Vibration Analyzer VA-14

CE

distrame
instruments de mesures électroniques

RION

Vibration Analyzer

VA-14

For more information
VA-14

— **Single channel analyzer also capable of microphone connection** —

Beyond trust to a new frontier in measurement

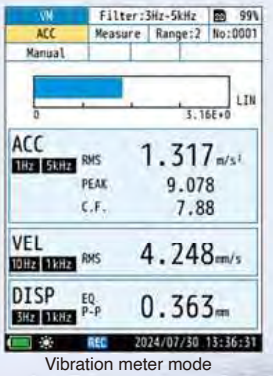
RION's New Vibration Analyzer VA-14

Vibration Meter Mode

- Allows simultaneous measurement of acceleration, velocity, displacement, and acceleration crest factor

New

- Filters (HPF, LPF) can be set for acceleration, velocity, and displacement, respectively



Vibration meter mode

FFT Analyzer Mode

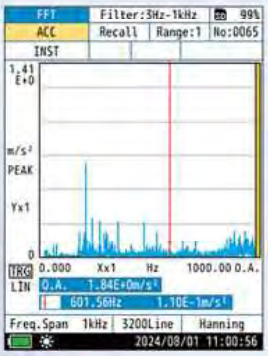
- Real-time analysis frequency 20 kHz
- Time waveform display and spectrum display with up to 3 200 spectral lines. Envelope processing also supported.

New

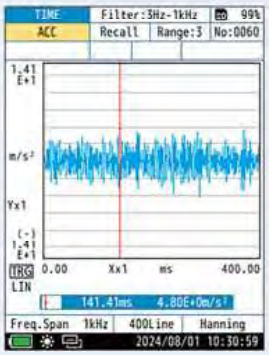
- Simultaneous saving of linear average value and maximum value

New

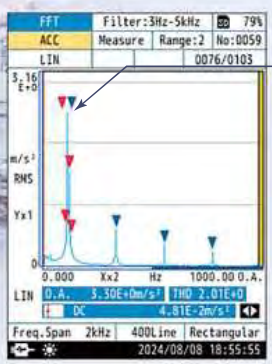
- Two types of peak detection functions
  - Displays top 10 spectra with "TOP10"
  - Displays top 10 peaks with "PEAK10"



Spectrum display (3 200 lines)



Time waveform display



110 Hz

Peak detection example

▼ **TOP10**
Detects spectra around 110 Hz

▼ **PEAK10**
Detects spectra at odd multiples of 110 Hz

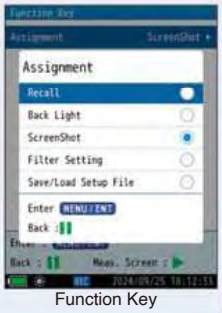
▼▼ are not displayed on the actual screens. It is only shown in the catalog.

Piezoelectric Accelerometer PV-57I (Supplied)

New

Equipped with "function keys"

Assign functions and perform operations with one push



Function Key

New

LAN terminal

– Connect to the network –

Allows control of the device and transfer of files (CSV, WAVE) stored on the SD card

*VX-14S is required to obtain measurement data

New

USB Type-C connector

– Compatible with USB power supply –

Long-term measurements are possible even in locations without power outlets

Easy to hold with one hand. Ideal for field measurements.

Achieved 30 % weight savings from previous model VA-12 Approx. 850 g → Approx. 665 g

(Including supplied accessories and batteries)

Take your VA-14 on-site for a wider range of use

New Features

Option program
Superior function program
VX-14S

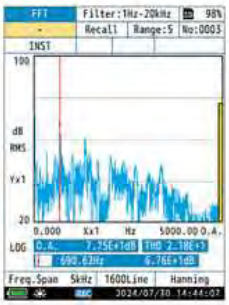
After installation, it can be used as a 2 GB SD card.

Installing the VX-14S adds the following function

Sound Measurement
(Operates in FFT mode)

[Microphone and preamplifier connection function]

Allows sound measurement by connecting a microphone. Covers both vibration and sound evaluation with just one VA-14 unit.



Measurement screen

Usage Examples FFT analysis of noise and vibration for evaluating machine quietness, detecting abnormal noise and planning countermeasures.

