

# Elcometer 456 Integral Coating Thickness Gauge with *Bluetooth*<sup>®†</sup>



Elcometer 456 Integral Coating Thickness Gauge with Bluetooth<sup>®†</sup>

The Elcometer 456 Integral Gauge with integrated V-groove, is ideal for single handed operation. The wide footprint of the Bigfoot™ probe provides greater stability when taking readings on flat and curved surfaces.

Standard and Top models are supplied with Bluetooth<sup>®†</sup> wireless technology for easy and simple connectivity to a PC or Bluetooth<sup>®†</sup> enabled PDA<sup>‡</sup>. RS232 data output is available on all models using an optional gauge-to-PC cable.

**Dry Film Thickness**  
Dry Film Thickness is probably the most critical measurement in the coatings industry. It provides vital information as to the expected life of the substrate, the product's fitness for purpose, its appearance and ensures compliance with a host of International Standards.

Quality systems, such as those described in ISO 9000, ISO 17025 and Guide 25, require that gauges be properly controlled, logged and in calibration. Increasingly, users are specifying that the readings taken by gauges are traceable to National Standards.

Dry Film Coating Thickness is a critical measurement in all industry sectors and can be categorised as follows:

*Digital:* The most widely used as it is generally the most accurate and can be used to measure the coating on almost any substrate, whether ferrous or non-ferrous.

*Mechanical:* Still widely used, particularly in areas where no electrical instruments are permitted or high temperatures prevail.

*Destructive:* Used primarily in multi-coat procedures and non-metallic substrates.

**Can be used in accordance with:**

AS 2331.1.4	EN 13523-1
AS 3894.3-B	IMO MSC.215(82)
AS/NZS 1580.108.1	IMO MSC.244 (83)
ASTM B 499	ISO 1461
ASTM D 1186-B	ISO 19840
ASTM D 1400	ISO 2063
ASTM D 7091	ISO 2360
ASTM E 376	ISO 2808-6A
ASTM G 12	ISO 2808-6B
BS 3900-C5-6B	ISO 2808-7C
BS 3900-C5-6A	ISO 2808-7D
BS 5411-11	ISO 2808-12
BS 5411-3	NF T30-124
BS 5599	SS 184159
DIN 50981	SSPC PA 2
DIN 50984	US Navy PPI 63101-000
ECCA T1	US Navy NSI 009-32

- **Easy to use gauge**  
Intuitive menus in multiple languages enables use straight from the box.
- **Portable**  
Rugged and ergonomic, each gauge is designed to withstand the harshest environments.
- **Bluetooth<sup>®†</sup> data output**  
The Elcometer 456 Standard and Top models now come with Bluetooth<sup>®†</sup> wireless technology. Instant transmission to your PC or hand held data device is now possible - no more cables required. RS232 data output is available on all models.
- **Memory**  
Memory versions are capable of storing up to 50,000 readings in up to 999 batches.
- **PSPC Ready**  
Provides the user with continuous monitoring of the 90/10 rule against the NDFT value, including pass/fail confirmation, as required by IMO PSPC for dedicated seawater ballast tanks.

† Standard & Top Gauges only

‡ PDAs require Windows Mobile 5.0 or Windows Mobile Professional or later

FEATURES	BASIC	STANDARD	TOP
<b>Fast, accurate reading rate</b> (>60 readings per minute)	•	•	•
<b>Auto substrate recognition on FNF models</b>	•	•	•
<b>Switchable Metric / Imperial units</b> (mm, µm, mils, inches)	•	•	•
<b>Backlight</b> (User selectable, ideal for dark environments)	•	•	•
<b>Multi Language Menus</b>	•	•	•
<b>Backlight</b> (User selectable, brightness adjustment and timeout)	•	•	•
<b>Intuitive menu driven display with adjustable text size</b>	•	•	•
<b>Maximised gauge reading display</b>	•	•	•
<b>Languages</b> (Menus in over 25 languages)	•	•	•
<b>User definable limits</b> (Green/Red LEDs for Pass/Fail inspection)		•	•
<b>User definable on-screen statistics</b> (number of readings, mean, standard deviation, coefficient of variation, minimum, maximum)	•	•	•
<b>On-screen calibration instructions</b>	•	•	•
<b>Calibration options for</b>			
<b>Smooth, rough and special substrates</b>	•	•	•
<b>Single and 2-point calibration</b>	•	•	•
<b>Zero Offset*</b>	•	•	•
<b>90/10 rule with autocheck feature - to meet IMO MSC.215 (82) and MSC.216(82) Performance Standard for Protective Coatings</b>	•	•	•
<b>Predefined calibration routines to meet ISO, SSPC, Swedish &amp; Australian Standards</b>		•	•
<b>Memory</b>			
<b>Memory size</b>		250 readings in one batch	50,000 readings in up to 999 batches
<b>Individual reading mode</b>		•	•
<b>Counted average mode</b>		•	•
<b>Individual readings review</b>		•	•
<b>Date and time stamp with clock and alarm functions</b> (Readings can be stamped including the last calibration date and time)			•
<b>Batch calibrations</b> (Each batch can be programmed with a different calibration)			•
<b>Batch calibration cloning</b> (Copy calibrations between batches)			•
<b>Data Output / Data Output Modes</b>			
<b>RS232</b>	•	•	•
<b>Bluetooth®</b>		•	•
<b>Immediate Output</b> (Each reading is transmitted as it is taken)	•	•	•
<b>Batch Output</b> (Send data by batches on command)		•	•
<b>ElcoMaster™ Software and ElcoMaster™ Mobile Software</b>		•	•

