
Elcometer 456 Coating Thickness Gauge

For precise measurement of coatings, the new Elcometer 456 heralds radical new advances in both design and performance.

- Ergonomic styling for the ultimate in hand-held comfort.
- Full, menu driven, graphics display for ease of use.
- Greater than 60 readings per minute for fast results.
- Enhanced memory capability for data storage.
- Unrivalled accuracy and repeatability for the ultimate hand held performance.

The Elcometer 456 is available in three models, **Basic**, **Standard** and **Top**, ferrous, non-ferrous and dual options in separate and integral probe versions. In addition, for added versatility a separate gauge can be transformed into an integral gauge by using a PINIP™, a plug-in integral probe.

LANGUAGE OPTIONS

The Elcometer 456 is currently available in 19 languages with more being developed. Each gauge comes programmed with a particular language set dependent on the part number ordered.

EUR – European Language Set includes:

English, German, French, Spanish, Czech, Danish, Italian, Dutch, Norwegian, Portuguese, Slovenian and Swedish.

AME – Asia/Middle East Language Set includes:

English, German, Spanish, French, Hebrew, Chinese, Japanese and Korean.

To request an AME gauge add '-2' to the part number eg. A456FBS-2

EME – Europe/ Middle East Language Set includes:

English, German, Spanish, French, Czech, Italian, Slovenian, Greek, Russian and Farsi.

To request an EME gauge, add '-3' to the part number eg. A456FTI1-3




SPECIFICATION

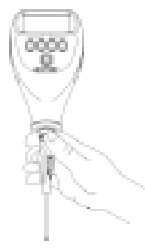
Display:	STN Graphics (LCD), 128 x 64 pixels
Active Display Area:	19.8 x 39.6mm / 0.78" x 1.56"
Operating Temperature:	0 to 50°C, 32 to 120°F
Dimensions:	128 x 68 x 28mm / 5.0" x 2.7" x 1.1"
Weight (incl. dry batteries):	130g / 4.58oz (integral unit)
Measurement Speed:	>60 readings per minute
Battery Type:	2 x AAA (LR03), Rechargeable batteries can be used
Battery Life:	30 – 40 hours continuous use with alkaline dry batteries (15,000 – 20,000 readings at an average of 8 readings per minute)
Minimum Substrate Thickness:	300µm (12 mils) unless special calibration adjustment is made.
National / International Standards:	<i>Ferrous:</i> BS 5411(11), BS 3900(C5), ISO 2178, ISO 2808, BS EN ISO 1461, DIN 50981, ASTM B 499, BS EN ISO 19840 <i>Non-Ferrous:</i> BS 5411(3), BS 3900(C5), ISO 2360, ISO 2808, DIN 50984, ASTM D 1400

FEATURES

Description	Elcometer 456 Basic	Elcometer 456 Standard	Elcometer 456 Top
Menu Driven Display	•	•	•
On Screen Calibration Instructions	•	•	•
12 Languages	•	•	•
Backlight for measurement in dark areas	•	•	•
LED and Bleeper	•	•	•
Infra Red Data Output	•	•	•
Cable Data Output		•	•
Metric / Imperial Units	•	•	•
Calibration Options	•	•	•
Smooth	•	•	•
2-Point	•	•	•
Rough Surfaces	•	•	•
Special Substrate	•	•	•
Zero Offset Mode	•	•	•
Calibration Options (Predefined)		•	•
ISO		•	•
SSPC		•	•
Swedish		•	•
Australian		•	•
Statistics	•	•	•
Mean	•	•	•
Standard Deviation	•	•	•
Number of Readings	•	•	•
Highest & Lowest Reading	•	•	•
Coefficient of Variation	•	•	•
Readings Memory		250 in a single batch	40,000 in up to 999 batches
Immediate Data Output	•	•	•
Individual Readings Review		•	•
Individual Batch Calibration		•	•
Reading Limits (high & low warnings)		•	•
Batch Data Output		•	•
Free PC Software and PC Cable		•	•
Date and Time Stamp			•
Clock Alarm			•

