The Multifunction Timegrapher No.1000 User Manual

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1. Instrument function

The Multifunction Timegrapher No.1000 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.

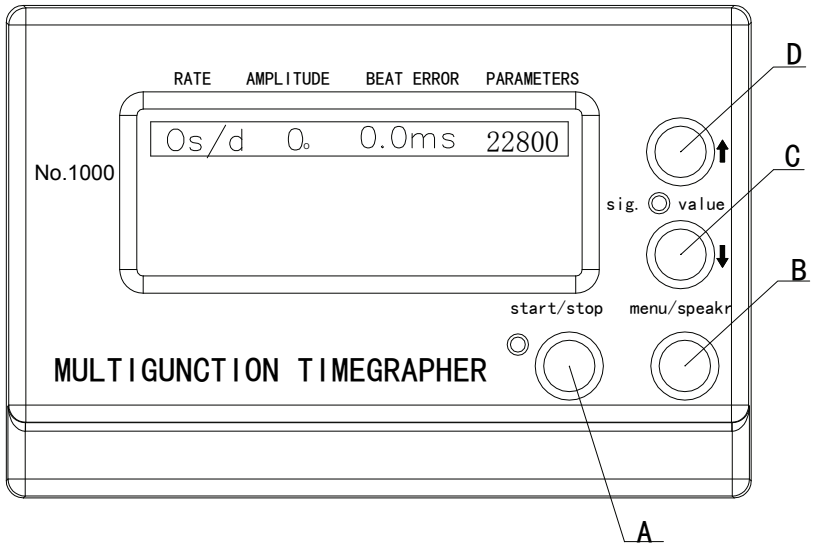
For the conventional beat, the instrument can automatically response; for the special beat, can manually select.

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



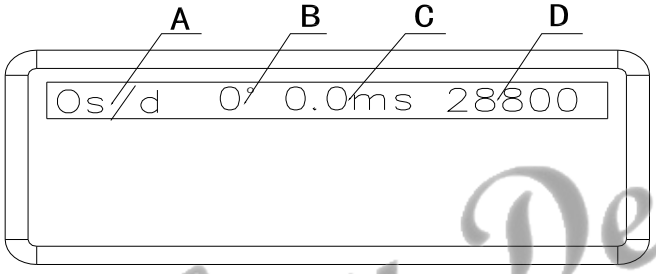
A. Start/Stop Key
The key used for start/stop to test the watch

B. Menu/Speaker Key
Selection of adjustment item or turn on/off speaker

C. Value ↓ Key
Selection of the next lower value or adjustment of dips' contrast

D. Value ↑ Key
Selection of the next higher value or adjustment of dips' contrast

2.2 Parameters and Display



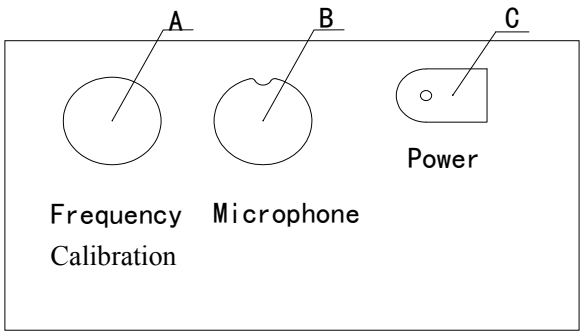
A. RATE
Rate deviation in seconds per day.

B. AMPLITUDE
Display of the amplitude in degrees.

C. BEAT ERROR
Display of the beat error in ms

D. PATAMENTS
Display of the lift angle or the beat (switching by 5s)

2.3 Connection



A. Frequency calibration Connector
(Only the company's engineers can calibrate the frequency)

B. Sensor Connector

C. Power Switch

3. Installation

3.1 The Basic Equipment Components

Testing equipment host
Microphone
Power cable
User Manual

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

Insert Power Cable into the mach outlet. Power supply voltage is between the 100 V～240V.

3.2.2 Microphone Connection

The sensor plugs to connect to the host interface Department of sensors.

4. Operation

After connecting of the power and the sensor, the instrument will be testing status. Place the watch on the signal 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 light flashing, means have received the signal of watch.

5. The Use of Keys

5.1 Start/Pause Key

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

First press the Start/Pause Key one time, the instrument pause. The parameters can be changed when green LED is off and red LED is on. After adjustment rightly, press the Start/Pause Key again when green LED is on and red LED is off. The instrument will be carried out the normal test and refresh the data and the screen to return to running condition.

5.2 Menu/Speaker Key

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

When the instrument pausing, press the Menu/Speaker Key, can enter the Menu 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 LCD's contrast, when the instrument running.

After pressed the Menu Key to select the adjustment, press the Value Key ↓ can select the

next lower parameter.

5.4 Value Key ↑

Press the Value Key ↑ can increase the LCD's contrast, when the instrument running.

After pressed the Menu Key to select the adjustment, press the Value Key ↑ can select the next higher parameter.

6. Parameters

6.1 Beat Numbers (Frequency Numbers)

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

(If the tested beat is not in automatically selection, 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 number.

The following beat are selected by 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 many common movements, therefore the lift angle value of instrument for factory is set to 52°. This value is required to 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 Period

The measuring period selectable: 2s、4s、8s、12s、20s、30s、60s

Use to recalculate the average values of the test result.

7. Technical Data

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

Frequency numbers: It can selected out the common beat number automaticly, also can selected out the less common beat number by manual.

Rate deviation measurement: the range of deviation is ± 999 sec / day, precision 1.0 sec/day.

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

Measuring period times for the average numerical results: 2s, 4s, 8s, 10s, 20s, 30s, 30s, 60s.

Measuring of the Beat error(Frequency error): Numerical display in milliseconds. Resolution is 0.1 milliseconds; the measuring range is 0-9.9 ms.

Lift Angle: the measuring range is 30 ° to 70 °, the factory set it to 52 °.

Supply voltage: single-phase AC 100 V～240V ± 10% two-line.

Measure positions: 1 to 6 positions.

Use of the environment: 0 ℃ to 50 ℃, relative humidity:0 to 80% RH

Shell: Light grey plastic
Dimensions: 173×9.5×11.5mm
Weight: 402g

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 testing state with the sound of “Di", but after placed the watch on the sensor, the instrument do not work

Check the second hand 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 lines is scattered or occur many lines

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