

NON-CONTACT INFRARED THERMOMETERS

MOD. 1760 / IR800

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INTRODUCTION

Thank you for purchasing this infrared thermometer. By simply pressing a push button and owing to infrared rays, it is possible to carry out temperature measurements without coming into contact with the object. The built-in laser pointer increases measurement accuracy while the retroilluminated LCD display and practical push-buttons combine for convenient and ergonomic use.

The Non-contact Infrared Thermometers can be used to measure the surface temperature of an object which might be indicated with difficulty via traditional contact thermometers (for example, it is very easy for moving objects, surfaces under voltage or those objects which cannot be easily touched.)

Proper use and care of this tool will guarantee years of durable and reliable service.

FEATURES:

- Rapid detection function
- Precise temperature measurement without need of contact
- Dual laser pointing
- Unique smooth surface, modern housing design
- Measurement maintenance function (Data Hold)
- °C/°F selection push button
- Digitally adjustable emissivity from 0.10 to 1.0
- MAX temperature display
- Retroilluminated LCD display
- Automatic selection range and Display Resolution 0.1°C (0.1°F)

- Continuous measurement mode (Trigger lock)
- Setting up of alarms (high/low)

WIDE RANGE APPLICATION:

The non contact infrared thermometer can be used to measure temperature in the foodstuffs sector, in safety and anti-fire inspections, in the plastic injection pressing industry, in the asphalt sector, in naval engineering, in silk screen printing and in the offset printing sector for the measurement of ink drying temperature, in heating, ventilation and air conditioning/refrigeration systems and for diesel engines in the maintenance workshops of automobile fleets.



SAFETY

- Use extreme caution when the pointer laser ray is turned on.
- Do not point the laser ray towards people or animals because it is dangerous for the eyes.
- Be careful not to point the laser beam on a reflective surfaces or mirrors which could cause damage to sight .
- Do not point the laser beam towards explosive substances or gases.

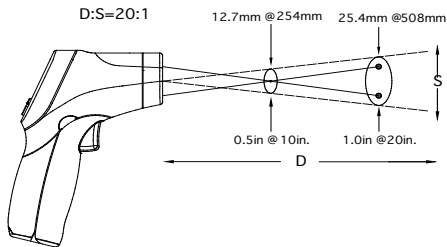
DISTANCE & DIMENSIONS OF THE LASER BEAM

Hand in hand with the increase of distance (D) between the thermometer and the object from which the temperature measurement is desired, the diameter of the laser beam (S) or the area measured becomes larger. The relationship between distance and dimensions of the laser beam is indicated as follows for the different thermometer models. The focal point is 914mm (36"). The laser beam dimensions correspond to 90% of energy emitted.

Picture:

MODEL: **1760/IR800**

Distance (D) / to spot size (S)



TECHNICAL PARTICULARS

Model	Temperature range	D: S
1760/IR800	-50 to 800 °C (-58°F ~ 1472°F)	20:1
Display resolution	0.1 °C (0.1°F)	<1000
	1°F	>1000

Accuracy for targets:

Assumes ambient operating temperature of 23 to 25 °C (73 to 77°F)

-50 ~ 20°C (-58°F ~ 68°F)	±2.5°C (4.5°F)
20°C ~ 300°C (68°F ~ 572°F)	±1.0% ±1.0°C (1.8°F)
300°C ~ 800°C (572°F ~ 1472°F)	±1.5%

Repeatability

-50 ~ 20°C (-58~68°F):	±1.3°C(2.3°F)
20 ~ 800°C (68~1472°F):	±0.5% or ±0.5°C(0.9°F)

Response time	150ms
Spectral response	8~14μm
Emissivity	Digitally adjustable from 0.10 to 1.0
Over range indication	LCD will show “----”

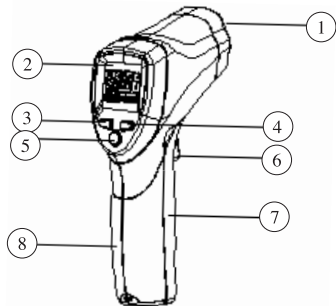
Polarity	Automatic (no indication for positive polarity); Minus (-) sign for negative polarity
Diode laser	output <1mW,Wavelength 630 ~ 670nm, Class 2 laser product
Operating temp.	0 to 50°C(32 to 122°F)
Storage temp.	-10 to 60°C (14 to 140°F)
Relative humidity	10%~90%RH operating, <80%RH storage
Power supply	9V battery, NEDA 1604A or IEC 6LR61, or equivalent
Safety	“ CE ” Comply with EMC

Note:

Make sure that the area in which it is intended to measure the temperature is larger than the diameter of the laser beam. The smaller such an area, the closer it should be approached. When accuracy is in doubt, make sure the area in question is at least double the diameter of the laser beam.

