IDEAL Single Laser Targeting Infrared Thermometer 61-827 Datasheet

IDEAL® Test and Measurement
61-827
Single Laser Targeting
Infrared Thermometer

Contents [hide

Introduction

The IDEAL 61-827 Single Laser Targeting Infrared Thermometer (IRT) is a non-contact temperature sensing meter. Its single laser defines the center of the area whose temperature will be measured.

Eye damage or personal injury hazard. Follow all safety procedures. Read and fully understand the instruction manuals prior to using this product. Failure to comply can result in serious injury.

Contacting IDEAL INDUSTRIES, INC.
To contact IDEAL INDUSTRIES, INC., call one of the following telephones numbers:
IDEAL Industries USA Customer Service

- Phone Number: 800-435-0705
- Email: **contactus@idealindustries.com**

IDEAL Industries Canada Customer Service

- Phone Number: 905-683-3400
- Email: **ideal_Canada@idealindustries.com**

IDEAL Industries EMEA

- Phone Number: +44 (0)1925 444 446
- Email: **eur.sales@idealindustries.com**

IDEAL Industries Australia

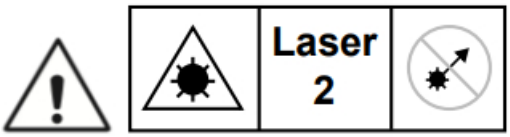
- Phone Number: +61 3 9562 0175
- Email: **InfoAUS@idealindustries.com**

Or visit the IDEAL Electrical Website at **www.idealind.com** To register your product, find manuals, watch videos, simply scan this QR code.

SCAN ME

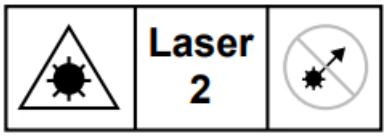
https://l.ead.me/bbePbl

Safety Information



Warning – Identifies conditions and actions that could result in serious injury if the hazard is realized.

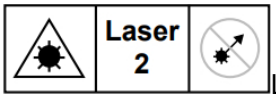

Caution – Identifies conditions and actions that could result in meter damage or an incorrect reading if the hazard is realized.



WARNING

Eye damage or personal injury hazard. Follow all safety procedures. Read and fully understand the instruction manuals prior to using this product. Failure to comply can result in serious injury.

- 
Choking Hazard, Small Parts. Keep Away from Children. This is not a toy. It is not for the use or plays by children. Keep Away from Children. Failure to do so can result in serious injury.
- Do not point the laser directly at people or animals.
- Do not look at the laser directly or through other optical tools (telescope, microscope, binoculars) or reflected laser light.
- Do not come in contact with high-temperature surfaces when making measurements.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Do not use the thermometer in an environment close to flammable or explosive materials.
- 
Cancer and Reproductive Harm – www.P65Warnings.ca.gov



LASER RADIATION DO NOT STARE INTO BEAM OUTPUT <1mW COMPLIES WITH EN60825-1:2014


CAUTION

Identifies conditions and actions that could result in meter damage or an incorrect reading if the hazard is realized.

Do not disassemble or modify the thermometer or laser.

- This unit has no serviceable parts.
- To avoid false readings, replace the batteries as soon as the low battery indicator  appears.

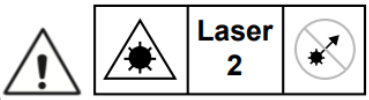
- Do not use without the batteries correctly in place and the battery door closed and secured.
- Inspect the case before using the thermometer. Do not use the thermometer if it appears damaged. Look for cracks or missing plastic.
- Using the thermometer around steam, dust, or environments with large temperature fluctuations may lead to inaccurate temperature measurement.
- To ensure measurement accuracy, please place the thermometer in the measurement environment for 30 minutes before using it.
- Avoid keeping the thermometer near a high-temperature environment for long periods.
- Clean the case and accessories with a damp cloth and mild detergents only. Do not use abrasives or solvents. Make sure the meter is completely dry before use.

