



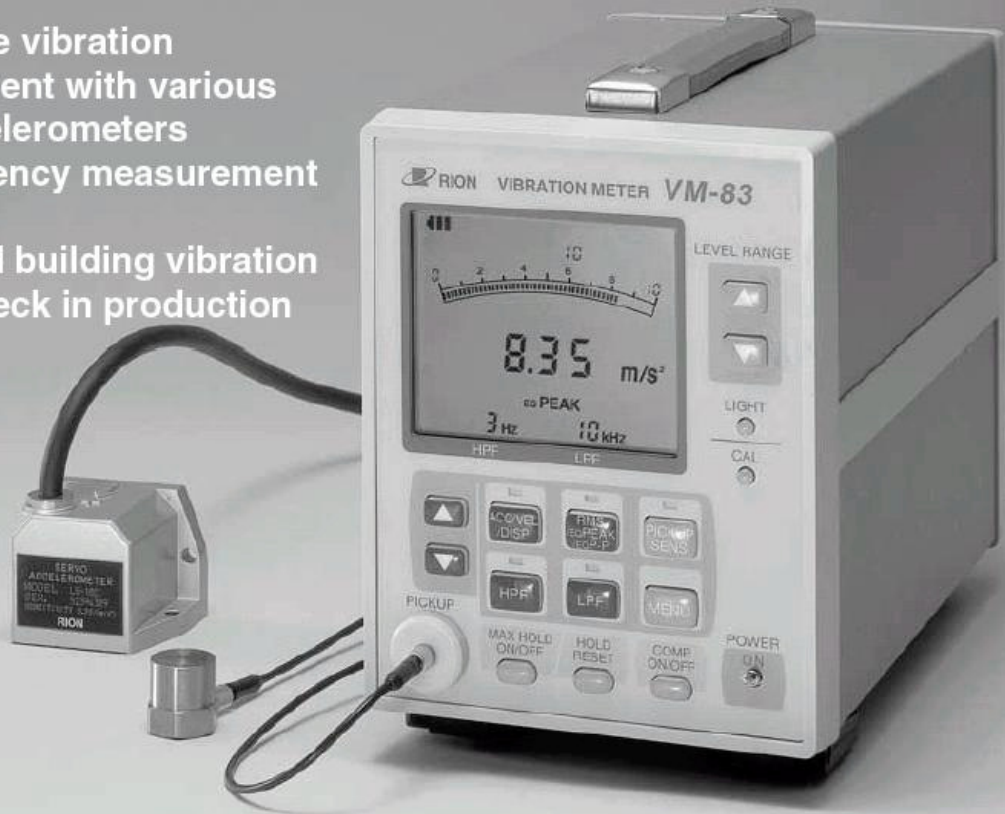
RION CO., LTD.

Vibration Meter **VM-83**

Compact and usable instrument for vibration measurement

Application

- Wide range vibration measurement with various types accelerometers
- Low frequency measurement to 0.1 Hz
- Bridge and building vibration
- Quality check in production line



- Piezo or servo accelerometer input
- Charge or ICP accelerometer input
- Output in acceleration, velocity and displacement
- Comparator with level evaluation output
- Frequency range: 1-20 kHz acceleration or 0.1 Hz to 100 Hz servo acceleration
- High-pass and low-pass filters
- True RMS, EQ PEAK, EQ P-P
- Max hold LCD, Peak hold LCD
- 20 hours battery life

The VM-83 is a general-purpose vibration meter designed for measurement and evaluation of vibrations, using a piezoelectric accelerometer or a servo accelerometer. It provides four types of input connectors and allows selection of acceleration, velocity, and displacement measurement. With the optional servo accelerometer, even very low frequency vibrations in the range of 0.1 to 1 Hz can be measured, something that is very hard to achieve with conventional piezoelectric accelerometers.

Display characteristics can be switched to true RMS, equivalent peak, and equivalent peak-to-peak. A comparator with level evaluation output is available. AC output, DC output, and a serial interface are provided as standard equipment. The unit has a box type enclosure and can be powered from batteries or an AC adapter.

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Specifications

Input Section

Pickup input: For piezoelectric accelerometer Max. input charge 30000 pC

Preamplifier input 1:

For connection of piezoelectric accelerometers via preamplifier VP-26A

Preamplifier input 2:

For connection of piezoelectric accelerometers with integrated preamplifier (ICP) 18 V, 2 mA

Servo pickup input: For connection of servo accelerometer LS-10C

Measurement modes

Acceleration (ACC): m/s² (piezoelectric), mm/s² (servo accelerometer)

Velocity (VEL): mm/s

Displacement (DISP): mm

Measurement range

Piezoelectric

- Accelerometer sensitivity 1.00 -9.99 pC/ (m/s²)
Acceleration: 0.3, 1, 3, 10, 30, 100, 300, 1000 m/s²
Velocity: 3, 10, 30, 100, 300, 1000 mm/s
Displacement: 1, 3, 10, 30, 100, 300, 1000 mm (HPF 1 Hz)
Displacement: 0.3, 1, 3, 10, 30, 100, 300, 1000 mm (HPF 3Hz)
Displacement: 0.03, 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 mm (HPF 10 Hz and above)
- For accelerometer sensitivity 0.030 - 0.999 pC/ (m/s²), multiply above figures by 10
- For accelerometer sensitivity 10.0 - 99.9 pC/ (m/s²), divide above figures by 10

