

NEW

elcometer®

# Elcometer 224

Surface Profile Gauge

Fast and reliable  
peak-to-valley  
**surface profile**  
measurement

- Accurately measure surface profile on flat or curved surfaces up to 500µm (20mils)

- Measures both average peak-to-valley and average maximum peak-to-valley height

- Portable, rugged hand-held design is ideal for field use





**Elcometer 224**

**Digital Surface Profile Gauge**

The **Elcometer 224** provides the very latest in surface profile measuring technology for measuring profile on either flat or curved surfaces.

Fast reading rate of 50+ readings per minute<sup>1</sup>

Stores up to 150,000 readings in 2,500 batches

Accurate, immediate and repeatable results

Integral & separate probe options for flat and convex<sup>2</sup> curved surfaces

Measurement capability to  $\pm 5\%$

Review batch data or last 20 readings in a graph format

USB and Bluetooth® data output to ElcoMaster® data management software



User replaceable tough tungsten carbide tip

Dust and water resistant rugged design equivalent to IP64

**STANDARDS:**

ASTM D 4417-B, SANS 5772, SSPC PA 17, US Navy NSI 009-32, US Navy PPI 63101-000

### Digital Surface Profile Gauge

### Elcometer 224

## 3 measurement modes

Whichever test method or Standard you are working to the Elcometer 224 Digital Surface Profile Gauge has a range of easy to use Measurement Modes.

#### Custom Mode

In Custom mode, simply select to take either 5 or 10 readings per measurement then specify either the average, highest or lowest measurement of each set of readings to be displayed and saved into the batch memory<sup>3</sup>.

#### Standards Mode

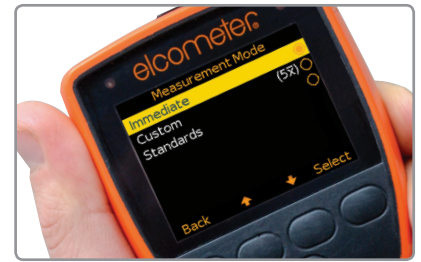
Select the International Standard you are working to and the Elcometer 224 will automatically set the data collection method accordingly. When selecting ASTM D 4417, you can even choose if the gauge stores the average or highest reading as the measurement.

#### Immediate Mode

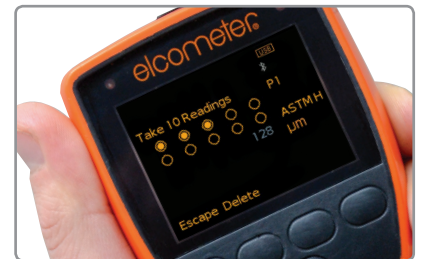
Take individual peak-to-valley measurements and save into the batch memory<sup>3</sup>. The Elcometer 224 automatically calculates and displays key statistics whilst you're inspecting, and you can set limits so the gauge will alarm whenever the reading is outside a predefined acceptable range.

#### Wireless Connectivity

Instantly transfer readings, statistics, and limits; via USB or Bluetooth®; to your PC or mobile device, using ElcoMaster® or your own software application, creating professional inspection reports in minutes.



Range of Measurement Modes



Select 5 or 10 readings per measurement

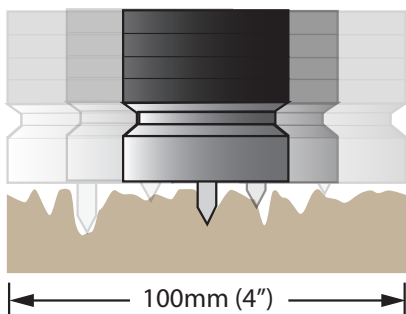


Can be used in accordance with a range of International Standards



USB and Bluetooth® data output to iPhone or Android™ devices

#### How to measure surface profile



1. Ensure probe is 90° to substrate to ensure accurate readings and calibrate the gauge on a glass zero tile.
2. To take one spot measurement, take either 5 or 10 readings within a 100mm (4") diameter area.
3. The measurement displayed is either the average peak-to-valley height or the maximum reading of the 5 or 10 readings, depending on which measurement mode you have selected.
4. To establish the average surface profile of an area, record 5 spot measurements for each 1m x 1m (3ft x 3ft) area.

