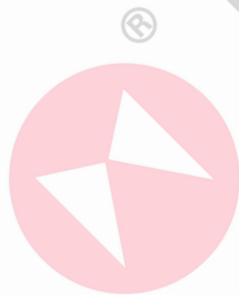


MITECH PORTABLE VIBRATION METER MV800

User's Manual



MITECH CO., LTD.
www.ponpe.com

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1. Overview

MITECH portable vibration meter MV800 is made up of piezoelectric transducer and digital display circuit. It is mainly used to measure vibration acceleration, speed and displacement of various rotary machine. This product has the advantages of large measurement, wide variety, intuitively demonstration, small size, light weight etc. It is widely used in measurement on site or at height and can reduce the working strength, improve the working efficiency.

1.1 Application

MV800 is mainly used in monitoring the vibration of machines, such as industries of manufacturing, electric, metallurgy, vehicle etc, specific on the quick check and preventive check of bearing, gear, motor, fan lathe etc.

1.2 Features

- Separate design, small size, stable performance low-consumption, attractive appearance.
- Liquid crystal display, humanized interface, easy to operate.
- Apply to harsh environment, with anti-electromagnetic interference ability, high accuracy.
- High frequency and low frequency measurement, easy to judge fault type of machine.
- Equip reliable ring accelerometer, superior than compression type sensor
- Auto sleep and auto power off
- In accordance with national standard, the measurement value can be compared with ISO2372 to judge the running state of device.
- Signal output, equips with earphone can realize the function of stethoscope.
- Signal output equips with oscilloscope to monitor and record the vibration.

1.3 Technical Parameters

Vibration pickup: separated charge-amplifier and build-in acceleration transducer
 Measurement range(displacement): 0.001~1.999mm(Peak to peak: valid value* $2\sqrt{2}$)
 Measurement range(speed): 0.1~19939mm/s (valid value)
 Measurement range(acceleration): 0.1~199.9m/s²(peak value: valid value* $\sqrt{2}$)
 Measurement accuracy: $\pm 5\%$ measured value
 Indication error: ± 2
 Frequency range: 10Hz~10KHz
 Display mode: 3-digit Semi liquid crystal display
 Sampling period: 1s
 Output signal: AC 2v(peak value, full measurement above 10k)
 Dimensions: 185mm*68mm*30mm
 Power model: 6F22 9v packed cells
 Battery life: continuous use for 30 hours

1.4 Working Principle

MV800 combines the quartz crystal and PZT piezoelectric effect together. When the quartz crystal or PZT is under strength, the surface generates charger, the vibration was changed into electrical signal by acceleration transducer. After processing and analyzing, the acceleration, speed and displacement are shown out in the liquid screen.

1.5 Working Conditions

Operation temperature: 0~50°C
 Memory temperature: -30°C~+70°C
 Relative humidity: below 90%RH

1.6 Configuration

NO.	Part name	QTY.	Remarks
1	Main unit	1	
2	Long probe	1	
3	Acceleration sensor	1	
4	Cable	1	
5	6F22 battery	1	
6	User's manual	1	
7	Warranty	1	
8	Short probe	1	
9	Earphone	1	
10	Sheathe	1	
11	Cable (signal line)	1	

2. Structure and Outline

2.1 Main Unit



2.2 Cable Line



2.3 Long Probe



2.4 Display

3 Keypad Definition

- ① Long press measurement key, put the magnetic base on the surface of workpiece, keep it stable, the value will be shown out.
- ② When the measurement value is stable, release the measurement key, read and record the value.
- ③ Press measurement key again can exit the former test and do the new test.
- ④ Release the measurement key for about 1 minute, it will auto power off.