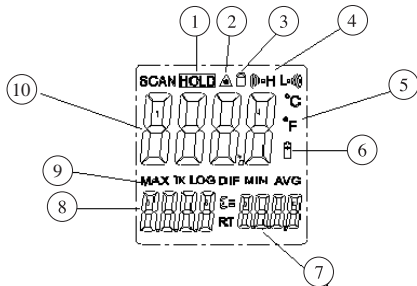
FRONT PANEL DESCRIPTION

- 1 IR sensor
- 2 LCD Display Laser pointer beam
- 3 Up key
- 4 Down key
- 5 Mode selection key
- 6 Measurement Push button (trigger)
- 7 Battery Cover
- 8 Handle Grip



INDICATIONS ON DISPLAY

- 1 Measurement maintenance
- 2 Laser "on" symbols
- 3 Continuous measurement method symbol
- 4 High or low alarm
- 5 °C/°F symbol (Celsius/Fahrenheit)
- 6 Battery download symbols
- 7 Emissivity symbol and value
- 8 Maximum temperature values (MAX)
- 9 Symbols for maximum values (MAX)
- 10 Current temperature value



BUTTONS

- 1 “Up” button (for emissivity, high or low alarm: EMS,HAL,LAL)
- 2 “Down” button (for Emissivity, high or low alarm: EMS,HAL,LAL)
- 3 MODE selection button (for passing from one function to another)

MEASUREMENT OPERATION

- 1 Selection of the temperature measurement unit (°C or °F)
- 2 During the measurement operation, use the “up” and “down” keys to adjust the emissivity.
- 3 During the measurement maintenance function use the “up” key to activate or de-activate the laser, or the “down” key to switch the retroillumination on or off.
- 4 To set up High (HAL) and Low Alarm (LAL) values and Emissivity (EMS), press and hold the selection MODE key until the appropriate symbol is not on the display, press the UP and down buttons to adjust the desired values.

MODE Selection Key Function

Pressing this button also enables access to the Emissivity set up function (EMS), activation/de-activation of the continuous measurement mode, of the activation/de-activation and regulation of the high (HAL) and low (LAL) alarm. Each time you press the selection MODE key, the instrument passes to the subsequent function. The diagram shows the cycle sequence of the various modes.

EMS adjustment.

The Emissivity(EMS) is digitally adjustable from 0.10 to 1.0.

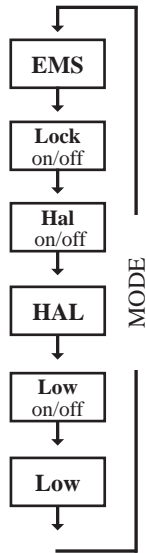
Activation/De-activation mode for CONTINUOUS MEASUREMENT

The continuous measurement mode is particularly useful for the continuous monitoring of temperature. Press the “up” and “down”keys to activate it/de-activate it. Press the measurement push button (trigger) to confirm continuous measurement mode. The instrument continues to display temperature even if the trigger is not pressed again.

In the continuous measurement mode, press the up and down keys to adjust emissivity or activate/de-activate the high (HAL) low (LAL) alarm. Press the measurement button (trigger) to confirm the High/Low alarm method.

