



# Vibration Level Meter VM-55

# Vibration Level Meter VM-55

## List of option program functions

The following functions can be added by installing optional programs.



### Extended Function Program VX-55EX



The VX-55EX program is supplied on a 512 MB SD card. After installation, the card can be used as a 512 MB SD memory card.

When the VX-55EX program has been installed\*, the VX-55WR and VX-55RT can be added.

**VX-55EX** →

+

**VX-55WR** →

**VX-55RT** →

\*Once installed, the VX-55EX cannot be uninstalled.

Functions: Auto store function (instantaneous value/processing values) / Marker function / Comparator function / Continuous data output function

Added function	Program type	VX-55WR	VX-55RT
Vibration waveform monitor (waveform recording)		●	
1/3 octave band analysis			●
1/3 octave band filter output			●

### Waveform Recording Program VX-55WR



Enables simultaneous vibration level processing and waveform recording. Recorded data can be analyzed on a computer, for example to perform frequency analysis. (Non-compressed WAVE files)

The VX-55WR program is supplied on a 2 GB SD card. After installation, the card can be used as a 2 GB SD memory card.

1 kHz sampling. 24 bit or 16 bit selectable.

Max. recording time (at 16 bit)

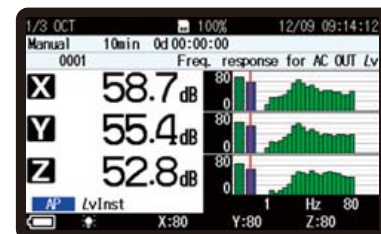
Memory card	512 MB	2 GB	32 GB
Sampling frequency			
1 kHz	Approx. 13 hours	Approx. 55 hours	Approx. 950 hours

### 1/3 Octave Real-time Analysis Program VX-55RT



Enables real time 1/3 octave band analysis. Saved analysis results can be reloaded later for display.

The VX-55RT program is supplied on a 512 MB SD card. After installation, the card can be used as a 512 MB SD memory card.



1/3 octave band analysis screen (simulated)



The Vibration Level Meter VM-55 is compliant with JIS C 1510: 1995 and JIS C 1517: 2014.

The unit is equipped to measure the instantaneous value for vibration level and vibration acceleration level, as well as the time percentile level, time averaged level, maximum and minimum values in three axes simultaneously.



[Improved functions from predecessor model VM-53/VM-53A]



Simultaneous measurement of vibration level ( $L_v$ ), and vibration acceleration level ( $L_{va}$ )



Support for communication with a computer USB port, I/O port



Support for high capacity SD cards up to 32 GB  
(Measurement data are output as CSV files, which can be handled by spreadsheet software such as Excel.)



Use as USB storage supported  
(Recognized as removable disk)



Support for added functions via option programs  
Long-term automated recording for continuous data  
Comparator output  
Simultaneous real time 1/3 octave band analysis for 3 axes  
Simultaneous waveform recording for 3 axes

