



# INFRARED THERMOMETERS

Infrared thermometers measure the temperature of surfaces. They're quick and easy to use. However, if used incorrectly or for the wrong application, readings could be inaccurate and put people at risk.

## INFRARED APPLICATIONS

Infrared thermometers are ideal for applications where a distance needs to be maintained between the person taking the readings and the item being measured. For example:

- Hot surfaces like fires or hotplates
- Hard to reach areas such as pipes

Because infrared thermometers only take the surface reading of the first physical object they come into contact with, they would not provide an accurate reading for the following applications:

- Core food temperatures
- Air temperatures
- Items covered by materials like cling film

## EMISSIVITY VALUES

Different surfaces have varying emissivities. If your thermometer has adjustable emissivity, make sure to set it accordingly for your application. See the table opposite for a small selection of emissivity values, or visit [etilttd.com/emissivity](http://etilttd.com/emissivity) for a thorough guide.

Aluminium (anodised)	0.77	Plastic (black)	0.95
Brass (oxidised)	0.61	Porcelain (glazed)	0.92
Brick (red)	0.90	Rubber	0.95
Cement	0.54	Skin (human)	0.98
Copper (oxidised)	0.65	Soil (dry)	0.92
Glass	0.92	Stainless steel	0.59
Paper (white)	0.68	Water	0.95
Perspex	0.86	Water (ice)	0.96
Pipe (glazed)	0.83	Water (frost)	0.98
Plastic (white)	0.84	Wood (planed)	0.90

## IR THERMOMETER CARE

It's important to use, clean and store your infrared thermometer properly to ensure accurate readings. We recommend following these tips:

- Keep the thermometer lens clean and free of debris
- Give your thermometer plenty of time to acclimatise to hot or cold environments
- Stand straight on and as close as possible to the surface being measured
- Check the accuracy of your readings regularly using a reliable calibration method

# THERMAPEN® IR THERMOMETER

- Patented, automatic 360° rotational display
- Adjustable emissivity for different surfaces
- Motion-sensing sleep mode - probe only
- High accuracy - ideal for HACCP procedures

The Thermapen IR is two instruments in one compact unit, combining the advanced technology of two ETI designed and manufactured products: the RayTemp 2 Plus infrared thermometer and Thermapen thermometer.

Housed in a robust ABS case that includes Biomaster product protection that reduces bacterial growth, the Thermapen IR incorporates a motion-sensing sleep mode (penetration probe only) which automatically turns the instrument on/off when set down or picked up, maximising battery life.

## ● Infrared thermometer

Simply aim the infrared thermometer at the target and press the scan button to display the surface temperature.  
**Please Note:** the infrared non-contact function will only measure when the probe is in the closed position.

The Thermapen IR thermometer incorporates a max/min temperature function accessed via the mode button (IR only). The distance to target ratio is 5:1, therefore the thermometer should be positioned as close to the target as possible. The default emissivity is 0.95 but can be adjusted between 0.1 and 1, if required via the mode button.

## ● Penetration probe

Opening the probe puts the instrument into probe mode, enabling you to take liquid or the core temperature of semi-solid food products using the fast response, stainless steel penetration probe (Ø3.3 x 110 mm). Displaying the temperature in just 3 seconds. The probe conveniently folds back through 180° into the side of the instrument when not in use.



Thermapen IR  
with air probe  
(228-114)



Patented  
auto-rotating  
display



model available  
see page 56



Order code	Description
228-065	Thermapen IR
228-114	Thermapen IR with air probe
830-480	Protective silicone boot
830-001	Zip pouch
832-002	Stainless steel wall bracket
830-485	Silicone boot - glow in dark