High/low Alarm Regulation

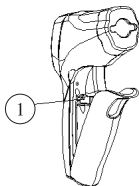
from -50 to 800 °C(-58°F ~ 1472°F)



°C or °F Selection Push Button

Select the temperature measurement units (°C or °F) using the °C/°F selection key (①)

The word “Max” indicates the maximum registration displayed each time in the time elapsed from the moment when the activation/de-activation “ON/OFF” key is pressed to the moment when it is released




MEASUREMENT OPERATION

- 1 Hold the thermometer and point it towards the surface where temperature measurement is intended.
- 2 Pull and hold down the Trigger and proceed with the measurement operations. If the state of the battery is good, the display lights up. Replace the battery if the display does not light.
- 3 Once the trigger has been released, the phrase HOLD appears on the display, to indicate that the last reading has been memorized. In MAINTENANCE mode, press the UP button to activate or de-activate the the laser. Press the DOWN button to turn on or off the retroillumination.
- 4 The instrument will automatically power down after approximately 7 seconds after the trigger is released. (Unless the continuous measurement mode has not been activated)

Note: Measurement operations considerations

To correctly carry out measurement, grip the thermometer and point the infrared sensor towards the object whose temperature is intended to be measured. The instrument is automatically capable of compensating for temperature deviations owed to ambient temperature. Keep in mind that the infrared sensor needs a certain time to stabilize in temperature. Therefore, if it is necessary to carry out measurements on areas where there is a heightened thermal amplitude, it is necessary to wait for a few moments before beginning measurement.

BATTERY REPLACEMENT

- 1 When the battery discharge “” symbol appears on the thermometer display, it is necessary to replace it with a new 9V battery.
- 2 Open battery carrier cover, then take out the battery from instrument and replace with a new 9-Volt battery. Finally close the battery carrier cover again.

NOTES:

- **How it Works.** Infrared thermometers measure the surface temperature of an object. The optical devices of the instrument indicate the energy emitted, reflected, and transmitted that has been gathered and converged on the sensor. The electronic circuits transform the signals into temperature reading values which are then displayed on the instrument. The laser, when present, serves only for the pointing phase.

- **Visual Field.** Make sure that the area where the temperature is to be measured is larger than the diameter of the laser beam. The smaller such an area, the more necessary it is to be closer to it. When accuracy is in doubt, make sure the area in question is at least twice as large as the diameter of the laser beam.
- **Distance & Diameter of the Laser Beam.** Gradually as the distance (D) increases between the thermometer and the object whose temperature measurement is desired, the diameter of the laser beam (S), or the area of measurement becomes larger. See: Fig: 1.
- **Looking for the hottest point.** To look for the point of the object with the highest temperature, carry out different measurements moving the thermometer before the outside of the area involved, then on all of the surface of the object, with a movement from high to low.
- **Usage Limitations**
 - 1 The thermometer is not adapted to carry out measurements on reflective or shining surfaces (stainless steel, aluminum, etc.). See the paragraph relating to Emissivity
 - 2 The instrument cannot measure through transparent surfaces such as glass: the value indicated should indeed be that of the temperature of the glass.
 - 3 Steam, dust, smoke, etc., can prevent accurate measurement by obstructing the temperature reading.

- **Emissivity.** Emissivity is a term used to describe the energy-emitting characteristics of different materials. The emissivity of the great part of organic materials and painted or oxydised (90% of standard applications) is equal to 0.95 (pre-set on the instrument). To compensate for possible imprecise readings, which can result from measurements carried out on metal or shining surfaces, cover the area to be measured with adhesive tape or opaque black paint and wait until this new material reaches the same temperature of the object that it is protecting,. At this point, carry out the temperature measurement.

Emissivity Values

Substance	Thermal emissivity	Substance	Thermal emissivity
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Lather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Earth	0.92 to 0.96	Lacquer	0.80 to 0.95
Water	0.92 to 0.96	Lacquer (matt)	0.97
Ice	0.96 to 0.98	Rubber (black)	0.94
Snow	0.83	Plastic	0.85 to 0.95
Glass	0.90 to 0.95	Timber	0.90
Ceramic	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	Chromium oxides	0.81
Plaster	0.80 to 0.90	Copper oxides	0.78
Mortar	0.89 to 0.91	Iron oxides	0.78 to 0.82
Brick	0.93 to 0.96	Textiles	0.90

MAINTENANCE

- 1 Repairs or maintenance must only be carried out by qualified personnel.
- 2 Periodically, wipe the body with a dry cloth. Never use abrasives or solvents on this instrument.
- 3 For maintenance, use only manufacturer's specified spare parts.

Declaration of conformity (CE)

The product 1760/IR800 is in conformity with EMC directive 89/336/CEE emanated from the Commission of the European Community.

When it comes to quality measuring tools, Beta Tools is the brand you can depend on.