

# Digital thickness gage HE-FM nano

## **!!INSTALL THE DEVICE DRIVERS BEFORE TO CONNECT THE HE-FM nano TO THE PC**

All the drivers and software required are downloadable from <http://www.marconilab.com/download.htm>

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 5.2mm (e.g.. glass, plastic, wood and composite materials). Due to its virtual 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.

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### **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)

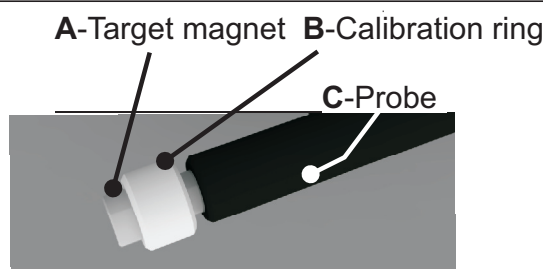


*Its basic technology relies on an electromagnetic principle (Hall effect): a thin and under power metal layer surrounded by a magnetic field will develop a potential difference between its surfaces.*

*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.



## **Installing drivers on your PC**

### **IMPORTANT Do not connect HE-FM nano to the PC until you are asked to do it!**

Download and run the file "serial\_install.exe", follow the instructions on the screen. During the procedure, it is possible that your antivirus displays security alerts.

After the procedure ends, you can connect to your Pc the HE\_FM nano.

### **Switch on**

### **IMPORTANT! before to connect the device to the pc, 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 connect the device to the USB port of the PC. Wait for 2 seconds for zeroing: the green led will flash quickly. If an error occurs, both green and red will turn on. In this case check if the magnet is correctly fitted in the starting position, detach and reconnect the usb. At this point it is

possible to detach the magnet, the calibration ring and the probe.

Start measuring. Now you can start one of the software (or Softgage or Pic-Thick). The correct software link will be indicated red led "link." turning on. To repeat the initial zeroing without disconnecting the HE-FM nano, place the target magnet, the calibration ring and the probe in the starting position, press and hold the select button for more than 4 seconds. The red and green led will turn on during the calibration.

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

### **1.0 - First connect the HE-FM nano to the Pc, and then start the software application.**

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

Connect 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 nano) or, if needed, in hundredth of millimeter (mod HE-FM nano 2 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).

Connect 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**

The minimum thickness value is displayed in brackets on the virtual display on the PC. 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-FM nano 2 and above)**

Press the select button on the device. 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-FM nano 3 only, with Soft gage software)**

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 press the virtual button «difference» on the softgage software.

From now the second line of display will continuously show the differential thickness between the point taken as reference and any other point. By pressing the virtual button «difference» it is possible to set a new datum point and restart the comparison.

## **6 -Available models**

**MarconiLab digital thickness gauge HE-FM nano 1 with tenth of millimeter display and minimum thickness measurement.**

**MarconiLab digital thickness gauge HE-FM nano 2 same as HE-FM nano 1 plus the two measurement scale option.**

**MarconiLab digital thickness gauge HE-FM nano 3 same as HE-FM nano 2 plus the differential thickness measurement feature.**

### **Specifications:**

- Hall effect technology based
- Minimum measurable thickness 5 hundredth of millimeter.
- Maximum measurable thickness 5,2 millimeters
- Resolution 0.01mm (mod. HE-FM2 and above), 0.1mm (mod. HE-FM1)
- Accuracy 0.03mm
- Temperature of employment: 5-50 degrees Celsius