Servo accelerometer

Acceleration: 10, 30, 100, 300, 1000 mm/s²

Velocity: 1, 3, 10, 30, 100 mm/s

Displacement: 0.1, 0.3, 1, 3, 10 mm

Vibration frequency range

Piezoelectric

Acceleration: 1 Hz to 20 kHz ±5% (AC output: 15 kHz to 20 kHz + 5% ; -15 %)
Velocity: 1 Hz to 3 Hz ±10%, 3 Hz to 3 kHz ±5%
Displacement: 1 Hz to 3 Hz ±20%, 3 Hz to 500 Hz ±10%

Servo accelerometer

Acceleration: 0.1 Hz to 100 Hz ±5%
Velocity: 0.1 Hz to 0.3 Hz ±10%, 0.3 Hz to 100 Hz ±5%
Displacement: 0.1 Hz to 0.3 Hz ±20%, 0.3 Hz to 100 Hz ±10%

Filters

Piezoelectric

High-pass filter: 1, 3, 10, 20, 50 Hz (-10% point)
Low-pass filter: 100, 300, 1 k, 3 k, 10 kHz (-10% point)

Servo accelerometer

High-pass filter: 0.1, 0.3, 1 Hz ;
Low-pass filter: 50, 100 Hz

Display characteristics

RMS: true RMS
Equivalent peak (EQ PEAK): RMS X √2
Equivalent peak-to-peak (EQ P-P): EQ PEAK X 2

Maximum value hold

Holds maximum value in selected mode at selected display characteristics

Peak hold Holds peak of acceleration waveform

Comparator function

Based on level evaluation

Comparator level setting: in steps of 2% of full-scale range

Delay time settings: 0 -9 s in 1-s steps

Auto reset time: 0 -90 s in 1-s steps, ON, OFF

Comparator output: Open-collector output (maximum applied voltage 12 V, maximum drive current 25 mA)
 Buzzer output: ON, OFF, LCD flashing

LCD functions

Bar graph: Linear scale, value sampled every 100 ms, 0 - 3.16, 0-10

Measurement value: 4-digit numeric display (average of 20 instantaneous value samples taken at 100 ms intervals)
Measurement mode: Display characteristics, filter, battery capacity (3-stage indication)

Calibration

Pickup sensitivity: 0.030 -0.999 pC/(m/s²), 1.00 -9.99 pC/(m/s²), 10.0 -99.9 pC/(m/s²)

Calibration output: Signal for external equipment calibration

AC Piezoelectric: 80 Hz ±2%, 2 V ±2%

Servo accelerometer: 1 Hz ±2%, 2 V ±2%

DC: 2 V ±2%

Outputs

AC output: Range full-scale 2 V, output impedance 600 Ω, BNC connector

Output voltage accuracy

Piezoelectric (unit electrical characteristics, 80 Hz)

Acceleration: range full-scale ±2%

Velocity: range full-scale ±3%

Displacement: range full-scale ±5%

Servo accelerometer (overall accuracy with LS-10C, 1 Hz)

Acceleration: range full-scale ±3%

Velocity: range full-scale ±4%

Displacement: range full-scale ±6%

DC output: Range full-scale 2 V, output impedance 600 Ω, BNC connector

Output voltage accuracy

Piezoelectric (unit electrical characteristics, 80 Hz)

Acceleration: range full-scale ±2%

Velocity: range full-scale ±3%

Displacement: range full-scale ±5%

Ambient conditions for operation

-10 to +50°C, 20 - 90% RH

Power requirements IEC R14 (size D) batteries X 4 or AC adapter (UP01811065A, option)

Current consumption Approx. 190 mA (*1)

Continuous operation on batteries (alkaline): approx. 20 hours (*1)

*1 Varies depending on measurement conditions

Dimensions and weight

171 (H) X 120 (W) X 234 (D) mm, Approx. 1.8 kg

Interface

Serial interlace: SWKR4030 (option) interlace cable SC-31M / SC-31S (option) allows connection of multiple VM83 units (max. 16) to a single computer
 *Maximum cable length: 400 m

Printer output:

For data output to printer (CP-10, CP-11, DPU-414)

Supplied accessories

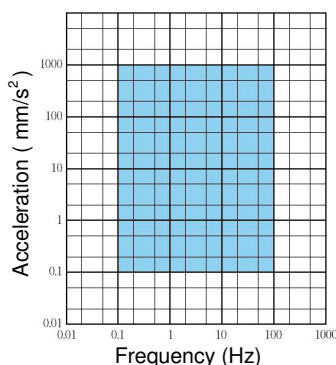
Storage case IEG R14 (size D) batteries X 4 (manganese)

Optional Accessories

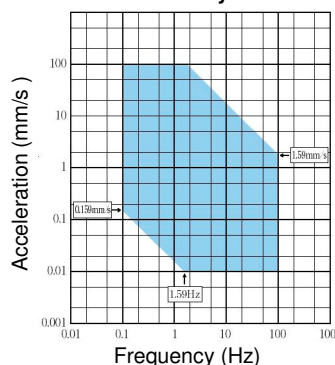
AC adapter	UP0181106SA
Piezoelectric accelerometer	
Vibration meter preamplifier	VP-26A
Extension cable	EC-02 series
Servo accelerometer	LS-10C
Servo accelerometer cable	EC-40 series
Printer	DPU-414
VM-83 management software	
VM-83PB1 (for Windows 9S/98/NT4.0)	
Multi-channel adapter M	SC-31M
Multi-channel adapter S	SC-31S
Interlace cable	5WKR4030

Measurement range of servo accelerometer

Acceleration



Velocity



Displacement

