RION

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)

Sampling frequency	Memory card 512 MB	2 GB	32 GB
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.
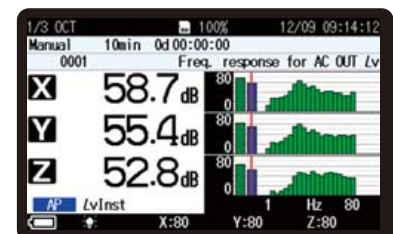
1/3 octave band analysis screen (simulated)

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 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.)

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
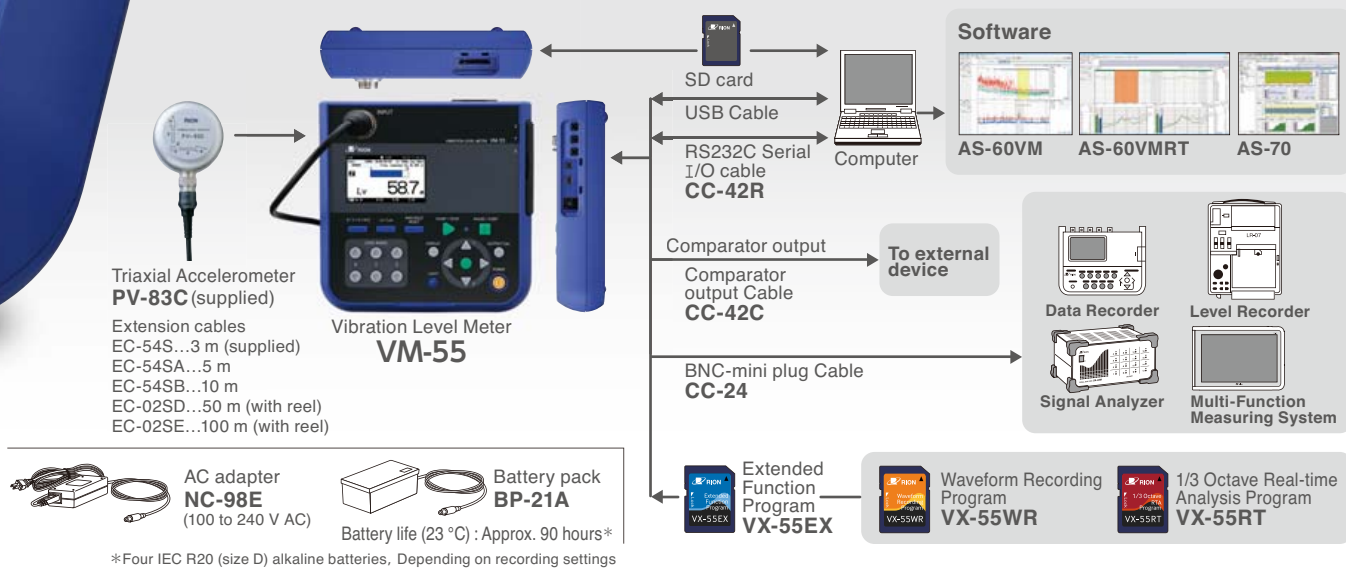Simultaneous waveform recording for 3 axes

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

Use as USB storage supported
(Recognized as removable disk)

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.)

Triaxial Accelerometer
PV-83C (supplied)

Extension cables
EC-54S…3 m (supplied)
EC-54SA…5 m
EC-54SB…10 m
EC-02SD…50 m (with reel)
EC-02SE…100 m (with reel)

Vibration Level Meter
VM-55

SD card

USB Cable

RS232C Serial I/O cable
CC-42R

Computer

Software
AS-60VM   AS-60VMRT   AS-70

Comparator output
To external device

Comparator output Cable
CC-42C

BNC-mini plug Cable
CC-24

Data Recorder   Level Recorder

Signal Analyzer   Multi-Function Measuring System

AC adapter
NC-98E
(100 to 240 V AC)

Battery pack
BP-21A
Battery life (23 °C) : Approx. 90 hours*

*Four IEC R20 (size D) alkaline batteries, Depending on recording settings

Extended Function Program
VX-55EX

Waveform Recording Program
VX-55WR

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

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.
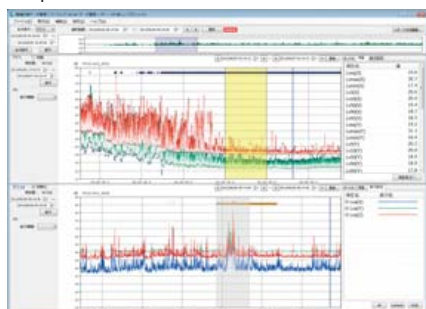
AS-60VM

Data Management Software for Environmental Measurement AS-60VMRT

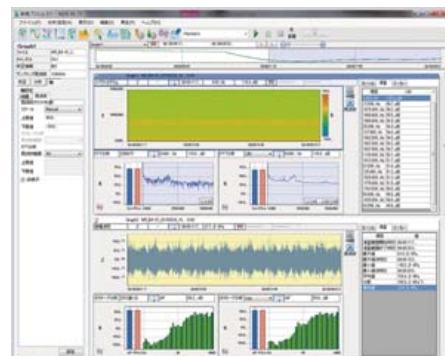(With 1/3 octave vibration level data management software)

- 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

- 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 $L5$, $L10$, $L50$, $L90$, $L95$ 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 µs (sampling frequency 8 kHz)		
	For time percentile level: 100 ms		
Store modes	3 modes: Manual, Auto*2, Timer Auto*2		
	Manual	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	
		Instantaneous value and maximum hold value store	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
		Processing value store	Various processing values obtained in manual mode are stored
	Auto*2	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*2	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*	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*	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*2	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.

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 Ω, Load impedance: 10 kΩ 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 Ω
		Load impedance: 10 kΩ 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	
Comparator*2	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)*1	
	SD card formatting	SD card formatting function corresponds to SD formatter
Power supply	IEC R6 [size AA] battery x 8 or external power supply	
	Battery life (23 °C)	Alkaline batteries LR6: approx. 27 hours
		Nickel-hydride rechargeable batteries: Approx. 27 hours (eneloop XX®*)
		*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-98E, at 100 V AC)
Dust and water proofing	IP54*3	
Ambient conditions for operation	Temperature: –10 °C to +50 °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 PV-83C	Reference sensitivity: 60 mV / (m / s²)	
	Usage temperature range: –10 °C to +50 °C (no condensation)	
	Waterproofing: IPx7	
	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® batteries.
* eneloop XX® 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)*4	EC-54S series
BNC-Pin output code	CC-24
Comparator output cable	CC-42C
RS232C serial I/O cable	CC-42R
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).

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

Distributed by:

RION CO., LTD.
https://rion-sv.com/

3-20-41, Higashimotomachi, Kokubunji, Tokyo 185-8533, Japan
Tel: +81-42-359-7888   Fax: +81-42-359-7442

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.

1505-9 2103.P.D