



# VIB<sup>®</sup> 05+ *Portable Vibration Meter*



## Manual

Version 1.01

## 1. Overview

VIB<sup>®</sup>05+ is a handheld machine condition detection instrument based on the latest microprocessor design. It has vibration measurement, infrared temperature measurement and intelligent color alarm functions. The instrument is simple and easy to use, suitable for on-site machine operation and maintenance inspector to monitor machine condition, detect problems in time, and ensure reliable operation of machines.

The complete configuration contains the following components:

- VIB<sup>®</sup>05+ Meter (built-in lithium battery)
- Acceleration sensor (with 80cm length cable)
- Magnetic holders for sensors
- Probe
- Battery charger
- Operation manual
- Instrument case

### Vibration measurement

VIB<sup>®</sup>05+ can measure the effective value of vibration velocity (mm/s RMS), single peak acceleration (g P), peak-to-peak displacement (um P-P) and high-frequency acceleration value (BG Peak); When measuring velocity, the instrument will automatically determine and indicate the machine alarm status in color based on the built-in ISO10816-3 machine vibration standard.

### Temperature measurement

In addition to its vibration detection function, VIB<sup>®</sup>05+ is also equipped with a non-contact infrared temperature measurement function, which is mainly used for bearing temperature detection. The measuring range is -20~120°C, and the measuring position is indicated by a red laser point.

## 2. Operation



Fig. 1: Front of instrument

### 2.1 Power on and off

Press the power button to switch ON and OFF

The instrument automatically shuts down when it is not operated for more than 3 minutes.

### 2.2 Sensor connection

Before measurement, the vibration acceleration sensor needs to be connected to the BNC input connector of the instrument, and the sensor must be fixed at the appropriate measuring point through a magnetic base or screws. When the measurement location is small, connect the sensor to the provided probe and hold it against the measuring point to measure, paying attention to using appropriate force.

If the sensor is not connected, or the sensor is faulty, the VIB<sup>®</sup>05+ will indicate a sensor question icon on the display screen.

## 2.3 Vibration measurement and evaluation

Use the direction keys to select the vibration measurement icon on the main screen and press the Enter key to confirm.

Switch vibration measurement type

When measuring, use the up and down arrow keys to cycle through the vibration parameters: velocity value (mm/s RMS), acceleration value (g P), displacement value (um P-P) or high-frequency acceleration (BG Peak)

Press the Enter key to Hold the vibration measurement value.

When in vibration velocity measurement, the instrument will according to the ISO10816-3 ISO standard for machine vibration to confirm alarms and indicate the results in color: normal (green), acceptable (yellow), warning (orange) and dangerous (red).

Press the left and right direction keys to cycle through the ISO machine types: **ISO1&3-R, ISO1&3-F, ISO2&4-R, ISO2&4-F.**

On the back of the VIB05+ instrument, ISO relevant machine type standards are provided. Users can refer to this information to determine the type of machine being measured, as shown in Figure 2.

### ISO10816-3 Vibration standard

Support classification: **R**-rigid support **F**-flexible support

Machine classification:

Group 1: Large machines with rated power  $\geq 300\text{KW}$ ; motors with shaft height  $\geq 315\text{mm}$ .

Usually sliding bearing, rotation speed 120RPM - 15000RPM

Group 2: motors with rated power  $15\text{KW} \leq P < 300\text{KW}$ ; shaft height  $160 \leq H < 315 \text{ mm}$ .

Usually with rolling bearings, speed  $> 600\text{RPM}$

Group 3: Pumps with rated power  $> 15\text{KW}$ , multi-blade impeller and separately connected to the prime mover  
(Centrifugal, mixed flow, axial flow)

Group 4: Pumps with rated power  $> 15\text{KW}$ , multi-blade impeller and integrated with the prime mover  
(Centrifugal, mixed flow, axial flow)

Fig. 2: ISO standard information on the label on the back of the instrument

## 2.4 Temperature detection

Use the direction keys to select the temperature measurement icon on the main interface and press the Enter key to confirm.

When measuring, turn on the red laser indicator, point the infrared temperature sensor of VIB05+ towards the surface of the object being measured, and the instrument will display the temperature value of the measuring point.

Press the Enter key to hold the temperature measurement value.

Note: please note that the farther the distance, the larger the measuring point size, as shown in the figure. Therefore, for a specific target size such as a bearing seat, in order to ensure measurement accuracy, an appropriate distance should be selected for testing. The recommended testing distance for this instrument is 10-15cm.

