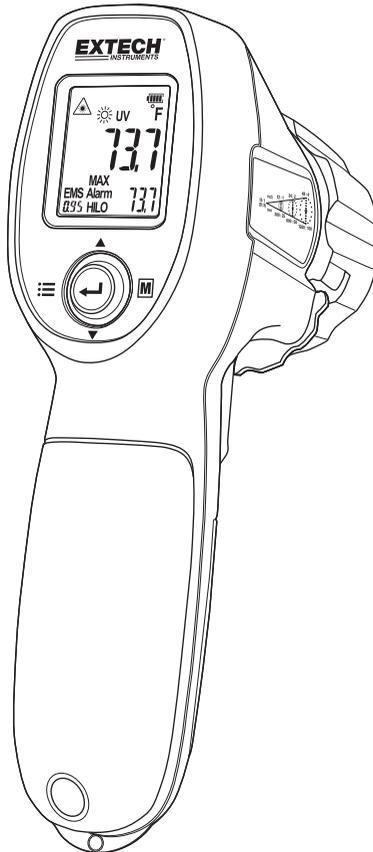


InfraRed Thermometer

Built-in UV Refrigerant Leak Detector and Flashlight

Model IR300UV



Introduction

Congratulations on your purchase of the IR300UV IR Thermometer. This thermometer makes non-contact (infrared) temperature measurements at the touch of a button. The built-in coaxial laser pointer increases target accuracy while the backlit LCD and handy multi-switch combine for convenient, ergonomic operation. The UV light source is convenient for locating leaks such as refrigerants. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) to check for the latest version of this User Guide, Product Updates, and Customer Support.

Features

- Measures non-contact surface temperature up to 500°C (932°F)
- 12:1 Distance to Spot Ratio (Field of View)
- Area and Single-point laser targeting
- Display MAX, MIN, AVG or MAX-MIN Difference
- Automatic Data Hold when trigger is released
- Display Backlight
- Selectable temperature units (°F / °C)
- Adjustable emissivity
- Audible and visible alarm indication for High and Low Temperature Alarm
- UV leak detector with 5 UV/Blue LEDs
- Bright flashlight with 5 White LEDs

Safety

International Safety Symbols



This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information

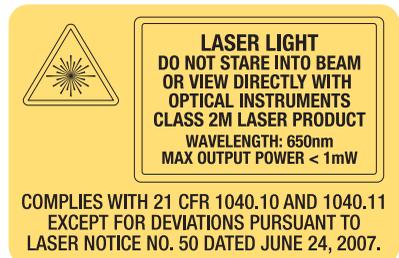
Warnings

- Do not directly or indirectly point the laser at the eyes of a person or an animal
- Inspect for damage or for any shortage of parts or accessories before use
- Replace the batteries immediately after the battery indicator flashes
- Do not use the thermometer near explosive gases, steam, or dust
- Note that an object with high reflectivity will normally cause the measured temperature value to read much lower than the actual temperature
- Use the device only as described in this User Guide

Cautions

To avoid thermometer damage, please avoid the following hazards:

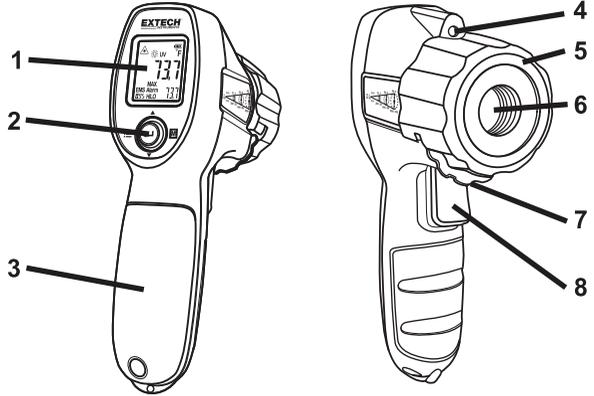
- EMF from welding equipment or electro-induction heaters
- Static electricity
- Thermal shock caused by large or abrupt environmental temperature changes; wait 30 minutes to allow the thermometer to stabilize to new environmental conditions
- Do not use this device in excessively high temperature environments



