

Vibration Meter VM-82A

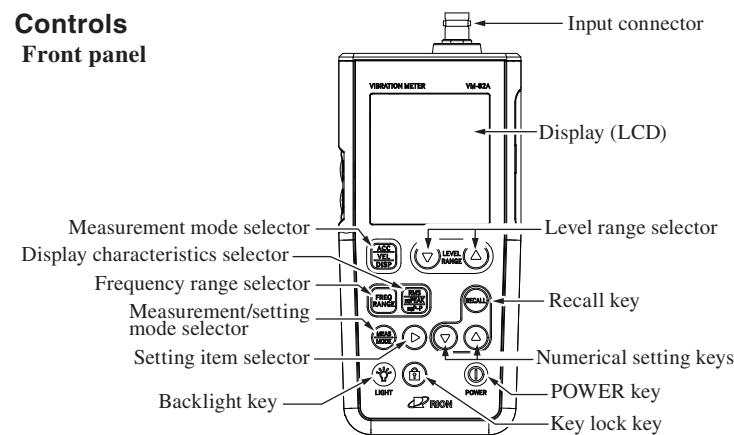
CONCISE MANUAL

Precautions

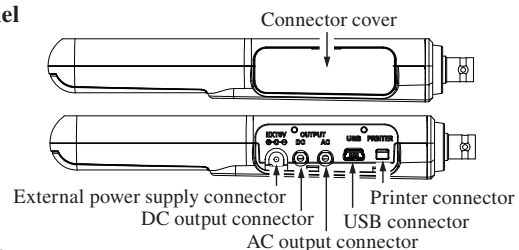
- Operate the unit only as described in this manual.
- Take care not to drop the unit, and protect it from shocks and vibrations.
- Do not store or use the unit in locations where the unit may be subject to
 - splashes of water or high levels of dust,
 - air with high salt or sulphur content, or other gases or chemicals,
 - high temperature (50°C or more), high humidity (90% RH or more), or direct sunlight,
 - directly transmitted vibrations or shock.
- The power cord used to connect the optional AC adapter to an AC outlet is a 100 V AC cord for domestic use in Japan, which is compliant with Japanese laws and electrical safety standards. Do not use this power cord outside Japan or with any voltage other than 100 V AC. Otherwise, RION cannot guarantee the safety of the equipment. Use a power cable that is compliant with the laws and electrical safety standards of your location.
- If you notice any sign of a problem during use, disconnect the AC adapter, remove the battery, and contact your supplier.
- Observe the following precautions after using the unit:
 - Always turn the unit off.
 - When the unit is not to be used for a week or longer, remove the batteries to prevent possible damage caused by battery leakage.
- Do not disassemble the unit or attempt internal alterations.
- Have the unit and the piezoelectric accelerometer checked and serviced about once every 18 months to 24 months. (Sensitivity calibration can be performed at the factory for a fee.)
- When powering the unit externally, use only the specified optional AC adapter (NC-98 series). Using a different adapter may cause malfunction or damage.
- Do not tap the LCD panel for example with your finger or a pen, to prevent possible malfunction or damage.
- The life of the backup battery for the internal clock of the unit is limited. You should have the battery replaced about once every five years. Regarding replacement of the battery, please contact your supplier.
- In case of malfunction, do not attempt any repairs. Note the condition of the unit clearly and contact the supplier.
- When using the unit near rotating machinery, take care that cables cannot be caught in the machinery.
- When disposing of the unit or the accessories, follow national and local regulations regarding waste disposal.

Controls

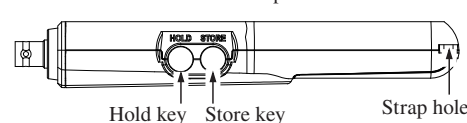
Front panel



Right side panel



Left side panel



Preparations

Always set the power to OFF before inserting batteries and making any connections.

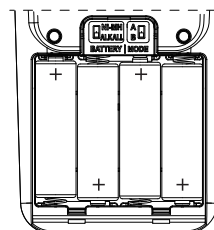
Power supply

This unit can be powered by four IEC R6 (size AA) batteries or by the optional AC adapter NC-98 series.

NC-98 series: For 100 V to 240 V AC

Inserting the batteries

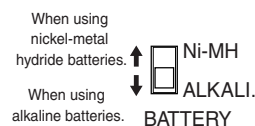
Insert four IEC R6 (size AA) batteries with correct polarity, as shown in the illustration right.



Selecting the battery type

Opening the battery compartment gives access to the battery type selecting switch (BATTERY) as shown in the illustration at right. Select the battery type used for the unit.

The remaining battery capacity corresponding to the selected battery type is displayed. Available settings are ALKALI. (alkaline battery) and Ni-MH (nickel-metal hydride battery).



Important	
Select the correct battery type.	
A manganese battery cannot be used.	

