

Elcometer 550

Non-Contact Uncured Powder Gauge

Operating Instructions



CE This instrument meets the Electromagnetic Compatibility Directive.

This instrument is Class A, Group 1 ISM equipment according to CISPR 11.

Group 1 ISM product: A product in which there is intentionally generated and/or used conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.

Class A product is suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

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A copy of this Instruction Manual is available for download on our Website via www.elcometer.com

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Thank you for your purchase of this Elcometer 550 Non-Contact Uncured Powder Gauge. Welcome to Elcometer.

Elcometer are world leaders in the design, manufacture and supply of inspection equipment for coatings and concrete. Our products cover all aspects of coating inspection, from development through application to post application inspection.

With the purchase of this product you now have access to the worldwide service and support network of Elcometer. For more information visit our website at www.elcometer.com.

1 ABOUT THIS INSTRUMENT

The Elcometer 550 is designed to allow the user to determine the dry film thickness of powder before it has been put in the oven to cure. This not only allows the user to control the dry film thickness of their product but also to minimise the wastage of expensive powder. Using an ultrasonic method the gauge does not require that the surface be disturbed to take a measurement, ensuring an ideal finish.

Measurements are taken by holding the gauge at the correct distance and angle from the powder coated part. The large colour display on the gauge body as well as another smaller LED display on the sensor gun help guide the user into the correct position.

To maximise the benefits of your new Elcometer 550 Non-Contact Uncured Powder Gauge, please take some time to read these Operating Instructions. Do not hesitate to contact Elcometer or your Elcometer supplier if you have any questions.

1.1 FEATURES

- Non-contact measurement
- Accurately predicts cured thickness of coating powders
- Ability to optimise reading accuracy with multiple calibration adjustments

1.2 WHAT THE BOX CONTAINS

- Elcometer 550 Non-Contact Uncured Powder Gauge
- Sensor gun
- Shoulder harness
- USB - PC transfer cable
- Universal charger & cable
- Zero/reference block
- Carry case
- Test certificate
- Operating instructions

The Elcometer 550 Non-Contact Uncured Powder Gauge is shipped in a cardboard package. Please ensure that this packaging is disposed of in an environmentally sensitive manner. Consult your local Environmental Authority for further guidance.

2 GETTING STARTED

2.1 CHARGING THE BATTERY


Your gauge features an internal rechargeable battery. The charger input is located on the bottom of the gauge beneath the protective cover. (See image on page 5.)


Before using your gauge for the first time be sure to charge the battery for 3 hours. Subsequent charging should take no more than 1.5 hours and provide up to 7 hours use of the gauge.

Note: *Batteries must be disposed of carefully to avoid environmental contamination. Please consult your local Environmental Authority for information on disposal in your region.*

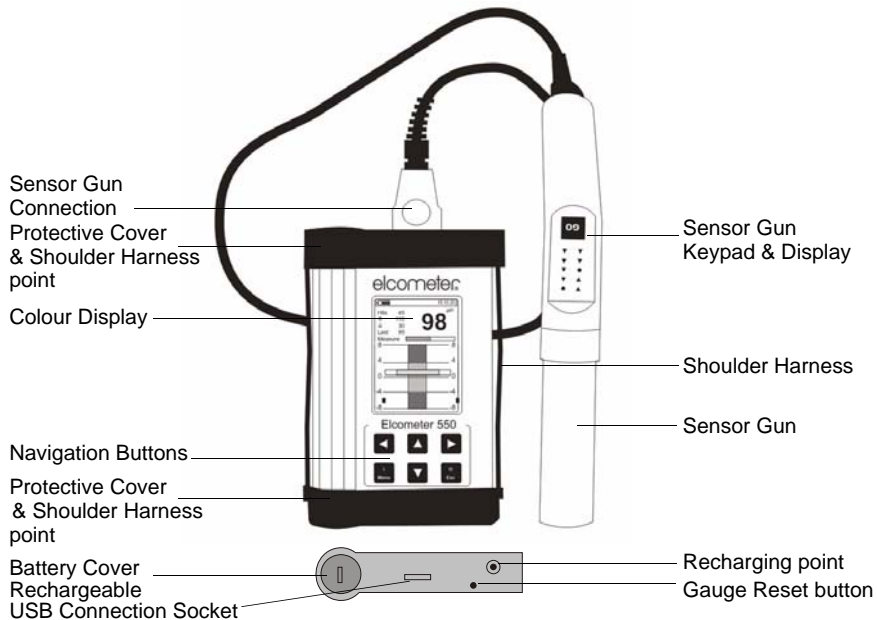
Do not dispose of any batteries in fire.

2.2 SWITCHING ON/OFF

To switch on, press and hold the  button for three seconds. The gauge will make a sound confirming that it has switched on and the main menu will be displayed. The gauge may also be switched on by using the "Go" button on the sensor gun in the same way.

To switch off, press and hold the  button for 3 seconds. The gauge will make a sound confirming that it has switched off.

