INSTRUCTION MANUAL

MT965

VIBRATION METER

Contents

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1. INTRODUCTION

The MT965 utilizes the piezoelectric effect of artificially polarized ceramics. It is designed for traditional vibration measurement in mechanical equipment, with a particular focus on rotating and reciprocating machinery. Capable of measuring vibration displacement, velocity, and acceleration, it finds extensive application in industries such as machinery manufacturing, electrical engineering, metallurgy, and general aerospace.

2. NOTICES

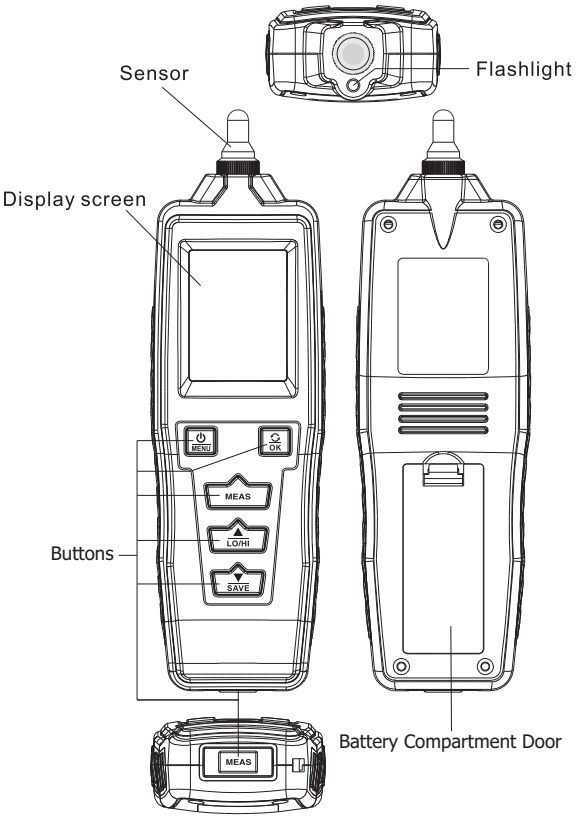
1. Do not use the instrument in flammable or explosive environments.
2. Keep away from dangerous voltage to avoid injury or damage to the meter.
3. Avoid strong impacts, high temperatures, and water immersion.
4. Remove the batteries if the device will not be used for an extended period.
5. Install the batteries with the correct polarity and replace them when their remaining power is low.
6. Do not disassemble the meter or attempt to modify internal parts.
7. Alcohol, diluents, and similar substances are corrosive to the meter's housing, especially the screen. Use a small amount on a damp cloth to clean the housing.
8. Operate the instrument carefully when near rotating equipment and ensure that nothing can get caught in the moving equipment.

3. FUNCTIONS

Functions include acceleration, velocity, and displacement measurements:

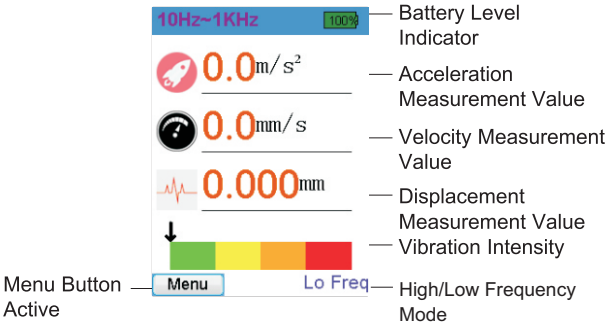
- 360° Screen rotation
- Switching between high (1kHz to 4kHz) and low frequency (10Hz to 1kHz) for acceleration measurement
- Graph curve display
- Storing and viewing files
- Power indicator
- Double measurement buttons
- Flashlight
- Brightness control for display
- Shutdown time setting
- Selection of Machine Power Level (kW)