Symbols & Descriptions

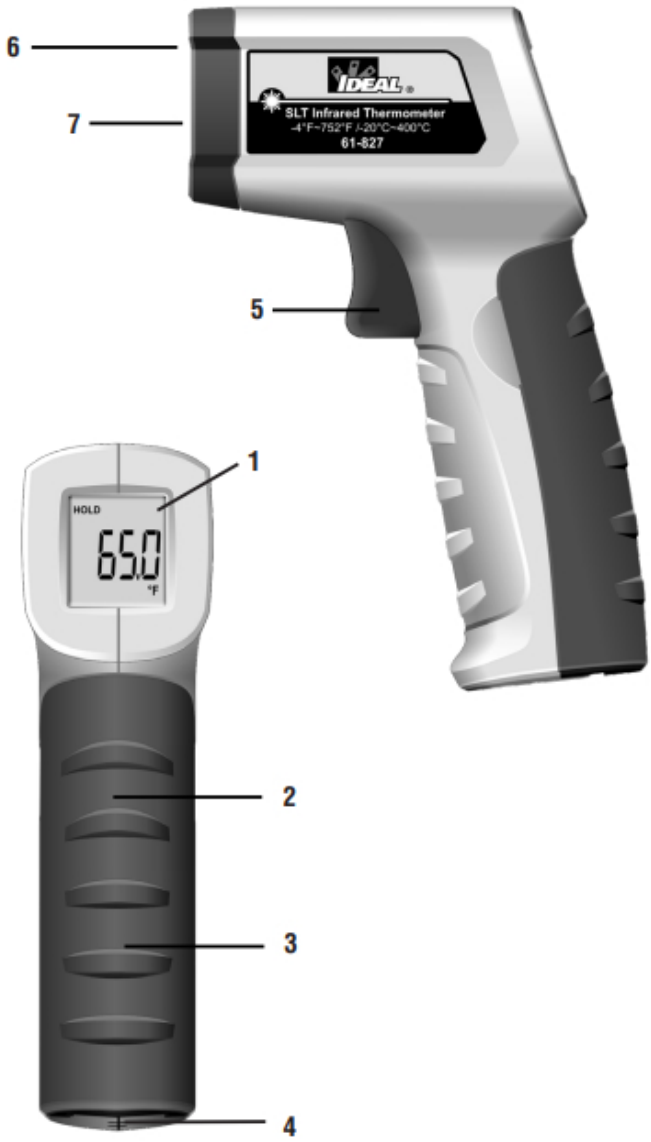
SYMBOL	DESCRIPTION
	Warning or Caution
	Laser Radiation Warning
	Laser Eye Hazard
LASER 2	Laser Class 2 Warning- Class 2 lasers are considered safe for normal operation. Class 2 lasers' output power is below 1 milliwatt. All Class 2 lasers emit Visible light only.
	Choking Hazard
	Low Battery Indicator
LCD	Liquid Crystal Display
	Do not dispose of this product as unsorted municipal waste. It must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.erecycle.org for additional information.
	Conforms to applicable North American Safety Standards
	Conforms to applicable Australian Safety Standards
	Conforms to European Directives

Operation

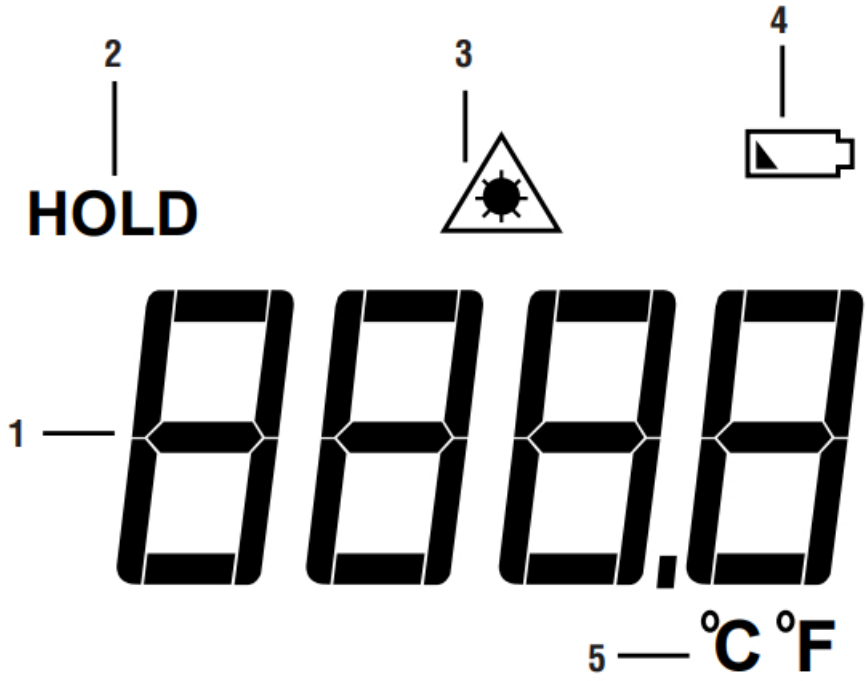
Identification and Description of Operating Controls and Functions for the Single Laser Targeting Infra-Red Thermometer:

