

**MEGA CHECK BASIC  
COATING THICKNESS METER**



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<b>1 Introduction</b> .....	<b>2</b>
1.1 Magnetic Induction (ISO 2178): .....	2
1.2 Eddy Current (ISO 2360): .....	2
<b>2 TECHNICAL DATA</b> .....	<b>2</b>
<b>3 Quick Start</b> .....	<b>3</b>
<b>4 Functions of the operating keys</b> .....	<b>3</b>
4.1 Important Notes .....	4
4.1.1 Measurement on small or curved parts .....	4
4.1.2 Thickness of the base material.....	4
4.1.3 Power supply.....	4
4.1.4 Battery and/or accumulator test.....	4
4.1.5 Automatic switch-off .....	4
4.1.6 Change of the probe.....	4
<b>5 Use of the Menu</b> .....	<b>5</b>
5.1 Calibrate .....	5
5.2 Auto-FN/NFE–Switching .....	5
<b>6 Setup</b> .....	<b>6</b>
6.1 Language selection:.....	6
6.2 Switching on and off the LCD light: .....	6
6.2.1 LCD Contrast.....	6
6.2.2 Measurement unit (switching between $\mu\text{m}$ – mils):.....	6
6.2.3 Display of the batteries voltage .....	6
6.2.4 Reset.....	7
<b>7 Measurement Probes</b> .....	<b>7</b>

# 1 Introduction

The coating thickness meter **MEGA-CHECK Basic** is an electronic coating thickness measurement device for exact measurement of coatings on metallic surfaces.

The following can be measured:

## 1.1 Magnetic Induction (ISO 2178):

All non-magnetic coatings on iron and steel, such as varnish, paint, plastics, email, rubber, ceramics and galvanized materials, except nickel.

## 1.2 Eddy Current (ISO 2360):

All insulating coatings, such as varnish, paint, plastics, anodized coatings, rubber, etc. on non-ferrous metals (aluminum, brass, zinc, lead, copper, non-magnetic steels).

Several measurement probes may be connected to the device which differ by their measurement method (magnetic induction and/or eddy current) and by their range of measurement (see II. MEASUREMENT PROBES). For the first time the analog measurement signals are directly digitalized in the probe guaranteeing above all trouble-free measurements. The probe cable is connected on both sides and is thus easy to service.

The comfortable menu selection in several languages allows easy operation of the device, mostly even without operating manual.

**MEGA-CHECK Basic** offers the possibility of storing up to 10,000 measurement values. Statistical evaluation is either carried out on the display or via a connected printer or computer.

For evaluation of the values via a computer, the device features an USB interface allowing for wireless communication with a computer when using the included USB radio receiver.

Various evaluation programs are available on request.

# 2 TECHNICAL DATA

Measuring technique::

ISO 2178	magnetic induction on iron and steel
ISO 2360	eddy current on non-ferrous metals and stainless steel
BS 5411	(Probes PFN-52D / PFN-52DS)
ASTM	

Measuring ranges: see "Measurement Probes"

Display: Graphic display backlighted with operation hints

Resolution: 0 - 100 µm: 0,1 µm  
100 - 2000 µm: 1,0 µm  
> 2.0 mm: 0,01 mm

Accuracy: 0 - 100 µm: 1 µm  
100 - 1000 µm: 1 %  
1000 - 2000 µm: 3 %  
> 2000 µm: 5 %

Ambient temperature: 0 - 50° C

Power supply: 3 x 1.5 V batteries (Mignon) or  
3 x 1.2 V rechargeable batteries with charger on request

