IR Video Thermometer
User Manual

Please read this manual before switching the unit on.
Important safety information inside.

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1. Introduction

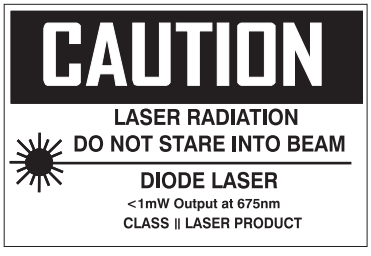
Thank you for purchasing the IR VIDEO Thermometer which is capable of non-contact (infrared) temperature measurements with visual camera at the touch of a button. The built-in laser pointer increases target accuracy while the backlight LCD and handy push-buttons combine for convenient, ergonomic operation.

The IR VIDEO Thermometer can be used to measure the surface temperature of the objects that is improper to be measured by traditional (contact) thermometer (such as moving object, the surface with electricity current or the objects which are uneasy to be touched.)

Proper use and care of this meter will provide years of reliable service.

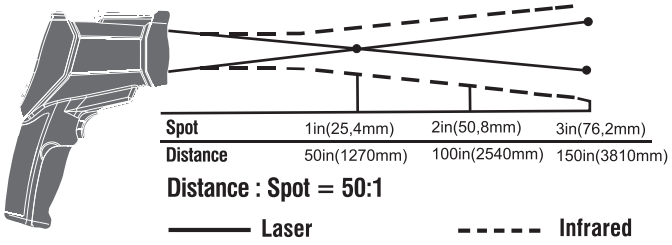
2. Features

- 2.2" TFT LCD display
- 640*480 pixels (30 million pixels)
- Micro SD memory card
- Image (JPEG) and video (AVI)
- Humidity and Air Temperature
- Dual laser targeting
- Type-K thermocouple probe
- Adjustable emissivity
- High accuracy
- Fast response time
- Dewpoint temperature and Wet bulb temperature



3. Distance & Spot Size

As the distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger. The relationship between distance and spot size for each unit is listed below. The focal point for each unit is 914mm (36”). The spot sizes indicate 90% encircled energy.



4. Specifications

IR temperature measurement

Temperature Range	-58 to 1832˚F (-50 to 1000˚C) -58 to 2912˚F (-50 to 1600˚C) -58 to 3992˚F (-50 to 2200˚C)
D: S	50:1
Accuracy	±1%±1.8˚F (±1.0˚C) 68 to 932˚F (20 to 500˚C) ±1.5% 932 to 1832˚F (500 to 1000˚C) ±2.0% 1832 to 4172˚F (1000 to 2300˚C) ±6.3˚F (±3.5˚C) -58 to 68˚F(-50 to 20˚C)
Display resolution	0.1˚F (0.1˚C) <1000 1˚F (1˚C) >1000
Repeatability	±2.7˚F (1.5˚C) -58 to 68˚F (-50 to 20˚C) ±0.5% or ±0.9˚F (0.5˚C) 68 to 1832˚F (20 to 1000˚C) ±1.0% 1832 to 4172˚F (1000 to 2300˚C)
Response Time	150mS
Spectral Response	8 ～14um
Emissivity	Digitally adjustable from 0.10 to 1.00

Type-k temperature measurement

Temperature Range	-58 to 2498˚F (-50 to 1370˚C)
Accuracy	±0.5%±2.7˚F (1.5˚C) 32 to 2498˚F (0 to 1370˚C) ±4.5˚F (2.5˚C) -58 to 32˚F (-50 to 0˚C)
Display resolution	0.1˚F (0.1˚C) <1000 1˚F (1˚C) >1000

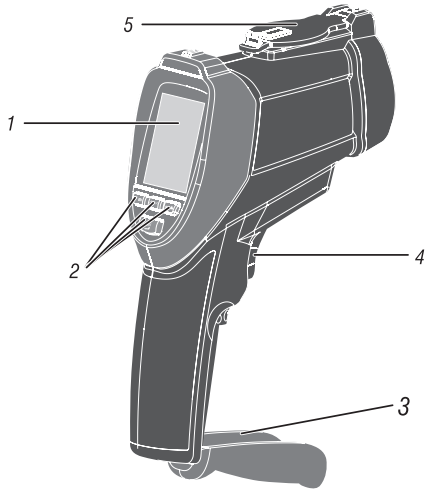
Air temperature and Relative Humidity measurement