1. LCD Screen
2. Function Button (Under Battery Cover)
3. Battery Cover
4. Lanyard Attach Point
5. Trigger (Turns IRT On)
6. Laser Aiming Emitters 

7. IR Lens



Display and Functions Indication Diagram



1. Main Display

2. HOLD the last reading in the display
3. Laser Radiation Warning
4. Low Battery Indicator
5. Degrees Displayed in F or C

Function	Description
1	Main 4 digit display
2	Measured Value is NOT being updated; last value only is shown
3	Laser Radiation Warning (Laser is emitting)
4	Low Battery Indicator
5	Degrees F ORC have been selected

Operating Features

Measured Surface Outline
A single press of the trigger results in a single area temperature of the surface whose center is defined by the laser dot.
Scanning
Pressing the trigger quickly places the unit in scan mode which constantly updates the temperature reading in the display as you aim at different targets. To remain in scan mode, keep the trigger pressed.

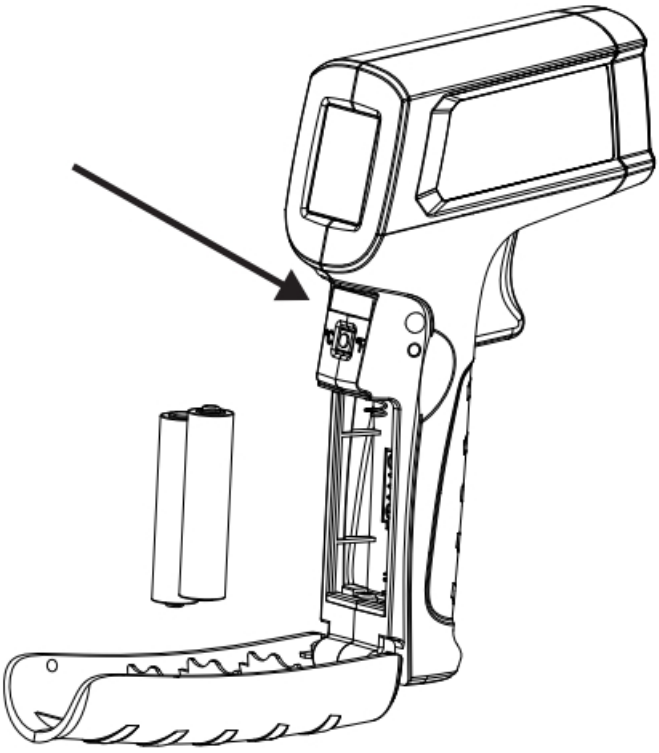
Meter Operation

Power On
A Single Trigger pull turns the unit on and temperatures are immediately calculated and the IRT displays the temperature of the surface it is pointed at. Centered around the laser dot.

Taking a Reading

1. Pull and hold the trigger after aiming at the target. The measurement result will be displayed in the LCD.
2. Release the trigger, and the HOLD icon appears, indicating that the measurement has been stopped and the last measured value is held.

