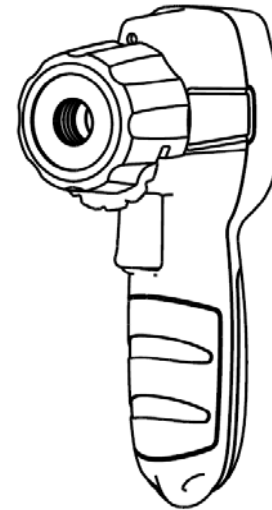




IR-121
Infrared Thermometer

ILV-121
ILV-151
ILV-301

Infrared Thermometer
+ UV Leak Detector



Users Manual

FLEX INSTRUMENTS CO., LTD.

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Users Manual

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Specifications are subject to change without notice.

Limited Warranty and Limitation of Liability

This Meter is warranted to original purchaser against defects in material and workmanship for two years from the date of purchase. During this warranty period, manufacturer will, at its option, replace or repair the defective unit, subject to verification of the defect or malfunction. This warranty does not cover disposable batteries, or damage from abuse, neglect, accident, unauthorized repair, alteration, contamination, or abnormal conditions of operation or handling.

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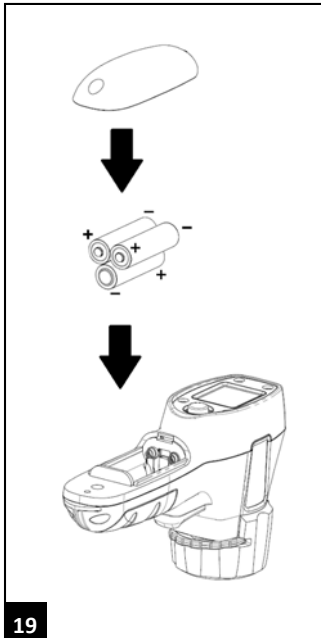
9F-3, 190, Sec. 2, Zhongxin Rd., Xindian Dist.,

New Taipei City 23146 TAIWAN

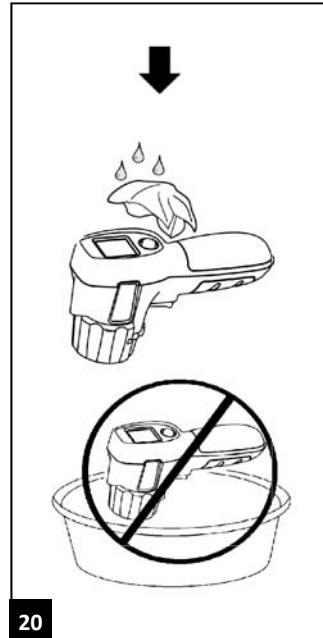
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Email: info@flexinstruments.com.tw

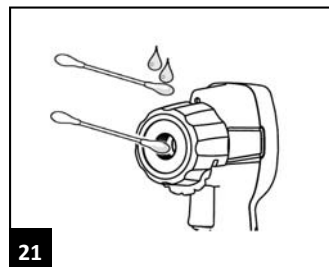
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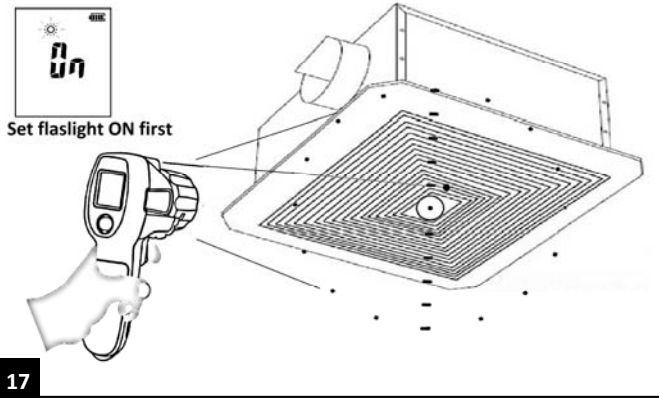