Specification	Thermapen IR
Range - infrared	-49.9 to 349.9 °C
Range - probe	-49.9 to 299.9 °C
Resolution	0.1 or 1 °C/°F - user selectable
Accuracy - infrared	±1 °C (0 to 100 °C) otherwise ±2 °C or ±2 % of reading whichever is greater
Accuracy - probe	±0.4 °C (-49.9 to 199.9 °C) otherwise ±1 °C
Field of view	Target ratio 5:1
Emissivity	0.95 default - adjustable 0.1 to 1
Battery	2 x 3 volt CR2032 lithium coin cell
Battery life	1000 hours - continuous use
Display	12 mm (horizontal) & 10 mm (vertical) LCD
Dimensions	19 x 50 x 157 mm
Weight	125 grams
FREE traceable certificate of calibration included (probe & IR)	

# IR-POCKET THERMOMETER

- LED spot alignment - safer than a laser
- Display hold function
- Lock function for continuous measurement
- Max/min memory function

The IR-Pocket thermometer is a non-contact infrared thermometer that has an easy-to-read, LCD display with low battery indication. Simply aim at the target and press the measure button to display the surface temperature instantly. The IR-Pocket indicates temperature over the range of -9.9 to 199.9 °C with an assured accuracy of ±2 % of reading or ±2°C, whichever is greater.

This thermometer features a two-button keypad, pressing the mode button allows the user to access a variety of functions, i.e. max/min, °C/°F, lock and emissivity. The lock function allows for continuous temperature measurement and the emissivity is adjustable so the user can measure a variety of surface types. An auto-power-off facility automatically turns the instrument off after 15 seconds, maximising battery life.

The default emissivity is 0.95 but is adjustable to enable temperature measurement of a variety of surface types.

For some useful infrared thermometer tips, or to download our infrared thermometer guide, please visit our website.



### LED spot alignment

The unit incorporates LED spot alignment, which allows the user to precisely target the diameter of the area to be measured. The LED pointer is safer for the eyes than laser pointers. As you move closer or further from the target the LED spot changes diameter indicating the area being measured.



● LED pointer



Specification	IR-Pocket
Range	-9.9 to 199.9 °C
Resolution	0.1 °C/°F
Accuracy	±2 °C or ±2 % whichever is greater
Field of view	Target ratio 1:1
Emissivity	0.95 default - adjustable 0.1 to 1
Battery & life	2 x 1.5 volt AAA - 20 hours continuous use
Display	Custom LCD
Dimensions	25 x 52 x 100 mm
Weight	88 grams

Order code	Description
814-060	IR-Pocket

# RAYTEMP® 2 PLUS IR THERMOMETER

- 360° rotating display with backlight
- Adjustable emissivity for different surfaces
- Target distance/diameter ratio 5:1
- FREE traceable certificate of calibration

NEW  
WHITE  
CASE

Designed and manufactured in the UK, the RayTemp 2 Plus infrared non-contact thermometer incorporates all the features of the RayTemp 2, but with the addition of a 360° self-rotating display, backlight and adjustable emissivity. Simply aim the thermometer at the target and press the measure button to display the surface temperature.

The unit incorporates a 5:1 optic ratio (target distance/diameter ratio) and therefore the thermometer should be positioned as close to the target as possible. The default emissivity is 0.95 but can be changed from 0.1 to 1, if required. The unit does not incorporate laser alignment, however this will appeal to those who are health and safety conscious and do not require this feature.

The RayTemp 2 Plus features a three-button keypad, incorporating measure, mode and max/min functions. Pressing the mode button allows the user to select °C/°F, adjust emissivity values and display the ambient temperature. The max/min function displays the highest and lowest recorded temperatures over the measurement period.

Featuring a large, easy-to-read LCD display with low battery indication and an auto-power-off facility that turns the instrument off after 30 seconds, maximising battery life, each unit is housed in a robust ABS case that contains Biomaster product protection that reduces bacterial growth and is powered by three AAA batteries that give a minimum of 5000 hours of battery life.

## • Automatic 360° rotational display

The RayTemp 2 Plus features an automatic 360° display, which rotates in 90° increments enabling the user to read the temperature in any position i.e. left hand, right hand, vertical or horizontal. This feature can be 'locked' by the user, if required. **UK Patent No. GB 2504936**



model available  
see page 63



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Order code	Description
228-120	RayTemp 2 Plus
832-050	Therma series s/s wall bracket & boot
830-221	Protective silicone boot - white*
814-132	Comparator (page 94)

\*Various colours are available. See page 14.