Viewing the Last Measured Value
When the unit is off, a short press (less than 0.5s) of the trigger turns the thermometer on, and the last measured temperature before the last shutdown will be displayed.
Temperature Unit Setting
Located underneath the battery door cover is Fahrenheit and Celsius and button. With the 61-827 on, select the C or F scale by simply pushing the button until F or C appears on the screen.



Backlight/Laser Pointer

Pulling the trigger automatically turns the backlight on for 8 seconds and also illuminates the laser pointer.
NOTE: During measurement, it is best to ensure that the measured target diameter is twice the spot size (S) of the thermometer, and then determine the test distance (D) according to the D:S diagram (refer to D:S part).
For example, if you use the 61-827 to measure the temperature of an object with a diameter of about 4" (10cm), then according to the above, the spot size (S) of the thermometer should be about 2" (5cm) for highest accuracy, and according to the D:S diagram, the measured distance (D) is about 20" (50 cm).

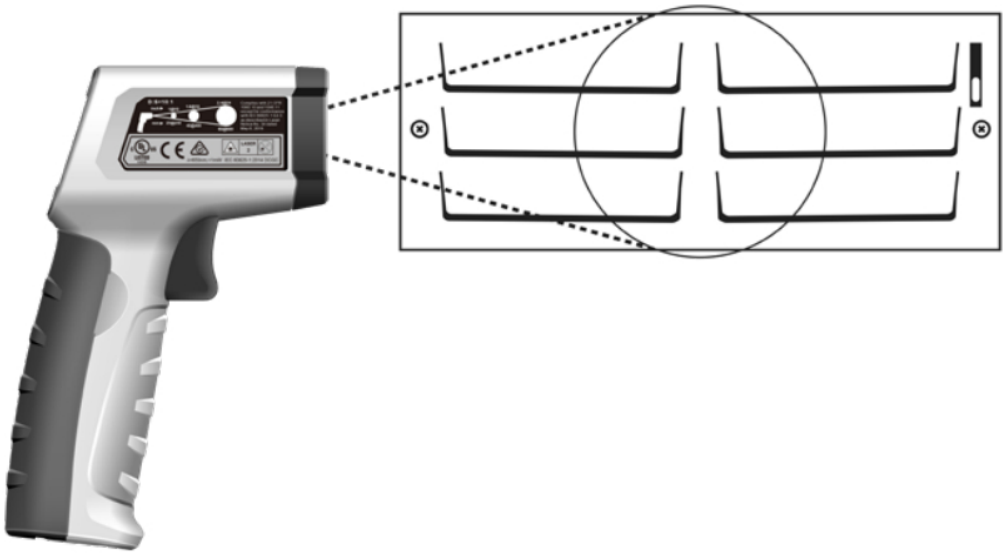
Auto Power Off
If there is no operation for 8 seconds, the thermometer will automatically power off and save the currently held

measurement.