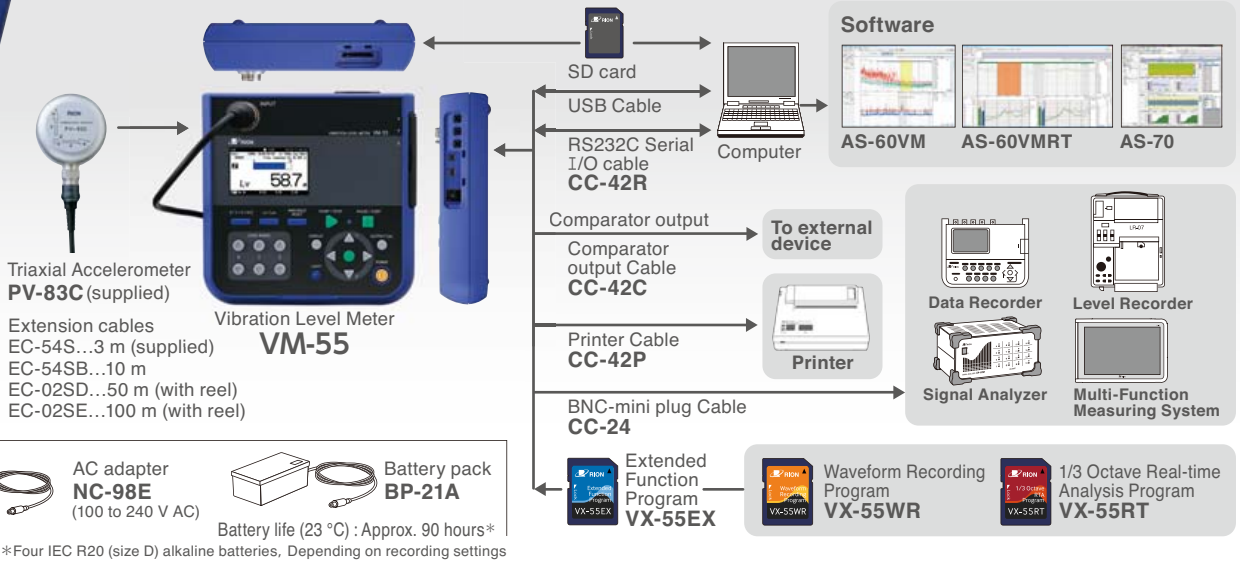


27 hours of measurement operation with IEC R6 [size AA] batteries (alkaline or nickel-hydride rechargeable)



Dust and water proofing IP54 rating (for main unit)

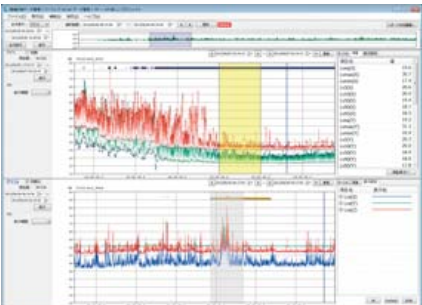
System Configuration (Equipment besides main unit, PV-83C, and EC-54S is optional.)



Data Management Software for Environmental Measurement AS-60VM

(With vibration level data management software)

- Manage data collected with VM-55 + VX-55EX in a computer.
- Allows use of auto stored data for simultaneous display of time-level and graph, simultaneous display of multiple channels, graph overlay, various types of processing operations, and report creation.

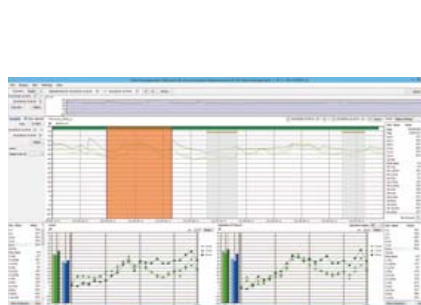


AS-60VM

Data Management Software for Environmental Measurement AS-60VMRT

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

- Manage data collected with VM-55 + VX-55EX + VX-55RT in a computer.
- Allows use of auto stored 1/3 octave band data for graph display of 1/3 octave band analysis results, various types of processing operations, and report creation.

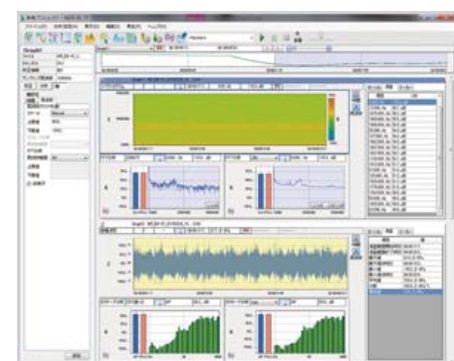


AS-60VMRT

Waveform Analysis Software AS-70

(With waveform analysis software)

- Allows use of WAVE files recorded with VM-55 + VX-55EX + VX-55WR for graph display, level processing, frequency analysis (octave band analysis / FFT analysis), file output and playback.



