

3-mode measurement of acceleration, velocity and displacement

Internal memory stores up to 1 000 data



Vibration Meter



Vibration Meter VM-82

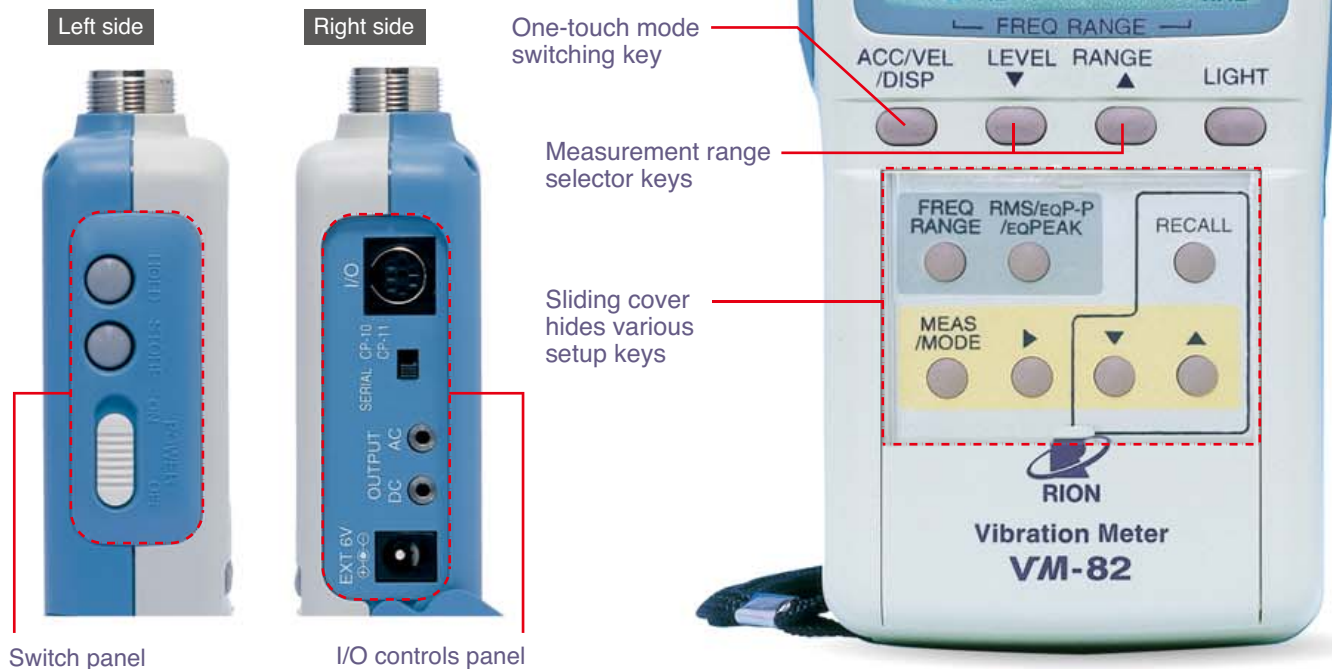
Easy-to-use vibration meter

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.



Vibration Meter VM-82

- 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.
- Backup function instantly reactivates previous settings at next power-on
- Built-in serial interface enables data processing on a computer
- 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



Switch panel

I/O controls panel

Store up to 1 000 Data For Recall or Processing on a Computer

Wide range of possible applications

Using the standard accelerometer PV-57A 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. Accelerometer sensitivity, measurement full-scale range and frequency range can be set up in the relationship shown in the table.