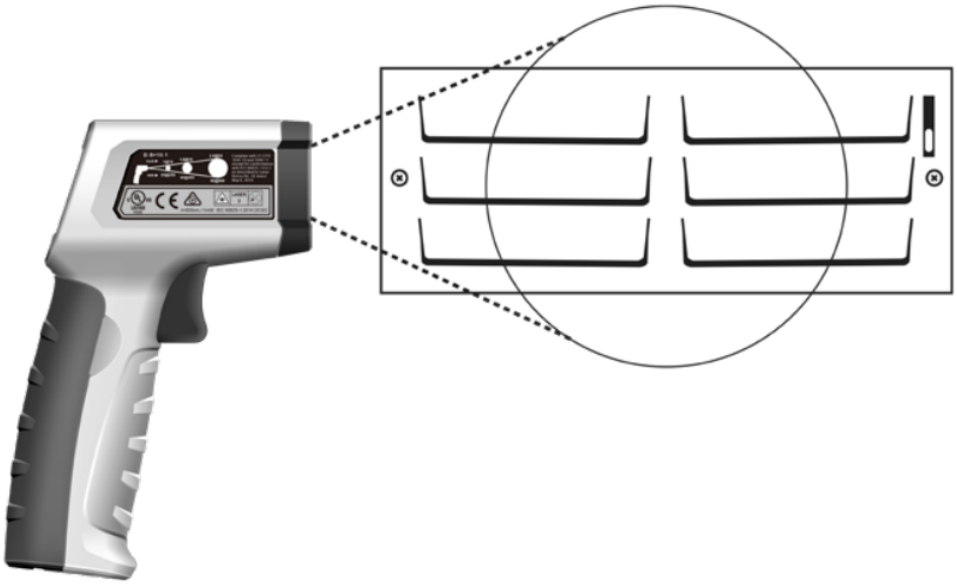
Emissivity
Emissivity is the term used to describe the efficiency with which a particular surface emits Infra-Red Radiation IN THE WAVELENGTHS that are detectable by the sensor in the IR Thermometer. Its sensitivity is in the 8 to 14-micron wavelength range. To be sure, a hot mass will radiate IR in many different wavelengths, but the sensing technology employed in this type of instrument has a narrow bandwidth. Some materials, such as electrical tape, human skin, certain types of paints are efficient emitters in these Wavelengths. Others such as aluminum, brass, and gold are inefficient emitters, again, IN THESE WAVELENGTHS. Heat a bar of gold to 200 degrees and try to read its temperature and it will appear cold. Cover it in electrical tape, and scan the tape, and the temperature will be much higher and much more accurate. Please remember this when making measurements of certain objects. This can and does greatly affect the accuracy of the readings.

Human Skin	0.98
Smooth Ice	0.96
Carbon Candle Soot	0.95
Oil Based Paint	0.94
White Bond Paper	0.93
Snow	0.85
Stainless Steel	0.85
Oxidized Copper	0.78
Rust	0.71
Cast Iron	0.64
Buffed Stainless Steel	0.16
Polished Brass	0.03