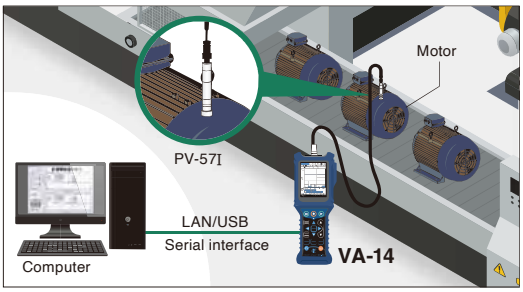
Target fields Noise and vibration analysis of automobiles, home appliances, etc.

Enhanced connection with communication devices
[Communication function (LAN/USB)]

By connecting via either USB or LAN, communication with a computer is possible, and control of the device along with the following functions can be used via commands:

- Acquisition of display values
  (vibration value, time waveform, FFT analysis value)
- Continuous acquisition of instantaneous values
  (vibration value: 100 ms, FFT analysis value*)
- Acquisition of calculated values
  (vibration value: calculation cycle 10 s/1 m/user setting, FFT analysis value: after calculation)

*Available when connected to LAN



Usage Examples Utilize measurement data from VA-14 to build pass/fail evaluation systems on production line and vibration monitoring systems. *Software for the computer is required separately.

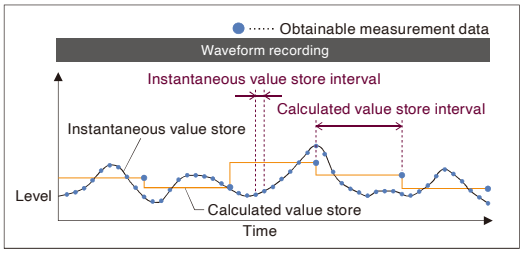
Target fields Quality assurance and production technology for automobiles, home appliances, etc.

Long time vibration recording (Operates in vibration meter mode)
[Auto store function]

Instantaneous values and calculated values can be recorded continuously at the same time.
Allows measurement of time-based changes in vibration values.

[Long time waveform recording function]

Records vibration waveforms in WAVE format.
(Select one from acceleration, velocity, or displacement)
Recorded data can be used to perform frequency analysis on a computer.
Maximum recording time: 200 hours

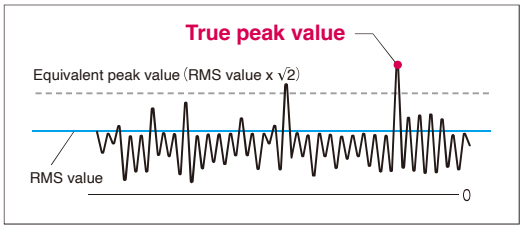


Usage Examples Evaluate changes in vibration and the effects of vibration when load conditions, such as the rotational speed of equipment and pump water volume are changed.

Target fields Design and development of equipment and machinery, quality assurance

Accurate evaluation of machinery condition
[Peak calculation function]

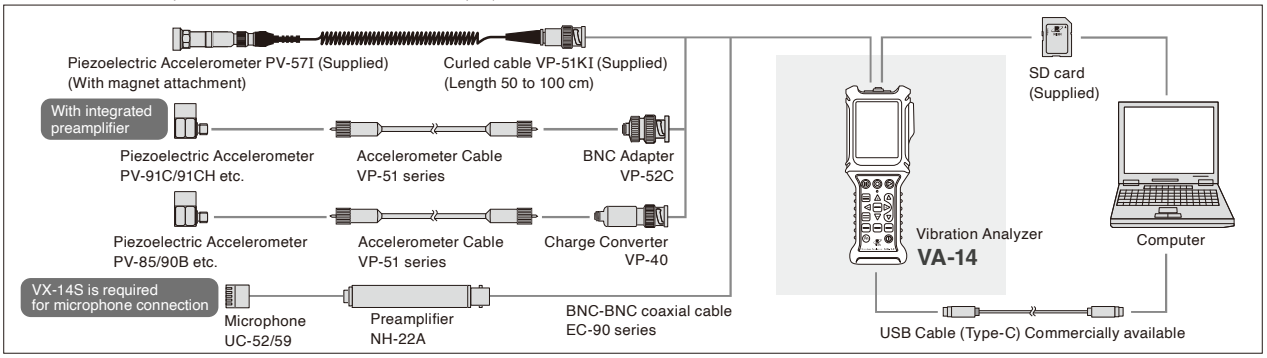
Calculates true peak values not only for acceleration but also for velocity and displacement
In addition to the equivalent peak value which is calculated from RMS multiplied by √2, the true peak value of the vibration waveform can be calculated, allowing for more accurate evaluation.