4. PARTS AND DISPLAY INTERFACE INSTRUCTIONS
4.1. Parts (as Shown in picture)

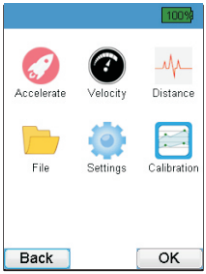


Buttons	Names of parts	Function Description
	Power On/Off/Menu Button	Press to turn meter on. Hold down to turn meter off. While ON, press to switch to the Menu or to exit when in the Menu.
	Rotate Screen/OK Button	During measurement, short press to rotate the screen. In the Menu press to confirm a selection.
	Front Measurement Button	Hold down to start/stop measurements.
	Up/LO/HI Frequency Button	During measurement, press to switch between high and low frequency settings. In the Menu press to go up in the Menu.
	Down/Save Button	During measurement, press to save selected settings. In the Menu press to go down in the Menu.
	Bottom Measurement Button	Hold down to start/stop measurements, during measurement press to pause a measurement.

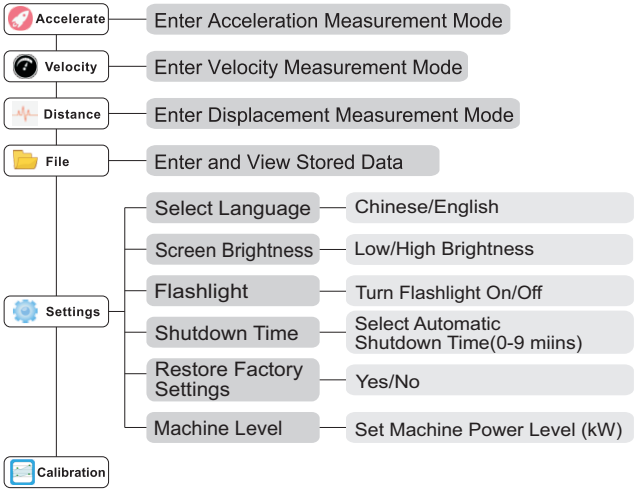
4.2. Instruction of full display interface



4.3. Menu Interface Description / Menu Structure Diagram



a. Diagram of Menu Functions:



5. PREPARATION FOR MEASUREMENT

5.1. Installing batteries

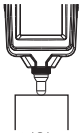
Install batteries into the battery compartment correctly, paying close attention to the polarity of the battery. Press the " MENU " button to turn on the meter, after powering on, check the battery status. If the power is low, please replace the batteries promptly.

5.2. Selecting a probe for measurement

Depending on the measurement requirements, users can select different probes to suit their needs. Using various probes may lead to different measurement outcomes, influenced by specific usage conditions.

a. Short (S) Probe Measurements:

This probe can be installed as needed and is suitable for a broad spectrum of vibration measurements, offering improved response values.



Short (S) probe measurement

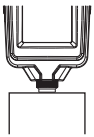
b. Long (L) Probe Measurements:

This accessory probe included in the package is primarily used for narrow objects or specialised applications, providing faster response times.

Long (L) probe measurement

c. Remove Probes for Surface Measurements:

This method is used for measuring flat surfaces or objects to ensure stable measurements and data.



Removing probes for measurement

6. OPERATING INSTRUCTIONS

6.1. Power On/Off

Press the " " button to power on the meter.
Hold down the " " button to shut down.

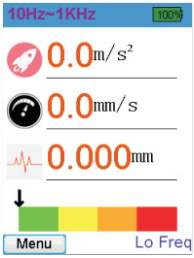
6.2. MENU Screen Rotation

After powering on, press the " OK " button to rotate the screen.

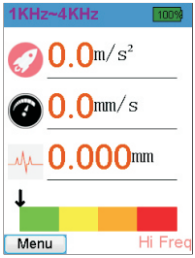
Screen rotation is supported only in acceleration measurement, velocity measurement, displacement measurement, and full display interface modes. Each rotation will clear all cached data.

6.3. Full Display Interface Measurement

Press the "MENU" button to turn on the meter; the full display interface MENU appears after powering on. Press the "LOW" button to switch between high frequency and low frequency mode. Hold down the "MEAS" button or press the "MEAS" button to start automatic measurement; press again to exit measurement. When cached data is not "0" it can be stored, press "SAVE" to store it; a window prompt confirms successful operation. Press "ENTER" to confirm storage of the measured data.
(The cache can store up to 20 data points; the first data point will be automatically deleted if the cache exceeds 20. Maximum data storage is 5 groups; a prompt will indicate when storage is full.)