Specification	RayTemp 2 Plus
Range	-49.9 to 349.9 °C
Resolution	0.1 °C & 1 °C
Accuracy	±1 °C (0 to 100 °C) otherwise ±2 °C or ±2 % of reading whichever is greater
Field of view	Target ratio 5:1
Emissivity	0.95 default - adjustable 0.1 to 1
Battery	3 x 1.5 volt AAA
Battery life	5000 hours (continuous use, w/out backlight)
Display	12 mm (horizontal) & 10 mm (vertical) LCD
Dimensions	25 x 56 x 128 mm
Weight	130 grams
FREE traceable certificate of calibration included	



# RAYTEMP® 2 IR THERMOMETER

- High accuracy  $\pm 1^\circ\text{C}$  over a limited range
- FREE traceable certificate of calibration
- Displays ambient temperature
- Records the max/min temperatures

Designed and manufactured in the UK, the RayTemp 2 infrared, non-contact thermometer features a large, easy-to-read LCD display and a three-button keypad, incorporating measure, mode and max/min functions. Simply aim at the target and press the measure button to display the surface temperature, over the range of  $-49.9$  to  $349.9^\circ\text{C}$  with a  $0.1^\circ\text{C}$  or  $1^\circ\text{C}$  resolution and assured accuracy of  $\pm 1^\circ\text{C}$  over the range  $0$  to  $100^\circ\text{C}$ .

Incorporating a 5:1 optic ratio (target distance ratio) and a fixed emissivity of  $0.95$  making it suitable for a wide range of food and industrial applications, each RayTemp 2 is housed in a robust ABS case that contains Biomaster product protection that reduces bacterial growth.

The unit does not incorporate laser alignment, which will appeal to those who are health and safety conscious and do not require this feature.

In addition, it promotes the user to get closer to the object being measured. Ideal in an environment where accuracy is important.

**NEW  
WHITE  
CASE**



**Bluetooth®**

model available  
see page 63



## OPTIONAL ACCESSORIES:

- Protective silicone boot.  
Various colours are available - see page 14
- Stainless steel wall bracket (832-050)  
& white silicone boot (screws not supplied)



Order code	Description
228-020	RayTemp 2
832-050	Therma series s/s wall bracket & boot
830-221	Protective silicone boot - white*

\*Various colours are available. See page 14.

Specification	RayTemp 2
Range	$-49.9$ to $349.9^\circ\text{C}$
Resolution	$0.1^\circ\text{C}$ & $1^\circ\text{C}$
Accuracy	$\pm 1^\circ\text{C}$ ( $0$ to $100^\circ\text{C}$ ) otherwise $\pm 2^\circ\text{C}$ or $\pm 2\%$ of reading whichever is greater
Field of view	Target ratio 5:1
Emissivity	$0.95$ fixed
Battery & life	$3 \times 1.5$ volt AAA - 5000 hours continuous use
Display	$12$ mm LCD
Dimensions	$25 \times 56 \times 128$ mm
Weight	$130$ grams

**FREE traceable certificate of calibration included**

# MINI RAYTEMP® INFRARED THERMOMETER

- Target distance/diameter ratio 12:1
- Laser dot alignment
- Backlit LCD display
- Compact, lightweight & easy-to-use

The Mini RayTemp infrared thermometer is a compact, lightweight and low cost infrared thermometer. Simply aim and pull the trigger to display the surface temperature of the item being measured.

Measuring temperature over the range of -50 to 330 °C with an assured accuracy of ±2 °C over the range of 0 to 330 °C, outside of this range (-50 to 0 °C) accuracy is ±4 °C or ±4 % whichever is greater. The Mini RayTemp has a clear, easy-to-read, LCD display with low battery indication, backlight and an auto-power-off facility that turns the instrument off after ten seconds, maximising battery life.

