

ET 2020 DUAL LASER INFRARED THERMOMETER

User Manual

THANK YOU FOR PURCHASING THIS PROFESSIONAL QUALITY NON-CONTACT INFRARED THERMOMETER. THIS UNIT FEATURES DUAL LASERS, WITH AN ABILITY TO MEASURE TEMPERATURES UP TO 850°C. BASED ON THEIR EMISSIVITY CHARACTERISTICS.

SAFETY INSTRUCTIONS

DO NOT point directly into eyes or anything that can be reflect into eyes. **DO NOT** point the laser directly at explosive gases.

PRODUCT DESCRIPTION

- 1. Dual laser targeting
- 2. LCD display
- 3. Function menu
- 4. Measuring trigger
- 5. Battery cover

LCD DISPLAY

- 1. Scanning and measuring procedure
- 2.Hold and keep last measurement data
- 3. Emissivity setting
- 4. °F and °C change
- 5. Main temperature display
- 6. Low voltage warning
- 7. Function transformation zone

CAUTION! LASER RADIATION DO NOT STARE INTO BEAM

DIODE LASER 1mW MAX OUTPUT at 635-670 nm CLASS II LASER PRODUCT





OPERATING INSTRUCTIONS

Temperature Measurement

Point the instrument at the surface of the object you want to measure and press the trigger.

The unit can display temperature, max temperature, min temperature, difference value, average value, max warning point, and min warning point.

The result will stay on the screen for 7 seconds after the trigger is pressed. And will then power off if there is no further operation.

Press the "MODE" button for 2 seconds when the unit is on to switch between °F and °C.

Dual Laser Targeting

The dual laser targeting range is within 120cm. At this distance, the temperature will be measured in a 10 cm range. To turn the laser off, press and release the trigger. When "hold" is displayed, press the laser backlit button to power the laser on and off.

Max Temperature Display

The max temperature is displayed in §MAX" after the temperature measurement is finished.

Backlight

1. Press and release the trigger.



- 3. When the backlit is on, it will light up the screen. The backlight will consume battery power.
- 4. Turn the backlight off when not required.

Emissivity

Press up and down button to adjust emissivity when it shows "HOLD". The emissivity of this instrument is between 0.1-1.0.

MODE menu operation

- 1. This function allows you to enter max value, min value, average value, max alarm point, min alarm point.
- 2. Press and release the trigger when it shows "HOLD". Press the "MODE" to enter the next program.

Max data Only shows the max data when measuring.

Min data Only shows the min data when measuring.

Difference data Shows the difference between the first and subsequent data.

Average data Shows the average between the first and subsequent data.

HAL

To set the max alarm temperature, press the up and down menu.

LAL

To set the min alarm temperature, press the up and down menu.

This product can alarm when the temperature is too high or too low. Set the alarm temperature through the "MODE" menu. It can be remain the setting when it is power on until the setting is cancelled.

Temperature Unit

°F or °C can be set by the temperature unit switch menu, press the MODE menu for 2 sec.

Over Range Alarm Function

If the temperature is beyond the instrument's range, it will show "--" on the screen.

Battery Replacement

When low power signal "LOGR" is displayed, please replace battery (9V). The battery is under the trigger.



IMPORTANT NOTES

The object to be measured must be larger than the vision field of the instrument. Keep the object surface clean and free from frost, oil, dirt etc when measuring. If the object to be measured is reflective, cover it with adhesive tape or black paint before measuring. If the object to be measured is transparent (such as glass) the result may not be accurate.

Steam, dust, smog etc will also influence the measured result.

This instrument can adjust for environmental temperature deviations. But if the deviation is large, allow about 30 minutes to adjust. To find a hot spot please 'light up' the object from top to bottom from left to right until you find it.

DISTANCE COEFFICIENT RATIO

The distance coefficient ratio of this product is 12:1. For example, if the object to be measured is 72cm from the instrument, then the diameter of the object must bigger the 6cm. Distance measurement may be influenced by other light sources.