Measurement mode	Accelerometer sensitivity mV/(m/s ²) (pC/(m/s ²))	Measurement full-scale range	Frequency range
ACC (m/s ²) Acceleration	0.1 to 0.99	10 to 10 000	3 Hz to 1 kHz, 3 Hz to 5 kHz, 3 Hz to 20 kHz, 1 Hz to 100 Hz
	1.0 to 9.9	1 to 1 000	
	10 to 99	0.1 to 100	
VEL (mm/s) Velocity	0.1 to 0.99	100 to 10 000	3 Hz to 1 kHz *10 Hz to 1 kHz
	1.0 to 9.9	10 to 1 000	
	10 to 99	1 to 100	
DISP (mm) Displacement	0.1 to 0.99	1 to 1 000	3 Hz to 500 Hz, 10 Hz to 500 Hz
	1.0 to 9.9	0.1 to 100	
	10 to 99	0.01 to 10	

*Electrical characteristics for velocity 10 Hz to 1 kHz measurement correspond to frequency response requirements as defined by ISO 2954 :1975 (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

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

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 2004 09/16 16:35
1.4 mm/s RMS FS 10
FREQ RANGE 10Hz ~ 1kHz
No. 001 2004 09/16 16:35
1.7 mm/s RMS FS 10
FREQ RANGE 10Hz ~ 1kHz
No. 002 2004 09/20 09:02
45 mm/s RMS FS 100
FREQ RANGE 10Hz ~ 1kHz
No. 003 2004 09/20 09:02
44 mm/s RMS FS 100
FREQ RANGE 10Hz ~ 1kHz
No. 004 2004 09/24 13:07 OVER
1.28 m/ss EQ PEAK FS 1
FREQ RANGE 3Hz ~ 1kHz
No. 005 2004 09/24 13:07
3.2 m/ss EQ PEAK FS 10
FREQ RANGE 3Hz ~ 1kHz
    
```

Print sample of stored data

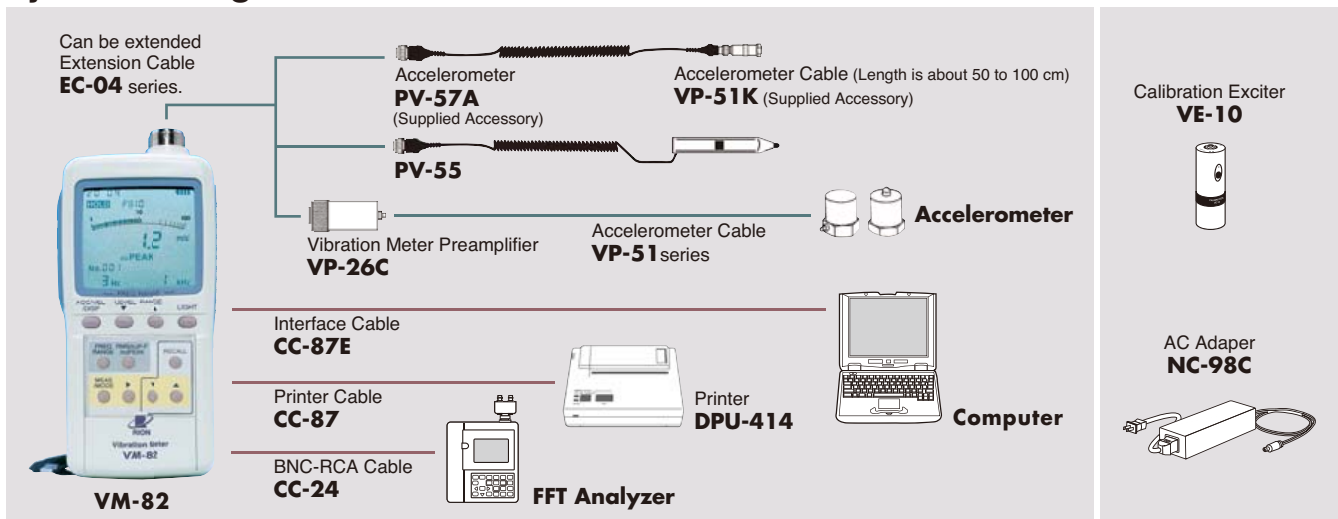
```

2004 09/19 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

2004 09/19 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

System Configuration (Optional accessories and Peripheral devices.)