Battery capacity: approx. 60 hours

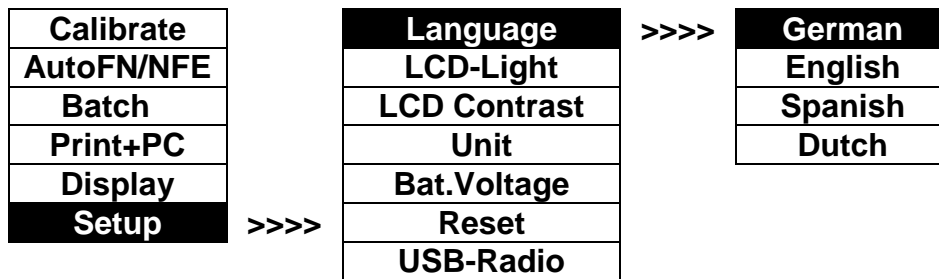
Dimensions: 198 x 92 x 35 mm

Weight: ca. 265 g (incl. battery)

Warranty: MEGA-CHECK Basic: 12 months  
Measurement probe: 3 month

### 3 Quick Start

- Connect the probe cable to the probe and the device.
- Switch on the **MEGA-CHECK Basic** using the ON-OFF key. The value last measured will be displayed.
- To change the language (English by default) press the MENU key:



Go through the menu using the arrow keys. Confirm your choice by pressing the OK key.

- Gently apply the probe on the coating to be measured until the value is displayed and the device confirms its measurement by means of an acoustic signal.
- Between each measurement, lift off the probe at least 5 cm for approx. 1 second. The stored calibration will then automatically be checked and corrected, if applied.
- When using a combined probe (FE/NFE), the device will automatically select the appropriate measurement method after the probe has been applied. Behind the measurement value the symbol **FE** will be displayed for the magnetic induction method or **NFE** for the eddy current method.

### 4 Functions of the operating keys



## 4.1 Important Notes

Do not run the probe along a measurement object. Always measure point by point! This means that after each measurement the probe should be lifted off for approx.

1 second. The calibration set will then automatically be checked and corrected, if applicable.

Please make sure that the pole pin of the measurement probe and the calibration plates are clean and free of chips and dust!

### 4.1.1 MEASUREMENT ON SMALL OR CURVED PARTS

With measurements on small or curved parts both, the zero adjustment and the foil calibration, should be carried out on a non-coated object with the same geometry.

The same applies to base material the structure of which differs strongly from the included base plate (cast, special steels etc.)

For measuring small parts on steel as a base material, the probes PF-1S and PF-3T are especially suitable.

When using the device for the first time its calibration should be checked by means of the included measurement foils.

### 4.1.2 THICKNESS OF THE BASE MATERIAL

Base material: iron / Steel (FE): > 0,3 mm

Base material: non-ferrous metals (NFE): > 0,2 mm

### 4.1.3 POWER SUPPLY

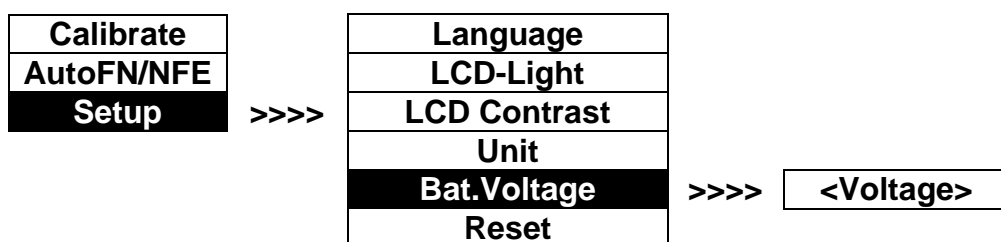
The device is delivered with three 1.5V batteries (Mignon) by series but it can also be operated with three 1.2 V NiCd batteries as an option. An appropriate charging device to be connected to the serial interface port is available.

Charging time: 8 – 10 hours.

It is also possible to have the battery charger connected all the time!

### 4.1.4 BATTERY AND/OR ACCUMULATOR TEST

As soon as only one bar is displayed on the active device the batteries have to be changed and/or the device has to be charged. If the message “change batteries” is displayed the device will automatically switch off for protection should the battery voltage be too low. To check this you can have the exact voltage be displayed:



The voltage should be more than 3.0V

**Old batteries are special refuse and must be special disposed**

### 4.1.5 AUTOMATIC SWITCH-OFF

The device will switch off automatically 2 minutes after the last measurement

### 4.1.6 CHANGE OF THE PROBE

To change the probe switch off the device first. Then connect the desired probe to the probe cable and switch on the device again. If no measurement probe is connected or the probe cable has no connection to the device a message will be displayed saying that no probe is connected. The device will then switch off again automatically!