EMISSIVITY AND INFRARED TEMPERATURE MEASUREMENT PRINCIPLE

Infrared thermometers are instruments that measure surface temperature through infrared emission, reflection and then conversion into energy. The thermometer converts these electrical signals into temperature readings displayed on the LCD.

The infrared energy an object can release is in direct proportion with its temperature and emissive power. This is called emissivity, and is related to the material and gloss of the object. Emissivity values range from 0.1 to 1.0. (The same as this unit). The emissivity of most organic materials, paints and oxidized surfaces is 0.95. Should there be a problem please set the emissivity to 0.95.

MATERIAL UNDER TEST	EMISSIVITY	MATERIAL UNDER TEST	EMISSIVITY
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Skin (human)	0.98
Cement	0.96	Leather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Soil	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

EMISSIVITY VALUES OF COMMON MATERIALS

SPECIFICATIONS

MODEL	ET2020		
RANGE	-50 to 850 ° C -58 to	o 1562 ° F	
RESOLUTION	0.1° < 1000°, 1° > 1000		
ACCURACY	-50°C to -23°C (-M'F to -10°F -23°C to -2°C (-10°F to 28°F) 2°C to 94°C (28°F to 200°F) 94°C to 204°C (200°F to 400°F) 204°C to 428°C (400°F to 800°F) 426°C to 1050°C (800°F to 1922°F) Note: Accuracy is specified for the am Range: 23 to 25°C (73 to 77°F)	±7°C/14°F(Typical) ±4°Cl8°F ±2.5°C/4.5°F ±(1.0%rdg + 1°C/2°F) ±(1.5%rdg + 1°C/ 2°F) ±(3%rdg + 1°C/ 2°F) ±(3%rdg + 1°C/2'F)	
EMISSIVITY	0.10 to 1.00 adjustible		
FIELD OF VIEW	D/S = Approx. 12:1 ratio (D = distance; S = spot or target)		
LASER POINTER	Dual, Class 2 laser < 1mW power; Wavelength is 630 to 670nm		
SPECTRAL RESPONSE	8 to 14 μm, (wavelength)		
REPEATABILITY	\pm 0.5% of reading or \pm 1°C (1.8°F) whichever is greater		

WARRANTY STATEMENT

Endeavour Tools guarantees this unit against defects in material and workmanship for a period of six (6) months from the date of purchase. This warranty excludes consumable items in the kit.

- A. Endeavour Tools warrants the quality of these goods against defects in material and workmanship only.
- B. Defective goods shall only be replaced, repaired or purchase price refunded if:
 - a. The customer notifies Endeavour Tools by providing a full report describing the defect in writing within 7 days of the discovery of the defect; and
 - b. The notification above provided to Endeavour Tools is prior to the expiry of the warranty period;
 - c. The customer forwards the defective goods together with proof of purchase from Endeavour Tools or its authorized distributor at their expense, within 14 days of any request by Endeavour Tools to do so;
 - d. The goods since the date of delivery to the customer have been properly maintained, stored and housed and the goods have not been abused or modified or the case opened; and the use of a defective material.
- C. Endeavour Tools may replace or repair the defective good (or part thereof) or refund the purchase price of the defective good at its option.
- D. Endeavour Tools shall not be responsible for any loss or damage arising from or in any way connected with the use of the goods.
- E. To the maximum extent permitted by law, a claim in respect to a defective good shall not be permitted in the event that the goods have not been installed, used, maintained, or housed in a proper and workmanlike manner or in accordance with the usual standards or manufacturers specifications or instructions or if the goods have been modified, repaired or altered by any person apart from Endeavour Tools.

Innovation - Performance - Quality

Not with standing our warranty terms above, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

The benefits under our warranty are in addition to other right and remedies under a law in relation to the goods.



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