

***Qoltec***<sup>®</sup>



USER MANUAL

COATING THICKNESS GAUGE

Model: 50646

## Introduction

Thank you for your trust and for choosing a Qoltec coating thickness gauge. We are confident that this product will meet your expectations. This manual will guide you through the process of installing and using the device. It contains important safety instructions regarding operation and correct installation. If you have any questions after reading this manual, please contact our Customer Service Department.

## About the product

The device is designed to measure the thickness of non-conductive coatings (e.g. paints, varnishes, plastics, enamels) applied to metal substrates.

It also enables the measurement of the thickness of non-magnetic coatings on ferromagnetic substrates (e.g. steel, iron, nickel, cobalt) and insulating coatings on non-ferrous metals (e.g. aluminium, copper).

## Safety instructions

- 1) Use the device for its intended purpose, in accordance with the user manual.
- 2) Keep the device out of the reach of children.
- 3) Never touch the device with wet hands whilst it is powered on.
- 4) Calibrate the device strictly in accordance with the manufacturer's guidelines.
- 5) Clean the device using suitable cleaning agents and materials.
- 6) Avoid exposure to extreme temperatures and humidity.

## Two measurement methods

The meter uses two measurement methods:

- 1) magnetic induction (F) – used for ferromagnetic substrates,
- 2) eddy current method (NF) – used for non-magnetic substrates (non-ferrous metals).

The device is equipped with an integrated dual-action probe (F/NF), which automatically recognises the type of metal substrate and selects the appropriate measurement method (in AUTO mode).

The measurement is performed by placing the probe directly and perpendicular to the surface being tested. The coating thickness result is calculated automatically and displayed on the LCD screen.

## Description of the device's components

Gauge design: Figure 1 in the appendix

1. Automatic switch-off function
2. Statistical display (average, minimum, maximum, count)
3. Measurement readings
4. Probe mode: AUTO – automatic mode, F – magnetic induction (ferromagnetic substrates), NF – eddy currents (non-magnetic metals)
5. Substrate properties (Fe: iron; NFE: non-iron)
6. Battery level indicator
7. Unit switching (um microns, mm millimetres, Mil mils)
8. Up button (device switch)
9. Right (zero calibration, average / minimum / maximum / count switching)
10. Down key (backlight switch, auto-off switch)
11. Left button (probe mode switch, clear statistics)
12. Power switch
13. Probe
14. Reference membrane
15. Surface to be tested

## Battery installation

- 1) Prepare 2 AAA batteries.
- 2) Remove the rear cover of the device.
- 3) Insert the batteries, ensuring correct polarity as indicated in the battery compartment.

## Measurement steps

1. Sample preparation:

Ensure that the surface to be tested is clean, dry and free from contaminants (dust, oil, rust). Clean the measurement area if necessary.

2. Switching on the device:

Before switching on the meter, hold the probe at least 2 cm away from any metal objects. Switch on the device using the power button.

**Note: It is recommended that you perform a zero calibration before starting measurements, particularly on first use, after a long period of inactivity, or when changing the type of surface.**

3. Taking a measurement:

- 1) Position the probe perpendicular (at a 90° angle) to the surface being tested.
- 2) Gently but firmly press the probe against the measurement point.
- 3) After the beep, read the result displayed on the screen.
- 4) Then lift the probe to a distance of at least 2 cm from the surface before taking the next measurement.

**Note: If the auto-off function is active and no operation is performed for 3 minutes, the device will switch off automatically to save battery power.**

## Calibrating the device

**Note: Calibration plates are included in the kit**

### Zero calibration

Zero calibration improves the accuracy of the device's measurements and should be carried out before each test.

- 1) Gently press the probe against the uncoated aluminium base.
- 2) The LCD display should show 0.00.
- 3) You will hear a double beep 'BI-BI', indicating that the zero calibration is complete.

### Basic calibration procedure

**Note: Always start paint thickness measurement with calibration!**

Basic calibration is required in the following cases:

- 1) First use of the device.
- 2) Prolonged period of non-use.
- 3) Change of substrate material.

Calibration is carried out at 7 calibration points, with the unit of measurement being mm.

**Prepare 6 calibration sheets of the following thicknesses:**

0.04–0.06 mm; 0.09–0.11 mm; 0.22–0.28 mm; 0.45–0.55 mm; 1.90–1.05 mm; 1.90–2.00 mm

Ensure that the device and calibration materials are clean. Enter the basic calibration mode on the device. Insert the calibration sheets one by one according to their thicknesses, following the instructions on the device's screen. After completing each step described below, ensure that the results have been saved. Repeat the procedure for each calibration sheet, in order of thickness and in accordance with the values displayed on the LCD, until all calibration points have been configured.

### Entering calibration mode

- 1) Hold down the 'up' button, then press the 'ON' button to switch on the device.
- 2) The LCD display will show a full-screen view of the sensor, and you will then hear a 'BI' beep.
- 3) The display will show 00 mm, and you will see the 'CAL' symbol in the bottom right-hand corner of the screen.
- 4) Release the 'up' button to confirm entry into calibration mode.

### Point calibration

- 1) Move the probe away from the surface — the LCD display will show 0.05 mm.
- 2) Place the probe on the aluminium base with a calibration sheet of the thickness indicated on the display.
- 3) Gently press the probe onto the sheet.
- 4) If the value on the display differs from the thickness of the sheet, use the 'up' and 'down' buttons to adjust the value.
- 5) Once the correct value has been set, remove the probe.
- 6) You will hear a 'Beep-Beep' sound, indicating that the calibration of the second point is complete.

## Completion of calibration

Once calibration has been carried out at all points, the device will return to standby mode.

## Switching the probe's operating mode

Press the 'left' button to switch the probe's operating mode.

