RION

3-mode measurement of acceleration, velocity and displacement
Internal memory stores up to 1 000 data

Vibration Meter
VM-82

CE

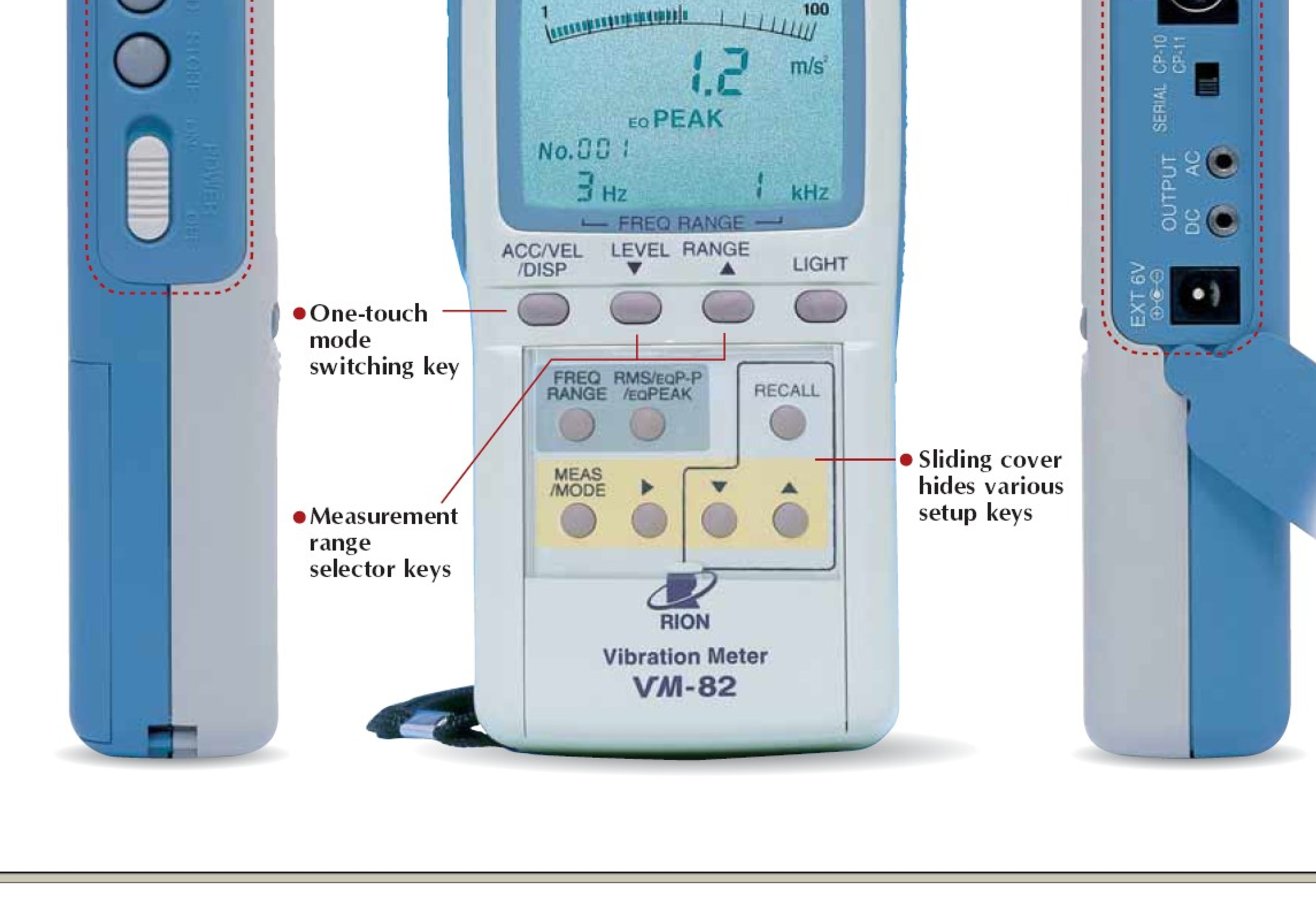
Easy-to-use vibration meter

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

▶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.
- 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



Store up to 1000 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/s²) (pc/(m/s²))	Measurement full-scale range	Frequency range
ACC (m/s²) Acceleration	0.1 to 0.99	10, 100, 1 000, 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, 10, 100, 1 000	
	10 to 99	0.1, 1, 10, 100	
VEL (mm/s) Velocity	0.1 to 0.99	100, 1 000, 10 000	3 Hz to 1 kHz ※10 Hz to 1 kHz
	1.0 to 9.9	10, 100, 1 000	
	10 to 99	1, 10, 100	
DISP (mm) Displacement	0.1 to 0.99	1, 10, 100, 1 000	3 Hz to 500 Hz, 10 Hz to 500 Hz
	1.0 to 9.9	0.1, 1, 10, 100	
	10 to 99	0.01, 0.1, 1, 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)

Easy-to-read display

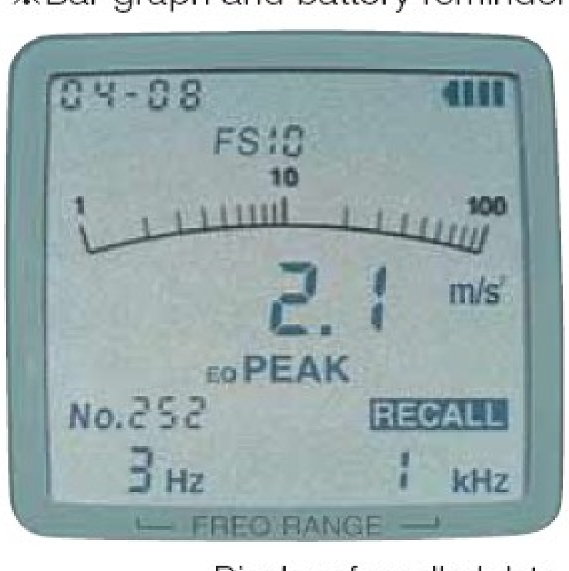
The large LCD panel displays the bar graph meter and numeric reading at the same time, making it easy to visually evaluate any changes immediately. The display also shows the frequency range setting and other useful information. Backlighting can be turned on as desired, allowing use of the unit also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

Data store capability

The internal memory of the VM-82 can hold up to 1 000 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.