SPECIFICATIONS AND PART NUMBERS

ELCOMETER 456 INTEGRAL GAUGES				
		Metric	Imperial	Part Numbers
 Basic Model	Ferrous Basic Integral Scale 1	0-1500µm	0-60mils/thou	A456FBI1
	Ferrous Basic Integral Scale 2	0-5mm	0-200mils/thou	A456FBI2
	Ferrous Basic Integral Scale 1 2*	0-5mm high resolution	0-200mils/thou	A456FBI12
	Ferrous Integral Scale 3	0-13mm	0-500mils/thou	A456FBI3
	Non-Ferrous Basic Integral	0-1500µm	0-60mils/thou	A456NBI1
	Dual Basic Integral FNF	0-1500µm	0-60mils/thou	A456FNFB1
SHIPPING LIST: Elcometer 456 Basic, Carry Case/Pouch, Wrist Harness, Calibration Foils, Instruction Book, 2 x AAA Batteries				
 Standard Model	Ferrous Standard Integral Scale 1	0-1500µm	0-60mils/thou	A456FS1
	Ferrous Standard Integral Scale 2	0-5mm	0-200mils/thou	A456FSI2
	Ferrous Standard Integral Scale 1 2*	0-5mm high resolution	0-200mils/thou	A456FSI12
	Ferrous Standard Integral Scale 3	0-13mm	0-500mils/thou	A456FSI3
	Non-Ferrous Standard Integral	0-1500µm	0-60mils/thou	A456NSI1
	Dual Standard Integral FNF	0-1500µm	0-60mils/thou	A456FNFS1
SHIPPING LIST: Elcometer 456 Standard, Carry Case/Pouch, Wrist Harness, Calibration Foils, EDTS⁺ Excel Link, EDCS WIN, EDCS⁺ Demo, PC Transfer Cable, Instruction Book, 2 x AAA Batteries				
 Top Model	Ferrous Top Integral Scale 1	0-1500µm	0-60mils/thou	A456FT11
	Ferrous Top Integral Scale 2	0-5mm	0-200mils/thou	A456FTI2
	Ferrous Top Integral Scale 1 2*	0-5mm high resolution	0-200mils/thou	A456FTI12
	Ferrous Top Integral Scale 3	0-13mm	0-500mils/thou	A456FTI3
	Non-Ferrous Top Integral	0-1500µm	0-60mils/thou	A456NTI1
	Dual Top Integral	0-1500µm	0-60mils/thou	A456FNFT11
SHIPPING LIST: Elcometer 456 Top, Carry Case/Pouch, Wrist Harness, Calibration Foils, EDTS⁺ Excel Link, EDCS WIN, EDCS⁺ Demo, PC Transfer Cable, Instruction Book, 2 x AAA Batteries				

ELCOMETER 456 SEPARATE GAUGES				
Separate Gauges: Probes for the Elcometer 456 separate gauges are supplied separately. Please remember to select the appropriate probe from the Elcometer 456 Probe List. (See details on next page.)				
		Basic	Standard	Top
	Ferrous Separate	A456FBS	A456FSS	A456FTS
	Non-Ferrous Separate	A456NBS	A456NSS	A456NTS
	Dual FNF Separates	A456FNFBSS	A456FNFS	A456FNFTS
SHIPPING LIST: As per the shipping lists for the integral gauges. Probes for separate gauges are supplied separately.				