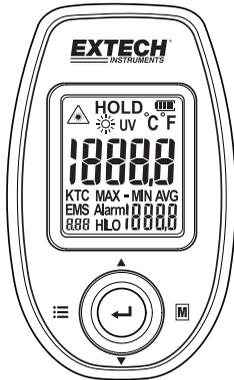
Description

Meter Description

1. LCD Display
2. Multi-Switch control
3. Battery Compartment
4. Laser pointer
5. White/Blue LEDs
6. IR sensor
7. Lens cover control
8. Measurement Scan Trigger



Display Description



	Laser pointer active icon
HOLD	Hold mode (displayed temperature freezes with trigger release)
MAX - MIN AVG	Maximum/Minimum/Average temperature icons
	Battery capacity indicator
	White LEDs active
°C °F	Temperature units (°F /°C)
Alarm HLO	Temperature Alarm icons
UV	UV LEDs active
EMS 888	Emissivity setting

Operation

Meter Power

The meter is powered by three 1.5V AA batteries. With fresh batteries installed, the meter switches ON when the trigger is pulled. Refer to the Maintenance section for Battery Installation instructions. The battery icon provides battery status indication. Replace the batteries as soon as the battery status icon indicates a low battery.

Setting Mode

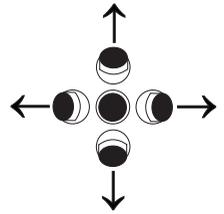
The various parameters of the meter are set using the five-way multi-switch located below the display. The available parameters are listed below:

- Flashlight (ON OFF)
- UV light (ON OFF)
- Temperature Units (°C °F)
- Emissivity (0.10 to 1.00)
- Laser pointer (ON OFF)
- Max/Min/Avg & Max-Min (ON OFF)
- HI LO Alarm (ON OFF)
- High Temperature Alarm Limit setting
- Low Temperature Alarm Limit setting
- Beeper (ON OFF)

Setting Mode Overview

The Settings switch has five positions to select a parameter, turn a parameter ON or OFF, and to adjust parameter values.

- Press and release the Measurement Trigger.
- Press the  button left to enter the Setting Mode. The parameter selected will appear in the display.
- Press the  button right to advance to the next parameter.
- Press the up  or down  buttons to change a parameter status or adjust a parameter value.
- Press the  button to store parameter changes and advance to the next parameter.
- Press the  button left to exit the Settings mode and return to Measurement mode.



Note: If no button is pressed within the APO time the meter will shut down. It may be helpful to extend the APO time when making adjustments in the Settings mode.

Setting Mode Detail

1. Flashlight Setting

Enter the Setting mode. The  Flashlight icon flashes.

Press up  for ON or OFF. Press  to store the setting

2. UV light Setting

Enter the Setting mode. Advance until the **UV** icon flashes.

Press up  for ON or OFF. Press  to store the setting

3. Temperature Units Setting

Enter the Setting mode. Advance until the **°F or °C** icon flashes.

Press up  to change the units. Press  to store the setting

4. Emissivity Setting

Enter the Setting mode. Advance until the **EMS** icon flashes.

Press up  or down  to adjust the setting. Press  to store the setting

5. Laser Pointer Setting

Enter the Setting mode. Advance until the  icon flashes.

Press up  for ON or OFF. Press  to store the setting

6. Max Min Avg Max-Min Setting

Enter the Setting mode. Advance until the **MAX – MIN AVG** icon flashes.

Press up  for ON or OFF. Press  to store the setting

7. Alarm HI Setting

Enter the Setting mode. Advance until the **Alarm HI** icon flashes.

Press up  or down  for ON or OFF. Press  to store the setting

If ON was selected, Press up  or down  to adjust the limit.

Press  to store the setting

8. Alarm LO Setting

Enter the Setting mode. Advance until the **Alarm LO** icon flashes.

Press up  or down  for ON or OFF. Press  to store the setting

If ON was selected, Press up  or down  to adjust the limit.

Press  to store the setting

9. Backlight Setting

Enter the Setting mode. Advance until the **LiTE** icon flashes.

Press up  or down  for ON or OFF. Press  to store the setting

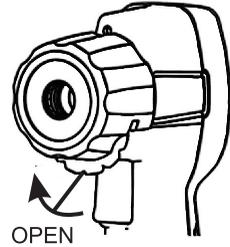
10. Auto Power OFF Setting

Enter the Setting mode. Advance until the **APO** icon flashes.