AS-70

# Specifications

Type Approval Number	No. TW161
Applicable standards	Weight and Measure Act (Vibration Level Meters) JIS C 1510:1995, JIS C 1517:2014 CE marking, WEEE Directive, Chinese RoHS (export model for China only)
Measurement functions	3-axis simultaneous measurement supported Vibration level $L_v$ and vibration acceleration level $L_{va}$ Maximum value hold for vibration level and vibration acceleration level
Processing measurement (processing values)	Time average level $L_{eq}$ for vibration level and vibration acceleration level Time percentile level $L_5, L_{10}, L_{50}, L_{90}, L_{95}$ for vibration level and vibration acceleration level Maximum value $L_{max}$ for vibration level and vibration acceleration level Minimum value $L_{min}$ for vibration level and vibration acceleration level
Measurement frequency range	
Vibration level	1 to 80 Hz
Vibration acceleration level	1 to 80 Hz
Measurement level range	
Vibration level, vertical direction	25 to 129 dB
Vibration level, horizontal direction	30 to 122 dB
Vibration acceleration level	30 to 129 dB
Residual noise level	
Vibration level, vertical direction	19 dB or less
Vibration level, horizontal direction	24 dB or less
Vibration acceleration level	24 dB or less
Frequency weighting	Vertical vibration characteristics (according to Weight and Measure Act or JIS), horizontal vibration characteristics (according to JIS), planar characteristics (according to JIS)
Level range	10 dB steps, 6 switchable ranges, independent for 3 axes 0 to 70 dB, 10 to 80 dB, 20 to 90 dB, 30 to 100 dB, 40 to 110 dB, 50 to 120 dB
Linearity range	80 dB
RMS detection circuit	Digital processing, time weighting characteristics 0.63 seconds
Sampling cycle	For time average level, maximum value, minimum value, maximum value hold: 125 $\mu$ s (sampling frequency 8 kHz) For time percentile level: 100 ms
Store modes	3 modes: Manual, Auto <sup>*2</sup> , Timer Auto <sup>*2</sup> Measurement results are stored along with measurement start time in one memory address Data stored either in internal memory or on SD card Internal memory can hold up to 1 000 sets of 3-axis data, storage on SD card depends on card capacity
Manual	Vibration level $L_v$ and vibration acceleration level $L_{va}$ instantaneous values and maximum hold values (current at the point when the pause key is pressed) are stored Various processing values obtained in manual mode are stored
Instantaneous value and maximum hold value store	
Processing value store	
Auto <sup>*2</sup>	Continuous store of vibration level $L_v$ and Vibration acceleration level $L_{va}$ instantaneous values Data stored on SD card only (not in internal memory)
Timer Auto <sup>*2</sup>	Continuous store of vibration level $L_v$ and Vibration acceleration level $L_{va}$ instantaneous values and processing values Measurement start time and end time can be set, with measurement carried out for 10 minutes at each full hour. Sleep function (power save mode until measurement start) available Data stored on SD card only (not in internal memory)
Measurement time <sup>*</sup>	Measurement time in Manual store mode Processing measurement with selected measurement time supported 500 seconds, 10 seconds, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 1 hour, 8 hours, 24 hours, User-specified (1 to 59 seconds, 1 to 59 minutes, 1 to 24 hours)
Total measurement time	Measurement time in Auto / Timer Auto store mode Processing measurement with selected measurement time supported 500 seconds, 10 seconds, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 1 hour, 8 hours, 24 hours, User-specified (1 to 59 seconds, 1 to 59 minutes, 1 to 1 000 hours)
$L_v$ store cycle	Store interval for instantaneous value data in Auto and Timer Auto store modes Available settings are 100 milliseconds and 1 second.
$L_{eq}$ processing cycle <sup>*</sup>	Interval for calculation of $L_{eq}$ , $L_N$ and other processing data in Auto and Timer Auto store modes 500 seconds, 10 seconds, 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, 1 hour, 8 hours, 24 hours, User-specified (1 to 59 seconds, 1 to 59 minutes, 1 to 24 hours)
Pause function	Pause/resume possible during instantaneous value measurement and Manual processing measurement Pause function not available in Auto and Timer Auto modes and during waveform recording
Marker <sup>*2</sup>	Two types of marker functions available Available only in Auto and Timer Auto store modes when setting $L_v$ store cycle
Data recall	Function for viewing stored data
Setting memory	Up to 5 sets of settings can be stored in internal memory and on SD card, for later recall Startup with settings stored in a file on the SD card possible
Clock function	Internal clock enables adding date and time information to stored data and also allows automated processing measurement using a timer
Display	Backlit semi-transparent color TFT LCD, WQVGA resolution (400 x 240 dots) Bar graph update cycle: 100 milliseconds, numeric indication update cycle: 1 second, Languages: English and Japanese, with Help function
Alarm indication	Signal overload indication: Full-scale +10.0 dB Signal underload indication: Full-scale -70.5 dB

\*1 When the Measurement Time is set to "500s", time percentile level  $L_N$  is calculated based on the instantaneous value every 5 seconds.



RION Co., Ltd. is recognized by the JCSS which uses ISO/IEC 17025 (JIS Q 17025) as an accreditation standard and bases its accreditation scheme on ISO/IEC 17011. JCSS is operated by the accreditation body (IA Japan) which is a signatory to the Asia Pacific Laboratory Accreditation Cooperation (APLAC) 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.

ISO 14001 RION CO., LTD.  
ISO 9001 RION CO., LTD.



\* Windows is a trademark of Microsoft Corporation. \* Specifications subject to change without notice.