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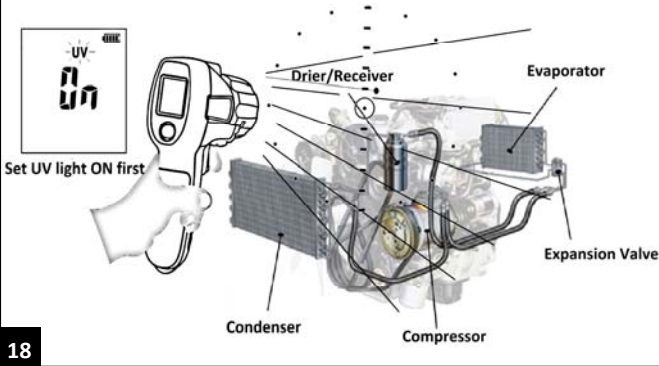
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How to Clean the Product.....	4
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Standards and Agency Approval.....	7
The Product.....	8

Infrared Temperature Measuring & White LED flashlight Application on HVAC



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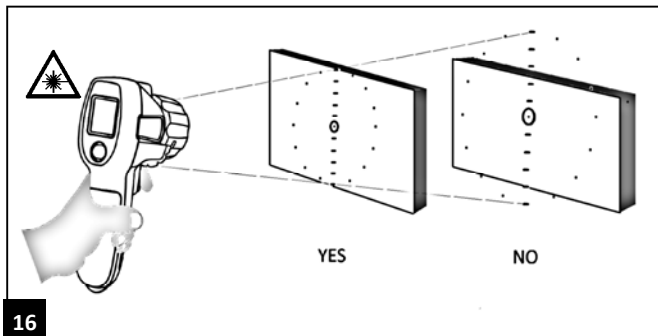
Infrared Temperature Measuring & UV flashlight Refrigerant Leak Detection Application on CAR



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Field of View

For accurate measurement, make sure that the target is larger than the unit's spot size. The smaller target, the closer you should be to it.



Locating a Hot or Cold Spot

To find a Hot or Cold Spot, aim the thermometer outside the desired area, then slowly scan across the area with an up and down motion until you locate a Hot or Cold Spot.

Introduction

The **FLEX IR-121**, **ILV-121**, **ILV-151**, and **ILV-301** Infrared Thermometers (the Product) can determine the surface temperature by measuring the amount of infrared energy radiated by the target's surface. Note that the Japanese models indicate Celsius only.

⚠ Warning

Read all safety information before you use the Product.

Safety Information

A **Warning** identifies conditions and procedures that are dangerous to the user. A **Caution** identifies conditions and procedures that can cause damage to the Product or the equipment under test.

Table 1 tells you about symbols used on the Product and in this manual.

⚠ Warning

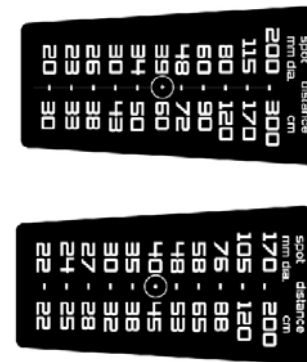
To prevent eye damage and personal injury:

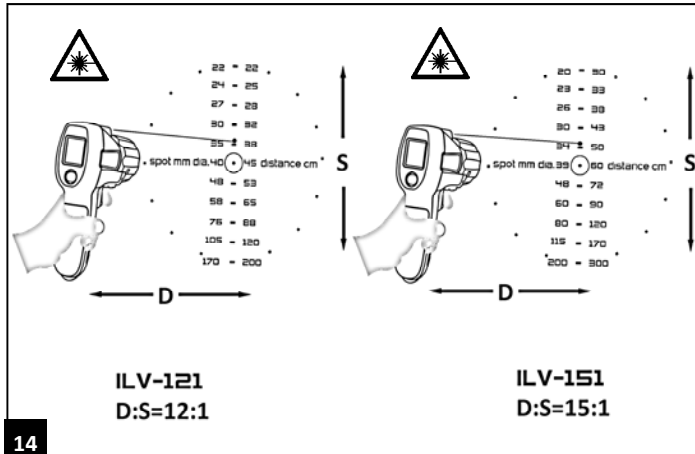
- Read all Safety Information before you use the Product.
- Do not use the Product if it operates incorrectly.
- Use the Product only as specified, or the protection supplied by the Product can be compromised.