Press up  or down  to adjust the setting. Press  to store the setting

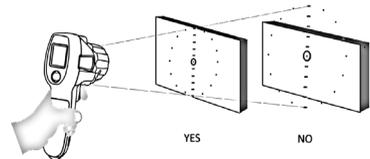
Surface Temperature Measurements

1. Typical setting should be: Laser pointer ON, Backlight ON, Temperature units set as needed, Emissivity set to 0.95, APO (auto power OFF) set to 10 seconds and Flashlight ON if measuring in a dimly lit area.
2. Open the lens protective lens cover by rotating the cover wheel clockwise (facing the lens) until the dot is visible on the wheel.
3. Hold the meter by its Handle Grip and point it toward the surface to be measured.
4. Pull and hold the Trigger to turn the meter on and begin testing in Scan mode. The display will light if the batteries are good. Replace the batteries if the display does not light.
5. Release the Trigger; the reading will HOLD for the time set in the APO setting. The backlight will turn off after approximately 4 seconds.
6. The meter defaults to the programmed conditions in use when the meter was last switched OFF.



Laser Pointer

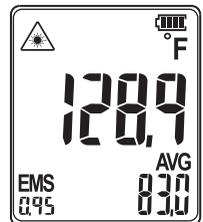
The laser pointer circle identifies the area being measured. The size of the area is determined by the distance to spot ratio. Objects outside the circle are not measured. The spot measured should always be larger than the circle for accurate measurements.



MAX, MIN, AVERAGE and MAX-MIN

In the MAX MIN AVG mode the meter will record the Maximum value scanned, Minimum value scanned, the Average of the scanned values and the Difference between the Max and Min value.

1. Turn Max Min ON in the settings mode
2. Press and hold the trigger to scan an area. Max, Min, Avg or Max-Min will be displayed in the lower right display. Press the up  button to select the parameter to be displayed. The values will be continuously updated for the length of the scan.

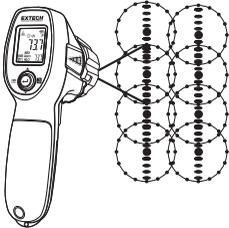


UV Leak Detector

Inject a small amount of florescent dye into the system under test. The dye/system mixture (refrigerant, for example) will escape and accumulate at all leak sites. Turn the blue UV LEDs on in the Setting mode and scan the system. The residue of the dye at the leak can be easily observed under the UV light. Dyes are available at most HVAC supply outlets.

Locating Hot or Cold Spots

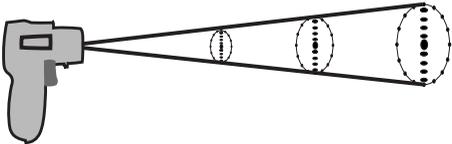
To detect a hot or cold spot, aim the thermometer at a region beyond the target and then scan the entire region in a slow, up/down motion.



Distance to Spot Ratio (Field of View)

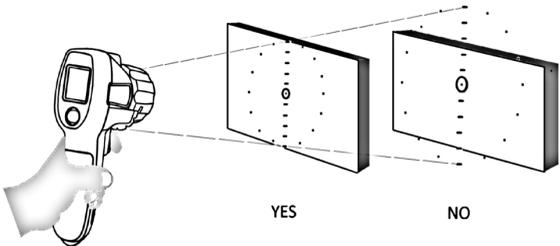
The meter’s field of view is 12:1 (distance to spot ratio). For example, if the meter is 60cm (24 inches) from the target (spot), the diameter of the target must be at least 5cm (2 inches). Other distances are shown below in the field of view diagram.

Note that measurements should normally be made further than 60cm (24 inches) from the target. The meter can measure from further distances but the measurement may be affected by external sources of light. In addition, the spot size may be so large that it encompasses surface areas not intended to be measured.



2.5cm @ 30cm	5cm @ 60cm	10cm @ 120cm
1" @ 12"	2" @ 24"	4" @ 48"

It is necessary to ensure that the size of the target is larger than the spot size. The smaller the target, the closer the distance should be.



Emissivity

Emissivity represents the energy reflectivity of a material. Most organic materials and painted or oxidized surfaces have an emissivity of approximately 0.95. If possible, masking tape or flat black paint should be applied to cover the measured surface.

Wait a period of time to allow the tape or paint to reach thermal equilibrium with the surface of the covered object. Measure the temperature of the surface covered with tape or paint only after equilibrium has been achieved.

High Low Limits

The HI / LO limits provide an alarm when a preset temperature is exceeded.

Lens Cover

The lens cover protects the lens from dust when the meter is not in use. Always close the cover when storing the meter.