<sup>1</sup> Convex probe up to 25 readings per minute  
<sup>2</sup> Applicable Patents: GB2505193, US9261345

<sup>3</sup> Model T only



## Elcometer 224

## Digital Surface Profile Gauge

### User Friendly

- Large buttons ideal for gloved hands
- Easy to use menus in multiple languages
- High contrast colour LCD with auto rotate
- High and low reading limit indicators
- Factory calibrated for immediate use

### Accurate

- Can be used in accordance with National and International Standards
- Temperature stable measurements
- Statistics are calculated and displayed in real time
- Live and batch readings graph format for instant analysis

### Reliability

- Repeatable and reproducible measurements
- 2 year gauge warranty<sup>2</sup>
- Supplied with fully traceable Test Certificates
- Batch & individual readings are date and time stamped

### Tough

- Sealed, heavy duty and impact resistant
- Dust and waterproof equivalent to IP64
- Suitable for use in harsh environments
- Scratch and solvent resistant display
- Durable gauge and probe construction

### Efficient

- Fast reading rate of 50+ per minute
- Integral and separate probe versions to suit your application
- Alphanumeric batch identification
- Compatible with ElcoMaster<sup>®</sup> software and ElcoMaster<sup>®</sup> Mobile App
- Powersave Mode with tap awake

### Powerful

- User replaceable tough tungsten carbide tip can be used for up to 20,000 readings
- USB and Bluetooth<sup>®</sup> data output to iPhone<sup>1</sup> or Android<sup>™</sup> devices
- Measures profiles up to 500µm (20mils)



Integral or separate probes measure profiles up to 500µm (20mils)



Ergonomic design for comfort during continuous use



2.4" colour screen provides enhanced reading visibility at all angles

<sup>1</sup> Compatible with iPod, iPhone and iPad.

<sup>2</sup> The Elcometer 224 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via [www.elcometer.com](http://www.elcometer.com).



## Digital Surface Profile Gauge

## Elcometer 224

Product Features	■ Standard		□ Optional	
	Model B	Model T	Model B	Model T
Fast, accurate reading rate; <i>50+ readings per minute</i> <sup>1</sup>	■	■		
Repeatable & reproducible measurements	■	■		
Easy to use menu structure; <i>in 30+ languages</i>	■	■		
Tough, impact, waterproof & dust resistant; <i>equivalent to IP64</i>	■	■		
Bright colour screen; <i>with permanent backlight</i>	■	■		
Scratch & solvent resistant display; <i>2.4" (6cm) TFT</i>	■	■		
Large positive feedback buttons	■	■		
Flat & convex surfaces <sup>2</sup>	■	■		
USB power supply; <i>via PC</i>	■	■		
Test certificate	■	■		
2 year gauge warranty <sup>3</sup>	■	■		
Automatic rotating display; <i>0°, 90°, 180° &amp; 270°</i>	■	■		
Ambient light sensor; <i>with adjustable auto brightness</i>	■	■		
Emergency Light Mode	■	■		
Gauge software updates <sup>4</sup> ; <i>via ElcoMaster® software</i>	■	■		
Data output	■	■		
USB; <i>to computer</i>	■	■		
Bluetooth®; <i>to computer, Android™ &amp; iOS<sup>5</sup> devices</i>			■	■
Measurement modes; <i>Immediate, Custom, Standards</i>	■	■		
On screen statistics	■	■		
Number of readings, $\eta$ ; Mean (average), $\bar{x}$ ; Standard deviation, $\sigma$ ;	■	■		
Highest reading, <i>Hi</i> ; Lowest reading, <i>Lo</i> ; Coefficient of variation, <i>CV%</i>			■	■
High & low limits; <i>definable audible &amp; visual alarms</i>				■
Number above high limit;				■
Number below low limit;				■
ElcoMaster® software & USB cable				■
Date and time stamp <i>for each reading</i>				■
Replaceable screen protectors	■	■		
Protective case	■	■		
Plastic transit case	□	■		
Measurement range	0-500µm (20mils)	0-500µm (20mils)		
On screen calibration instructions; <i>in 30+ languages</i>	■	■		
Number of batches				2,500
Gauge memory; <i>number of readings</i>	Last 5	150,000		
Delete last reading	■ <sup>6</sup>	■		
Limits; <i>user definable audible &amp; visual pass/fail warnings</i>		■		
Gauge (g) or gauge & batch specific (gb) limits				gb
Batch types; <i>normal, counted average</i>		■		
Batch statistics; <i>Average peak-to-valley, Average Max peak-to-valley, Standard deviation, <math>\sigma</math>; Highest reading, Hi; Lowest reading, Lo; Coefficient of variation, CV%</i>				■
Review, clear & delete batches		■		
Copy batches and calibration settings		■		
Alpha-numeric batch names; <i>user definable on the gauge</i>		■		
Fixed Batch Size Mode; <i>with batch linking</i>		■		
Trend graph; <i>last 20 readings</i>		■		
Review batch graph		■		