\* Zero Offset, USA Patent Number 6243661. Zero Offset subtracts a user defined value from the reading. Ideal for ISO19840

TECHNICAL SPECIFICATION	
<b>Measurement Speed</b>	Greater than 60 readings per minute
<b>Display</b>	STN Graphics (LCD), 128 x 64 pixels; 19.8 x 39.6mm (0.78" x 4.56")
<b>Battery Type</b>	2 x AAA (LR03). Rechargeable batteries can be used
<b>Battery Life<sup>+</sup></b>	30 - 40 hours continuous use with alkaline batteries
<b>Minimum Substrate Thickness</b>	Ferrous: 0.3mm (12mils) Non-Ferrous: 0.1mm (4mils) unless special calibration adjustment is made
<b>Operating Temperature</b>	0°C - 50°C (32°F - 120°F)
<b>Dimensions</b>	128 x 68 x 28mm (5.0 x 2.7 x 1.1")
<b>Weight (including batteries)</b>	130g (4.58oz)

+ With Bluetooth® disabled

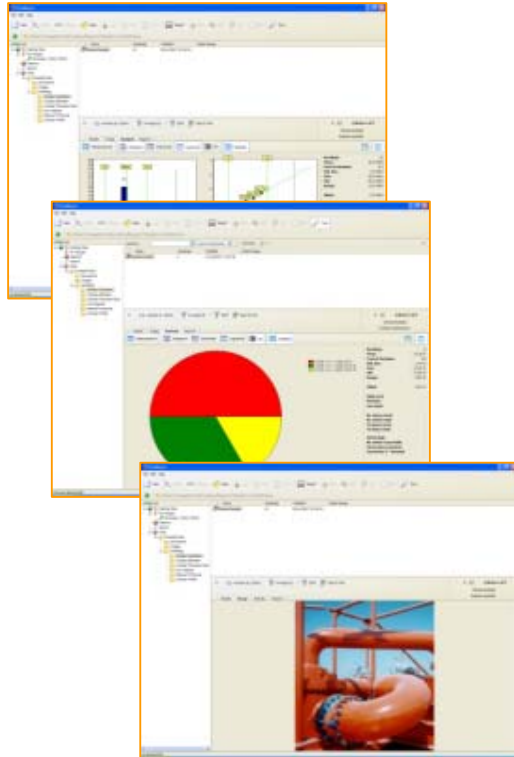
SCALE RANGE	METRIC	IMPERIAL
<b>Scale 1</b>	0 – 1500µm	0 – 60 mils
<b>Scale 1 2 (High Resolution)</b>	0 – 5mm	0 – 200 mils
<b>Scale 3</b>	0 – 13mm	0 – 500 mils

PART NUMBER	BASIC	STANDARD (with Bluetooth®)	TOP (with Bluetooth®)
<b>Ferrous Integral Scale 1</b>	A456FBI1	A456FSI1	A456FTI1
<b>Ferrous Integral Scale 1 2</b>	A456FBI12	A456FSI12	A456FTI12
<b>Ferrous Integral Scale 3</b>	A456FBI3	A456FSI3	A456FTI3
<b>Non-Ferrous Integral Scale 1</b>	A456NBI1	A456NSI1	A456NTI1
<b>Dual FNF Basic Integral Scale 1</b>	A456FNFB1	A456FNFS1	A456FNFT1
<b>Packing List</b>	Elcometer 456 Integral Gauge (supplied with a range of calibration foils appropriate for the scale range), carry pouch, wrist harness, 2 x LR03 batteries, ElcoMaster™ and ElcoMaster™ Mobile Software (Standard and Top models only) and operating instructions.		

SPARES & ACCESSORIES	
DESCRIPTION	PART NUMBER
Gauge-to-PC (RS232) Cable	T99916217
RS232 to USB Cable Adaptor	T99916716
Gauge-to-PC (USB) Cable Kit	T99916217A
USB Bluetooth® Transmitter/Receiver for PC	T99920130

## ElcoMaster™ Data Management Software

Supplied free of charge with Elcometer 456<sup>†</sup> gauges ElcoMaster™ makes it easy to collate and use the data recorded. Whether the data is to be used for analysis, to create professional reports for distribution, print reports or to archive for future use, ElcoMaster™ can help. With inbuilt report templates and easy access to all data, images and other associated files, ElcoMaster™ makes managing data simple.



The software has been designed to be familiar and intuitive to any PC user. When the gauge is connected to the PC, individual readings can be sent directly into the software for real time analysis or simply 'drag and drop' a batch from the gauge to the software.