## 5 Use of the Menu

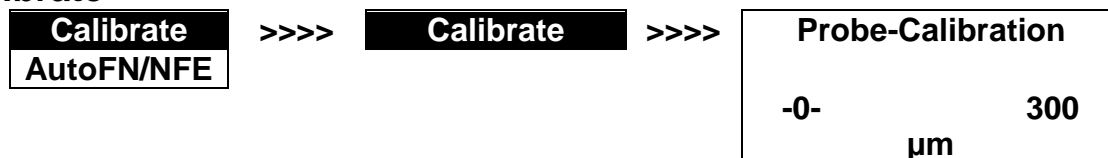
The different devices functions will be controlled via a menu. After switching on the device press the *MENU* key in order to call up the menu.

Using the arrow keys you can select a menu option. The current selection is highlighted in black. You will confirm your selection by pressing *OK*. Either a submenu or the selected device function will be displayed.

You will exit the menu of the device by pressing the *C* key.

The blue key in the center will call up the main menu.

### 5.1 Calibrate



#### Zero Adjustment (One-point-calibration)

Press the blue key *-0-* on the left. Set the probe on a blank base plate (FE = iron, steel; NFE = non-ferrous metals). In the display the message *>calibrate<*, then *>calibrate ready<* and 0.0 is indicated, the beep signal sounds. Now the probe can be removed.

Important: Zero adjustment with the probe PF-15 for thick coatings has to be carried out on a steel plate with a size of at least 60 x 40 mm.

#### Foil Calibration (Two-point-calibration)

##### After zero adjustment:

- Set the correct calibration value for the probe using the arrow keys (see MEASUREMENT PROBES on page 14). The value can be changed by  $\pm 1$  digit by pressing the keys shortly. Pressing the keys longer will result into the value continuously increasing and/or decreasing faster.
- Put the measurement foil onto the base plate. Apply the probe onto the foil; then press the blue menu key on the right.
- After the acoustic signal the calibration value is displayed and the probe can now be removed.

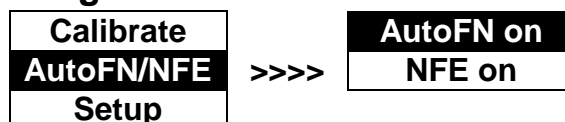
The device is now ready for measurements.

##### **IMPORTANT**

**During start-up of the device and during measurements on small or curved objects zero adjustment and foil calibration using the included measurement foil (approx. 300 µm) should be carried out by all means.**

**If the device had already been in use and has been calibrated correctly, the calibration value last entered will be automatically adjusted to any existing changes in temperature and/or corrected. New calibration is only required if the measurement is carried out on small or curved objects.**