The life of the batteries depends on various usage factors. For reference, some general figures are given below.

Room temperature, backlight off, communication off, continuous use and connected accelerometer is under quiet conditions.

Alkaline batteries (LR6): approx. 30 hours

Nickel-metal hydride battery (HR6)

eneloop XX: approx. 32 hours

* Eneloop XX is trademarks or registered trademarks of the Panasonic Group.

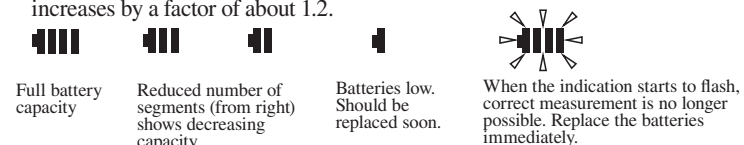
* Be sure to use a dedicated charger when charging eneloop XX.

When backlight is on, power consumption increases by a factor of about 1.5.

When communication cable is connected, power consumption increases by a factor of about 1.2.

Important	
Take care not to insert the batteries with wrong polarity. Make sure that all four batteries are of the same type. Do not mix different battery types or old and new batteries. Remove the batteries from the unit if it is not to be used for a week or more.	

The battery indicator in the top right corner of the display shows the remaining battery capacity. When communication cable is connected, power consumption increases by a factor of about 1.2.



Power-on mode

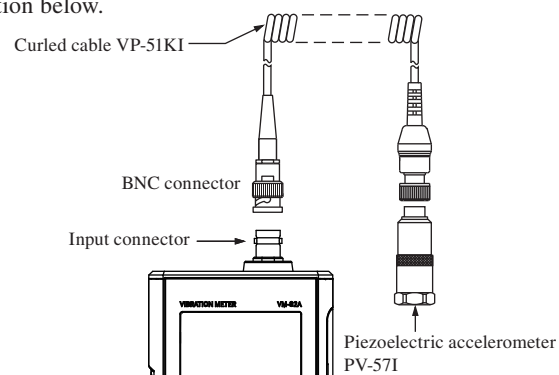
Opening the battery compartment gives access to the power-on mode switch (MODE) as shown in the illustration at right. Normally the "A" position is used. By setting this switch to "B", you can have the on/off status of the unit controlled by the power supplied to the external power supply connector (EXT 6V). In such a case, the POWER key on the front panel has no effect.

Important	
When setting the power-on mode switch to "B", remove all batteries from the battery compartment. Otherwise the power-on mode will not operate normally.	

When using the supplied piezoelectric accelerometer PV-57I

Important	
Make sure that the power of the unit turns off before connecting or disconnecting the cable and accelerometer.	

Make the connection with the supplied curled cable VP-51KI, as shown in the illustration below.

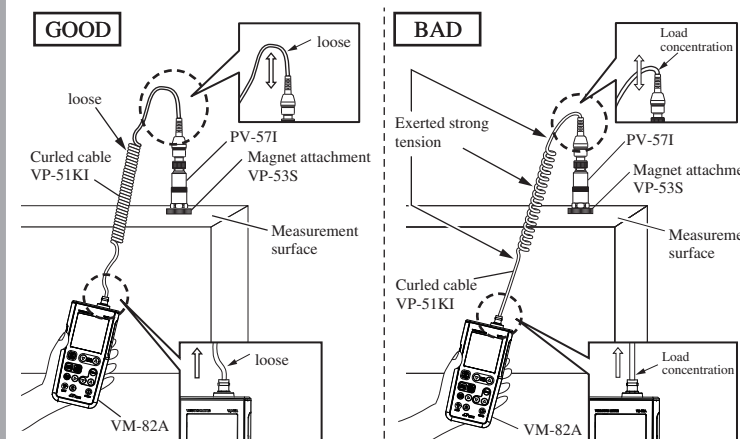


Caution

When using magnet attachment VP-53S to fix an object to be measured to the piezoelectric accelerometer, be careful not to get injured when attaching or detaching.

Do not pull cable when attaching/detaching the VP-53S to prevent breaking of cable.
Do not let go of the VP-53S until it is placed on the surface to be measured to prevent breaking of piezoelectric accelerometer.

Important	
Keep VP-51KI loose during the measurement. If it is exerted strong tension, it may cause breaking of cable.	



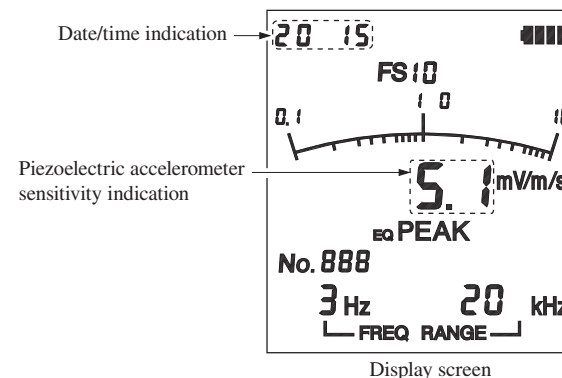
Setup

Setting mode

Each push of the MEAS/MODE key toggles between the measurement mode (MEAS) and setting mode (MODE).