Automatic mode (AUTO): The device automatically recognises the probe type and performs the appropriate measurement.

Mode for users who are unsure which mode is appropriate.

Magnetic induction mode (FI): For measuring ferromagnetic substrates, such as steel or iron.

Eddy current mode (N): recommended for thin coatings and precision measurements.

## Static data management

**Note: The device can store up to 50 measurement results. Once the limit is reached, new data overwrites the oldest entries.**

- 1) Press the right button to switch between different types of statistical data:  
Average (AVG): The average value of the stored measurements; Minimum (MIN): The lowest recorded result; Maximum (MAX): The highest recorded result, Count (COUNT): The number of recorded data points (up to 50).
- 2) Hold down the left button for approximately 3 seconds to: Clear all recorded statistical data and start collecting new statistics from scratch.

## Backlight and auto-off

- 1) Press the 'down button' to turn the backlight on or off.
- 2) Hold down the 'Down' button for approximately 3 seconds to:

Enable or disable the auto-off function.

If this function is enabled and the device remains unused for 3 minutes, it will switch off automatically.

## Measurement

- 1) Position the probe perpendicular (vertically) to the surface.

- 2) Touch the probe to the surface being tested.
- 3) When you hear a beep, read the result.
- 4) Lift the probe at least 2 cm before taking the next measurement.

## Switching the probe's operating mode

Press 'left' to switch the probe mode.

In automatic mode (AUTO), the instrument can automatically switch the probe and take a measurement.

In magnetic induction mode (F), the instrument will measure using the magnetic induction mode. At this time, it is suitable for measuring ferromagnetic substrates.

In eddy current mode (NF), the instrument will measure using the eddy current method. This mode is suitable for measuring ferromagnetic metal substrates.

## Backlight

Press the 'down button' to switch the backlight on or off.

## Auto-off

Hold down the Down button for approximately 3 seconds to enable or disable the auto-off function. If the auto-off function is enabled and no operation is performed within 3 minutes, the device will switch off automatically to save battery power.

## Troubleshooting

If you notice a significant fault with the device, you can remove the battery for 2 seconds, reinsert it, then restart the computer and try again.

## FAQ – Frequently Asked Questions

1. What is the meter used for?

To measure the thickness of paint, varnish and other coatings on metals.

2. Which metals does the device support?

Steel (F mode – magnetic induction)

Aluminium, copper, etc. (NF mode – eddy currents)

3. Do I need to calibrate the device?

Yes. Always before first use. After a long period of inactivity. After changing the type of substrate.

4. What does AUTO mode mean?

The device automatically recognises the type of metal and selects the appropriate mode.

5. Why is the measurement result unstable?

Possible causes:

1. lack of calibration
2. dirty surface
3. substrate too thin
4. surface too small or curved

6. How do I reset the device?

Remove the batteries for 2 seconds. Reinsert them and switch on the meter.

## Technical Specifications

| Parameter                         | Value                                                 |                               |
|-----------------------------------|-------------------------------------------------------|-------------------------------|
| Probe:                            | Probe F – Measurement principle: Magnetic induction   | Probe N – Eddy current effect |
| Measurement range:                | 0–2000 $\mu\text{m}$                                  |                               |
| Accuracy:                         | $\pm(3\% + 1 \mu\text{m})$                            |                               |
| Resolution:                       | 0 $\mu\text{m}$ –999 $\mu\text{m}$ (1 $\mu\text{m}$ ) |                               |
| Zero calibration:                 | Supported                                             |                               |
| Statistics:                       | Average, minimum, maximum, count                      |                               |
| Unit:                             | $\mu\text{m}$ , mm, mils                              |                               |
| Min. surface radius of curvature: | 5 mm                                                  |                               |
| Minimum surface concavity radius: | 25 mm                                                 |                               |
| Minimum measurement area:         | 20 mm in diameter                                     |                               |
| Min. substrate thickness:         | 0.2 mm (F)                                            | 0.05 mm (N)                   |
| Max. measurement speed:           | 2 readings per second                                 |                               |

|                        |                                   |
|------------------------|-----------------------------------|
| Power supply:          | 2 x 1.5V batteries (not included) |
| Operating temperature: | 0–50°C, 20–90% RH                 |
| Storage:               | -10–60°C, 20–90% RH               |
| Device dimensions:     | 50 × 122 mm                       |

## Maintenance

1. The device should be stored in a dry and clean place, away from moisture, dust and sources of heat.
2. Keep the measuring probe clean. After use, it is recommended to wipe the probe tip with a soft, dry cloth.
3. Do not use solvents or harsh chemicals to clean the casing or the probe.
4. Avoid mechanical impacts and dropping the device.
5. If the device is not to be used for an extended period, it is recommended that the batteries be removed to prevent any potential leakage.
6. It is recommended to periodically check the accuracy of the readings by performing a calibration on a calibration plate and calibration foils.

## Disposal

1. Do not dispose of the end-of-life device in household waste.
2. The product is subject to the separate collection of electrical and electronic waste in accordance with applicable regulations (the WEEE Directive).
3. Used batteries should be taken to the appropriate collection points for batteries and accumulators.
4. Proper disposal helps to protect the environment and human health.

## Warranty

The product is covered by the manufacturer's warranty in accordance with the terms set out in the warranty certificate or the terms and conditions of sale.

The warranty covers manufacturing defects arising from the production process.

The warranty does not cover:

1. mechanical damage (e.g. dropping, impact),
2. damage resulting from improper use,
3. damage resulting from tampering by unauthorised persons,
4. damage caused by liquid spillage or exposure to chemicals,

5. normal wear and tear of consumable parts (e.g. batteries).

To make a complaint, please contact the retailer or the manufacturer's authorised service centre.

## Attachment

1

