

HTC™

VIBRATION METER

User Manual



PVB 805

User Instructions

- ◆ This manual introduces application method, attentions and other items about the product in detail. Please read it intently to operate the meter efficiently.
- ◆ Do not use it inflammable, explosive circumstance.
- ◆ Do not throw away the electrical waste with normal household waste, please dispose it by national or local related law and regulations.
- ◆ If there are any quality problems or any doubts about how to operate, please contact the retailer or us, we will solve it as soon as possible.

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1> Before Operation

Packing Details

Please check your accessories according to the below list. If there is anything missing, please contact the local agent or stores immediately.

No.	Description	Unit	Quantity	Remark
1	The Meter	PC	1	
2	1.5V AAA Battery	PC	2	
3	User Manual	PC	1	
4	Short Probe	PC	1	
5	Long Probe	PC	1	
6	Lifting Rope	PC	1	

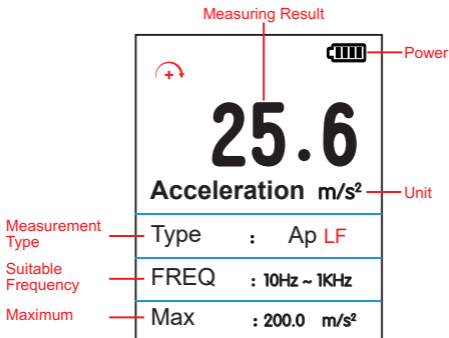
Brief Introduction







Vibration test is a crucial method of monitoring device condition and diagnosing malfunction. The utilization of handheld vibration meter improves the production safety, product quality and production efficiency. The application gets piezoelectric accelerated sensor which turns vibration signal into electrical signal, the device works by processing and analysing the input signal, and shows vibration acceleration, velocity, displacement value on screen. It is used widely in machine manufacturing, electric power, metallurgy and vehicle manufacturing fields.

Parts Name



1. Sensor
2. LCD
3. Keys
4. LED
5. Battery Cover



Keys	Names	Instructions
	Power on / Measure	Short press for power-on, then press it firmly to test
	Save / Set	Short press for setting, long press for storage
	Power off / Back	Short press to return, long press for power-off
	UP / LED Light on	Short press to switch on/off the LED light while measuring; Short press to scroll up the option while setting.
	DOWN / Rotation	Short press to rotate the screen while measuring; Short press to scroll up the option while setting.
	Bottom Measure	Press it firmly to test

Specifications

Items	PVB 805
sensor	piezoelectric accelerated sensor
acceleration measurement range	0.1~199.9m/s ² (peak value)
velocity measurement range	0.1~199.9mm/s(real-time valid value)
displacement measurement range	0.001~1.999mm(peak-peak value)
accuracy	±(5%+2dgt)
low frequency acceleration measuring frequency range	10Hz~1KHz
high frequency acceleration measuring frequency range	1KHz~10KHz
velocity measuring frequency range	10Hz~1KHz
displacement measuring frequency range	10Hz~500Hz
storage capacity	200 sets
data refresh time	500ms
power	2*1.5V AAA battery
battery working life	beyond four hours without breaks
working temperature	0°C~50°C
working humidity	20%RH~80%RH
storage temperature	-20°C~60°C
storage humidity	20%RH~80%RH
dimension	176*54*25mm
net weight	121g
height above sea level	<2000m

Attentions

- ◆ Do not use it in high temperature and humidity environment.
- ◆ Do not use it nearing corrosive materials.

- ◆ Do not use it if it could be splashed.
- ◆ Do not use it in chemical gas condition.

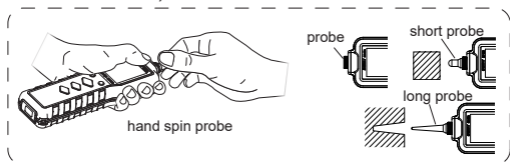
2> Preparation

Battery Installation

Open the cover, put 2*1.5V AAA batteries in according to right polarity.

