

# Vibration Meter **VM-82**

*Easy-to-use vibration meter  
for acceleration, velocity, and  
displacement measurements*



〈Actual size〉

  
RION  
Vibration Meter  
**VM-82**



# On site weapon!!



〈Actual size〉

## ■ Outline

The vibration meter VM-82 is designed for a wide range of industrial applications. It is particularly suited for routine maintenance and monitoring of rotational machinery, as well as for performance testing during machine development.

Acceleration (ACC), velocity (VEL), and displacement (DISP) can be easily measured using a suitable frequency range, allowing comprehensive and precise evaluation of machine vibrations.

The large LCD panel containing a numeric readout as well as a bar graph type meter lets the user check vibration fluctuations at a glance. Measurement results can be printed and stored in the internal memory of the unit, for later data processing using a computer.

## ■ Features

- **Protective sliding cover for preset parameters and less frequently used setup keys. Side-mounted main controls (HOLD, STORE, POWER switch) make it easy to hold and operate the unit with one hand.**
- **Internal memory stores up to 1000 data**
- **Backup function instantly reactivates previous settings at next power-on**
- **Choice of accelerometers allows wide-range measurement of ACC,VEL and DISP**
- **Built-in serial interface enables data processing on a computer**
- **Capability for data printout using optional printer**
- **Low-power design enables up to 30 hours of continuous use on one set of alkaline batteries**
- **Compact dimensions and light weight: only 320 grams including batteries**

# Store up to 1000 Data For Recall or Processing on a Computer

## Wide range of possible applications

Using the standard accelerometer PV-57 supplied with the unit, the measurement range of the VM-82 is as indicated by the   section in the table. Selecting a different accelerometer makes it possible to measure very low-level or high-level vibrations as well. Table 1 shows the various measurement ranges and frequency ranges that are available with different accelerometers.

## Easy-to-read display

The large LCD panel displays the bar graph meter and numeric reading at the same time, making it easy to visually evaluate any changes immediately. The display also shows the frequency range setting and other useful information. Backlighting can be turned on as desired, allowing use of the unit also in dark locations.



Measurement data display screen



Backlit screen

Measurement mode	Accelerometer sensitivity (mV/m/s <sup>2</sup> )	Measurement full-scale range	Frequency range
ACC (m/s <sup>2</sup> ) Acceleration	0.1 to 0.99	10, 100, 1000, 10000	3 Hz to 1 kHz
	1.0 to 9.9	1, 10, 100, 1000	3 Hz to 5 kHz
	10 to 99	0.1, 1, 10, 100	3 Hz to 20 kHz, 1 Hz to 100 Hz
VEL (mm/s) Velocity	0.1 to 0.99	100, 1000, 10000	3 Hz to 1 kHz
	1.0 to 9.9	10, 100, 1000	*10 Hz to 1 kHz
	10 to 99	1, 10, 100	
DISP (mm) Displacement	0.1 to 0.99	1, 10, 100, 1000	3 Hz to 500 Hz
	1.0 to 9.9	0.1, 1, 10, 100	10 Hz to 500 Hz
	10 to 99	0.01, 0.1, 1, 10	

Table 1   indicates range with standard PV-57

\*Electrical characteristics for velocity 10 Hz - 1 kHz measurement correspond to frequency response requirements as defined by JIS B 0907-1989 (Requirements for Instruments to Measure Vibration Severity in Rotational and Reciprocal Machinery)

## Data store capability

The internal memory of the VM-82 can hold up to 1000 data, letting the user verify results also after the end of measurement. In recall mode, any of the stored data can be easily redisplayed by specifying the desired address. Stored data can also be further processed by a computer.

\*Bar graph and battery reminder are not stored.



Display of recalled data

## Data printout

The separately available printer can be used to produce hard copy of stored data or currently displayed data, together with information on measurement time and measurement parameters.

```
No. 000 1997 01/16 16:35
  1.4 mm/s RMS FS 10
  FREQ RANGE 10Hz ~ 1kHz
No. 001 1997 01/16 16:35
  1.7 mm/s RMS FS 10
  FREQ RANGE 10Hz ~ 1kHz
No. 002 1997 01/20 09:02
  45 mm/s RMS FS 100
  FREQ RANGE 10Hz ~ 1kHz
No. 003 1997 01/20 09:02
  44 mm/s RMS FS 100
  FREQ RANGE 10Hz ~ 1kHz
No. 004 1997 01/24 13:07 OVER
  1.28 m/s EQ PEAK FS 1
  FREQ RANGE 3Hz ~ 1kHz
No. 005 1997 01/24 13:07
  3.2 m/s EQ PEAK FS 10
  FREQ RANGE 3Hz ~ 1kHz
```

Print sample of stored data

```
1997 02/19 13:54 *=OVER
DISP mm EQ PEAK FS 0.1
FREQ RANGE 10Hz ~ 500Hz
0.000 0.000 0.001 0.001 0.002
0.003 0.006 0.008 0.011 0.012
0.011 0.014 0.013 0.006 0.006
0.013 0.014 0.006 0.006 0.010
0.013 0.014 0.015 0.021 0.019
0.015 0.015 0.011 0.011 0.008
1997 02/19 13:55
0.008 0.007 0.010 0.014 0.016
0.020 0.017 0.015 0.011 0.014
0.018 0.017 0.013 0.016 0.015
0.012 0.011 0.013 0.013 0.011
0.008 0.008 0.009 0.015 0.016
0.013 0.014 0.011 0.009 0.009
```