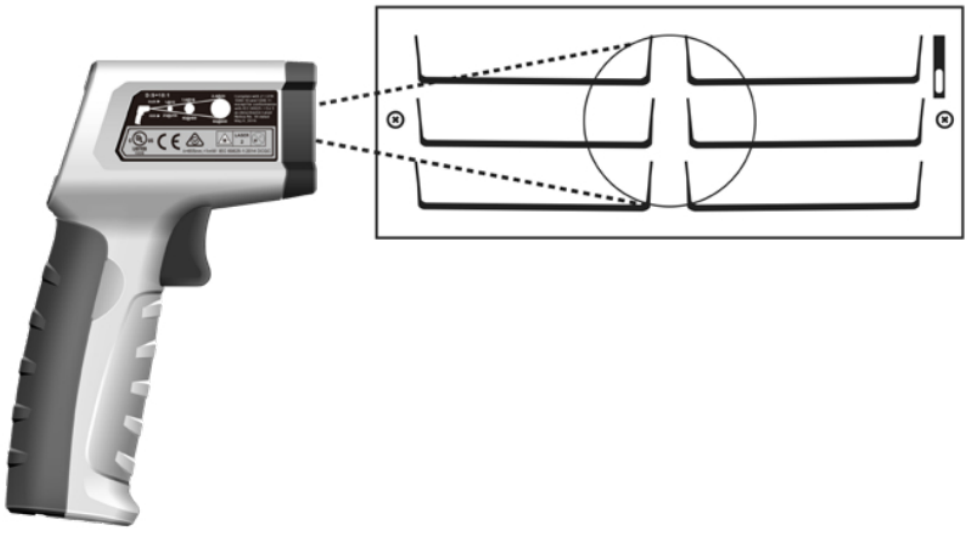
Best Accuracy Coverage



Average Accuracy Coverage

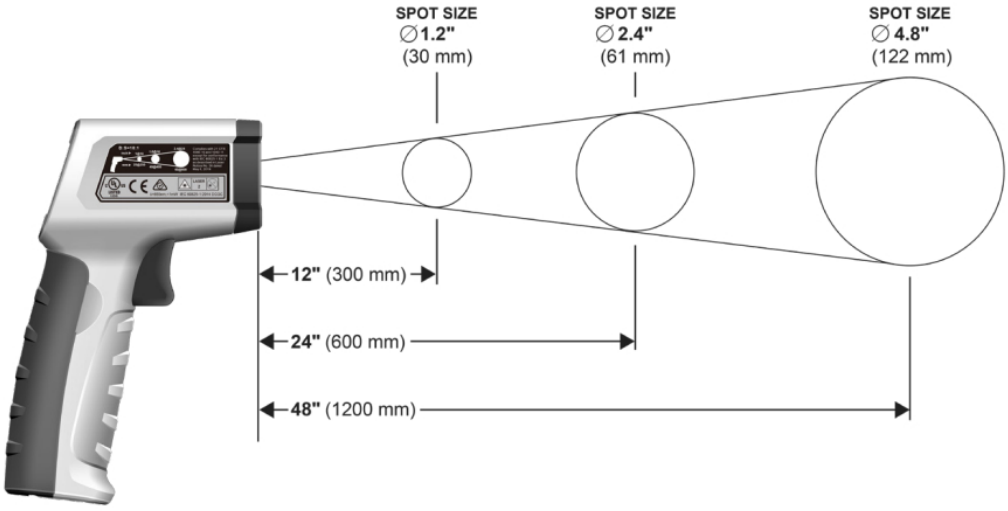


Poor Accuracy Coverage



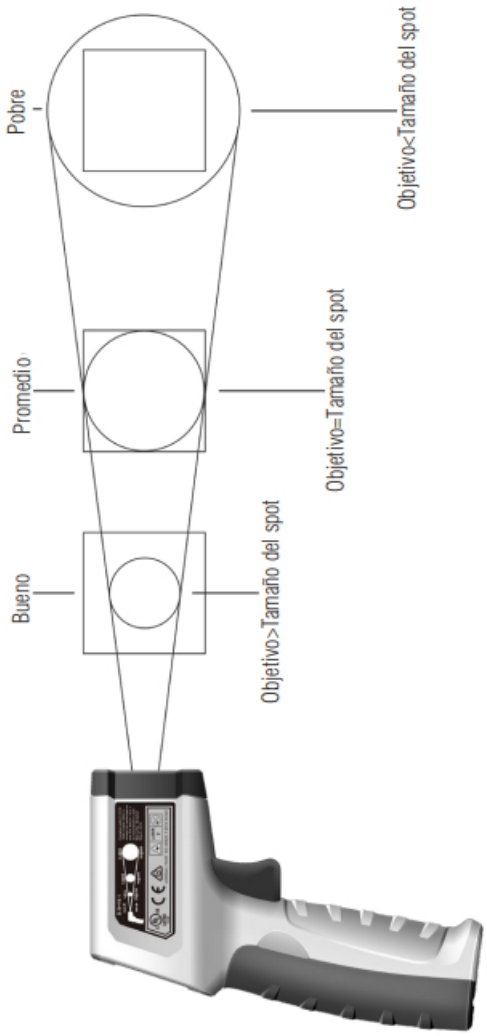
Spot Size to Distance

The measured surface area can represent a cone emanating out from the sensor. The further the distance to the surface, the larger the area that will influence temperature measurements. It is important that when it is safe to do so, get as close as possible to the target, using the single laser to define the center of an imaginary circle. This will increase the accuracy of the displayed temperature. Also, make measurements at 90 degrees to the surface as angular measurements are less accurate. (Reference diagram below)



Field of View

Make sure that the measured target is larger than the spot size. The smaller the target, the closer the test distance should be (please refer to D:S for the spot size at different distances). To obtain the optimum measurement result, it is recommended that the target being measured is 2 times larger than the spot size.