Usage Examples Helps detect machine and equipment failures in early stage, improving production efficiency

Target fields Equipment maintenance, machine design and development

Related Products (Connection Configuration Example)



Specifications

Standard compliance			
	CE Marking	EMC Directive	2014/30/EU EN 61326-1: 2021
		Low Voltage Directive	2014/35/EU EN 61010-1:2010/A1: 2019
		RoHS2 Directive	2011/65/EU EN IEC 63000: 2018
	WEEE: Directive 2012/19/EU, China RoHS, KC Mark		
Input function			
	Connector and type, etc.	BNC connector CCLD power supply 20 V, 2 mA	
Sensor		Piezoelectric accelerometer PV-57I (accessory)	
Input range	When the sensitivity is (0.100 to 0.999) mV/(m/s²)		
	Acceleration (ACC)	10, 31.6, 100, 316, 1 000, 3 160, 10 000 m/s²(rms)	
	Velocity (VEL)	31.6, 100, 316, 1 000, 3 160, 10 000, 31 600 mm/s(rms)	
	Displacement (DISP)	0.89, 2.83, 8.94, 28.3, 89.4, 283, 894 mm(EQ P-P)	
	When using PV-57I or thesensitivity is (1.00 to 9.99) mV/(m/s²)		
	Acceleration (ACC)	1, 3.16, 10, 31.6, 100, 316, 1 000 m/s²(rms)	
	Velocity (VEL)	3.16, 10, 31.6, 100, 316, 1 000, 3 160 mm/s(rms)	
	Displacement (DISP)	0.089, 0.283, 0.89, 2.83, 8.94, 28.3, 89.4 mm(EQp-p)	
	When the sensitivity is (10.0 to 99.9)mV/(m/s²)		
	Acceleration (ACC)	0.1, 0.316, 1, 3.16, 10, 31.6, 100 m/s²(rms)	
	Velocity (VEL)	0.316, 1, 3.16, 10, 31.6, 100, 316 mm/s(rms)	
	Displacement (DISP)	0.0089, 0.0283, 0.089, 0.283, 0.89, 2.83, 8.94 mm(EQp-p)	
	Measurement range (using PV-57I, high-pass filter 3 Hz, low-pass filter 5 kHz)		
	Acceleration	0.02 m/s² to 141.4 m/s²(rms) (limited by maximum continuous measurement acceleration of PV-57I)	
	Instantaneous maximum acceleration	700 m/s²	
	Velocity	0.2 mm/s to 141.4 mm/s(rms) (at 159.15 Hz input)	
	Displacement	0.02 mm to 40.0 mm(EQ P-P) (at 15.915 Hz input)	
	Measurement frequency range		
	Acceleration	1 Hz to 20 kHz	
	Velocity	3 Hz to 3 kHz	
	Displacement	3 Hz to 500 Hz	
	Acceleration envelope curve	1 kHz to 20 kHz	
	Filter characteristics	Pre-filter Vibration severity (Velocity RMS values with a frequency range of 10 Hz to 1 kHz, in accordance with ISO 2954:2012. Corresponds to a velocity high-pass filter (HPF) at 10 Hz and a low-pass filter (LPF) at 1 kHz (−3 dB point).	
	High-pass filter (HPF)	1 Hz (acceleration only), 3 Hz, 10 Hz, 1 kHz (−10% point) Cutoff slope −18 dB/oct	
	Low-pass filter (LPF)	1 kHz, 5 kHz, 20 kHz (−10% point) Cutoff slope −18 dB/oct	
	HPF and LPF can also be set separately for acceleration, velocity, and displacement.		
Calculation items	Vibration meter (VM) mode		
	Acceleration (ACC)	m/s²	RMS, PEAK, crest factor
	Velocity (VEL)	mm/s	RMS, EQPEAK(PEAK*1)
	Displacement (DISP)	mm, μm	RMS, EQPEAK, EQ P-P(p-p*1)
	Time waveform (TIME) mode	Time waveform	
	Data type	ACC, VEL, DISP, Acceleration envelope curve	
	FFT analysis mode	Spectrum	
	Data type	ACC, VEL, DISP, Acceleration envelope curve	
	Time window functions	Rectangular, Hanning, Flat-top	
	Calculation	Instantaneous value, linear average, maximum value, exponential average (Linear average and maximum value should be able to be calculated and saved simultaneously.)	
	Average number	Maximum 2 048 times	
Trigger	Trigger source	External trigger, Level trigger	
	Trigger level	Steps of 1/8 of full scale on one-sided amplitude	
	Trigger slope	+/−	