Distributed by:

LED	Two-color (red/blue) type for status indication
Calibration output signal	For calibration of connected external equipment AC output: 31.5 Hz, 1 Vrms, DC output: 2.5 V
AC/DC output	AC or DC output selectable by menu 2.5 dia. output jacks, 3 separate channels
AC output	Output impedance: 600 $\Omega$ , Load impedance: 10 k $\Omega$ or higher, AC output: 1 Vrms (full-scale) Frequency weighting for instantaneous value display and for AC output can be set separately
DC output	Output impedance: 600 $\Omega$ Load impedance: 10 k $\Omega$ or higher DC output 2.5 V (full-scale, 25 mV/dB)
USB	Mass storage class: When unit is connected to a computer as a storage device, SD card is recognized as a removable disk Communication device: When unit is used as a communication class device, operation control via communication commands is possible
RS-232C communications	Using a dedicated cable, RS-232C communications are possible (using I/O port)
BMP files	Screen content can be captured and saved as a BMP file
Print function	Dedicated printer DPU-414 can be used to print measurement results (using I/O port)
Print screen mode	Produces a hard copy of the screen display. Instantaneous value, processing values, recall data can be printed.
Comparator <sup>*2</sup>	Vibration level or vibration acceleration level based comparator. Output activated when setting level (30 to 120 dB, 1-dB steps) is exceeded.
Supported channels	Single-axis channel selected with menu
Comparator output	Open-collector output (using I/O port) Max. applied voltage: 24 V Max. drive current: 50 mA (with 24 V applied voltage)
SD card	SD / SDHC (max. capacity 32 GB) <sup>*1</sup>
SD card formatting	SD card formatting function corresponds to SD formatter
Power supply	EC R6 [size AA] battery x 8 or external power supply
Battery life (23 $^{\circ}$ C)	Alkaline batteries LR6: approx. 27 hours Nickel-hydride rechargeable batteries: Approx. 27 hours (eneloop XX <sup>®</sup> ) * Actual operation time will differ, depending on unit settings and battery brand.
AC adapter	NC-98E
External power supply voltage	5 to 7 V (rated voltage 6 V)
Current consumption	Approx. 80 mA (at 12 V (battery x 8) DC) Primary side (100 V AC side) power consumption: Approx. 4 VA (with NC-98C, at 100 V AC)
Dust and water proofing	IP54 <sup>*3</sup>
Ambient conditions for operation	Temperature: -10 $^{\circ}$ C to +50 $^{\circ}$ C, max. 90 % RH (no condensation)
Dimensions and weight	Approx. 175 mm (H) x 175 mm (W) x 40 mm (D) mm, approx. 780 g (incl. batteries)
Accelerometer: Triaxial accelerometer	Reference sensitivity: 60 mV / (m / s <sup>2</sup> ) Usage temperature range: -10 $^{\circ}$ C to +50 $^{\circ}$ C (no condensation) Waterproofing: IPx7
PV-83C	Dimensions and weight: Approx. 67 dia. x 40.7 mm (D) (excluding connection cable)
Supplied accessories	EC-54S (3 m) x 1, IEC R6 [size AA] battery x 8, carrying case x 1

\* Please use the dedicated charger to charged eneloop XX<sup>®</sup> batteries.

\* eneloop XX<sup>®</sup> is a registered trademark of Panasonic group.

## Options

Product name	Product number
Extended function program (Inst.on 512 MB SD card)	VX-55EX
Waveform recording program (Inst.on 2 GB SD card)	VX-55WR
1/3 octave real-time analysis program (Inst.on 512 MB SD card)	VX-55RT
SD Card 512 MB	MC-51SD1
SD Card 2 GB	MC-20SD2
SD Card 32 GB	MC-32SP3
AC adapter	NC-98E
Battery pack	BP-21A
Extension cable (VM-55) <sup>*4</sup>	EC-54S series
BNC-Pin output code	CC-24
Comparator output cable	CC-42C
RS232C serial I/O cable	CC-42R
Printer	DPU-414
Printer cable	CC-42P
Data management software for environmental measurement	AS-60VM
"	AS-60VMRT
Waveform analysis software	AS-70

\*1 Use Rion products for assured operation. \*2 VX-55EX is required separately

\*3 Protected against harmful dust (dust-proof type) and water splashes from any direction (splash-proof type)

\*4 Accelerometer cable lengths up to 203 meters are covered by the Weight and Measure Act.

### Precautions regarding waterproofing

Before use, verify that the rubber bottom cover and the battery compartment lid are firmly closed.

To maintain the water and dust proof rating, internal packing replacement is required every two years (at cost).



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This product is environment-friendly. It does not include toxic chemicals on our policy.  
This product is certified to an International Protection rating of IP54 (dust protected and resistant to splashing water).  
This leaflet is printed with environmentally friendly UV ink.