2.3 GAUGE OVERVIEW



2.4 NAVIGATION BUTTONS



Left and right navigation (main menu) and up and down (sub menus)



Up and down navigation (main menu) and setting adjustment (sub menus)



Power on, menu enter/select/start/stop measuring button



Power off, return to previous menu/escape



(Sensor gun) Power on, start/stop measurement button

2.5 TAKING A MEASUREMENT

2.5.1 Zeroing the gauge


Each Elcometer 550 Non-Contact Uncured Powder Gauge is individually calibrated at the factory. To ensure the highest level of measurement accuracy the Elcometer 550 should be zeroed by the user, before use, to take into consideration the varying environmental conditions.

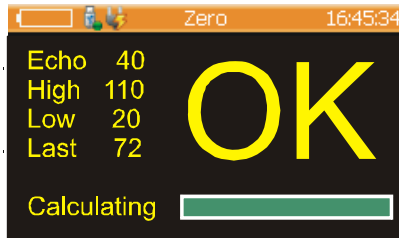
To zero the gauge:

- Take the circular zero reference block from the case and check that the inside is clean and free from dust
- Position the sensor gun vertically so that the top of the measurement head is pointing vertically upwards and place the zero reference block over the top

Note: *The zero reference block fits loosely on to the sensor gun and will fall off if not held vertically.*

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- Holding the sensor by the handle, **not the sensor barrel**, switch the gauge on and select  from the main menu
- The gauge will start taking measurements and once complete 'OK' should be displayed
- The gauge is now ready for measurements. Place the zero reference block back in the case making sure that the internal surfaces are facing down to keep it free from dust and powder contamination

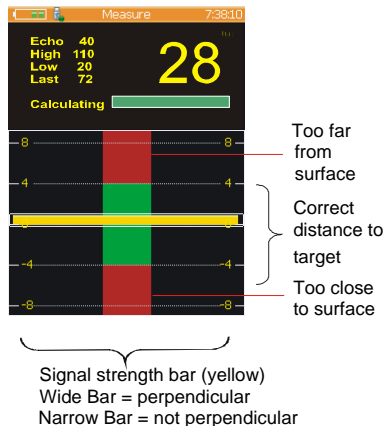
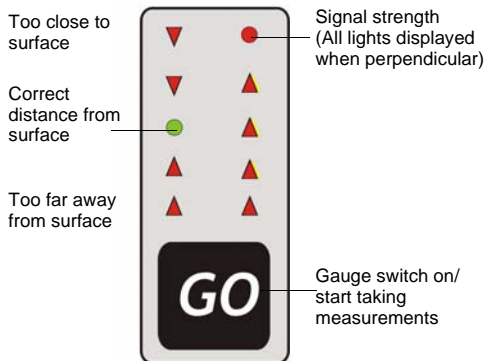


Note: In the unlikely event of a zeroing failure an error code will be displayed. Check the zero reference block for contamination or damage and retry. In the case of multiple failures please contact your nearest Elcometer representative.

2.5.2 Positioning the Sensor Gun to take a reading

The Elcometer 550 is a non-contact powder thickness gauge which uses a focused ultrasonic measurement method. In order for the gauge to collect the data required to calculate a reading, the sensor gun has to be at the correct distance away from, and perpendicular to, the powder coated surface.

To achieve the correct positioning the Elcometer 550 Non-Contact Uncured Powder Gauge provides the user with both visual and acoustic cues on the sensor gun and on the instrument's colour display. Once the gauge is in the correct position the gauge starts to automatically collect data. The diagrams below illustrate how to use the visual indicators on the gauge and gun to achieve the correct measurement position.

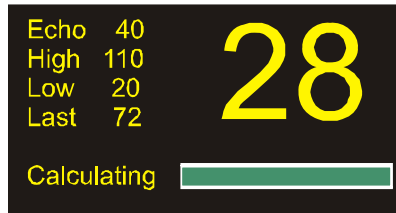


2.5.3 Taking a reading

Once the gauge has been zeroed, start by placing the gun in roughly the correct position. Highlight "measure" on the main screen and then press either the menu button on the gauge or the go button on the handle. The measurement screen will then be displayed.

The instrument requires several echoes in order to return a result. Echoes are only recorded when the signal is strong enough and the sensor gun is the correct distance from the substrate. The number of echoes taken is displayed. For a measurement to be calculated at least 5 echoes are required. For increased accuracy more echoes may be taken.








When the desired number of echoes has been received, pressing the Go button on the sensor gun or the Menu button on the gauge, prompts the gauge to calculate the coating thickness.