Specifications

Accelerometer PV-57A (supplied accessory)	
Type	Shear-type piezoelectric accelerometer (with integrated preamplifier)
Sensitivity	5.1 mV/m/s ² ±3 % 80 Hz, 23 °C
Frequency range	1 Hz to 5 kHz (±10 %)
Dimensions	17 (width across hexagonal flat) x49 mm
Weight	45 g
Other usable types	PV-55 (direct connection possible)

Measurement range (with PV-57A)		
Acceleration (ACC)	0.02 to 200 m/s ²	EQ PEAK 1 Hz to 5 kHz
Velocity (VEL)	0.3 to 1 000 mm/s	RMS 3 Hz to 1 kHz
	0.1 to 1 000 mm/s	RMS 10 Hz to 1 kHz
Displacement (DISP)	0.02 to 100 mm	EQ PEAK 3 Hz to 500 Hz
	0.001 to 100 mm	EQ PEAK 10 Hz to 500 Hz

Frequency range	
Acceleration (ACC)	3 Hz to 1 kHz, 3 Hz to 5 kHz, 1 Hz to 100 Hz, 3 Hz to 20 kHz
Velocity (VEL)	10 Hz to 1 kHz, 3 Hz to 1 kHz
Displacement (DISP)	10 Hz to 500 Hz, 3 Hz to 500 Hz

The above figures refer to the point where response is down by 10 % from flat response, due to the action of a high-pass filter or low-pass filter. For displacement measurements, the 500 Hz limit is imposed by the maximum input acceleration. The electrical characteristics of 10 Hz to 1 kHz for velocity correspond to JIS B 0907:1989 (Requirements for Instruments to Measure Vibration Severity in Rotational and Reciprocal Machinery).

Measurement full scale range	
For accelerometer PV-57A and accelerometers with sensitivity	1.0 to 9.9 mV/m/s ² (pC/m/s ²)
Acceleration (ACC)	1, 10, 100, 1 000 m/s ²
Velocity (VEL)	10, 100, 1 000 mm/s
Displacement (DISP)	0.1, 1, 10, 100 mm

When accelerometer sensitivity is 0.1 to 0.99 mV/(m/s²) (0.1 to 0.99 pC/(m/s²)), above ranges are to be multiplied by a factor of 10.

When accelerometer sensitivity is 10 to 99 mV/(m/s²) (10 to 99 pC/(m/s²)), above ranges are to be multiplied by a factor of 1/10.

Indication parameters	
Acceleration	RMS, EQ PEAK
Velocity	RMS, EQ PEAK
Displacement	RMS, EQ PEAK, EQ p-p
EQ PEAK=RMS × $\sqrt{2}$, EQ p-p=EQ PEAK × 2	

Display	
Numerical range	001 to 128 Mean value of 20 sampling values on each 100 ms is displayed, updated every 2 seconds
Bar graph display	Logarithmic scale, 1 to 100 % of full-scale
Indication characteristics	RMS, EQ PEAK, EQ p-p
Indication modes	m/s ² , mm/s, mm
Frequency range	Selected range for each measurement mode shown at bottom of display
Memory addresses	000 to 999 (1 000 addresses)
Battery status indication	4-segment display
Real time clock	Year, month, day, hour, minute
Accelerometer sensitivity	0.10 to 0.99, 1.0 to 9.9, 10 to 99 mV/m/s ²
Backlight	LED
Overload indication	"OVER" shown on LCD

Data memory	Maximum 1 000 data (000 to 999) can be stored manually. Stored data comprise all display contents except bar graph and battery status. Internal backup battery preserves stored data.
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Gain calibration	After setting the accelerometer sensitivity, calibration is performed to provide proper gain.
Setting range	0.10 to 0.99, 1.0 to 9.9, 10 to 99 pC/m/s ² (mV/m/s ²)
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-57A)	
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, max. 90 % RH
Main unit	-10 to +50 °C, max. 90 % RH
Power requirements	
DC	4 IEC R6P (size "AA") batteries
AC	AC adapter (NC-98C, 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, Weight	167.5 (H) × 76 (W) × 35 (D) mm, Approx. 320 g (including 4 manganese batteries)
Supplied accessories	Accelerometer PV-57A ×1 Accelerometer cable VP-51K ×1 Magnet attachment VP-53S ×1 Rod attachment VP-53E ×1 Hex flat attachment VP-53D ×1 M6 screws VP-53A ×2 IEC R6P batteries ×4 Soft carrying case ×1

* Specifications subject to change without notice.

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