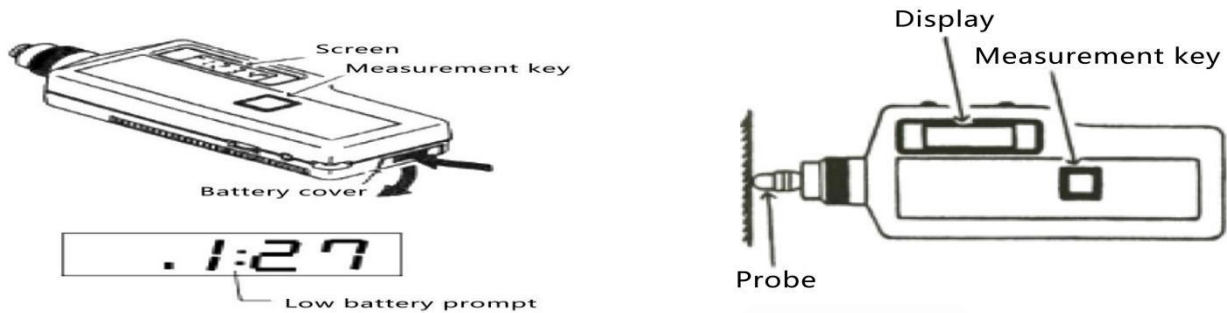
4. Operation

4.1 Preparations Before Using

- ① Install battery
Open the cover, put in the battery.

② Check the battery voltage

Press measurement key, if the screen shows this, it means the voltage is low, you need to change a new one.



4.2 Selection of Probe

- The principle of selecting probe

When measure the displacement, speed, acceleration of low frequency 10Hz~1KHz, select long probe, when measure the displacement, speed, acceleration of high frequency of 1KHz~10KHz, select short probe, short probe also used to maintain the reliable accuracy, when there is a flat frequency above 1KHz, there is no need to use probe.

- Short probe

Short probe is necessary for frequency of 10Hz~10KHz. It is more reliable.

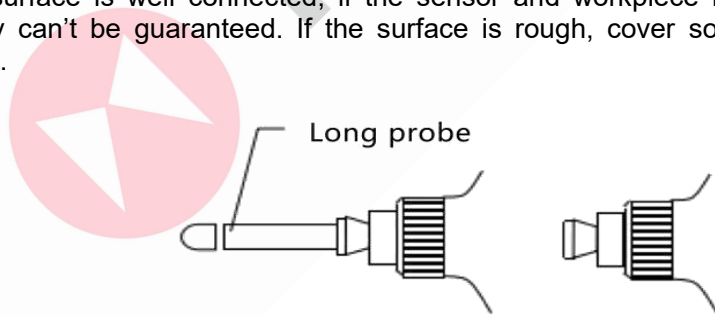


- Long probe

When the short probe is hard to test, use 8cm long probe. In low frequency of 10~1KHz, long probe has good response, above 1KHz, the response will reduce.

- No probe

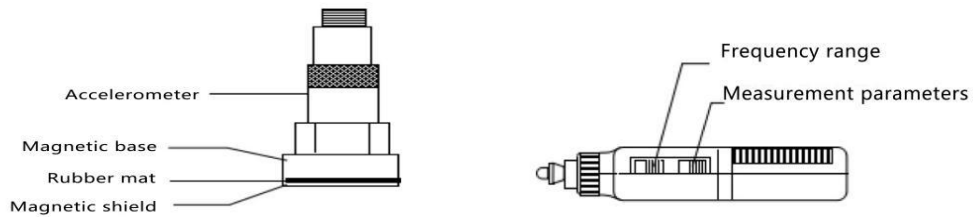
It is ok when the surface is well connected, if the sensor and workpiece is not well connected, the response frequency can't be guaranteed. If the surface is rough, cover some wax to guarantee the frequency response.



4.3 Sensor Connection

- ① Connect sensor with vibration meter by signal line
- ② Take out the rubber mat
- ③ Put the magnetic on the surface of workpiece

Notes, drag the sensor with angle not directly, to protect the signal line.



4.4 Frequency Switch

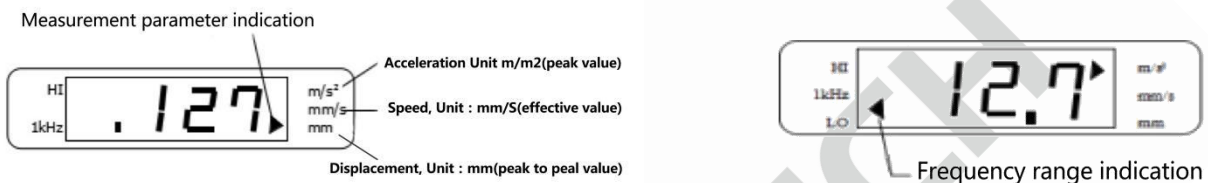
Choose correct frequency range

4.5 Set Vibration Parameters

Use measurement parameter key to select acceleration, speed, displacement.

