

# Digital thickness gage



www.marconilab.com

The MarconiLab digital thickness gauge is a modern and accurate instrument for easy and reliable measurement up to 5mm thickness.

This non-invasive tool is suitable specifically for those semi-closed, hard to probe surfaces (e.g. antique musical instruments). It does not require them to be opened. Thanks to the light magnetic attraction of its component, no harm is brought to any delicate area adding no dents or scratches, nor vibrations or stress.


Moreover, our technology allows precise measurements, regardless of the objects density.

The device can also be used with a wide range of non-magnetic materials, up to 5mm (e.g.. glass, plastic, wood and composite materials). Due to its digital display the result is instantaneous and clear. No more tricky interpolation on a measuring scale. A fluid and continuous readout will make the measurement easy, accurate and non-stopping, moving on any curved or straight path.

## **User's Manual is part of the product: keep it in a safe place.**

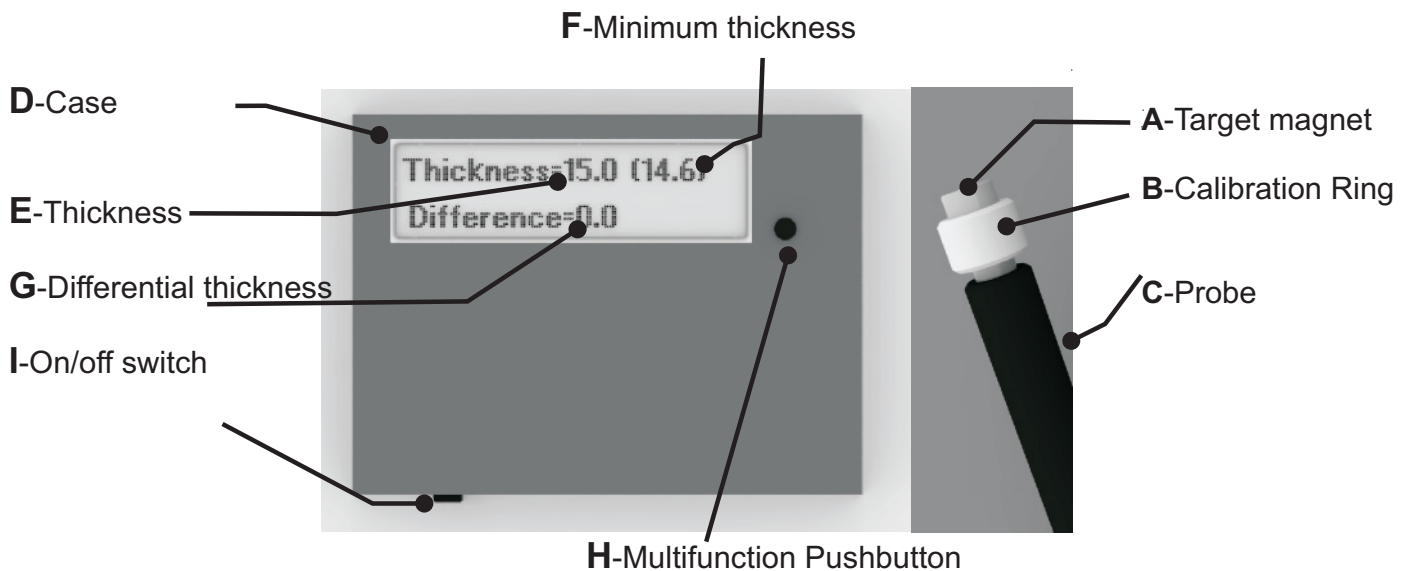
Strictly follow this manual to perform precise measurements and keep this device in a working order.

Our additional tutorial videos available on : [www.youtube.com/user/LiuteriaMarconi?feature=mhee](http://www.youtube.com/user/LiuteriaMarconi?feature=mhee)

 Its basic technology relies on a electromagnetic principle (Hall effect): a thin and under power metal layer surrounded by a magnetic field will develop a potential difference between its surfaces.  
Through some complex calculations it is possible to render this potential difference into the distance between those magnetic materials, i.e. the thickness of the material in between.