- Before you use the Product, inspect the case. Do not use the Product if it appears damaged. Look for cracks or missing plastic.
- See emissivity information for actual temperature. Reflective objects result in lower than actual temperature measurement. These objects pose a burn hazard.
- Do not look directly into the laser with optical tools (for example, binoculars, telescopes, microscopes). Optical tools can focus the laser and be dangerous to the eye.
- Do not look into the laser. Avoid direct Eye Exposure. Do not point laser directly at persons or animals or indirectly off reflective surfaces.
- Replace the batteries when the low battery indicator shows to prevent incorrect measurement.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.
- Use the Product only as specified or hazardous laser radiation exposure can occur.

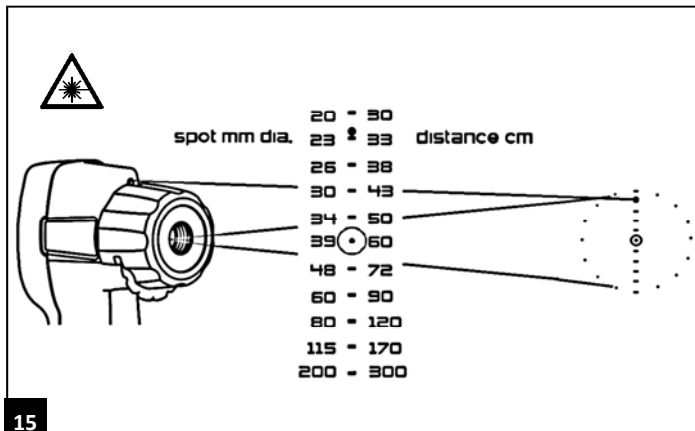
Patented Precise Laser pointing indication of Measured spot size and distance

No more guessing or imagination of your measured temperature spot size and distance. Truly reflecting the reality of your measurement. The label on the right side of your thermometer is the index reference corresponding to your laser scale pointing. (ILV-121/ILV-151 only)





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Table 1. Symbols

Symbol	Meaning
	Caution! Risk of danger. Important information. See Manual.
	Do not dispose of this product as unsorted municipal waste. Contact a qualified recycler.
	Laser Radiation! Avoid direct Eye Exposure.
	Complies with European Union Directives.
	Battery
	Warning LEDs! Do not look directly into LED light or shine

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Maintenance

⚠ Caution

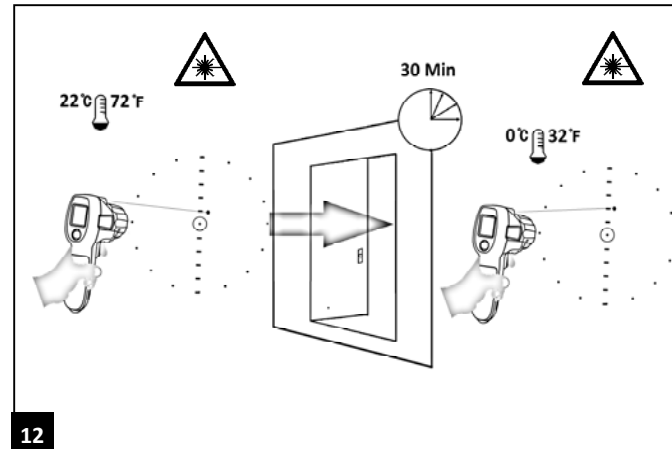
To avoid damage to the Product, do not leave the thermometer on or near objects of high temperature.

How to Change the Battery

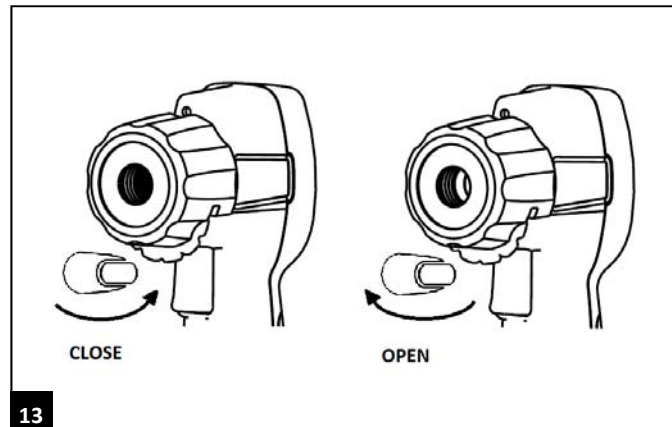
To install or change the AA IEC LR06 battery, open the battery compartment and replace the battery as shown in Figure 19.