456 SEPARATE PROBE PART NUMBERS

Probe Type	Part Number	Measuring Range		Accuracy ¹		Resolution	
		Metric	Imperial	Metric	Imperial	Metric	Imperial
F1 Standard	T456F1S	0 – 1500µm	0 – 60mils	±3% or ±2.5µm	±3% or ±0.1mils	Below 100µm: 0.1µm	Below 5mil: 0.01mil
F1 Right Angle	T456F1R						
F1 Telescopic	T456F1T			±1% or ±2.5µm ²	±1% or ±0.1mil ²	Above 100µm: 1µm	Above 5mil: 0.1mil
F1 PINIP™	T456F1P						
F2 Standard	T456F2S	0 – 5mm	0 – 200mils	±3% or ±20µm	±3% or ±1.0mils	Below 1000µm: 1µm	Below 50mil: 0.1mil
F2 Right Angle	T456F2R						
F2 Telescopic	T456F2T			±1% or ±20µm ²	±1% or ±1.0mil ²	Above 1000µm: 10µm	Above 50mil: 1mil
F2 PINIP™	T456F2P						
F1 2 Standard	T456F12S	F1 Mode	F1 Mode	F1 Mode	F1 Mode	F1 Mode	F1 Mode
		0 – 1500µm	0 – 60mils	±3% or ±2.5µm ±1% or ±2.5µm ²	±3% or ±0.1mils 1% or ±0.1mil ²	Below 100µm: 0.1µm Above 100µm: 1µm	Below 5mil: 0.01mil Above 5mil: 0.1mil
F1 2 Right Angle	T456F12R	F2 Mode	F2 Mode	F2 Mode	F2 Mode	F2 Mode	F2 Mode
		0 – 5mm	0 – 200mils	±3% or ±20µm ±1% or ±20µm ²	±3% or ±1.0mils ±1% or ±1.0mil ²	Below 1000µm: 1µm Above 1000µm: 10µm	Below 50mil: 0.1mil Above 50mil: 1mil
F3 Standard	T456F3S	0 – 13mm	0 – 500mils	±3% or ±0.05µm	±3% or ±2.0mil	Below 2mm: 1µm	Below 100mil: 0.1mil
				±2% or ±0.05µm ²	±2% or ±2.0mil ²	Above 2mm: 10µm	Above 100mil: 1mil
All ferrous probes can be used with Elcometer 456 ferrous separate gauges and dual FNF separate gauges.							
N1 Standard	T456N1S	0 – 1500µm	0 – 60mils	±3% or ±2.5µm	±3% or ±0.1mils	Below 100µm: 0.1µm	Below 5mil: 0.01mil
N1 Right Angle	T456N1R						
N1 PINIP™	T456N1P			±1% or ±2.5µm ²	±1% or ±0.1mil ²	Above 100µm: 1µm	Above 5mil: 0.1mil
N1 Anodiser's Probe	T456N1A						
NEW N2 Probe	T456N2S	0 – 5mm	0 – 200mils	1 – 3% or ±20µm	1 – 3% or ±0.8mil	Below 1mm: 1µm Above 1mm: 10µm	Below 40mil: 0.1mil Above 40mil: 0.5mil
All non-ferrous probes can be used with Elcometer 456 non-ferrous separate gauges and dual FNF separate gauges.							
FNF1 Standard	T456FNF1S	0 – 1500µm	0 – 60mils	±3% or ±2.5µm	±3% or ±0.1mils	Below 100µm: 0.1µm	Below 5mil: 0.01mil
FNF1 Right Angle	T456FNF1R						
FNF1 PINIP™	T456FNF1P			±1% or ±2.5µm ²	±1% or ±0.1mil ²	Above 100µm: 1µm	Above 5mil: 0.1mil
All dual FNF probes can be used with Elcometer 456 dual FNF separate gauges only.							
¹ Whichever is the greater, ² Whichever is the greater when calibrated close to the thickness to be measured F = Ferrous N = Non-Ferrous FNF = Dual Ferrous/Non-Ferrous							





Elcometer Miniature Probes for Elcometer 456 Separate Gauges

The Miniature Probe range has been designed to provide a practical solution to those customers who need to take measurements in hard to reach places or on small surface areas.

We appreciate that the size of the normal standard, right angle and telescopic probes from Elcometer can be restrictive in such applications, simply because they are too large.

The new miniature probes are ideal for accessing awkward areas such as:

- Inside diameters
- Thin diameter tubing
- Narrow edges
- Small curves
- Applications at the bottom of small, deep bores.



GENERAL INFORMATION



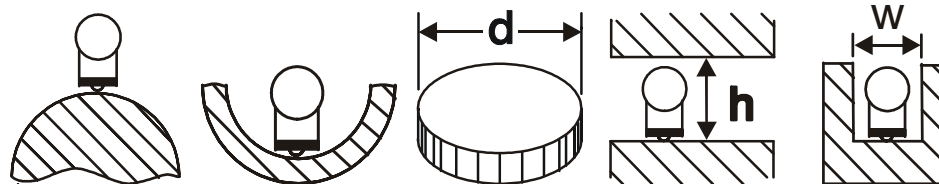
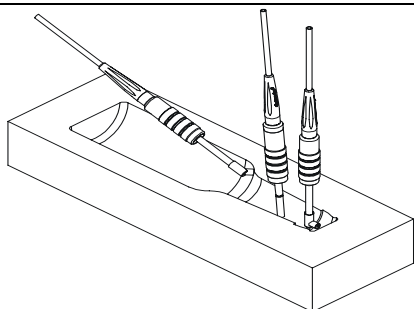
Ferrous and non-ferrous miniature probes are available with a measuring range of 0 – 500µm (0 – 20mils/thou). Two probe lengths are available, 45mm or 150mm as either straight probes, 45° or 90° angle probes. Straight probes have a removable outer sleeve for greater flexibility of use.