Ideal for numerous temperature measurement applications where contact with the item to be measured is an issue. The Mini RayTemp features laser assisted alignment as standard, to assist in pin-pointing the area of measurement.

The unit incorporates a 12:1 optic ratio (target distance/diameter ratio) and a fixed emissivity of 0.95 making it suitable for a wide range of food and industrial applications.

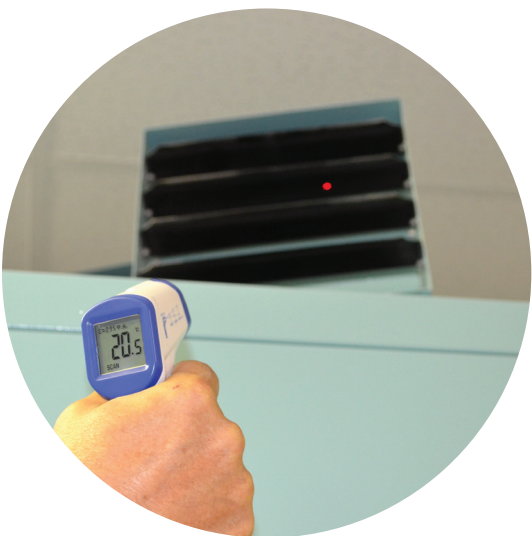
- **Low cost calibration checker**

The Comparator (814-132) provides an inexpensive way of checking the temperature of infrared thermometers when used in conjunction with a Reference thermometer, see pages 99 and 100 for details.



**OPTIONAL ACCESSORY:**

- Protective nylon pouch with belt strap (830-040)



Order code	Description
814-080	Mini RayTemp
830-040	Protective nylon pouch
814-132	Comparator

Specification	Mini RayTemp
Range	-50 to 330 °C
Resolution	0.1 °C/°F
Accuracy	±2 °C (0 to 330 °C) otherwise ±4 °C or ±4 % whichever is greater
Field of view	Target ratio 12:1
Emissivity	0.95 fixed
Battery & life	9 volt PP3 - 80 hours continuous use
Display	Custom LCD
Dimensions	36 x 88 x 131 mm
Weight	143 grams

# RAYTEMP® 3 INFRARED FOOD THERMOMETER

- High accuracy over the critical food range
- Circular laser for precise targeting
- Temperature range -60 to 500 °C
- Compact, lightweight & easy to use



The RayTemp 3 infrared food thermometer is ideal for use in the food industry. It is compact, lightweight and easy to use. Simply aim and pull the trigger to display the temperature of the item being measured. In addition the LCD will display the maximum temperature.

This instrument measures temperature over the range of -60 to 500 °C with an assured accuracy of  $\pm 1$  °C over the critical food range of 0 to 65 °C, outside of this range  $\pm 2$  °C or  $\pm 2$  % of reading, whichever is greater in an ambient temperature of between 15 °C and 25 °C, with a repeatability of  $\pm 1$  °C of reading.

The unit incorporates a clear, easy to read, LCD display with low battery, laser and backlight indication and an auto power off facility that turns the instrument off after 15 seconds, maximising battery life. The RayTemp 3 is ideal for measuring food surface temperatures, eliminating the need to touch or contaminate the food you are measuring, avoiding the risk of cross-contamination. The unit can be used by anyone as there is no need to focus or adjust the instrument.

Each RayTemp 3 features a single push button, allowing the user to select °C or °F. The thermometer also incorporates a circular laser, which allows you to precisely target the diameter of the area to be measured. As you move closer or further from the target the laser circle changes diameter. The unit incorporates a 12:1 optic ratio (target distance/diameter ratio) and a fixed emissivity of 0.97 making it more suitable for chilled and frozen foods, although this thermometer can be used for a wide range of other applications.