## **USERS' INSTRUCTIONS:**

- Do not substitute our target magnet with a similar in shape and dimension one. Each unit is finely calibrated with its magnet. In case of loss please contact our service center.
- Keep all parts clean, especially from specks, to avoid any false measurement.
- Strictly follow the procedures described afterward.
- Always keep the probe perpendicular to the surface to be measured.
- While using or testing the instrument, do not invert the polarity of the target magnet to avoid false indications. The target magnet is built to prevent its use on the wrong side.



## **Switch on and power off**

**IMPORTANT! To switch on the device, make sure the calibration ring is perfectly fitted on the probe and the target magnet, so to form a single body.**

A correct alignment of those three elements will allow a precise zeroing on the measurement scale, hence accurate measuring. To turn on the instrument simply move the switch (I) to the left. Wait for 2 seconds to display the thickness measurement page. At this point it is possible to detach the magnet, the calibration ring and the probe. Start measuring. When finished, it is highly recommended to turn off the instrument moving the switch (I) to the right, to extend battery life.

## **1 - How to perform a measurement**

### **1.1 The surface to be measured is accessible both side.**

Turn on the device first, then pull apart the target magnet, the calibration ring and the probe.

Place the probe on the first side of the surface to be measured, lean the target magnet on the other side.

The readout will display on a tenth millimeter scale (type HE-FM1) on the screen (E) or, if needed, in hundredth of millimeter (mod HE-FM2 or above)

### **1.2 The surface to be measured is accessible on one side only.**

(e.g. in correspondence of the "f" holes of the violin)

Turn on the device first, then pull apart the target magnet, the calibration ring and the probe.

Place the probe on the accessible side, let the target magnet to slip inside the musical instrument. Thanks to the probe magnetic attraction, retrieve the magnetic target.

If the magnetic strength becomes too weak to pick up the target magnet, you may use the recovery magnet. Use the recovery magnet to attract the target magnet in the musical instrument. Once achieved, slowly replace the recovery magnet with the probe and put it away from the working area. From now on the magnetic force will be enough to keep the probe and the target linked together on the opposite sides of the surface.

### **1.3 Precaution during measurement.**

During any measurement it is highly recommended to keep the probe and the target away at least 20cm from any magnetic material (e.g. the recovery magnet, nails, screws, pins and metallic plaques) as well as any electromagnetic source (e.g. engines, inductors, transmitters, mobile phones, etc.).

## **2 - How to measure the minimum thickness**

A minimum thickness value (letter F) is displayed in brackets. This function becomes highly valuable if, due to matt surfaces, it becomes hard to properly line up the magnet and the probe, hence to have a precise measurement.

In this situation proceed as follows: place the probe on the area to be measured, slightly spin the probe. Every second the gauge will automatically select and display the lowest detected value (on a 16000 measurement/sec) corresponding to the best alignment between probe and target magnet.

## **3 - How to select the desired accuracy in measurement (type HE-FM2 and above)**

Push the button H and keep it pressed for few seconds. The measurements will switch from tenth of millimeter (e.g. 35) to tenth of millimeter and hundredth of millimeter (e.g. 35.4) and vice versa.

## **4 - How to measure the differential thickness (type HE-FM3 only)**

To display the differential thickness between a datum point and another one in the vicinity proceed as follows: place probe and magnet to get the measurement in the datum point then quickly press the pushbutton H.

From now the G area of display will continuously show the differential thickness between the point taken as reference and any other point. By quickly pressing the pushbutton H it is possible to set a new datum point and restart the comparison.

## **5 - Low battery indication**

In case of "Low Battery" indication, stop measuring and replace the battery. Twist and remove the 5 screws in the back of the gauge. Replace the old battery with a new one (LR-9 type) and DO NOT TOUCH the electronic circuit. Close the case with the 5 screws.

## **6 -Available models**

**MarconiLab digital thickness gauge HE-FM1 with tenth of millimeter display and minimum thickness measurement.**

**MarconiLab digital thickness gauge HE-FM2 same as HE-FM1 plus the two measurement scale option.**

**MarconiLab digital thickness gauge HE-FM3 same as HE-FM2 plus the differential thickness measurement feature .**

Specifications:

- Hall effect technology based
- Minimum measurable thickness 5 hundredth of millimeter.
- Maximum measurable thickness 5 millimeters
- Power current: one LR-9 battery ( 40 hours average life)
- Resolution 0.01mm (mod. HE-FM2 and above), 0.1mm (mod. HE-FM1)
- Accuracy 0.03mm
- Temperature of employment: 5-50 degrees Celsius