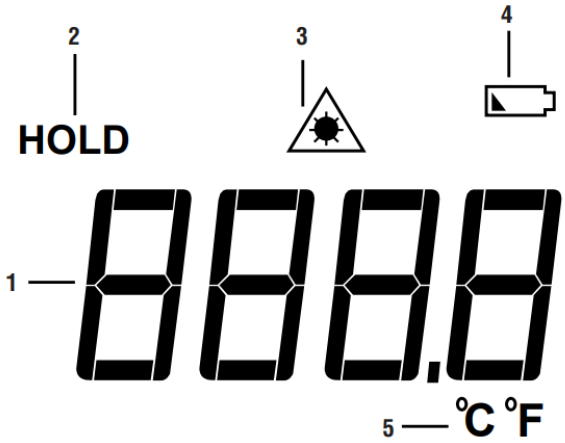


Functions Operations Table

Button	Response	Default Function	Operation
	Backlight or Laser On or Off	Last Selection	Short press to toggle the Backlight On and measure the object one time. Long press to toggle the laser On and continuously measure. Release the trigger to hold the measured value and the laser is off.

Functions Indications Table

	Low Battery Indicator
HOLD	Temperature Hold Indicator
°C °F	Temperature Unit Indicator
	Main Display of the Measured Temperature
	Laser Indicator



Measurement Specifications

Function	**Range**	**Resolution**	**Accuracy**
	61-827		**±(a%+b)**
Temperature	-4ºF to 752ºF (-20ºC to 400ºC)	0.1º	±3.6ºF or ±1.8% of reading, whichever is greater ±1.8ºC or ±1.8% of reading, whichever is greater
Emissivity	0.95	0.1	
Distance to Spot Ratio	10:1	NA	
Response Time	£500ms (95% of reading)		
Repeatability	2°F or 1.0%, whichever is greater		

Environmental Specifications

Operating Temperature:	32ºF to 122ºF (0ºC to 50ºC) (<80%RH)
Operating Altitude:	6500 ft (2000 m)
Storage Temperature:	-4ºF to 140ºF (-20ºC to 60ºC) (<80%RH)

Intended for indoor use.

Mechanical Specifications

Dimensions: (L x W x H)	5.75 in. x 1.5 in. x 3 in. (146 mm. x 38 mm. x 70 mm.)
Weight:	0.3 LBS (0.15 KG)
Display:	LCD
Display Count:	9999
Power Source:	2 x 1.5V AAA
Battery Life:	Continuous temperature measurement greater than 12 hours typical
Wavelength:	655nm
Beam Divergence: Parallel: Perpendicular:	7 Degrees 38 Degrees
Maximum Power Output:	<1mW

EMC/EMI

CISPR 22 3rd Edition. Class B Limits.
EN 55032
CISPR 32
CISPR 11
FCC 15. 107 with reference to Section 15.109 (g).
ICES-003
EN 61326-2-2 Sec 6.4.2.101

USA (FCC)

47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.

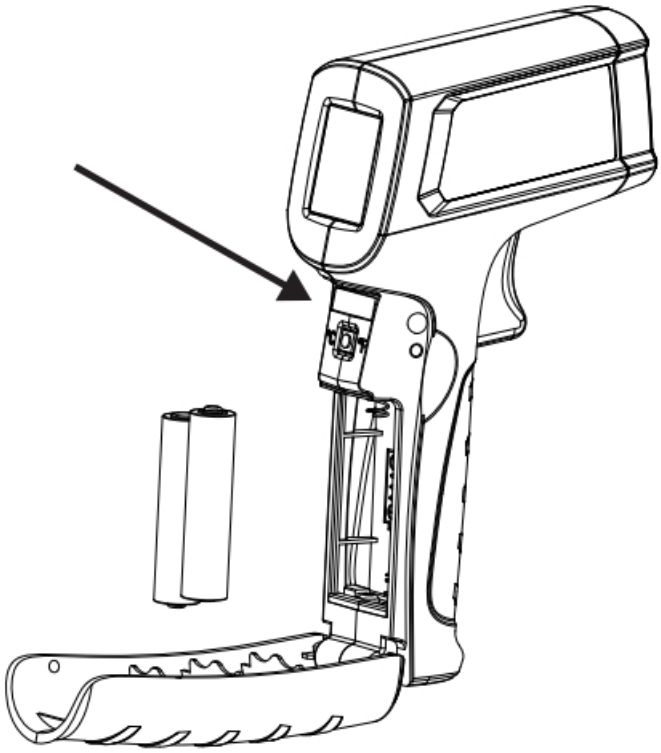
Safety

Complies with the following:
UL 61010-1, 3rd Edition, May 11, 2012, Revised November 21, 2018, CAN /CSA-C22.2 No. 61010-1-12, 3rd Edition, Amendment 1: 2018, Revision dated
November 21 November 2018
IEC 60825-1
21CFR 1002.13
Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed.3 as described in Laser Notice No. 56 dated May 8, 2019.