You can store all of your associated job or inspection files, health and safety reports etc. within ElcoMaster™ one programme holds all of your inspection information in one place. Data can also be transferred directly from the gauge to a PDA or mobile phone for instant reporting in the field, using ElcoMaster™ Mobile\*\*.

Viewing data and producing standard reports is achievable in just a few clicks. Fully customised reports can be produced quickly by using the ElcoMaster™ Report Designer.

In addition to the readings and charts, you can also assign a digital photograph or drawing to an individual batch of data, allowing you to visually display the inspection area in your reports. Values can be stored on templates as can averages and statistics in certain zones, e.g. car doors. Batches can be combined for immediate comparison of data from various areas of the job site.

ElcoMaster™ features include:

- Create professional reports in seconds.
- Export reports to spreadsheets, text files or save as PDF or JPEG files.
- Copy and paste reports into other documents.
- Reports can be combined in order to clearly compare different batches.
- E-mail reports directly from ElcoMaster™ or ElcoMaster™ Mobile\*\* for ultimate flexibility.
- Assign batch identification tags.
- Batches can be renamed to clearly identify the area inspected or job name.
- Combine batches to compare readings or link batches together from different gauges into one comprehensive inspection file.
- 'Find' feature quickly locates a specific file or batch.
- Supports gauges with Bluetooth® wireless technology.
- The wide range of standard reports includes; Individual measurements, Statistics, Histograms, Individual line or bar charts, Log normal, Pie charts.
- Fully customise reports using the ElcoMaster™ Report Designer tool.
- Include company graphics and logos in every report.

ElcoMaster™ is the ultimate digital job file software solution. It allows users to store all their readings for coatings including dry film thickness, adhesion, cleanliness, climate, surface profile etc. and links to many Elcometer product groups. This ensures full details of the entire coatings process are easy to compare and monitor, resulting in less waste, better accuracy and lower costs.

<sup>†</sup> Standard & Top Gauges only

\*\* ElcoMaster™ Mobile compatible with Windows Mobile 5 or Windows Mobile 6 Professional or later.

## Related Products



Elcometer 456

### Elcometer 456 Separate Coating Thickness Gauges with Bluetooth®

The Elcometer 456 Separate Gauge is the most versatile gauge for the measurement of a wide range of coatings on metal substrates. The probes are fully interchangeable; any ferrous gauge accepts any ferrous probe, any non-ferrous gauge accepts any non-ferrous probe and FNF models will accept all Elcometer 456 probes. Using the unique plug-in integral probe (PINIP™) the user has all the versatility of a separate and integral probe in a single gauge.



Calibration Foils

### Calibration Foils, Coated Standards and Zero Test Plates

Formal quality systems such as those described in ISO 9000 and Guide 25 require that gauges be properly controlled, logged and in calibration. Increasingly, users are specifying that the readings taken by gauges are traceable to National Standards. There are three types of coating thickness standards available from Elcometer: coated standards, foils and zero test plates.



Elcometer Inspection Kits

### Elcometer Inspection Kits

Site inspection requires a range of portable testing equipment. In order to make these products easily available and transportable, Elcometer have developed a range of inspection kits. All the gauges are conveniently stored in a hard plastic protective carrying case and are supplied with full operating instructions.

#### ENGLAND

Elcometer Limited  
Edge Lane  
Manchester M43 6BU

Tel: +44 (0)161 371 6000  
Fax: +44 (0)161 371 6010  
e-mail: sales@elcometer.com  
www.elcometer.com

#### USA

Elcometer Inc  
1893 Rochester Industrial Drive  
Rochester Hills Michigan 48309

Tel: +1 248 650 0500  
Toll Free: 800 521 0635  
Fax: +1 248 650 0501  
e-mail: inc@elcometer.com  
www.elcometer.com

#### ASIA & THE FAR EAST

Elcometer (Asia) Pte Ltd  
896 Dunearn Rd  
Sime Darby Centre #3-09  
Singapore 589472,  
Republic of Singapore

Tel: +65 6462 2822  
Fax: +65 6462 2860  
e-mail: asia@elcometer.com  
www.elcometer.com

#### BELGIUM

Elcometer SA  
Rue Vallée 13  
B-4681 Hermalle /s Argenteau

Tel: +32 (0)4 379 96 10  
Fax: +32 (0)4 374 06 03  
e-mail: be\_info@elcometer.be  
www.elcometer.be

#### NETHERLANDS

Elcometer NL  
Newtonlaan 115  
3584 BH Utrecht

Tel: +31 (0)30 210 7005  
Fax: +31 (0)30 210 6666  
e-mail: nl\_info@elcometer.com  
www.elcometer.com

#### FRANCE

Elcometer Sarl  
97 Route de Chécý  
45430 BOU

Tel: +33 (0)2 38 86 33 44  
Fax: +33 (0)2 38 91 37 66  
e-mail: fr\_info@elcometer.fr  
www.elcometer.fr

#### GERMANY

Elcometer Instruments GmbH  
Ulmer Strasse 68  
D-73431 Aalen

Tel: +49 (0)7361 52806 0  
Fax: +49 (0)7361 52806 77  
e-mail: de\_info@elcometer.de  
www.elcometer.de