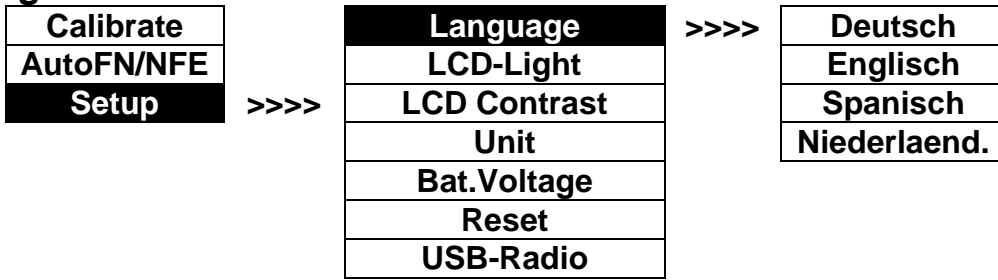
### 5.2 Auto-FN/NFE–Switching



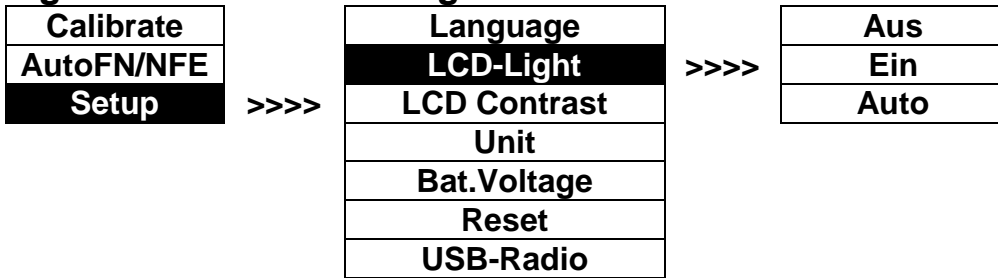
When using the combined probes **PFN-52D** and **PFN-52DS** and when measuring coatings on slightly magnetic stainless steel materials it is possible that the probe will automatically switch to **FE** and a wrong measurement value is displayed. In such case you have to switch automatically recognition of the measuring method to **NFE On** in order to activate NFE (the eddy current method). If the probe has been switched to this method, the base material will be displayed inversely to show recognition to the **NFE On** method. After repeated switching on and off of the device, the Auto method is selected automatically in order to use the appropriate measurement on FE base material for the next measurements.

## 6 Setup

### 6.1 Language selection:



### 6.2 Switching on and off the LCD light:



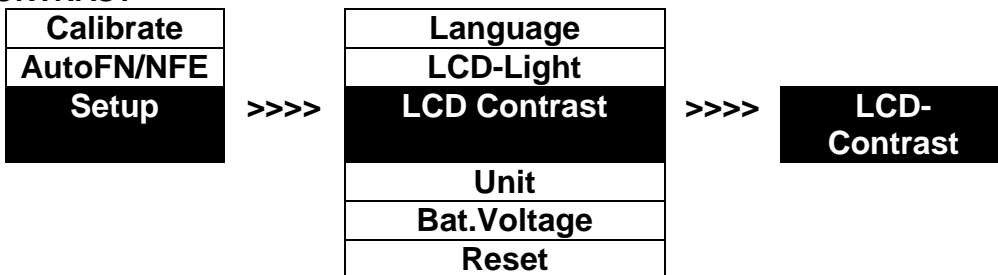
On: LCD light always switched on

Off: LCD light switched off

Auto: LCD light is switched on during the measurement and for approx. 2 seconds when pressing the key. After that it is switched off to save energy

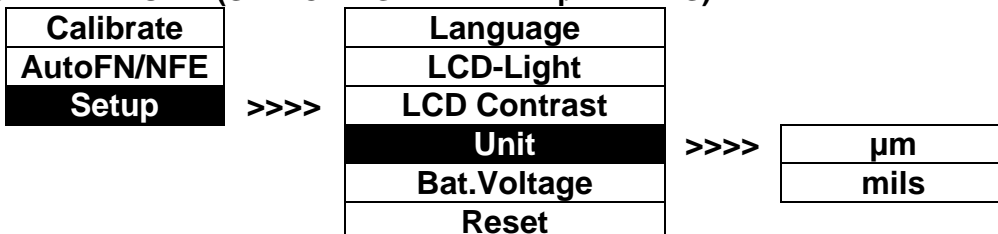
Note: If the LCD light is always switched on the life span of the batteries will reduce significantly! The LCD-Light is disconnected automatically as soon as the battery voltage falls down to 2.9 V.

#### 6.2.1 LCD CONTRAST

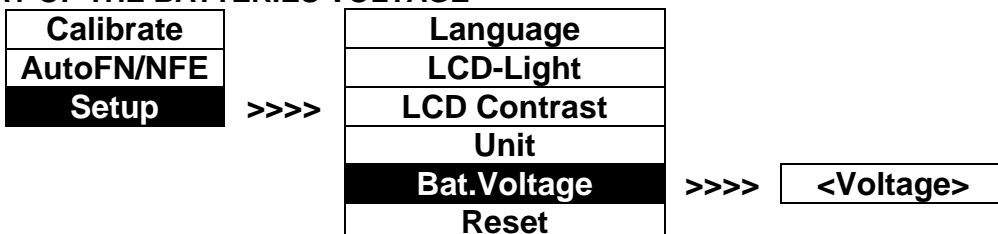


To regulate the contrast use the up and down arrows.

