargeable battery: Approx. 16 hours (Manual store, Eco setting ON), Approx. 20 hours (Auto store, Eco setting ON, with VX-57EX installed)* Current consumption: Approx. 81 mA (at 12 V supply) *Measurement conditions: L_{eq} calculation interval 10 minutes (L_V store OFF) *The operating time with batteries will vary depending on the battery manufacturer and type (model), the usage environment of VM-57, and the measurement conditions.
AC adapter	NE-21P (Input: 100 V to 240 V AC, 50/60 Hz, Output: 12 V DC)
External power supply voltage	5.7 V to 15 V (rated voltage 12 V) USB port: 5 V
Dustproof and waterproof performance	IP rating: IP54*3 (excluding accelerometer), Accelerometer (PV-83E): IPX7
Operating temperature and humidity range	Temperature: -10 °C to 50 °C, Humidity: 10 % to 90 % RH (no condensation)
Dimensions and Weight	Approx. 150.5 mm (H) × 173.2 mm (W) × 44.0 mm (D), 1 110 g (including main unit, 3-axis accelerometer PV-83E, connection cable EC-54S, and batteries)
Sensor	
3-axis accelerometer PV-83E	Sensitivity: 60 mV/(m/s²), Temperature range for operation: -10 °C to 50 °C Dimensions and Weight: Approx. dia 67 × 40.7 mm(H), Approx. 300 g
Accessories	3-axis accelerometer PV-83E × 1, Carrying case × 1, Model name label (For attaching the carrying case) × 2, Connection cable (3 m) EC-54S×1, Size AA alkaline batteries × 8, 512 MB SD card (only when VX-57EX is preinstalled) × 1

Optional accessories

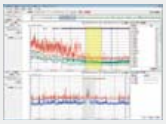
Product name	Product number
Extended Function Program (supplied as 512 MB SD card)	VX-57EX
Waveform Recording Program (supplied as 2 GB SD card)	VX-57WR
1/3 Octave Real-time Analysis Program (supplied as 512 MB SD card)	VX-57RT
512 MB SD card	MC-51SD1
2 GB SD card	MC-20SD2
32 GB SD card	MC-32SP3
AC adapter	NE-21P
DC Polarity Converter	CC-43J
Battery pack (Using four D alkaline batteries)	BP-21A
Extension cable*4	EC-54S series
Extension cable	EC-04 series
BNC pin output cable	CC-24/CC-24S
Comparator Output / Trigger Input Cable	CC-43CT
RS-232C serial I/O cable	CC-42R
Data Management Software for Environmental Measurement (Includes the Vibration Level Data Management Software)	AS-60VM
Data Management Software for Environmental Measurement (Includes the Vibration, Octave and 1/3 Octave Data Management Software)	AS-60VMRT
Waveform Analysis Software	AS-70

*1 Use Rion fully guaranteed products. *2 VX-57EX required for VM-57 (sold separately)
*3 Protection against harmful dust and water splashing from any direction.
*4 Accelerometer cable lengths up to 208 meters are covered by the Weight and Measure Act.

Precautions on portable charger usage

Avoid portable charger with functions that monitor device power consumption and are capable of interrupting the power supply. The power consumption of VM-57 is relatively low compared to smartphones; portable charger equipped with such features may erroneously terminate power supply to the unit.

Software supporting VM-57



Data Management Software for Environmental Measurement AS-60VM

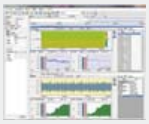
(with vibration level data management software)

Manages data collected with VM-57 + VX-57EX on a computer. Allows use of auto stored data for time-level and graph display, simultaneous display of multiple channels, graph overlays, various processing operations, and report creation.

Data Management Software for Environmental Measurement AS-60VMRT

(with 1/3 octave vibration level data management software)

Manages data collected with VM-57 + VX-57EX + VX-57RT on a computer. Allows use of auto stored 1/3 octave band data for graph display of 1/3 octave band analysis results, various processing operations, and report creation.



Waveform Analysis Software AS-70

Allows use of WAVE files recorded using VM-57 +VX-57EX + VX-57WR for graph display, level processing, frequency analysis (1/3 octave band analysis / FFT analysis), file output, and playback.

JCSS 0197

RION CO., LTD. is recognized by the JCSS which uses ISO/IEC 17025 as an accreditation standard and bases its accreditation scheme on ISO/IEC 17011. JCSS is operated by the accreditation body (IAJapan) which is a signatory to the Asia Pacific Accreditation Cooperation (APAC) as well as the International Laboratory Accreditation Cooperation (ILAC). The Quality Assurance Section of RION CO., LTD. is an international MRA compliant JCSS operator with the accreditation number JCSS 0197.

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