

OPERATION MANUAL

NON-CONTACT INFRARED DIGITAL THERMOMETER



Model: IRT12a

Features

- High and low alarm
- MAX, MIN and AVG temperature displays
- Data hold
- Auto power off
- LCD backlight
- Selectable °C or °F units
- Emissivity adjustable from 0.10 to 1.00
- Built-in laser pointer
- Low battery indication

Applications

- Electrical and Mechanical
- Professional Auto
- Equipments Maintenance
- Marine Engines
- HVAC/R
- Diesel, Transportations Facility

How it works

Infrared thermometers measure the surface temperature of an object. The unit's optics senses emitted, reflected, and transmitted energy, which is collected and focused onto a detector. The unit's electronics converts the information into a temperature reading, which is displayed on the unit. In unit that comes with a laser pointer, the laser serves only for aiming purposes.

INTRODUCTION

The VIOT IRT12a non-contact infrared thermometer is designed to measure the surface or skin temperature of a target where conventional contact thermometers are inappropriate to use. For example: a moving object, surfaces with live voltage or hard to reach objects in harsh environments.

LASER CAUTION

Use extreme caution while laser beam is on.

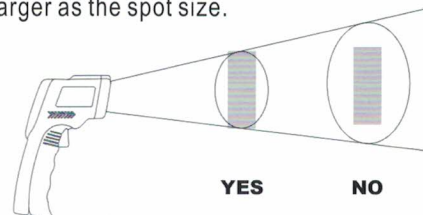
Do not aim laser directly into eyes.

Do not reflect laser from a reflective surface into your eyes

Do not expose the beam to flammable or explosive gas.

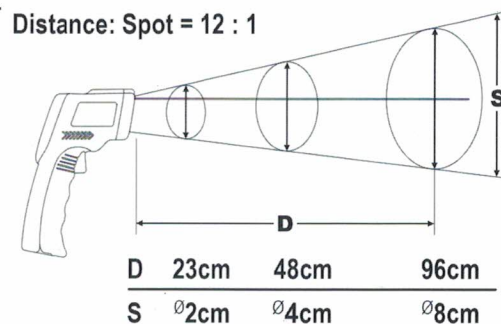
Field of view

Make sure that the target is larger than the unit's spot size. The smaller the target, the closer you should aim to the target. When accuracy is critical, make sure the target is at least twice as large as the spot size.



Distance & Spot Size

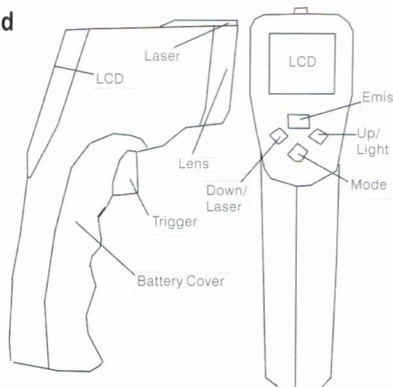
As the distance (D) from the object increases, the spot size (S) of the area measured by unit becomes larger. The relationship between distance and spot size for each unit is listed below.



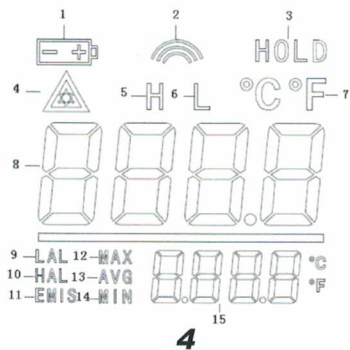
Locating a Hot Spot

To find a hot spot, aim the thermometer outside the area of interest, and then scan across with an up and down motion until you located hot spot.

Front panel legend



Indicator



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- 1 Battery symbol
- 2 Measuring symbol
- 3 Data hold
- 4 Laser
- 5 High alarm symbol
- 6 Low alarm symbol
- 7 °C / °F symbol
- 8 Current temperature value
- 9 Low alarm function
- 10 High alarm function
- 11 Emissivity function
- 12 Maximum function
- 13 Average function
- 14 Minimum function
- 15 Function value

Buttons

MODE button functions

The infrared thermometer measures the Maximum (MAX), Minimum (MIN) and Average temperature each time you take a reading. This data is stored and can be recalled with the MODE key until a new measurement is taken. When the trigger is pulled again, the unit will begin measuring in the last mode selected.