How to Clean the Product

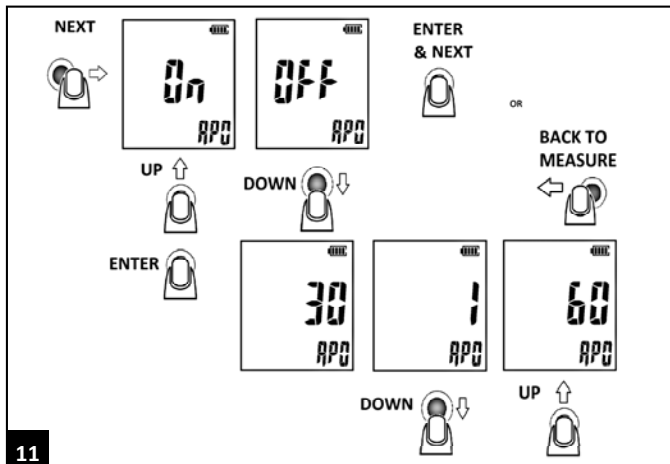
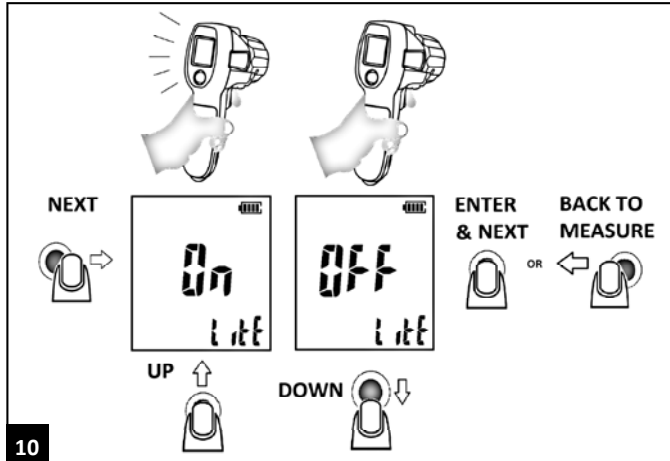
Use soap and water on a damp sponge or soft cloth to clean the Product case. Carefully wipe the surface with a moist cotton swab. The swab may be moistened with water. See Figure 20 ~21.



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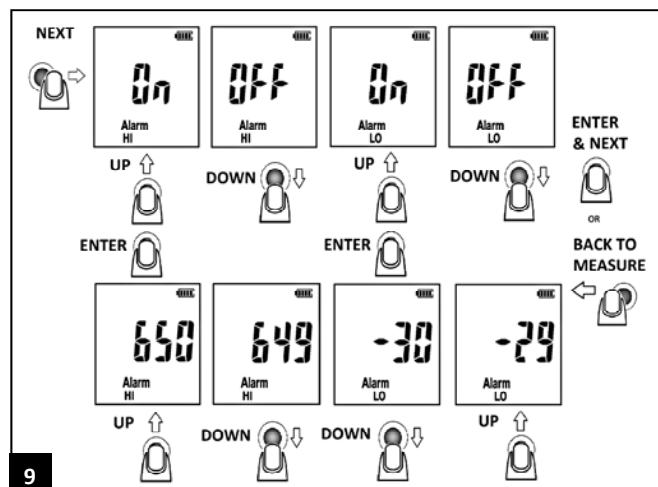
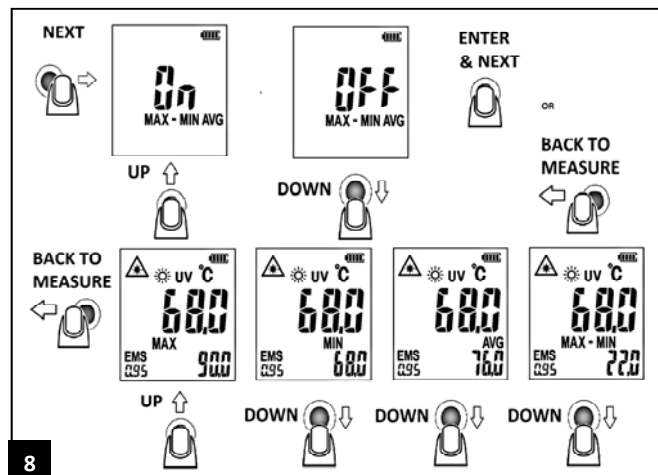
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Specifications

