

Elcometer 214

Infrared Digital Thermometer

Operating Instructions



This product meets the Electromagnetic Compatibility Directive.

The product is Class B, 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 B product is suitable for use in domestic establishments and in establishments directly connected to 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 214 Infrared Thermometer. 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.

Your Elcometer 214 Infrared Thermometer is a world beating product. 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 YOUR GAUGE

The Elcometer 214 Infrared Thermometer is a simple, easy-to-use, battery powered thermometer which safely and accurately measures surface temperature of non-reflective materials using infrared technology. The Elcometer 214 Infrared Thermometer also displays the maximum temperature.

Infrared temperature measurement has been used successfully in aerospace laboratories as well as manufacturing, maintenance and quality control processes for more than 30 years. Recent technological advances have lowered costs and reduced sensor size, making non-contact infrared temperature measuring instruments available to new users and applications.

The infrared system is made up of optics, detector and display. This instrument uses special optics to gather infrared energy from a target surface and focuses this energy onto a detector. The detector then converts the infrared energy into an electrical signal proportional to the temperature of the target surface. A digital display of the temperature, in degrees Celsius or degrees Fahrenheit is produced in less than one second.

1.1 GAUGE FEATURES

- Non-contact technology
- Range -35 to +365°C or -31 to +689°F
- Fast, 1 second scanning of cold and hot spots
- Measurement of objects as small as 25mm
- Optical resolution of 8:1
- Emissivity 0.95 fixed
- Easy to read LCD display
- Lightweight

1.2 WHAT THE BOX CONTAINS

- Elcometer 214 Infrared Thermometer
- 2 AAA, 1.5V Batteries
- Wrist Strap
- Operating Instructions

Note: *The Elcometer 214 Infrared Thermometer is packed in a cardboard and foam package. Please ensure that this packaging is disposed of in an environmentally sensitive manner. Please consult your local Environmental Authority for further guidance.*

To maximise the benefits of your new Elcometer 214 Infrared Thermometer please take some time to read these Operating Instructions. Do not hesitate to contact Elcometer or your Elcometer supplier if you have any questions.

2 GETTING STARTED

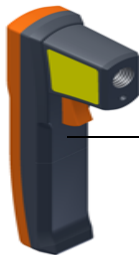
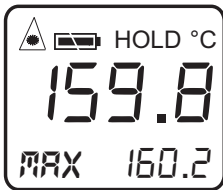
Warning! This instrument is fitted with a Class 2 Laser.

Do not point the laser directly at the eye or indirectly off reflective surfaces as this may cause serious damage to the eye.

To take a temperature measurement, point the sensor at the desired target and pull the measure key.

2.1 DEFAULT SCREEN

The Elcometer 214 Infrared Thermometer has a fast reading response time of 1 second. Continuous readings are taken if the measure key is held. The thermometer automatically switches off 15 seconds after it is released.



Measure Key

To switch from degrees Celsius to Fahrenheit press the °C/°F button below the display screen.

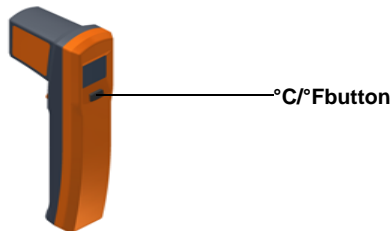


Figure 1. Switch to change from °C to °F

2.2 LCD ERROR MESSAGE

Er2

'Er2' is displayed when the thermometer is exposed to rapid changes in the ambient temperature.

Er3

'Er3' is displayed when the ambient temperature is below 0°C (32°F) or above +50°C (122°F).

The thermometer should be allowed plenty of time (minimum 30 minutes) to stabilise to the ambient temperature.

Er

Hi Lo

Error 5-9, for all other error messages it is necessary to reset the thermometer. To reset, turn the instrument off, remove the batteries and wait for a minimum of one minute, re-insert the batteries and turn on. If the error message remains please contact the Service Department for further assistance.

'Hi' or 'Lo' is displayed when the temperature being measured is outside the measurement range.

Note: A decimal point to the left of the centre digit of the display indicates a sub-zero temperature. See Figure 2.



Figure 2. Sub-zero temperature display

2.3 CALCULATING TARGET DISTANCE.

The Elcometer 214 has a distance-to-target ratio (D/T) of 8:1 and measures the emitted energy from a target spot one-eighth the size of the working distance. For example, if the distance from the sensor optics to the target is 200mm (8"), the diameter of the measured area is 25mm (1"), the minimum target area for the Elcometer 214. See Figure 3.

