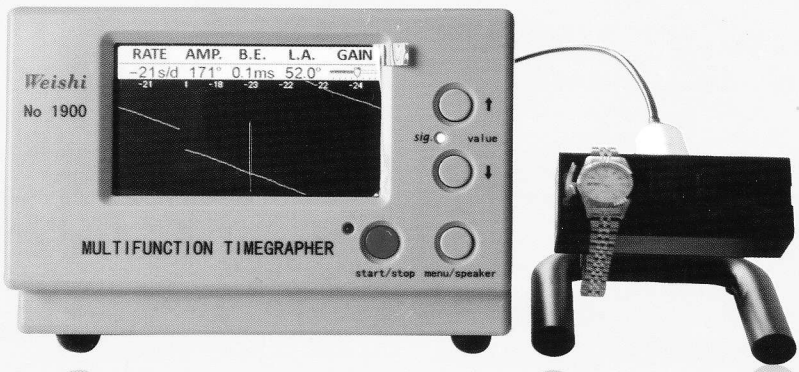
The WeiShi Multifunction Timegrapher

No.1900



User Manual

The WeiShi Multifunction Timegrapher No.1900 User Manual Table fo Contents

1 Instrument function

The WEI SHI WATCH EXPERT No.1900 is a precise mechanical watches test instrument, it is used for multi-testing by watch manufacturers and watch technician.

The frequency diagram of the watch can be displayed in the LCD screen.

According to different watches, the instrument will automatically adjust optimal signal level during testing.

The instrument will automatically calculate the rate, amplitude, beat error, and display them by data in real time; Select "±99.9s/d" at item Rate Range for result display, can make the precision of Rate Deviation up to 0.1s/d.

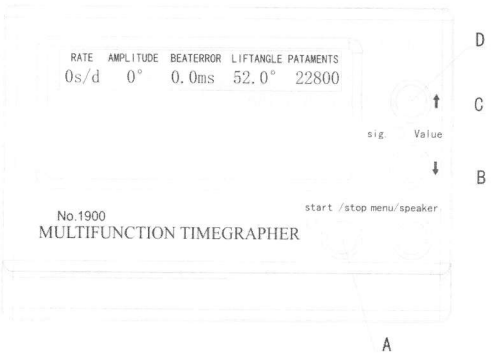
For the conventional beat, the instrument can automatically response; for the special beat, can manually select.

The sampling period can selected by 2 seconds, 4 seconds, 6 seconds, 8 seconds, 12 seconds, 20 seconds, 30 seconds, 60 seconds, and the average of corresponding period will be regard as the precise value of the watch.

Six kinds of testing position can be adjusted, and the simulation sound can be play in the speaker or mute.

2 Keys and Display

2.1 Key Function



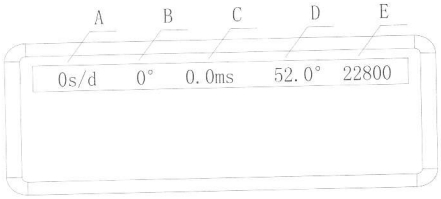
A Start/Stop Key
Start or stop the Watch testing.

B Menu/Speaker Key
Selection of menu item or turn on/off the speaker

C Value ↓ Key
Selection of the next lower parameters or decrease the input levels gain from the sensor.

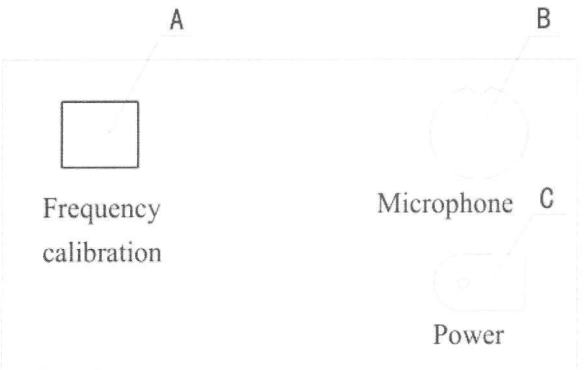
D Value ↑ Key
Selection of the next higher parameters or increase the input levels gain from the sensor.

2.2 Parameters and Display



A	RATE	Display the rate accuracy in seconds per date.
B	AMPLITUDE	Display the amplitude in degrees.
C	BEAT ERROR	Display the beat error in ms.
D	LIFT ANGLE	Display the lift angle in degrees.
E	PATAMENTS	Display the beat or the level gain (switching by 5s).

2.3 Connection



A Frequency calibration connector (For internal use only, do not connect any thing)

B Sensor connector (Microphone)

C Power supply

3 Installation

3.1 The Basic Equipment Components

Testing equipment host
Sensor (Microphone)
Power adapter
Instruction

3.2 Equipment Installation

The instrument is to be installed in such a way that it is not exposed to direct sunlight or to extreme temperature of 60℃. The microphone should be placed at a sufficient distance from noisy machines, loudspeakers, sharp stroke sound and particularly from ultrasonic cleaning machines. The high noise will disturb signal

sensing by the microphone.

3.2.1 The Power Supply

Plug the power adapter into the match outlet. Power supply voltage is between the 100V ~ 240V.

3.2.2 Microphone Connection

Plug the sensor's connector into the host.

4 Operation

When the power supply and the sensor are connected, the instrument stays in idle mode after power on, and the red LED flashing. Keep on press the "Start/Stop" key more than 3 seconds, the instrument turns on and ready for testing. Place the watch at the sensor and the uplift of watch (leader) should the sheet metal. Test position can be changed freely; the hand must remove from the sensor after the test position is fixed. Green LED flashing, means have received the signal of watch.