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## OPTIONAL ACCESSORIES:

- Protective nylon pouch with belt strap (830-040)
- ABS carrying case - ideal for transporting and securely storing the RayTemp 3 thermometer (834-740)



Comparator (814-132)

Diameter at spot:

0.5" 1" 2" 4"

Distance to object:

6" 12" 24" 48"



Order code	Description
814-040	RayTemp 3
830-040	Protective nylon pouch
834-740	ABS carrying case
814-132	Comparator

Specification	RayTemp 3
Range	-60 to 500 °C
Resolution	0.1 °C/ °F (-9.9 to 199.9 °C) or 1 °C
Accuracy	$\pm 1$ °C (0 to 65 °C) otherwise $\pm 2$ °C or $\pm 2$ % whichever is greater
Field of view	Target ratio 12:1
Emissivity	0.97 fixed
Battery & life	2 x 1.5 volt AAA - 140 hours continuous use
Display	Custom LCD
Dimensions	40 x 66 x 155 mm
Weight	180 grams



# RAYTEMP® 8 INFRARED THERMOMETER

- Integral type K thermocouple socket
- Range IR -60 to 500 °C, probe -64 to 1370 °C
- Includes differential & average temperatures
- Target distance/diameter ratio 12:1

The RayTemp 8 portable infrared thermometer is compact, lightweight and easy-to-use. Simply aim and pull the trigger to display the temperature of the item being measured. The thermometer displays temperature over the range of -60 to 500 °C.

Featuring a clear, easy-to-read, LCD display with low battery indication, the RayTemp 8 incorporates an auto-power-off facility that turns the instrument off after 60 seconds, maximising battery life. The unit features a circular laser with centre dot indicator, which allows you to precisely target the diameter of the area to be measured. As you move closer or further from the target the laser circle changes diameter.

The three-button keypad, allows the user to select °C/°F and max/min. Additionally, the difference between the max and min temperature and the average temperature can be displayed.

- **Two instruments in one**  
The RayTemp 8 incorporates a miniature thermocouple type K probe socket that enables a wide range of type K thermocouple probes to be used for a variety of temperature measurement applications, including air, liquid and surface temperatures. For details of compatible type K thermocouple probes, see pages 77 to 83.



Order code	Description
814-045	RayTemp 8
860-845	RayTemp 8 kit
830-040	Protective nylon pouch
The RayTemp 8 is exclusive of probe	

## RAYTEMP 8 INFRARED KIT

### Each kit contains:

- RayTemp 8 infrared thermometer (814-045)
- Penetration probe (123-160)
- FREE Box of 100 Probe Wipes (836-220)
- FREE ABS carrying case (834-740)



Specification	RayTemp 8
Range - infrared	-60 to 500 °C
Range - probe	-64 to 1370 °C
Resolution	0.1 °C/°F (-9.9 to 199.9 °C) or 1 °C
Accuracy - infrared	±2 °C or ±2 % of reading whichever is greater
Accuracy - probe	±1 °C or ±1 % of reading whichever is greater
Field of view	Target ratio 12:1
Emissivity	0.95 default - adjustable 0.1 to 1
Battery & life	2 x 1.5 volt AAA - 180 hours continuous use
Display	Custom LCD
Dimensions	40 x 66 x 155 mm
Weight	185 grams



# RAYTEMP® 28 INFRARED THERMOMETER

- Integral type K thermocouple socket
- Ideal for high temperature applications
- Dual laser for precise targeting
- Stores the last 12 readings

The RayTemp 28 is a professional infrared, non-contact thermometer with dual laser dot alignment, incorporating a 30:1 optic ratio (target distance/diameter ratio), enabling users to measure small targets from a distance or any item that is difficult to reach.

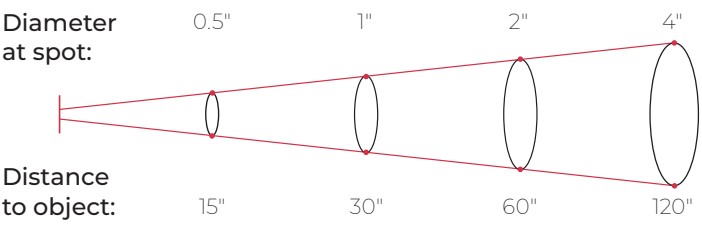
Featuring a three-button keypad, the RayTemp 28 allows the user to select the mode required, i.e. max, min, differential or average temperatures, view the max/min and configurable high/low alarms. Adjustable emissivity enabling the user to measure a variety of surface types.