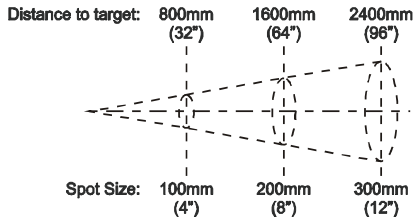


Figure 3. Calculating distance to target

Note: The laser spot indicates the target area. The measurement is NOT confined to this spot.

3 BATTERY REPLACEMENT



'Battery OK'
measurements are possible



'Battery Low': battery needs
to be replaced, measurements
are still possible



'Battery Exhausted':
measurements are
not possible

Note: *It is important to turn the instrument off before replacing the batteries otherwise the thermometer may malfunction*

Note: *Alkaline 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.

Open the battery cover at the end of the case using both thumbs, applying a little downwards pressure to slide the cover away from the case. See Figure 4.

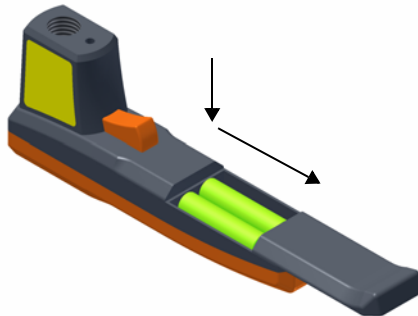


Figure 4. Battery cover removal

Remove the old batteries from the case. Fit the new batteries.
Replace the battery cover.

4 MAINTENANCE/STORAGE

You own one of the finest digital thermometers in the world. If looked after, it will last a lifetime.

- The sensor lens is the more delicate part of the thermometer. The lens should be kept clean at all times
- Clean the gauge with a soft, dry cloth such as those made for cleaning eyeglasses or a cotton swab dampened with either water or medical alcohol.
- Be careful not to scratch the LCD screen or break the glass screen.
- Do not subject the gauge to a strong impact.
- Do not submerge any part of the thermometer
- The thermometer should be stored at room temperature between -20 to $+65^{\circ}\text{C}$ (-4 to 149°F).



WARNING :



LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT

- When the device is on do not look directly into the laser beam as permanent eye damage may result.
- Use extreme caution when operating the laser.
- Never point the device towards anyone's eyes.
- Keep out of the reach of children
- Not to be used for safety related applications.



This gauge incorporates a Liquid Crystal Display. If the display is heated above 50°C (120°F) it may be damaged. This can happen if the gauge is left in a car parked in strong sunlight.

To ensure accurate temperature measurements, it is important that the sensor optics do not come into contact or near contact with extremely hot or cold sources. Exposure to such temperatures for more than a few seconds may cause the instrument to drift by several degrees.

Debris on the lens of the sensor optics may cause obstruction and reduce the accuracy of the Elcometer 214 Infrared Thermometer. If this occurs, either wipe the lens with a cotton bud (moistened with clean water only) or blow off the loose particles with clean compressed air.

Regular calibration checks over the life of the gauge are a requirement of quality management procedures. Compare the Elcometer 214 Infrared Thermometer reading on samples measured with a contact thermometer.

Your gauge does not contain any user-serviceable components other than batteries. In the unlikely event of a fault, the gauge should be returned to your 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 operating instructions and at www.elcometer.com

5 TECHNICAL SPECIFICATIONS

Measurement Range:	-35 to +365 °C or -31 to +689 °F	
Accuracy:	Object = 15-35°C	1.5°C (2.7°F)
	Object = 0-365°C	2.5% or 2.5°C (4.5°F)
	Object = 35 to 0°C	2.5% +0.05/degree
Resolution:	-9.9 to 199.9°C	0.2°C (0.5°F)
	>200°C, <-20°C	1°C (1°F)
Response Time:	1 second	
Ambient Temperature:	0 to 50 °C (32 to 122 °F)	
Emissivity:	0.95 fixed	
Case Dimensions:	166 x 34 x 64 mm (6.55 x 1.33 x 2.50")	
Weight:	113 g (3.98 oz) including batteries (2 AAA batteries)	
Field of View:	8:1 Optics ratio, Minimum Target Ø25mm (Ø1")	
Display:	4 digit, 10mm character height LCD	
Battery Type:	2 AAA 1.5V Batteries	
Battery Life:	Minimum 14 hours continuous use.	

6 RELATED EQUIPMENT

In addition to the Elcometer 214 Infrared Thermometer, Elcometer produces a wide range of environmental measuring equipment and other equipment for measuring the characteristics of surface coatings.

Users of the Elcometer 214 Infrared Thermometer may also benefit from the following Elcometer products:

- Elcometer 212 Digital Pocket Thermometer
- Elcometer 213/2 Digital Waterproof Thermometer
- Elcometer 319 Dewpoint Meter

For further information contact Elcometer, your local Elcometer supplier, or visit www.elcometer.com