4.6 Set Frequency Range

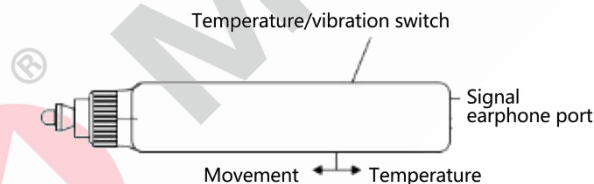
Use frequency range key to select "LO" or "HI"



4.7 Signal Output

The vibration signal is outputted by signal port, the port can connect the oscilloscope or the earphone (when the signal is at full range, output 2v peak value wave form).

- ① Connect the earphone, long press the measurement key
- ② Adjust the volume key, you can hear the vibration
- ③ Switch the frequency range, you can hear the high frequency and low frequency

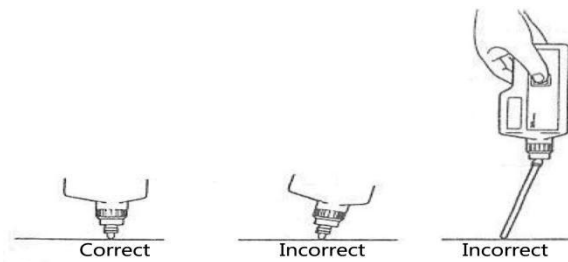


4.8 Troubleshooting

MV 800 has low frequency and high frequency switch, can judge the fault of bearing and gear, when the value of low frequency is higher than high frequency, it means the vibration is caused by low frequency, we can consider bearing problems, such as rotor imbalance, bearing bend, bearing not centered, base loose, when the high frequency is 5 times bigger than low frequency, it means the vibration is caused by high frequency, such as the deterioration of rolling bearing, gear tooth broken etc.

5. Cautions

- Match the sensor with the number, if the sensor is not matched with tester, you can deliver it to our company
- When using different probes, the results might be different (especially in high frequency)
- Do not use pincers to avoid damage
- Theoretically, MV800 can test acceleration of 199.9m/s, while in reality the collision of probe makes the test range lower than 199.9m/s², usually the limit of acceleration is 50m/s².



6. The Standard of Vibration Intensity

The vibration is from structure design, manufacture, apply, adjust, it will cause metal fatigue, component abrasion and other faults. The 10~1KHz low frequency vibration is mainly because metal fatigue, the above 1KHz high frequency vibration is mainly because resonance.

Metal fatigue is proportional to vibration speed, the vibration power is proportional to speed square. No matter metal fatigue or abrasion, it is proper to use speed standard. Compare the results with ISO2372, we can know the device current running state.

**Vibration Intensity standard
ISO2372**

	<15KW	15-75KW	>75KW
18	✘	✘	✘
11.2	✘	✘	✘
7.1	✘	✘	●
4.5	✘	●	●
2.8	●	●	✓
1.8	●	✓	✓
1.1	✓	✓	👍
.71	✓	👍	👍
.45	👍	👍	👍

Speed (mm/s)

✘ : Not allowed ● : Allowed
 ✓ : Not bad 👍 : Good

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7. Maintenance & Notes

- Avoid man-made damage, put sheathe when using
- When the battery is almost out, please change the battery
- Take out the battery when not using to avoid the battery leakage
- After using, clean the tester with soft cloth, avoid rain or oil infiltration
- When there happens abnormal things, please do not self dismantle the tester, deliver it to our company.

User Notes

Warranty:

The product is guaranteed for one year since purchased. Log www.mitech-ndt.com or follow our company official public platform to register for maintenance. Please fill the blanks as required, if the product is not registered for maintenance, it will follow the date of manufacturer.

When applying for maintenance, please visit our official website, www.mitech-ndt.com or official accounts, submit “online reporting to repair” sheet.

In accordance with the international relevant regulations, the following are not within the scope of free warranty,

- Damage caused by man-made or improper keeping;
- Self-dismantle or non-special repair shop dismantle;
- Do not follow the requirement of service registration or warranty expired;
- Consumable parts.

Service promise:

- MITECH users have lifelong maintenance service
- Free maintenance, inspection, software upgrade and etc.