Measurement Notes

1. The object under test should be larger than the spot (target) size calculated by the field of view diagram.
2. If the surface of the object under test is covered with frost, oil, grime, etc., clean before taking measurements.
3. If an object's surface is highly reflective apply masking tape or flat black paint to the surface before measuring.
4. The meter may not make accurate measurements through transparent surfaces such as glass.
5. Steam, dust, smoke, etc. can obscure measurements.
6. The meter compensates for deviations in ambient temperature. It can, however, take up to 30 minutes for the meter to adjust to extremely wide ambient temperature changes.
7. To find a hot spot, aim the meter outside the area of interest then scan across (in an up and down motion) until the hot spot is located.
8. When the meter is held at the optimum distance from the target, the single laser dot will appear at the top of the circular laser target. As long as the single laser dot is within the circular laser target, the meter will make an accurate measurement.

Maintenance

Cleaning

To clean the lens use compressed air to clear dust and other particles, then carefully clean with a wet cotton swab. The cotton swab should be moistened with clean water.

To clean the meter housing, wipe with a damp, soft cloth. Do not use solvents or abrasives. Do not immerse the IR300UV in water or other liquid.

Replacing Batteries

When the battery icon indicates a low battery, or when the meter doesn't switch ON, replace the batteries.

The battery compartment lid is located on the rear of the handle. Remove the one Philips head screw and lift the lid off.

Replace the three 1.5V AA batteries following correct polarity and then replace and secure the battery compartment lid.

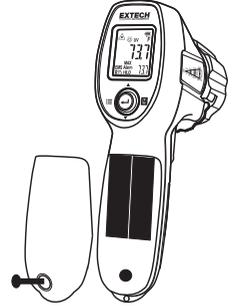
Battery Safety Notes: Please dispose of batteries responsibly; never dispose of batteries in a fire, batteries may explode or leak. If the meter is not to be used for 60 days or more, remove the battery and store separately. Do not mix battery types or freshness levels; please use batteries of the same type and of the same freshness level.



Never dispose of used batteries or rechargeable batteries in household waste.

As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.



Specifications

Infrared Thermometer Specifications

Range / Resolution	-30~500°C (-22~932°F)
Accuracy	$\geq 0^{\circ}\text{C}$: $\pm 1.5^{\circ}\text{C}$ or 1.5% of reading (whichever is greater) $\geq 32^{\circ}\text{F}$: $\pm 3^{\circ}\text{F}$ or 1.5% of reading (whichever is greater) $\geq -10^{\circ}\text{C}$ to $<0^{\circ}\text{C}$: $\pm 2^{\circ}\text{C}$ $\geq 14^{\circ}$ to $<32^{\circ}\text{F}$: $\pm 4^{\circ}\text{F}$ Note: Accuracy is specified for the ambient temperature range: 21~25°C (70~77°F)
Response Time	<500ms (95% of reading)
Repeatability (% of reading)	$\pm 8\%$ of reading or $\pm 1.0^{\circ}\text{C}$ (1.8°F) whichever is greater
Emissivity	Adjustable from 0.10 to 1.00
Temp. Coefficient	$0.1^{\circ}\text{C}/^{\circ}\text{C}$ or $\pm 0.1\%/^{\circ}\text{C}$ of reading (whichever is greater)
Field of View	D/S = Approx. 12:1 ratio (D = distance, S = spot)
Laser power	Less than 1mW
Spectral response	8 to 14 microns

General Specifications

Display	Backlit LCD display with function indicators
Display resolution	0.1°C (0.2°F)
Flashlight	5 white LEDs
UV light	5 blue LEDs
Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	10 to 90% RH non condensing @ 30°C (86°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F) without battery
Operating Altitude	2000m (7000 ft.) above sea level
Storage Altitude	12,000m (40,000 ft.) above sea level
Drop Proof	1.2m (4 ft.)
Power Supply	3x1.5V AA IEC LR06 batteries
Automatic Power Off	Adjustable 1 to 60 seconds
Weight	300g (10.6 oz.)
Dimensions	185 x 54 x 104mm (7.3 x 2.1 x 4.1")
Vibration and Shock	IEC 60068-2-6 2,5g, 10Hz to 200Hz IEC 60068-2-27 50g, 11ms
EMC	EN61326-1:2006 EN61326-2:2006
Compliance	EN/IEC 61010-1

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