All miniature probes are supplied with foils and instruction manual. A calibration certificate is available using the standard part number TCAL-990, at the normal price.

Measuring Range:	0 – 500µm, 0 – 20mils/thou
Accuracy*:	±2.5µm or 1 – 3%*, ±0.1mil or 1 – 3%
Resolution:	0.1µm up to 100µm, 1µm from 100 – 500µm 0.01mil up to 5mils/thou, 0.1mil from 5mils/thou to 20mils/thou

* The accuracies quoted of ±2.5µm or 1-3% are with the miniature probe held in a probe placement jig.

SPECIFICATIONS AND PART NUMBERS



Probe Type	Part Number	Minimum Convex Diameter	Minimum Concave Radius	Minimum Sample Diameter	Minimum Access Requirements		Overall Length (¹ Headroom)
					Height	Width	
FERROUS MINIATURE							
Ferrous Straight Probe, 45mm Long	T456FM3---A	1.5mm (0.06")	6.5mm (0.26")	3mm (0.12")	6mm (0.24")		150mm (5.91") ¹
Ferrous Straight Probe, 150mm Long	T456FM3---C	1.5mm (0.06")	6.5mm (0.26")	3mm (0.12")	6mm (0.24")		260mm (10.24") ¹
Ferrous 45 Degree Probe, 45mm Long	T456FM3R45A	1.5mm (0.06")	6.5mm (0.26")	3mm (0.12")	18mm (0.71")	7mm (0.28")	145mm (5.71")
Ferrous 45 Degree Probe, 150mm Long	T456FM3R45C	1.5mm (0.06")	6.5mm (0.26")	3mm (0.12")	18mm (0.71")	7mm (0.28")	250mm (9.84")
Ferrous 90 Degree Probe, 45mm Long	T456FM3R90A	1.5mm (0.06")	6.5mm (0.26")	3mm (0.12")	16mm (0.63")	7mm (0.28")	140mm (5.51")
Ferrous 90 Degree Probe, 150mm Long	T456FM3R90C	1.5mm (0.06")	6.5mm (0.26")	3mm (0.12")	16mm (0.63")	7mm (0.28")	245mm (9.65")
NON-FERROUS MINIATURE							
Non-Ferrous Straight Probe, 45mm Long	T456NM3---A	3mm (0.12")	25mm (0.98")	4mm (0.16")	6mm (0.24")		150mm (5.91") ¹
Non-Ferrous Straight Probe, 150mm Long	T456NM3---C	3mm (0.12")	25mm (0.98")	4mm (0.16")	6mm (0.24")		260mm (10.24") ¹
Non-Ferrous 45 Degree Probe, 45mm Long	T456NM3R45A	3mm (0.12")	25mm (0.98")	4mm (0.16")	18mm (0.71")	7mm (0.28")	145mm (5.71")
Non-Ferrous 45 Degree Probe, 150mm Long	T456NM3R45C	3mm (0.12")	25mm (0.98")	4mm (0.16")	18mm (0.71")	7mm (0.28")	250mm (9.84")
Non-Ferrous 90 Degree Probe, 45mm Long	T456NM3R90A	3mm (0.12")	25mm (0.98")	4mm (0.16")	16mm (0.63")	7mm (0.28")	140mm (5.51")
Non-Ferrous 90 Degree Probe, 150mm Long	T456NM3R90C	3mm (0.12")	25mm (0.98")	4mm (0.16")	16mm (0.63")	7mm (0.28")	245mm (9.65")

The above capabilities have been determined using a calibration foil of 100µm and the probe held in a probe placement jig

Elcometer Instruments Ltd
 Edge Lane, Manchester, M43 6BU, England
 Tel: +44(0) 161 371 6000, Fax: +44(0) 161 371 6010
 e-mail: sales@elcometer.com
 www.elcometer.com