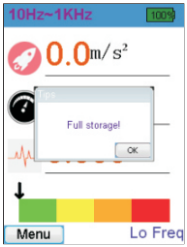


Full display interface
(Low frequency mode)



Full display interface
(High frequency mode)

Success prompt during
data storage operation



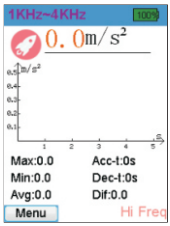
Prompt indicating that
device storage is full

6.4. Menu

The full display interface is displayed after powering on, press " " button to enter Menu interface, press up/down buttons to select, press " " button to enter the corresponding interface. Press the " " button again to return to the previous screen.

6.5. Acceleration Measurement

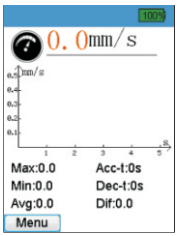
Enter Menu interface, press up/ down button to select Acceleration measurement, press " " button to enter the interface. This interface also has a graph analysis function. Press the " " button to switch between high/low frequency mode measurement, press the " " button to save data and press the " " button to return to the previous interface.



Acceleration interface

6.6. Velocity Measurement

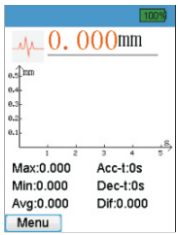
Enter Menu interface, press up/down button to select Velocity measurement, press the " " button to enter the interface. This interface also has a graph analysis function. Press the " " button to save data and press the " " button to return to the previous interface.



Velocity interface

6.7. Displacement Measurement

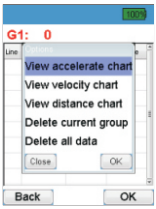
Enter Menu interface, press up/down button to select Displacement measurement, press the " " button to enter the interface. This interface also has a graph analysis function. Press the " " button to save data and press the " " button to return to the previous interface.



Displacement interface

6.8. View Stored Files

Enter the Menu interface and select the "File" option, the saved data can be viewed in the "File" interface; press the up/down buttons to scroll through stored data sets, hold down to scroll quickly. Press the " OK " button, a window showing the available operations: "View accelerate chart", "View velocity chart","View distance chart", "Delete current group", and "Delete all data".



6.9. Settings

Enter the Menu interface and select the "Settings" option. Language settings, screen brightness, flashlight, shutdown time, factory reset, and machine power level settings are displayed in the Settings Menu. Certain settings like language settings, screen brightness and shutdown time will be remembered even after the meter has been shutdown.

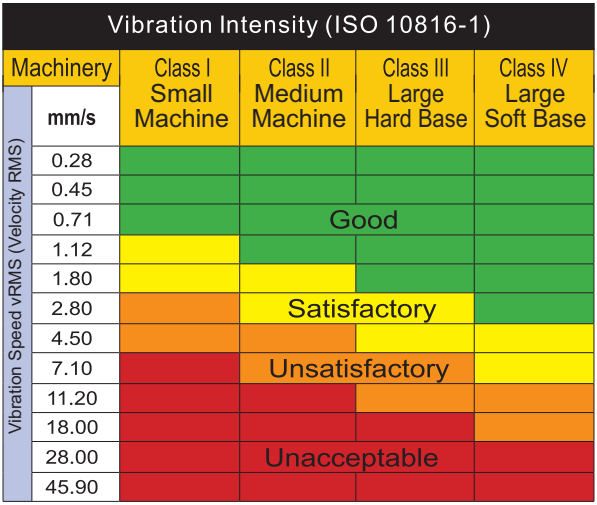
a. Language selection - Users can choose between English/Chinese interface languages.
b. Screen brightness - Users can choose between Low/High brightness settings.
c. Flashlight - Users can toggle this option to turn the Flashlight On/Off.
d. Shutdown time - Users can set the automatic shutdown time from 0 to 9 minutes. If set to 0 minutes the automatic shutdown function will be disabled.
e. Restore factory settings - Users can choose to reset the meter to it's factory settings.
f. Machine Power Level(kW) - there are four power levels to choose from:
I: Small (P< 15kW)
II: Medium (15kW< P< = 75kW)
III: Large hard base (P> 75kW)
IV: Large soft base(P> 75kW)