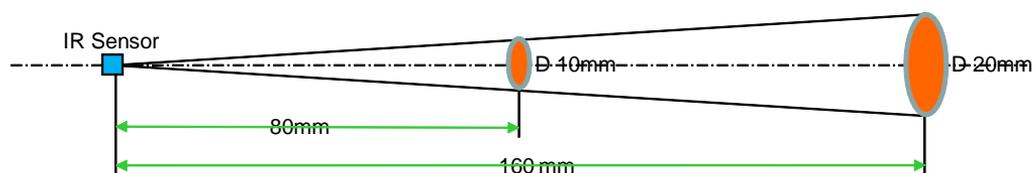


Fig. 3: Infrared temperature measurement D:S (8:1)

## 2.5 Battery, charging and indication

The instrument is powered by a built-in rechargeable lithium battery, which takes 3 hours to charge and can be used continuously for more than 30 hours when fully charged. There is a battery icon in the upper right corner of the instrument display to indicate the battery level. It will show green when fully charged.

## 2.6 Setting



1. Language: available in Chinese and English
2. Date and time: can be set freely
3. Unit: The measurement unit and type can be set according to your needs
4. Sensitivity: You can set the actual sensitivity of the vibration sensor
5. Brightness: adjustable screen brightness

## 3. ISO10816-3 international standard for machine

### vibration

ISO10816-3 is a special standard for measuring vibration intensity on machine bearings, bearing seats or supports. This vibration standard is applicable to units with a power greater than 15KW and an operating speed of 120-15000rpm, including the following machines:

- Steam turbines with power not exceeding 50MW;
- The power of the steam turbine unit is greater than 50MW, and the rotation speed is lower than 1500rpm or higher than 3600rpm (excluding

units included in ISO10816-2);

- Rotary compressor;
- Industrial gas turbines with power not greater than 3MW;
- centrifugal, mixed flow or axial flow pumps;
- Generators other than hydraulic generating units or pumping stations;
- Various types of electric motors;
- Blower or fan.

### 3.1 Classification by machine type, rated power and shaft height (see Fig. 2)

### 3.2 Distinguish support flexibility

The support condition depends on the relationship between the machine and the foundation flexibility. If the lowest natural frequency of the combination of the machine and the support system in the measurement direction is greater than 25% of the main excitation frequency (rotation frequency), the support system is a rigid support in that direction. All other supports are flexible supports. For example, if the machine is supported by rubber or springs, resonance will occur at low rotational speeds. When the speed increases beyond this resonant frequency, the vibration decreases and the machine is flexible.

### 3.3 ISO10816-3 vibration value evaluation standard

Suitable for industrial machines with power greater than 15KW and rated speed of 120-15000RPM

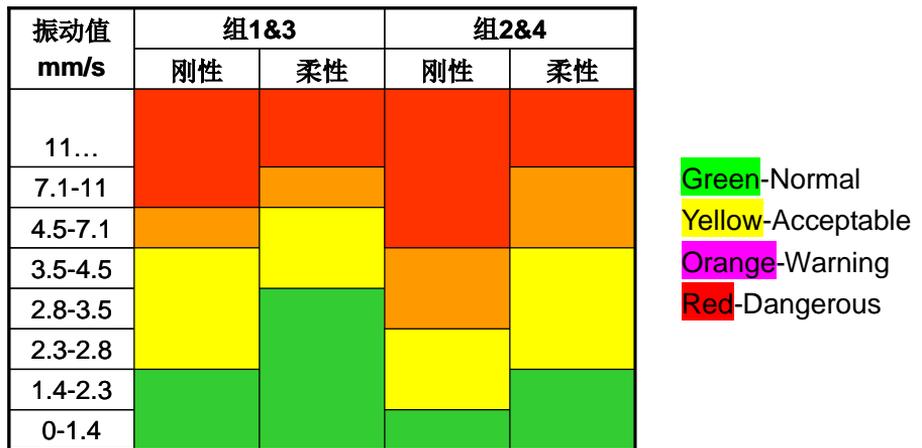


Fig. 4: ISO10816-3 vibration speed value standard

## 4. VIB<sup>®</sup>05+ Technical Specifications

**Input:** 100mV/g IEPE acceleration sensor, 80cm cable and BNC connector

**Vibration measurement:**

Velocity: 0-200mm/s RMS Frequency 10Hz-1kHz

Displacement: 0-2000  $\mu$  m Peak-Peak Freq. 10Hz-1kHz

Acceleration: 0-20 g Peak Frequency 10Hz-1kHz

High frequency acceleration 0-20 g peak, frequency range  
1 kHz ~12 kHz

**Accuracy:** +/-5%

**Alarm Indication:** Built-in ISO10816-3 machine vibration standard  
evaluation of vibration speed alarm state

**Temperature:** Temperature measurement range: -20~120°C, laser dot  
indication target

Accuracy:  $\pm 2^\circ\text{C}$ ; Resolution:  $1^\circ\text{C}$ ; D:S 8:1

**Display:** TFT color display, 128x160 pixels

**Power & Charger:** Lithium rechargeable battery, 3.7V 1600 mAh,  
Recharge time 3 hours ; Operating time >30 hours continuous

**Operation temperature:** -10°C to +50°C;

**Dimensions:** 115 x 75 x 25mm (LxWxT)

**Weight incl. sensor and cable:**230g

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