<sup>1</sup> Up to 25 readings per minute for the convex probe    <sup>2</sup> Applicable Patents: GB2505193, US9261345    <sup>3</sup> The Elcometer 224 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via [www.elcometer.com](http://www.elcometer.com). Elcometer 224 probes are covered by a 1 year warranty.    <sup>4</sup> Internet connection required    <sup>5</sup> Visit [www.elcometer.com/sdk](http://www.elcometer.com/sdk) to find out how to integrate Elcometer's MFi certified products to your App.

<sup>6</sup> Up to the last 5 readings can be deleted

## Elcometer 224

## Digital Surface Profile Gauge

## Technical Specification

Display Information	2.4" (6cm) QVGA colour TFT display, 320 x 240 pixels		
Battery Type	2 x AA batteries, rechargeable batteries can also be used		
Battery Life	Approximately 24 hours of continuous use at 1 reading per second <sup>2</sup>		
Minimum Headroom	Integral:	185mm (7.3")	
	Separate:	See page 7	
Gauge Dimensions (h x w x d)	Integral:	168 x 73 x 37mm (5.61 x 2.87 x 1.46")	
	Separate:	141 x 73 x 37mm (5.55 x 2.87 x 1.46")	
Gauge Weight (including batteries)	Integral:	218g (7.69oz)	
	Separate:	161g (5.68oz)	
Measurement Range	0-500µm (0-20mils)		
Probe Tip	Tungsten carbide tip 60° angle; Tip Radius: 50µm (2mil)		
Operating Temperature	-10 to 50°C (14 to 122°F)	Storage temperature	-10 to 60°C (14 to 140°F)
Accuracy & Resolution	Accuracy <sup>3</sup> : ±5% or ±5µm (±0.2mil); Resolution: 1µm (0.1mil)		
Packing List <sup>4</sup>	Elcometer 224 gauge, glass zero tile <sup>4</sup> , 2 x calibration foils <sup>4</sup> , wrist harness, plastic transit case (T), protective case, screen protector, probe protection cap <sup>4</sup> , 2 x AA batteries, test certificate, operating instructions, USB cable (T) & ElcoMaster® software (T)		

## Model Options

Part Number		Description	Certificate
Integral Gauge	Separate Gauge <sup>1</sup>		
E224C-BI	E224C-BS	Elcometer 224 Model B Digital Surface Profile Gauge	•
E224C-TI	E224C-TS	Elcometer 224 Model T Digital Surface Profile Gauge	•

## Accessories

Part Number		Description
Integral Gauge	Separate Gauge	
T22419793	T22419793	Probe Tip Protection Cap
T22420072	T22420072	Glass Zero Tile with Wallet
T22421882C	T22421882C	Certified Calibration Test Kit: 125µm & 500µm (5 & 20mils) Calibration Foils, Glass Zero Tile & Calibration Certificate
T99921325	T99921325	USB Cable
T99924797	T99924797	USB Bluetooth® Adaptor (V2.0+) - for PCs without Bluetooth®
T99922341	T99922341	Self Adhesive Screen Protectors (Pack of 10)
T22420053	T22420053	Replacement Tip (Pack of 2) with Fixing Tool
T22420095	T22420095	Replacement Tip (Pack of 5)
-	T45622371	Benchtop Inspection Stand

<sup>1</sup> Probes are supplied separately, see page 7 for details. <sup>2</sup> Using default settings & lithium batteries, alkaline or rechargeable batteries may differ.

<sup>3</sup> Whichever is the greater.

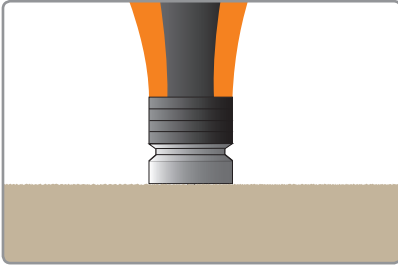
<sup>4</sup> For separate gauges, the test foils, glass zero tile and probe protection cap are supplied with the separate probe.

• Test Certificate supplied as standard.