Trigger	Pre-trigger	1/8 frame
	Trigger operation	
	Free	Calculation is carried out constantly, regardless of the trigger condition.
	Repeat	Calculation is carried out every time the trigger condition is met.
	Single	Calculation is carried out only once when the trigger condition is met.
Display		3.5-inch TFT-LCD monitor In FFT analysis mode and time waveform (TIME) mode screens, the cursor position is controlledvia the touch panel.
Warning indication		LED (lights up in red to indicate overload)
Memory	Memory media	SD cards (max. 32 GB)*
	Store mode: Manual	Measurement values and setting conditions are saved to a memory card. Up to 1,000 data sets can be saved under one store name, and up to 1,000 store names can be saved.
	Store mode: Auto*1	Up to 200 hours of continuous data can be saved under a single store name. Up to 1,000 store names can be saved.
	Parameter setting memory	Up to 10 setting configurations can be saved in the device's internal memory. Up to 1,000 configurations can be saved on an SD card.
	Wave files	When operating in Vibration meter (VM) mode, the Auto store mode allows recording of vibration waveforms for up to 200 hours.*1
	BMP files	Screen capture can be saved as BMP files.
	Recall function	Measurement data can be read from memory card and redisplayed on screen.
	Resume function	Settings are memorized when power is turned off and can be restored at next power-on
Input/output section	Trigger input	TTL level, BNC-mini plug, 2.5 mm dia. (for CC-24)
	USB port (Type-C)	
	Command control	Settings can be retrieved and changed via communication commands.
	Data transfer	Enables the transferring of data by making the computer recognize the SD card as a removable disk.
	LAN	
	Command control	Setting retrieval and modification, as well as measurement value acquisition*1, are possible via communication commands.
	Data acquisition	SD card can be accessed to retrieve data using FTP function
Power	DC12 V (5.7 to 15 V)	AC adapter NE-21P, six AA batteries (23℃, normal operation, backlight off)
	Battery life	Approx. 12 hours
	Current consumption	130 mA (normal operation, backlight off)
	Power consumption	Approx. 1.5W (in case of AC 100 V (NE-21P))
Operating temperature range, storage temperature range		
	Main unit	−10 ℃ to +50 ℃, 10% to 90% RH (no condensation)
	Piezoelectric accelerometer PV-57I	−20 ℃ to +70 ℃, 90% RH or less
Dimensions, Weight		Approx. 238.9 mm (H) × 80 mm (W) × 44.5 mm (D), Approx. 665 g (including protective cover, batteries, and PV-57I)
Supplied accessories		Piezoelectric accelerometer PV-57I ×1, Curled cable (Attached to the PV-57I) ×1, Magnet attachment VP-53S ×1, Shoulder strap ×1, Size AA alkaline battery ×6, 512 MB SD card ×1

Option

Name	Model
Function extension program	VX-14S
512 MB, 2 GB, 32 GB SD card*	—
Accelerometer	PV series
Charge converter	VP-40/VP-42
BNC adaptor	VP-52C
AC adapter (100 V to 240 V AC)	NE-21P
DC Polarity Converter	CC-43J
BNC pin output cable	CC-24 series

Name	Model
Hand strap	VA-14-020
Carrying case	VA-14-021
Calibration exciter	VE-10
Waveform analysis software	AS-70
Waveform analysis software	CAT-WAVE
Microphone preamplifier	NH-22A
1/2-inch electret microphone	UC-59

*Use only RION supplied cards for assured operation
*1 VX-14S required (sold separately).

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