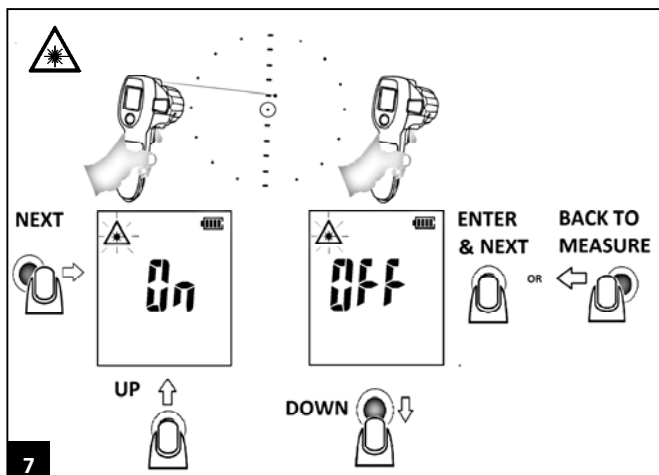
	IR-121/ILV-121	ILV-151/ILV-301
Temperature Range	-30°C~500°C (-22°F to 932°F)	-30°C~800°C (ILV-301) (-22°F to 1471°F) -30°C~650°C (ILV-151) (-22°F to 1202°F)
Accuracy (Calibration with ambient temperature 23°C±2°C)	≥0°C:±1.5°C or ±1.5% of reading, whichever is greater (≥32°F:±3°F or ±1.5% of reading, whichever is greater) ≥-10°C to <0°C:±2°C (≥14°F to <32°F:±4°F) <-10°C:±3°C <14°F:±6°F)	≥0°C:±1.5°C or ±1.5% of reading, whichever is greater (≥32°F:±3°F or ±1.5% of reading, whichever is greater) ≥-10°C to <0°C:±2°C (≥14°F to <32°F:±4°F) <-10°C:±3°C <14°F:±6°F)
Response Time (95%)	<500ms (95% of reading)	<300ms (95% of reading)
Spectral Response	8 to 14 microns	
Emissivity	0.10 to 1.00	

Temperature Coefficient	$\pm 0.1^{\circ}\text{C}/^{\circ}\text{C}$ or $\pm 0.1\%/^{\circ}\text{C}$ of reading (whichever is greater)	
Optical Resolution	12:1 (calculated at 95% energy)	30:1 (ILV-301) 15:1 (ILV-151) (calculated at 95% energy)
Display Resolution	0.1°C (0.2°F)	
Repeatability (% of reading)	$\pm 8\%$ of reading or $\pm 1.0^{\circ}\text{C}$ (2°F), whichever	$\pm 8\%$ of reading or $\pm 1.0^{\circ}\text{C}$ (2°F), whichever
Power	3 AA IEC LR06 Batteries	
Battery Life	25hours (IR-121)/ 20hours (ILV-121) with laser and backlight on	20hours with laser and backlight on
Weight	300g	
Size	IR-121 (185 x 51 x 85) mm (7.29 x 2.01 x 3.35) inches ILV-121/ILV-151/ILV-301 (185 x 51 x 100) mm (7.29 x 2.1 x 3.94) inches	
Operating Temperature & Humidity	0 °C to 50°C (32 °F to 122°F) 10% to 90% RH non-condensing@30°C (86°F)	
Storage Temperature	-20 °C to 60°C (-4 °F to 140°F), without battery)	



Class 2

A Class 2 laser is safe because of the blink reflex if not viewed through optical instruments. As with class 1M, this applies to laser beams with a large diameter or large divergence, for which the amount of light passing through the pupil cannot exceed the limits for class 2.