Digital Surface Profile Probes

Elcometer 224



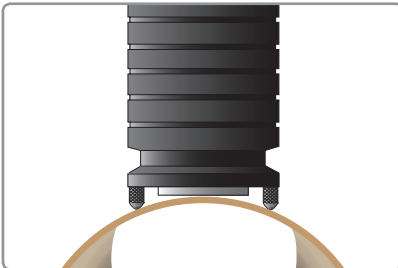
**Flat Surface Profile Probes**

Supplied with either standard cables or armoured metal reinforced heavy duty cables, Elcometer surface profile probes are supplied with a glass zero tile, calibration test foils (nominal values 125µm (5.0mils) & 508µm (20mils)) and an Elcometer test certificate.



Technical Specification

Range: 0-500µm (0-20mils)	Resolution: 1µm (0.1mil)	Accuracy: ±5% or ±5µm (±0.2mil)		
Probe Design	Part Number	Minimum Headroom	Minimum Sample Diameter	Certificate
Flat Surface: Standard	T224C500US	125mm (4.92")	25mm (1.0")	●
Flat Surface: Armoured	T224C500UARM	165mm (6.50")	25mm (1.0")	●



**Convex Surface Profile Probes**

Supplied with either standard cables or armoured metal reinforced heavy duty cables, Elcometer convex surface profile probes are supplied with a glass zero tile, calibration test foils (nominal values 125µm (5.0mils) & 508µm (20mils)) and an Elcometer test certificate.



Technical Specification

Range: 0-500µm (0-20mils)	Resolution: 1µm (0.1mil)	Accuracy: ±5% or ±5µm (±0.2mil)		
Probe Design	Part Number	Minimum Headroom	Minimum Pipe Diameter	Certificate
Convex Surface: Standard*	T224C500UX	135mm (5.31")	75mm (3.0")	●
Convex Surface: Armoured*	T224C500UXARM	175mm (6.89")	75mm (3.0")	●

**Digital Inspection Kits**

Three specialist **Surface Profile**, **Climate** and **Coating Thickness Gauges** in one **cost-effective, easy to use kit**

Quality Without Compromise

● Test Certificate supplied as standard.  
Elcometer 224 probes are covered by a 1 year warranty

\* Applicable Patents: GB2505193, US9261345

## Digital Inspection Kits

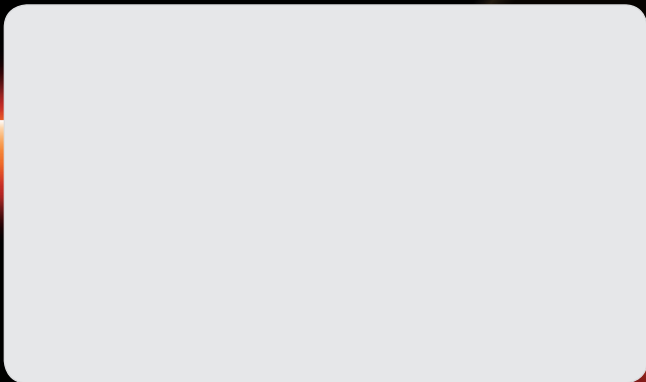
These digital inspection kits have been specifically designed to undertake the three principal inspection requirements in the Protective and Industrial Coatings Industry – climate, surface profile and dry film thickness. Ideal for ‘paperless’ quality assurance systems the kits come complete with ElcoMaster® software for professional reporting and analysis.

For more information see [www.elcometer.com](http://www.elcometer.com)



### Technical Specification

Part Number	Description
YKIT-DIGITAL-B	Elcometer Basic Digital Inspection Kit (F)
YKIT-DIGITAL-T	Elcometer Top Digital Inspection Kit (F)
YKIT-DIGITALFNF-B	Elcometer Basic Digital Inspection Kit (FNF)
YKIT-DIGITALFNF-T	Elcometer Top Digital Inspection Kit (FNF)



**elcometer®**  
[www.elcometer.com](http://www.elcometer.com)

Elcometer 224 Model T: Made for iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, iPhone 5, iPhone 4s, iPhone 4, iPad Air 2, iPad mini 3, iPad Air, iPad mini 2, iPad (3rd and 4th generation), iPad mini, iPad 2, and iPod touch (4th and 5th generation). "Made for iPod," "Made for iPhone," and "Made for iPad" mean that an electronic accessory has been designed to connect specifically to iPod, iPhone, or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod, iPhone, or iPad may affect wireless performance.

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Due to our policy of continuous improvement, Elcometer Limited reserves the right to change specifications without notice.

The Elcometer 224 is supplied with a 1 year warranty against manufacturing defects. The warranty can be extended free of charge to 2 years within 60 days of purchase via [www.elcometer.com](http://www.elcometer.com).

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