6.10. Calibration

a. Select the "Calibration" menu option to enter.
b. Press the up/down buttons to select an item and press the "OK" button to enter the selected calibration screen. (Note: There is no specific order for the calibration operation)
   (1) Zero point calibration.
   (2) Calibration for a point at 10m/s² & 80Hz. **Note:** The machine/equipment being used must be in a stable state.
   (3) Calibration for a point at 10m/s² & 2000Hz. **Note:** The machine / equipment being used must be in a stable state.
c. (Optional) Press the "MEAS" button to vertically flip the page.
d. Select start item and press the "OK" to initialize. At this time, the first three items read "Number--Number", the right side represents the ADC (Analogue to Digital Converter) value, and the left side represents the converted vibration value.
e. Display under different calibration items:
   (1) Press again to perform Zero Point Calibration with "Set Zero" displayed and wait until progress bar reaches 100%.
   (2) Adjust the output of the vibrating machine to a stable state corresponding to the above condition. Press the "OK" button again to calibrate slope value with "Set Slope" displayed, and wait until progress bar reaches 100%.
   (3) After the calibration is successful, the progress bar disappears, the meter will display "Done".
f. After completing the desired calibrations, press the "MENU" button to exit.
g. If the calibration values are wrong, you can restore the factory settings of the MT965 and try again.

7. OTHER NOTICES

1. When the amount of stored data is high, it may take more time to enter the "File" interface and normal operation/inputs may also have a delayed response. In this case it may be advisable to delete unnecessary stored data.
2. When the acceleration value is unable to be measured, try switching the frequency settings (Lo/Hi).
3. The meter will automatically shut down when the battery level is too low.
4. Machine vibration intensity levels are represented by the green, yellow, orange, or red status bars displayed at the bottom of the screen in the full display measurement interface. Refer to the table on the next page for interpretation.



Comparison table for vibration intensity and machine power class

8. GENERAL SPECIFICATIONS

Technical Parameters	Technical Indicators
Vibration Sensing Method	Piezoelectric Ceramic Accelerometer (Shear Type)
Measurement Range	Acceleration: 0.1 to 199.9m/s² Velocity: 0.1 to 199.9mm/s Displacement: 0.001 to 1.999mm
Measurement Accuracy	±10%
Frequency Range	Acceleration: 1kHz to 4kHz (Hi) 10Hz to 1kHz (Lo) Velocity: 10Hz to 1kHz (Lo) Displacement: 10Hz to 1kHz (Lo)
Maximum Groups Supported for Data Storage	500 Data Points (5 groups x 100 data points)
Batteries	2 x 1.5V AAA
Operating Temperature	0°C to 40°C
Operating Humidity	30%RH to 90%RH
Dimensions	180 x 54 x 30mm
Weight	150g

9. WARRANTY

Warranty Coverage

Major Tech warrants its test instruments to be free from defects in materials or workmanship under normal use and service for a period of two (2) years from the date of shipment. This warranty is extended exclusively to the original purchaser, provided the online Product Registration has been completed on either www.major-tech.com or www.majortech.com.au, depending on which country the product was purchased. This warranty is non-transferable.

Exclusions

This warranty does not cover:

- Disposable batteries and fuses
- Damage caused by leaking batteries (damaging the meter and components)
- Normal wear and tear of mechanical components
- Failures caused by use outside the product's specifications
- Any product which, in the opinion of Major Tech, has been misused, contaminated, or damaged due to neglect

Check Procedure
Prior to contacting Major Tech or a distributor regarding a warranty claim, please check the following:
- Batteries are installed correctly
- Battery condition – either replace disposable batteries or ensure rechargeable batteries are charged where applicable
- Test leads are inserted in the correct terminals and are fully inserted, no damage to test leads

Contact Information
For any warranty claims or inquiries, please contact either Major Tech or the distributor from whom the product was purchased.

Specific Declarations
a. Major Tech disclaims liability for any consequential results arising from the use of this product.
b. We reserve the right to modify product design and instruction manual content without prior notice.
c. Disposal of old batteries must comply with local laws and regulations.

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