Print sample of display data

# Specifications

## Accelerometer PV-57 (supplied accessory)

Type:	Shear-type piezoelectric accelerometer (with integrated preamplifier)
Sensitivity:	5.1 mV/m/s <sup>2</sup> ±3% 80 Hz
Frequency range:	1 Hz - 5 kHz (±10%)
Dimensions:	17 (width across hexagonal flat) × 49 mm
Weight:	50 g
Other usable types :	PV-55 (direct connection possible)

## Measurement range (with PV-57)

Acceleration (ACC):	0.02 - 200 m/s <sup>2</sup> EQ PEAK 1 Hz - 5 kHz
Velocity (VEL):	0.3 - 1000 mm/s RMS 3 Hz - 1 kHz 0.1 - 1000 mm/s RMS 10 Hz - 1 kHz
Displacement (DISP):	0.02 - 100 mm EQ PEAK 3 Hz - 500 Hz 0.001 - 100 mm EQ PEAK 10 Hz - 500 Hz

## Frequency range

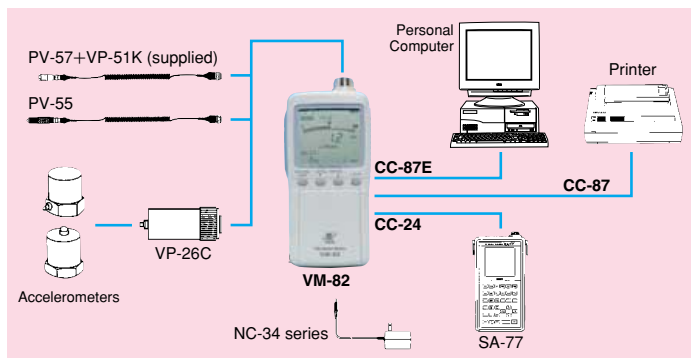
Acceleration (ACC):	3 Hz - 1 kHz, 3 Hz - 5 kHz, 1 Hz - 100 Hz, 3 Hz - 20 kHz
Velocity (VEL):	10 Hz - 1 kHz, 3 Hz - 1 kHz
Displacement (DISP):	10 Hz - 500 Hz, 3 Hz - 500 Hz

## Measurement full scal range

For accelerometer PV-57 and accelerometers with sensitivity	1.0 - 9.9 mV/m/s <sup>2</sup> (pC/m/s <sup>2</sup> )
Acceleration (ACC m/s <sup>2</sup> ):	1, 10, 100, 1000
Velocity (VEL mm/s):	10, 100, 1000
Displacement (DISP mm):	0.1, 1, 10, 100
Indication parameters	
Acceleration:	EQ PEAK, RMS
Velocity:	RMS, EQ PEAK
Displacement:	EQ PEAK, EQp-p, RMS EQ PEAK = RMS × √2 EQp-p = EQ PEAK × 2

## Display

Numerical range:	3 digits, 001 - 128 Mean value of 20 sampling values on each 100 ms is displayed, updated every 2 seconds
Bar graph display:	Logarithmic scale, 1 - 100% of full-scale
Indication characteristics:	RMS, EQ PEAK, EQp-p
Indication modes:	m/s <sup>2</sup> , mm/s, mm
Frequency range:	Selected range for each measurement mode shown at bottom of display
Memory addresses:	000 - 999 (1000 addresses)



System Configuration

Battery status indication:	4-segment display
Real time clock:	Year, month, day, hour, minute
Accelerometer sensitivity:	0.10 - 0.99, 1.0 - 9.9, 10 - 99 mV/m/s <sup>2</sup>
Backlight:	LED
Data memory:	Maximum 1000 data (000 - 999) can be stored manually. Stored data comprise all display contents except battery status. Internal backup battery preserves stored data.

Overload indication: "OVER" shown on LCD

## Output

AC output:	Range full-scale: 1 V Output impedance: approx. 600 Ω
DC output:	Range full-scale: 1 V Output impedance: approx. 600 Ω
Output voltage and display accuracy (electrical characteristics)	
Acceleration (ACC):	Range full-scale ±2% (80 Hz)
Velocity (VEL):	Range full-scale ±3% (80 Hz)
Displacement (DISP):	Range full-scale ±5% (80 Hz)
Overall accuracy (in combination with PV-57)	
Acceleration (ACC):	Range full-scale ±5% (80 Hz)

## Interfaces

Serial interface:	For data output and remote control of VM-82
Printer interface:	For output of data to printer (Option)

## Ambient conditions:

Accelerometer:	-20 to +70°C, < 90 % RH
Main unit:	-10 to +50°C, < 90 % RH

## Power requirements

DC:	4 IEC R6 (size "AA") batteries
AC:	AC adapter (NC-34 series, option)

## Current consumption

Approx. 55 mA (6 V, backlight off)

## Battery life (continuous use)

Alkaline batteries:	approx. 30 hours
Manganese batteries:	approx. 14 hours

## Dimensions

Approx. 168 (W) × 76 (H) × 35 (D) mm

## Weight

Approx. 320 g (including 4 manganese batteries)

## Supplied accessories

Accelerometer (PV-57)	1
Consists of:	
Accelerometer PV-57	1
Accelerometer cable VP-51K	1
Magnet attachment VP-53S	1
Round bar attachment VP-53E	1
Hex flat attachment VP-53D	1
M6 screws VP-53A	2
IEC R6 batteries	4
Soft carrying case	1
Instruction manual	1

Specifications subject to change without notice.

 **RION CO., LTD.**

20-41, Higashimotomachi 3-chome, Kokubunji, Tokyo 185-8533, Japan  
Telephone: +81-42-359-7888 Fax: +81-42-359-7442  
URL : <http://www.rion.co.jp/> E-mail : [info@rion.co.jp](mailto:info@rion.co.jp)

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