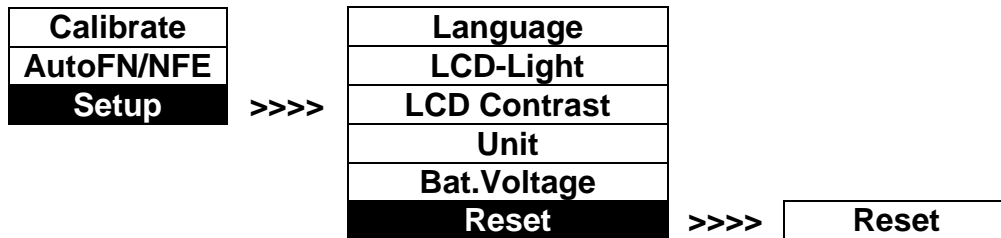
#### 6.2.2 MEASUREMENT UNIT (SWITCHING BETWEEN $\mu\text{M}$ – MILS):



#### 6.2.3 DISPLAY OF THE BATTERIES VOLTAGE



## 6.2.4 RESET



Using the reset function all adjustments are reset to the settings from factory. This function is important when settings have been modified or the device and the probe do not work properly.

## 7 Measurement Probes

### Special characteristic curves and calibration data

Several measurement probes can be connected to the device, which differ by their measurement method (magnetic induction and/or eddy current) and by their measurement range and/or by application (see below table).

The special characteristic curves and calibration data are stored in the probe resulting in to the last calibration carried out with the probe being activated after the probe was connected to the device and after the device has been switched on (no new calibration necessary when changing the probe).

### **IMPORTANT:**

If the device is switched on without a probe connected a message will be displayed saying that the probe is not connected and the device will switch off automatically.

When the probe is changed the device must first be switched off. Then connect the probe and switch it on again.



**Table of the available measurement probes with calibration values:**

Measurement method:

PF = magnetic induction on steel

PN = eddy current on NE metals

PFN = magnetic induction + eddy current on steel + non-ferrous metals

Measuring probe <i>Calibration value</i>	Measuring range	Application
PF - 5 <i>300 μm</i>	Fe 0 – 5000 μm	One-pole probe for measurements on steel with sliding collar, exchangeable sapphire pole pin.
PF – 5S <i>300 μm</i>	Fe 0 – 5000 μm	One-pole probe for measurements on steel with sliding collar, exchangeable sapphire pole pin, measurement head can be tilted by 90°.
PF – 1S <i>300 μm</i>	Fe 0 – 1000 μm	One-pole probe for measurement thin coatings on small steel parts, measurement head can be tilted by 90°.
PF - 3T <i>300 μm</i>	Fe 0 – 3000 μm	One-pole probe for measurements on small steel parts or in steel tubes.
PF – 1T <i>300 μm</i>	Fe 0 – 1000 μm	One-pole probe for measurements on small steel parts or in steel tubes.
PF - 6S <i>1000 μm</i>	Fe 0 – 6 mm	Special two-pole 90° swinging probe, compensated against extl. magnetic fields
PF - 30 <i>5.0 mm</i>	Fe 0 – 30 mm	Special two-pole probe for thick layers
PFN – 52D <i>300 μm</i>	NFe 0 – 2500 μm Fe 0 – 5000 μm	Combined probe for measurements on steel and non-ferrous metals with sliding collar, exchangeable sapphire pole pin.
PFN – 52DS <i>300 μm</i>	NFe 0 – 2500 μm Fe 0 – 5000 μm	Combined probe for measurements on steel and non-ferrous metals with sliding collar, measurement head can be tilted by 90°, exchangeable sapphire pole pin.