Measurement data display screen

Backlit screen



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 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

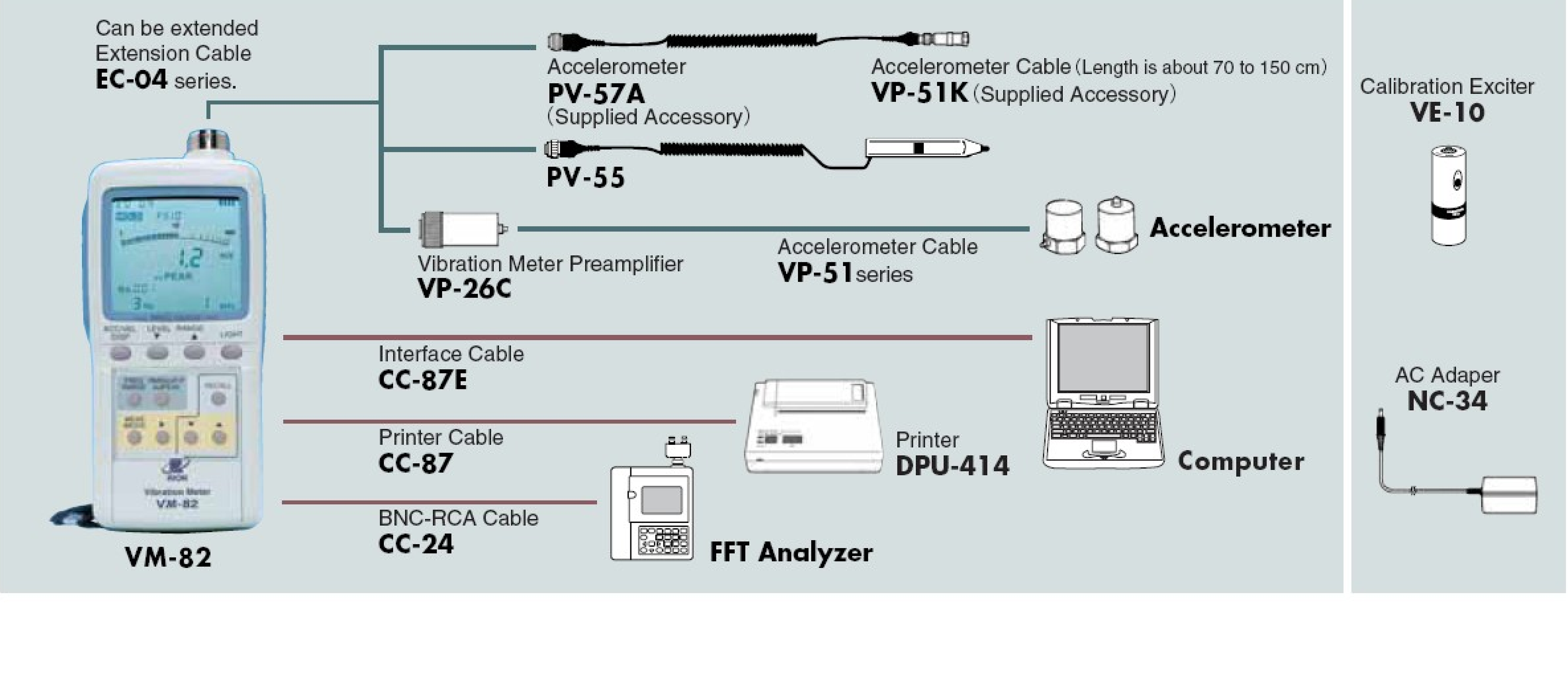
```
        2004 09/19 13:54        *=OVER
  DISP   mm    EQ PEAK FS 0.1
   FREQ RANGE 10Hz ~    500Hz

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

Item		Specification
Accelerometer PV-57A (supplied accessory)		
	Type	Shear-type piezoelectric accelerometer (with integrated preamplifier)
	Sensitivity	5.1 mV/m/s² ±3 % 80 Hz
	Frequency range	1 Hz to 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-57A)		
	Acceleration (ACC)	0.02 to 200 m/s² 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
Mesurement full scal range		
	For accelerometer PV-57A and accelerometers with sensitivity	1.0 to 9.9 mV/m/s² (pC/m/s²)
	Acceleration (ACC)	1, 10, 100, 1 000 m/s²
	Velocity (VEL)	10, 100, 1 000 mm/s
	Displacement (DISP)	0.1, 1, 10, 100 mm
Indication parameters		EQ PEAK = RMS ×√2 EQ p-p = EQ PEAK × 2
	Acceleration	RMS, EQ PEAK
	Velocity	RMS, EQ PEAK
	Displacement	RMS, EQ PEAK, EQ p-p
Display		
	Numerical range	3 digits, 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/s², 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/s²
	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 battery status.Internal backup battery preserves stored data.

Item			Specification
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 ℃, <90 % RH
	Main unit		−10 to +50 ℃, <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・Weight			167.5 (H) × 76 (W) × 35 (D) mm・ Approx. 320 g (including 4 manganese batteries)
Supplied accessories			Accelerometer PV-57A ×1 Consists of: 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