The unit has a clear, easy-to-read, custom LCD display that features a backlight for when ambient light levels are low and an auto-power-off facility that turns the instrument off after 35 seconds, maximising battery life. The thermometer is housed in a robust IP54 splashproof case to help reduce the possibility of damage in harsh environments and is supplied in a protective ABS carrying case.



## Two instruments in one

The RayTemp 28 incorporates a miniature thermocouple type K probe socket that enables a wide range of type K thermocouple probes to be used for a variety of temperature measurement applications, including air, liquid and surface temperatures. For details of compatible type K thermocouple probes, see pages 77 to 83.



Specification	RayTemp 28
Range - infrared	-50 to 1350 °C
Range - probe	-50 to 1370 °C
Resolution	0.1 °C to 1000 °C thereafter 1 °C
Accuracy - infrared	±2 °C (0 to 1350 °C) otherwise ±4 °C or ±4 % of reading whichever is greater
Accuracy - probe	±1 °C or ±1 % of reading whichever is greater
Field of view	Target ratio 30:1
Emissivity	0.95 default - adjustable 0.1 to 1
Battery & life	9 volt PP3 - 40 hours continuous use
Display	Custom LCD
Dimensions	83 x 95 x 192 mm
Weight	275 grams

Order code	Description
814-028	RayTemp 28
The RayTemp 28 is exclusive of probe	

# RAYTEMP® 38 INFRARED THERMOMETER

- Wide temperature range -59.9 to 999.9 °C
- Target distance/diameter ratio 50:1
- Robust housing for durability
- Auto power-off & backlight functions

The RayTemp 38 is a professional infrared, non-contact thermometer with dual laser dot alignment that incorporates a 50:1 optic ratio (target distance/diameter ratio), this enables users to measure small targets from a distance. The user stands a safe and comfortable distance from the target, points the thermometer at the surface to be measured, pulls the trigger and instantly reads the temperature. Ideal for measuring the surface temperature of any item that is difficult to reach. This enables the user to measure most surfaces accurately and quickly.

Measuring the surface temperature over the range of -59.9 to 999.9 °C with a 0.1 °C/°F resolution, the RayTemp 38 incorporates an auto-power-off facility that turns the instrument off after 60 seconds, this function can be disabled, if required. Each unit incorporates a backlit custom LCD display that indicates both the temperature and the emissivity. The thermometer features a four-button keypad, allowing the user to select the mode required, i.e. max, min, differential and average temperatures, view the max/min high and low alarms and adjust the emissivity from 0.1 to 1.0 in 0.01 increments (default set at 0.95).

- **Two instruments in one**

The RayTemp 38 is two instruments in one as it incorporates a thermocouple socket that will accept a type K thermocouple probe, see pages 77 to 83 for available probes. Each RayTemp 38 is supplied in a protective ABS carrying case. An optional strong magnetic holder is also available. The holder screws into the bottom of the thermometer's housing, allowing the unit to be mounted onto a metal surface for continuous monitoring.



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Magnetic holder (814-150)



Order code	Description
814-038	RayTemp 38
814-150	Magnetic holder
The RayTemp 38 is exclusive of probe	

Specification	RayTemp 38
Range - infrared	-59.9 to 999.9 °C
Resolution	0.1 °C/°F
Accuracy - infrared	±2 °C or ±2 % of reading whichever is greater
Accuracy - probe	±1 °C or ±1 % of reading whichever is greater
Field of view	Target ratio 50:1
Emissivity	0.95 default - adjustable 0.1 to 1
Battery & life	2 x 1.5 volt AAA - 180 hours continuous use
Display	Custom LCD
Dimensions	47 x 170 x 240 mm
Weight	395 grams