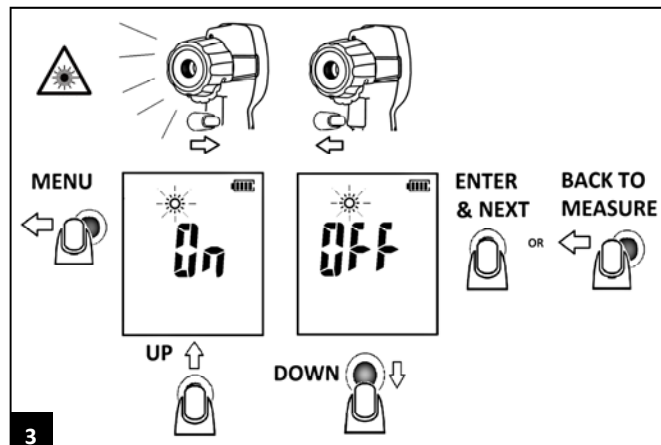
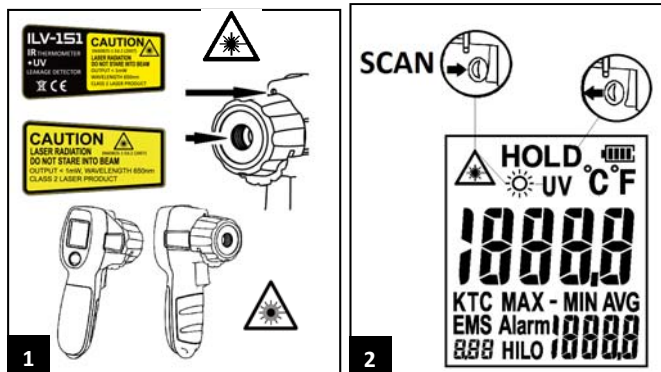


Operating Altitude	2000 meters above mean sea level
Storage Altitude	12,000 meters above mean sea level
Drop Proof	1.2 meters (4 feet)
Vibration and Shock	IEC 60068-2-6 2.5g, 10 to 200Hz, IEC 60068-2-27, 50g, 11ms
EMC	EN61326-1:2006 EN61326-2:2006

Standards and Agency Approval

Compliance.....IEC 61010-1
 IEC 62472
 Laser Safety.....IEC 60825-1 Ed. 2 (2007)
 Class 2 Laser Product
 Rated Wavelength.....650nm
 Beam Divergence.....1mradmax
 Maximum Output Power.....1mWmax

The Product



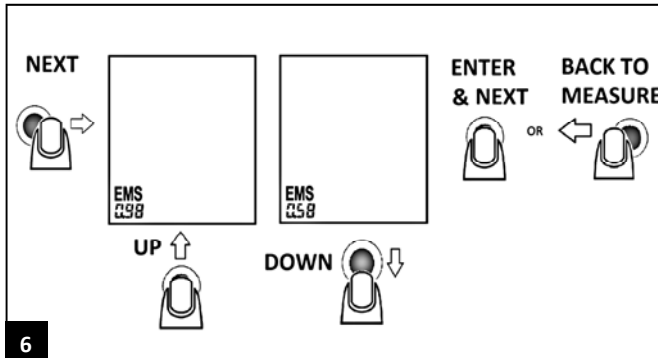
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Table 2. Nominal Surface Emissivity

Material	Value	Material	Value
Default****	0.95	Glass(plate)	0.85
Aluminum*	0.30	Iron*	0.70
Asbestos	0.95	Lead*	0.50
Asphalt	0.95	Oil	0.94
Brass*	0.50	Paint	0.93
Ceramic	0.95	Plastic**	0.95
Concrete	0.95	Rubber	0.95
Copper*	0.60	Sand	0.90
Food-Frozen	0.90	Steel*	0.80
Food-hot	0.93	Water	0.93
		Wood***	0.94

*Oxidized
**Opaque, over 20 mils
***Natural
****Factory Setting

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Emissivity (EMS)

The emissivity of the surface of a material is its effectiveness in emitting energy as thermal radiation. Quantitatively, emissivity is the ratio of the thermal radiation from a surface to the radiation from an ideal black surface at the same temperature as given by the Stefan–Boltzmann law.

The Emissivity adjustment need to refer to Table 2. Nominal Surface Emissivity for an accurate non-contact infrared temperature measurement.