5 The Use of Keys

5.1 Start/Stop Key

Please press the Start/Stop Key, before adjusting any parameters of the instrument.

First, press the Start/Stop Key to stop the instrument, then the green LED is off and red LED is on. After adjustment rightly, presses the Start/ Stop Key again, the red LED off. The instrument starts testing again, and refreshes the data and the screen for a new condition.

5.2 Menu/Speaker Key

When the instrument testing, press the Menu/Speaker Key directly, can turns on or off the speaker.

When the instrument stopping, press the Menu/Speaker Key, can enter the Parameters Setup window, then press the Menu/Speaker Key, can select the menu

item, press the Value Key ↑ or ↓, can change the selected items parameters.

5.3 Value Key↓

Press the Value Key ↓ can decrease the input levels gain from the sensor, when the instrument testing.

When in Parameters Setup window, press the Value Key ↓ can select the next lower parameter.

5.4 Value Key↑

Press the Value Key ↑ can increase the input levels gain from the sensor, when the instrument testing.

When in Parameters Setup window, press the Value Key ↑ can select the next higher parameter.

6 Parameters

6.1 Beat Numbers

Automatic selection

The following beat numbers are available for automatic selection mode:
12000、14400、18000、19800、21600、25200、28800、36000、43200

(If the tested beat is not in automatic selection mode, the instrument will display the closest beat number, but the test result is not correct. At this time, use the manual mode to select the relative beat.)

Manual selection can selected out the beat number that Automatic select can not identify and rare beat numbers.

The following beat numbers are available for Manual selection mode:
3600、6000、7200、7380、7440、7800、9000、9100、10800、11880、12000、12342、12480、12600、13320、13440、13500、14000、14040、14160、14200、14280、14400、14520、14580、14760、14850、15000、15360、15600、16200、16320、16800、17196、17258、17280、17786、17897、18000、18049、18514、19332、19440、19800、20160、20222、20944、21000、21031、21306、21600、25200、28800、32400、36000、43200

6.2 Lift Angle

The lift angle is 52° for most usual movements; therefore the lift angle value of instrument for default is set to 52°. This value is required for calculate the amplitude and must be selected according to the watch movement. The lift angle can be set to between 30° and 70°.

6.3 Measurement Period

The measurement periods are selectable:
2s、4s、8s、12s、20s、30s、60s

Use for recalculate the average values of the measured result.

6.4 Curve Color

The graph can draw in white or color, if set to color, odd and even points are express in yellow and blue, and the complex curve is in pink.

6.5 Curve Type

The normal type (A) or complex type (B) is selectable for the curve graph.

6.6 Rate Range

The Rate Range can display in "±999s/d" or "±99.9s/d". In "±999s/d" mode, the measured results refresh every measurement period, and in "±99.9s/d" mode, maximum 50 times of the measured results are use to make the average values for display. In this mode, the Rate accuracy resolution is up to 0.1s/d with a measuring range of ±99.9s/d.

6.7 Auto Off

When no measurement in progress, the instrument automatic power off according to the Auto Off Timer, this can save the power and increase the LCD screen's life. The Auto Off time is set in minutes, to disable the Auto Off Timer, set the value as "---m".

7 Technical Data

Measuring possibilities: Rate deviation, amplitude, beat error of mechanical watches and diagram recording of the beat noise.

Beat numbers: The instrument can check up the normal beat numbers automatically and also can find out the uncommon beat number by manual.

Rate accuracy: the measuring range is ± 999s/d or ± 99.9s/d, resolution 1.0s/d or 0.1s/d.

Amplitude measurement: Numerical display in degrees, resolution is 1°, measuring range: 100° ~ 360° (the lift angle can affect the amplitude, range: 30° ~ 70°. Under normal circumstances, the amplitudes value does not exceed 360°.)

Measuring times period for the average numerical results: 2s, 4s, 8s, 12s, 20s, 30s, 60s.

Measuring of the Beat Error: Numerical display in milliseconds; Resolution is 0.1 milliseconds; the measuring range is 0.0 ~ 9.9 Ms.

Lift Angle: The measuring range is 30° ~ 70°; the default value is set to 52°.

Supply voltage: Single-phase AC 100V ~ 240V ± 10% two-wire.

Measure positions: 1 ~ 6 positions.

Display: Color LCD graphic monitor, 480 x 272 pixels.

Working environment: 10℃ ~ 40℃, relative humidity: 0 ~ 80% RH

Shell: Light grey plastic

Dimensions: 29*21*24. 5cm

Weight: 1.7kg

8 Common faults and handling

8.1 After insert the socket, the screen is dark. Check the power pilot LED is bright or not.

8.2 The instrument can enter measuring state with the sound of "Di", but after placed the watch on the sensor, the instrument do not work.

Check the movement whether rotation (and amplitude must be more than 100 °), the crown of watch (leading) is against at the sheet metal of sensor.

8.3 Signal LED is bright, but the curves graph is scattered or occur many lines.

Maybe the beat is mistake, adjusted the right beat (frequency) by manual selection.

9 Tips

Set the parameters correctly, can make the instrument work efficiently.

9.1 Set the parameters correctly, can make the instrument work efficiently.

For different movements or different kind of environments, adjusts the input levels gain from the sensor, can make a better accuracy in measuring.

If the movements input level is strong, and the environment is noisy, decrease the input levels gain can resists more interactions from noise, and get a better accuracy in such environments.