Probe Installation

There are different probes for different purposes
(tips: different probe corresponds with different purposes for different meets)





- 1) Short probe is utilized in common for regular testing, and the result is reliable.
- 2) Long probe is for some places where short probe can not reach, which is good for regular testing. (However, it is not suggested to use this longer probe for testing in high frequency acceleration testing, because of the quick decreasing of high frequency.)
- 3) No probes, it's crucial that the head is contacted well with the measuring point for the best frequency response result which is in range of 10Hz~10KHz.

General Regulation


In frequency range of 10Hz~1KHz, short and long probes are reliable for displacement, velocity and acceleration, but it is suggested to use short probe for high frequency acceleration testing. The bearing stress on sensor should be even, and do not impact the sensor to avoid split of transistor.

3> Operating Instructions

Power on/off

Short press  to turn it on, long press  to shut it down.

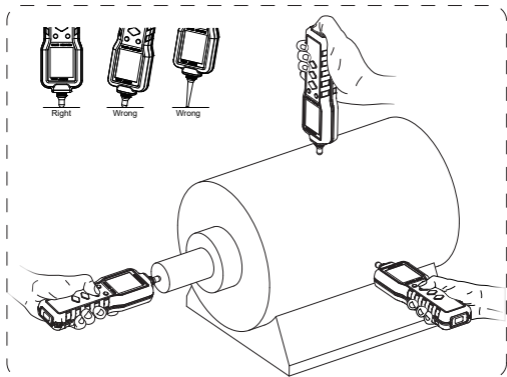
Measure and Data-locking

Press  firmly to test, loose it, the reading remains same.

Attention:

- 1) The stress acted on the tested object is 0.5~1.0kg
- 2) The probe should be vertical with the surface of tested object for accurate result.

For Example:



Acceleration Measurement in Low Frequency

The applicable frequency range is 10Hz~1KHz.

Operations as follows:

Type	: Vrms
FREQ	: 10Hz ~ 1KHz
Max	: 200.0 mm/s

Type	: Ap LF
FREQ	: 10Hz ~ 1KHz
Max	: 200.0 m/s ²

- 1.Short press SET
- 2.Choose Acceleration/Low Frequency by UP/DOWN
- 3.Short press SET to enter this testing mode or press BACK to return

Acceleration Measurement in High Frequency

The applicable frequency range is 1KHz~10KHz.

Operations as follows:

1.Short press SET
2.Choose Acceleration/High Frequency by UP/DOWN
3.Short press SET to enter this testing mode or press BACK to return

Velocity Measuring

The applicable frequency range is 10Hz~1KHz.

Operations as follows:

1.Short press SET
2.Choose Velocity by UP/DOWN
3.Short press SET to enter this testing mode or press BACK to return

Displacement Measuring

The applicable frequency range is 10Hz~500Hz.
Operations as follows:

1.Short press SET
2.Choose Displacement by UP/DOWN
3.Short press SET to enter this testing mode or press BACK to return

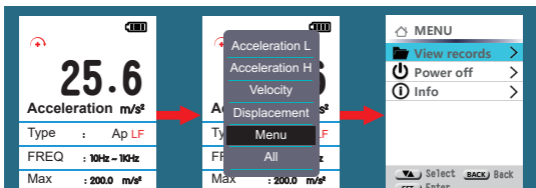
Full Display

Full Display means there are three results, low frequency acceleration, velocity and displacement, show on the screen at the same time.. Operations as follows:

1.Short press SET
2.Choose Full Screen by UP/DOWN
3.Short press SET to enter this testing mode or press BACK to return

Menu

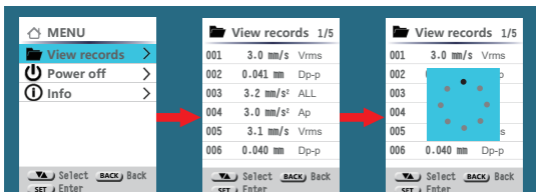
It is supported with three options: record, auto-off and information in the menu. Operations as below:



1.Short press SET
2.Choose Menu by UP/DOWN
3.Short press SET to enter this testing mode or press BACK to return

View Records

User can check the historical data by view records.
Operations as below:



1.Select RECORD by UP/DOWN, press SET to go into the record page
2.Turn page by UP/DOWN
3.Long press OFF to delete all records in current page

View records 1/5		
001	3.0 mm/s	Vrms
002	0.041 mm	Dp-p
003	3.2 mm/s ²	ALL
004	3.0 mm/s ²	Ap
005	3.1 mm/s	Vrms
006	0.040 mm	Dp-p
Select	Back	
SET	Enter	

View records 1/5		
001	3.0 mm/s	Vrms
002	0.041 mm	Dp-p
003	3.2 mm/s ²	ALL
004	3.0 mm/s ²	Ap
005	3.1 mm/s	Vrms
006	0.040 mm	Dp-p
Select	Back	
SET	Enter	

View records 1/5		
001	3.0 mm/s	Vrms
002		
003		
004		
005		
006	0.040 mm	Dp-p
Select	Back	
SET	Enter	

- 1.Short press SET to enter the record page
- 2.Choose record number by UP/DOWN
- 3.Long press OFF to delete the current record number

View records 1/5		
001	3.0 mm/s	Vrms
002	0.041 mm	Dp-p
003	3.2 mm/s ²	ALL
004	3.0 mm/s ²	Ap
005	3.1 mm/s	Vrms
006	0.040 mm	Dp-p
Select	Back	
SET	Enter	

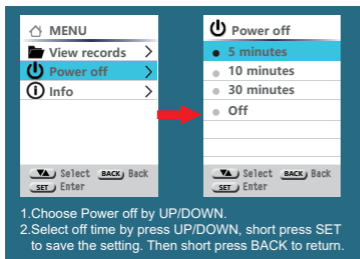
View records 1/5		
001	3.0 mm/s	Vrms
002	0.041 mm	Dp-p
003	3.2 mm/s ²	ALL
004	3.0 mm/s ²	Ap
005	3.1 mm/s	Vrms
006	0.040 mm	Dp-p
Select	Back	
SET	Enter	

001	
36.8	
Velocity mm/s	
Type : Vrms	
FREQ : 10Hz ~ 10Hz	
Max : 200.0 mm/s	

- 1.Short press SET to enter the record page
- 2.Choose record number by UP/DOWN
- 3.Short press SET to check the record details or press BACK to return

Auto Power off Time

There are four options for auto power off time.
Operation as follows:

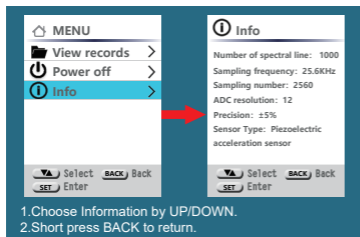


The screenshot shows two panels. The left panel is the 'MENU' screen with options: View records, Power off (highlighted), and Info. The right panel is the 'Power off' settings screen with radio button options: 5 minutes (selected), 10 minutes, 30 minutes, and Off. A red arrow points from the 'Power off' option in the left menu to the '5 minutes' option in the right menu.

1. Choose Power off by UP/DOWN.
2. Select off time by press UP/DOWN, short press SET to save the setting. Then short press BACK to return.

Information





It shows Basic parameters in this page.
Operations as follows:



The screenshot shows two panels. The left panel is the 'MENU' screen with options: View records, Power off, and Info (highlighted). The right panel is the 'Info' screen displaying the following parameters: Number of spectral line: 1000, Sampling frequency: 25.6KHz, Sampling number: 2560, ADC resolution: 12, Precision: ±5%, and Sensor Type: Piezoelectric acceleration sensor. A red arrow points from the 'Info' option in the left menu to the 'Info' title in the right menu.