Maintenance and Service

Equipment Maintenance and Service

Meter Inspection
Do not use if the meter appears damaged. Visually inspect the meter to ensure the case is not cracked.
Battery Inspection/Replacement
Inspect the battery compartment monthly for any signs of degradation. Low battery voltages will cause inaccuracies in readings. Remove the batteries for storage or if the meter will not be used for longer than one month. Battery leakage will compromise the safety of the meter and cause irreparable damage to internal components.



Maintenance and Storage

Switch off and disconnect the meter completely before carrying out any maintenance. Clean the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Keep away from liquids and ensure the meter is completely dry before use.

Service and Replacement Parts
This unit has no serviceable parts.

Disposal of Waste, Electrical & Electronic Equipment

In order to preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally, the user should return the unserviceable products to relevant facilities in accordance with statutory regulations. The crossed-out wheeled bin indicates the product needs to be disposed of separately and not as municipal waste.

Do not dispose of this product as unsorted municipal waste. It must be properly disposed of in accordance with local regulations. Please see **www.epa.gov** or **www.erecycle.org** for additional information.

Disposal of Used Batteries/Accumulators
The user is legally obliged to return used batteries and accumulators. Disposing of used batteries in household waste is prohibited! Batteries/accumulators containing hazardous substances are marked with the crossed-out wheeled bin. The symbol indicates that the product is forbidden to be disposed of via domestic refuse. The

chemical symbols for the respective hazardous substances are **Cd** = Cadmium, **Hg** = Mercury, **Pb** = **Lead.**
You can return used batteries/accumulators free of charge to any collecting point of your local authority, our stores, or where batteries/accumulators are sold. Consequently, you must comply with your legal obligations and contribute to environmental protection.

TWO YEAR LIMITED WARRANTY

This tester is warranted to the original purchaser against defects in material and workmanship for a period of two (2) years from date of purchase. With proof of purchase from an authorized IDEAL distributor, a defective tester will be repaired or replaced with the same product or a functionally equivalent product, at the option of IDEAL INDUSTRIES, INC. during the warranty period, subject to verification of the defect or malfunction. Warranty does not cover consumables such as fuses, batteries, and excludes defects caused by leakage from batteries, abuse, mishandling, dropping, ordinary wear and tear, misuse, neglect, unauthorized repair, improper use, alterations, accidents or any causes beyond IDEAL's reasonable control. Consequential or incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This LIMITED WARRANTY gives you specific legal rights, which vary from state to state. This warranty constitutes the sole and exclusive remedy of the purchaser and the exclusive liability of IDEAL, and is in lieu of any and all other warranties, and expressly disclaims all other warranties, implied, or statutory as to merchantability, fitness for the purpose sold, description, quality productiveness, or any other matter. No agent, distributor or other supplier has the authority to modify or amend this warranty or make other representations or warranties other than those contained in this warranty without express written authorization from IDEAL. For warranty service, call IDEAL customer service at 1-800-635-0705.
Made in China.

Scan the barcode on the right to see the new IDEAL T&M Product Line

IDEAL INDUSTRIES, INC. Sycamore, IL 60178, U.S.A. 800-435-0705 www.Idealind.com ND 9113-1

https://l.ead.me/bbePbl

Documents / Resources

	IDEAL Single Laser Targeting Infrared Thermometer 61-827 [pdf] Datasheet IDEAL, Single, Laser Targeting, Infrared, Thermometer, 61-827

References

- Electronic Waste Management - CalRecycle Home Page
- U.S. Environmental Protection Agency | US EPA
- Electronic Waste Management - CalRecycle Home Page
- IDEAL Electrical | Home | Wire Connectors | Hand Tools
- P65Warnings.ca.gov