Pressing the MODE button also allows you to access the High Alarm (HAL), low Alarm (LAL), And show Emissivity (EMIS) data. Each time you press the MODE, you can move to next function.

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Setting the High Alarm, Low Alarm, and Emissivity

To set value for the Emissivity (EMIS), press the Emis key, then press the Up key or Down key to set the emissivity, then press the Emis key again to confirm it. The emissivity can be changed from 0.10 to 1.00.

To set values for the High Alarm (HAL) and the Low Alarm (LAL), press the Mode key to choose the HAL or LAL, then press the Up and Down key to set the value, then press the Mode key to confirm it.

Laser and Backlight setting

First hold on the trigger key and press the Up key for backlight function ON/OFF.

First hold the trigger key and press Down key for laser function ON/OFF.

LCD Alarm Indication

H or L is displayed when the object temperature is outside of the setting of HAL or LAL. AL or AH is displayed when the ambient temperature is lower than 0°C (32°F) or higher than 40°C (104°F). OL or OH is displayed when the object temperature is outside of the thermometer temperature range.

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Emissivity

Emissivity is a term used to describe the energy-emitting characteristics of materials. About 90% of organic materials and painted or oxidized surfaces have an emissivity of 0.95, which is pre-set in the unit. Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate, cover the surface to be measured with masking tape or flat black paint. Allow the tape to reach the same temperature as the material and measure the compensated area.

STORAGE & CLEANING

The sensor lens is the most delicate part of the unit. It should be kept clean at all times, using only a soft cloth or cotton swab with water or medical alcohol. Allow the lens to fully dry before use.

- Do not submerge any part of the thermometer.
- The thermometer should be stored at room temperatures between 1 ~ 149°F (-20 ~ 65°C)

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REMINDERS

Not recommended for use in measuring shiny or polished metal surface (stainless steel, aluminum, etc.).

The unit cannot measure through transparent surface such as glass. It will measure the surface temperature of the glass instead.

Steam, dust, smoke, or other particles can prevent accurate measurements by obstructing the unit's optics.

SPECIFICATIONS

Temperature range: -50 ~ 600°C (-58 ~ 1112 °F)

Distance to spot ratio: 12:1

Accuracy: +/- 1°C (1.8°F) (from 10 to 100°C), +/-2% of reading

Response time: 1 second

Spectral response: 8 ~ 14µm

Emissivity: adjustable from 0.10 to 1.00

Resolution: 0.1°C / °F

Over range indication: <-50°C LCD show 'OL', >550 °C LCD show 'OH'

Over operating temperature indication: ambient temperature <0°C LCD show 'AL', >40 °C LCD show 'AH'

High and low alarm indication: target temperature higher LCD show H, lower LCD show L

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Operating temperature: 0 ~ 40°C (32 ~ 104 °F)

Storage temperature: -20 ~ 65 °C (-4 ~ 149 °F)

Relative humidity: 10% ~ 90 % RH non condensing operating, <80% RH storage

Power: 9V

Size: 95*44*195mm

Weight: 200g (including battery)

BATTERY REPLACEMENT

The thermometer incorporates visual low battery indications following:

- ☐ Battery sign will be shown when turning on the thermometer. If the battery is good, the sign will disappear after 3 seconds. If the battery sign is flashing, the battery has low power and will need replacement.

NOTE: It is important to power off the unit before replacing the battery or it will malfunction. Dispose of the used battery promptly and keep away from children.

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DISPOSAL OF THIS THERMOMETER

If you at some point intend to dispose of this unit, please keep in mind that many of its components consist of valuable materials, which can be recycled.

Please don't discharge it in the garbage bin, but check your local community for recycling facilities.



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TABLE OF APPROXIMATE EMISSIVITY

Aluminum *	0.30	Lead *	0.50
Asbestos	0.95	Limestone	0.98
Asphalt	0.95	Oil	0.94
Basalt	0.70	Paint	0.93
Brass*	0.50	Paper	0.95
Brick	0.90	Plastic**	0.95
Carbon	0.85	Rubber	0.95
Ceramic	0.95	Sand	0.90
Concrete	0.95	Skin	0.98
Copper *	0.95	Snow	0.90
Dirt	0.94	Steel *	0.80
Frozen Food	0.90	Textiles	0.94
Hot Food	0.93	Water	0.93
Glass (plate)	0.85	Wood***	0.94
Ice	0.98		
Iron *	0.70		

* oxidized

** opaque, over 20 mils

*** natural

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