1. Choose Information by UP/DOWN.
2. Short press BACK to return.

Auxiliary Functions


1. LED Light: Short press  to turn it on/off. This operation can only be done in full display measuring page.
2. Screen Rotation: Short press  to rotate the screen in clockwise. This operation can only be done in full display measuring page.
3. Data storage: Long press  to save the current result. The storage icon  and record number shows on the right top of the screen. This operation can only be done when the result is locked.

4> Others

General Problems

1. Cannot be power on: Out of battery.
2. No result for acceleration testing: switch different frequency testing mode, for instance, switch low frequency acceleration into high frequency.
3. The acceleration reading is unstable: check if the sensor and probe are loose. Tighten it, then test again if it is.

Maintenance

1. Working environment: the vibration meter is a precise device, so keep it strictly from crash, impact, humid, strong current, magnetic field, greasy and dust environments.
2. Changing batteries and maintenance
 - a. Please change batteries when on LCD screen shows low-power icon .
 - b. Please take batteries out if no operations for a long while, in case the leakage of batteries which can severely damage the device.
3. Do not disassemble or reform inner construction of this device.
4. Surface cleaning: Ethyl alcohol、diluent have corrosive effect on the body surface of the device, especially the LCD window, so please just scrub it gently with a bit of pure water.

Appendix

a. Machine vibration grading form(ISO2372)

vibration intensity			applicable machine types			
vibration velocity $V_{rms}(mm/s)$			I	II	III	IV
_____	0.28	_____	A	A	A	A
_____	0.45	_____				
_____	0.71	_____				
_____	1.12	_____	B	B	B	B
_____	1.8	_____				
_____	2.8	_____	C	C	B	B
_____	4.5	_____				
_____	7.1	_____	D	D	C	C
_____	11.2	_____				
_____	18	_____				
_____	28	_____				
_____	45	_____			D	D

Attention:

- (1) I type is small-sized motor that its power is below 15kw; II type is medium-sized that its power is from 15kw to 75kw; III type is large-scale original motor(based on hardness connection); IV type is based on resilient connection.
- (2) Vibration grades:A,B,C,D grade. A for good, B for satisfaction, C for unsatisfaction, D for unallowed. Measure velocity RMS value should be in three orthogonal directions of the bearing cap.

b. The max limited vibration value for motors that its power is beyond 1 horsepower(NEMA MG1-12.05)

REV(r/min)	peak-to-peak displacement amplitude(μm)
3000~4000	25.4
1500~2999	38.1
1000~1499	50.8
≤ 999	63.6

For AC motor, the rev is the top synchronous speed; For DC motor or multi-purpose motor, it is working rev.

c. The Max limited vibration value of lager-scale inductive motor(NEMA MG1-20.52)

REV(r/min)	peak-to-peak displacement amplitude(μm)
≥ 3000	25.4
1500~2999	50.8
1000~1499	63.6
≤ 999	76.2

Both standards above are made by National Electrical Manufactures Association in America(NEMA).

d. Performed winding squirrel-cage inductive motor

synchronous speed(r/min)	peak-to-peak displacement amplitude(μm)	
	elastic support	steel support
720~1499	50.8	63.6
1500~2999	38.1	50.8
≥ 3000	25.4	25.4

This standard is made by American petroleum institute(API)

e. ISO/IS2373 The quality standard based on vibration velocity amplitude

grade of quality	REV(r/min)	shaft heightH(mm), max velocity amplituderm(s)(mm/s)		
		80<H<132	132<H<225	225<H<400
N(normal level)	600~3600	1.8	2.8	4.5
R(good level)	600~1800	0.71	1.12	1.8
	1800~3600	1.12	1.8	2.8
S(special level)	600~1800	0.45	0.71	1.12
	1800~3600	0.71	1.12	1.8

This threshold value of "N" in the table applies to normal motor.

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