

elcometer®  
inspection equipment



Elcometer 224  
surface profile gauge

**Elcometer 224**

**Separate 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.

**STANDARDS:**

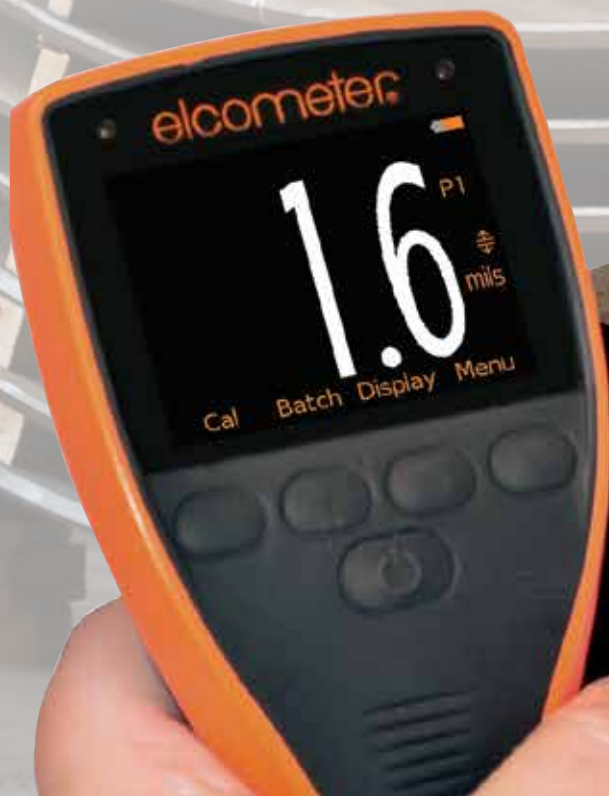
ASTM D 4417-B, SANS 5772,  
SSPC PA 17, US Navy NSI 009-32,  
US Navy PPI 63101-000

Integral & separate probe options for flat and convex<sup>1</sup> surfaces

USB and Bluetooth® data output to ElcoMaster® software, see page 12-2

Dust and water resistant rugged design equivalent to IP64

Auto rotating display with tap awake feature



<sup>1</sup> Applicable Patents: GB2505193, US9261345

**Elcometer 224**

**Separate Digital Surface Profile Gauge**

**User Friendly**

- Large buttons ideal for gloved hands
- Easy to use menu structure 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
- Alpha numeric batch identification
- Compatible with ElcoMaster® software and ElcoMaster® 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® data output to iPhone<sup>1</sup> or Android™ devices
- Measures profiles up to 500µm (20mils)



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



Ergonomic design for comfort during continuous use



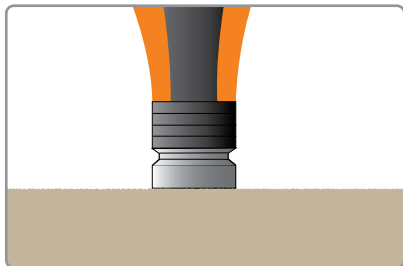
2.4" colour screen provides enhanced reading visibility at all angles

<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).

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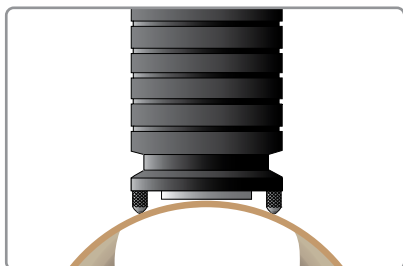
**Flat Surface Profile Probes**

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")           | ●                               |  |

**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:<br>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  |

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

\* Applicable Patents: GB2505193, US9261345

### Elcometer 224

### Integral Digital Surface Profile Gauge

Fast, accurate and user friendly, the **Elcometer 224** is available with or without memory and Bluetooth®.

Review batch data or last 20 readings in a graph format

Time & date stamped measurements

Measurement capability to  $\pm 5\%$

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

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

Accurate, immediate and repeatable results

User replaceable tough tungsten carbide tips



#### STANDARDS:

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

<sup>1</sup> Up to 25 readings per minute for the convex probe

## Elcometer 224

## Digital Surface Profile Gauge

| Product Features   | ■ Standard        | □ Optional        |
|--|-------------------|-------------------|
|  | 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 back light</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>               |                   | ■                 |
| On screen statistics   | ■                 | ■                 |
| Number of readings, $n$ ; Mean (average), $\bar{x}$ ; Standard deviation, $\sigma$ ; | ■                 | ■                 |
| Highest reading, $H_i$ ; Lowest reading, $L_o$ ; Coefficient of variation, $CV\%$    |                   |                   |
| 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 (20 mils) | 0-500µm (20 mils) |
| 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>  |                   | ■                 |
| 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

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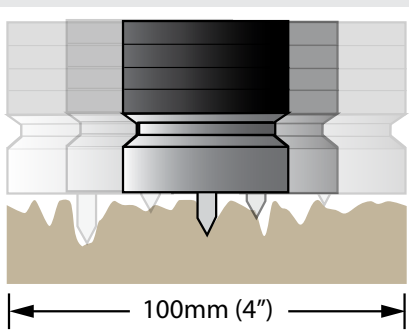
**Model Options**

| Part Number     | Description   | Certificate |
|-----------------|---|-------------|
| Integral Gauge  | Separate Gauge <sup>1</sup>   |             |
| <b>E224C-BI</b> | <b>E224C-BS</b> Elcometer 224 Model B Digital Surface Profile Gauge | •           |
| <b>E224C-TI</b> | <b>E224C-TS</b> Elcometer 224 Model T 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 3-6                          |                           |
| 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 <sup>®</sup> software (T) |                                       |                           |

**Measuring 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> Probes are supplied separately, see page 3-8 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.



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elcometer®  
coatings inspection

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. All gauges come with a 1 year warranty as standard, the Elcometer 224 is extendable within 60 days from date of purchase, free of charge, to 2 years via [www.elcometer.com](http://www.elcometer.com)

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