2.5.4 Error Codes

- 1 The thickness measured was above the high limit
- 4 The thickness measured was below the low limit
- 10 Echoes varying (can occur if probe moved and measured several different thicknesses)
- 20 Too few echoes received for calculation
- 255 No echoes found

2.6 GAUGE MENU SETTINGS

- 2.6.1  Start taking measurements. See 2.5 "Taking a measurement".
- 2.6.2  Zeros the gauge. See 2.5.1 "Zeroing the gauge".
- 2.6.3  Gauge information screen, including gauge and sensor gun serial numbers and software version numbers.
- 2.6.4  This screen displays the previous 10 readings and their average, together with the date and time of last zero. Press  to delete all readings and history.
- 2.6.5  Displays the remaining battery life and information.
- 2.6.6  **Gauge**
- The user can set up various parameters within the gauge including:
- Backlight**
- This option determines the brightness setting between high, medium and low. Lowering the brightness setting will prolong the life of the battery.

Timeout

This feature allows the user to preset an automatic switch off when not in use of between 1-10 minutes.

Sound

The speaker can be switched on or off. If switched off both the menu selection confirmation and the acoustic positioning guidance sound will be disabled.

Units

User selectable between microns (μm) or mils.

2.6.7**Limits**

The user can set high and low predicted cured thickness limit boundaries for their quality control process. If a measurement is taken which falls outside these limit boundaries then the gauge displays a warning error message.


In addition to setting limits the Elcometer 550 Non-Contact Uncured Powder Gauge features powder shrinkage compensation. This adjustment is known as the percentage distortion setting and allows users to ensure that the predicted coating thickness value is equivalent to the actual coating thickness post cure.



To calculate the percentage distortion value:

- Measure a powder coated test panel using Elcometer 550 Non-Contact Uncured Powder Gauge and record the gauge's predicted coating thickness value. Cure the test panel in the powder oven for the appropriate time and temperature for the powder coating

- Measure the dry film thickness of the panel using a suitable coating thickness gauge such as the Elcometer 456
- Calculate the shrinkage as a percentage and adjust the distortion percentage accordingly

3 TROUBLESHOOTING

The device does not start when pressing the  button

- *press  button for 5 seconds and press  to turn the device on*

The device does not start or turns off while measuring, and the battery is low

- *recharge the battery*

The device fails to respond

- *press  button for 5 seconds until the device turns off, press  to turn the device on*

The device still fails to respond

- *press reset button with a paperclip. Position of reset described in "2.3 Gauge Overview" on page 5.*

Distance display is not in the green area while measuring:

- *hold sensor perpendicular to the surface*
- *distance to the surface is not correct (18 mm)*

Distance display is not in the green area while zeroing:

- *Sensor may be out of alignment. Contact your local Elcometer representative for advice*

4 GAUGE INFORMATION

The Elcometer 550 Non-Contact Uncured Powder Gauge provides the user with information specific to their gauge such as serial numbers, software version and similar data in the About menu. Additionally, the energy menu informs the user of the current battery state. If the measured battery voltage is displayed as less than 6.5V then it is necessary to recharge the battery.

5 MAINTENANCE

The Elcometer 550 Non-Contact Uncured Powder Gauge is designed to give many years reliable service under normal operating and storage conditions.

The gauge does not contain any user-replaceable components. In the unlikely event of a fault, your gauge should be returned to your local Elcometer supplier or directly to Elcometer. The warranty will be invalidated if the instrument has been opened. Contact details can be found on the outside cover of these instructions, or on the Elcometer website, www.elcometer.com

6 TECHNICAL SPECIFICATION

| | |
|------------------------|--|
| Measurement Range: | 30µm to 110µm (1.18mils to 4.4mils) predicted cured thickness |
| Resolution: | 1µm (0.04mils) |
| Accuracy: | ±5µm (±0.25mils) or 5% of the coating thickness, whichever is the greater |
| Power Supply: | 7.2V Ni-Mh rechargeable battery, (100-240V; 50-60Hz) |
| Charger: | 100-240V 50-60Hz fast charger |
| Display: | 3.5" (90mm) QVGA colour LCD |
| Case Dimensions: | 115mm x 185mm x 35mm (4.6" x 7.4" x 1.4") |
| Weight: | 0.9 kg (1.9lb) |
| Operating Temperature: | 10°C to 35°C (50 to 95°F). Battery life may be shorter at low temperatures |
| Humidity: | <85% at all times |

6.1 DATA STORAGE

The Elcometer 550 Non-Contact Uncured Powder Gauge automatically saves the previous 10 readings which can be accessed via the History Screen from the main menu.

7 RELATED EQUIPMENT

In addition to the Elcometer 550 Non-Contact Uncured Powder Gauge, Elcometer produces a wide range of other coating testing equipment.

Users of the Elcometer 550 Non-Contact Uncured Powder Gauge may also benefit from the following Elcometer products:

- Elcometer 456 Dry Film Thickness Gauge
- Elcometer 214L Infrared Digital Thermometer
- Elcometer 215 Oven Data Logger
- Elcometer 406L Statistical Mini Glossmeter
- Elcometer 1510 Conical Mandrel Bend Tester
- Elcometer 1615 Variable Impact Tester

For further information contact Elcometer or your local supplier.

Details of Elcometer offices around the world are given on the outside cover of these operating instructions. Alternatively visit the Elcometer website, www.elcometer.com