Setting the date/time and sensitivity

In the setting mode, the setting item selector [▶] moves the current setting item in the order Year → Month → Day → Hour → Minute → Piezoelectric accelerometer sensitivity → Year etc. The time is set and displayed in 24-hour notation.



The currently flashing item can be changed. Use the numerical setting keys [▲] [▼] to change the value. Pressing the [▲] key increases the value and pressing the [▼] key decreases it. Keeping a key depressed for 2 seconds or more causes the value to change rapidly.

Setting the piezoelectric accelerometer sensitivity

Change the setting at the VM-82A so that it matches the sensitivity indicated on the calibration chart of the used piezoelectric accelerometer. Round the sensitivity up as necessary.

- Cause the piezoelectric accelerometer sensitivity item to flash.
- Use the numerical setting keys [▲] [▼] to change the value. Pressing the [▲] key increases the value and pressing the [▼] key decreases it. Keeping a key depressed for 2 seconds or more causes the value to change rapidly. The display range is 0.10 to 99, with the resolution as indicated below.

Display resolution	0.10 to 1.0	"0.01" steps
	1.0 to 10	"0.1" steps
	10 to 99	"1" steps

Measurement

Vibration measurement

- Press the POWER key for over two seconds to turn the unit on.
- Select the measurement mode with the measurement mode selector.

3. Set the frequency range and display characteristics. The relationship between measurement and accelerometer sensitivity, level range, and frequency range is as shown in the table below.

In the ACC mode, when the supplied piezoelectric accelerometer PV-57I is used, the measurement full-scale point can be set to a value between 1 and 1000. Set the frequency range to a setting which suits the measurement purpose.

Measurement mode	Accelerometer sensitivity	Measurement range	Frequency range
ACC (m/s ²)	0.1 to 0.99	10 to 10000	3 Hz to 1 kHz
	1.0 to 9.9	1 to 1000	3 Hz to 5 kHz
	10 to 99	0.1 to 100	3 Hz to 20 kHz 1 Hz to 100 Hz
VEL (mm/s)	0.1 to 0.99	100 to 10000	3 Hz to 1 kHz
	1.0 to 9.9	10 to 1000	10 Hz to 1 kHz
	10 to 99	1 to 100	
DISP (mm)	0.1 to 0.99	1 to 1000	3 Hz to 500 Hz
	1.0 to 9.9	0.1 to 100	10 Hz to 500 Hz
	10 to 99	0.01 to 10	

4. If the input signal overloads the circuitry of the VM-82A, the indication OVER appears and the backlight will come on in red on the display. Adjust the level range with the level range selector so that OVER does not appear and the measurement value is easy to read.

Storing measurement data

Displayed measurement data can be stored in the internal memory. The entire display contents except for the bar graph indication and the battery status indication are stored, as listed below.

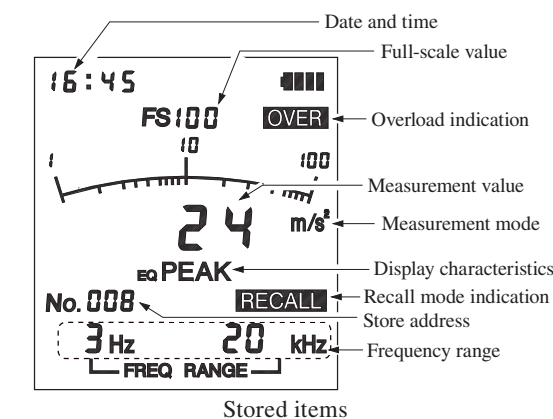
Date and time, Measurement range (full-scale value), Measurement value, Measurement mode, Display characteristics, Frequency range, Overload yes/no

- When wishing to store the data in a specific address, use the numerical setting keys to select the address. Then close the cover again.

Important	
When data are stored in an address that already contains data, the previous data will be overwritten.	

2. Press the store key to store the currently displayed data. (It is also possible to use the hold key to freeze the display and then perform the store operation.)

3. When the store key is pressed, the display very briefly turns off and the data are stored. The store address is incremented by 1 count. If the store address currently is 999 and the store key is pressed, the next store address will be 000.



Recall mode

When the recall key is pressed, the recall mode is activated. The indication RECALL appears on the display and stored data are displayed. Pressing the key again switches back to the measurement mode.

- Press the recall key to activate the recall mode.
- Use the numerical setting keys to select the address to be recalled.

Clearing stored data

If the unit is turned on while holding down the recall key on the front panel, all stored data will be cleared. This process will take five seconds or more and the screen is turned off during the process. When it is completed, the measurement screen appears.

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