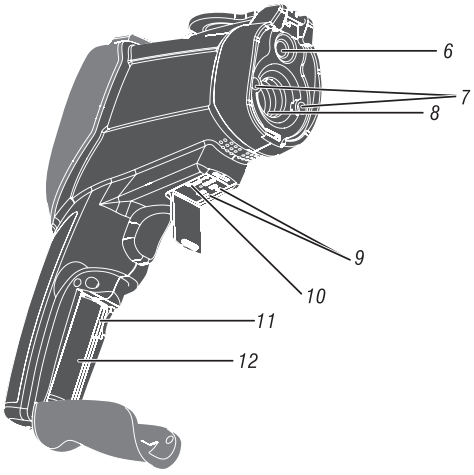
Air Temperature Range	32 to 122˚F (0 to 50˚C)
Dewpoint Temperature Range	32 to 122˚F (0 to 50˚C)
Relative Humidity Range	0 to 100% RH
Air temperature Accuracy	±0.9˚F (0.5˚C) 10 to 40˚C ±1.8˚F (1.0˚C) others
Dewpoint temperature Accuracy	±0.9˚F (0.5˚C) 10 to 40˚C ±1.8˚F (1.0˚C) others
Relative Humidity Accuracy	±3%RH 40% to 60% ±3.5%RH 0% to 40% and 60% to 80% ±5%RH 0% to 20% and 80% to 100%
Operating Temperature	32 to 122˚F (0 to 50˚C)
Storage Temperature	14 to 140˚F (-10 to 60˚C)
Relative Humidity	10 to 90%RH non-condensing
Display	2.2” 320*240 color LCD with backlight

POWER

Battery	Rechargeable battery
Battery Life	About 4 hours continuous use
Battery Charge Time	About 2 hours with AC adapter or USB connection
Size (H*W*L)	205mm*62mm*155mm
Weight	410g

5. Front Panel And Button Description





Item-Description

1-LCD Display
2-BUTTONS
3-Battery Cover
4-Measurement Trigger
5-Retractable Lens Cover
6-Visual camera
7-Laser
8-IR sensor
9-Type-k thermocouple socket
10-USB computer interface socket
11-Micro SD memory card
12-Battery

Item-Description

1-UP or Picture button
2-ESC button
3-Down or VIDEO button
4-Mode button

6. Menu Overview

Power on or power off

On the power off mode, press and hold ESC button, until the LCD is on, then the unit will power on.

On the power on mode, Press and hold the ESC button, until the LCD is off, then the unit will power off.

6-1. Measurement Mode

The IR VIDEO thermometer has six modes.

On the power on mode, press the ESC button, the unit will display the six modes. You can use UP or DOWN button to select any mode you need.

Items	Description
CAM mode	measure the IR temp., air temp. & air humi. with camera
IR mode	measure the IR temp. very fast
DEWPOINT	measure the IR temp. and dewpoint temp.
DATALOG	Datalog mode.
GALLERY	display the picture/datalog and video
SETTINGS	setting parameter.

Symbols

Symbols	Description
	CAM mode
	IR mode
	DEWPOINT mode
	Laser
	Scan

Symbols	Description
	High alarm
	High alarm working
	Low alarm
	Low alarm working
	Hold

6-2. CAM Mode

Use to measure IR temp, air temp, air humi, dewpoint temperature and wet bulb temperature with camera. It can display the IR MAX temp., MIN temp., DIF temp., AVG temp.

Press and hold trigger to measure the temperature. This mode can take picture and take video.

6-2-1. Take Picture Function

On the CAM mode, press the ▲ button to enter picture taking, then press SAVE with ▲ button to save pictures, or press CENCEL with ▼ button to cancel.

6-2-2. Take Video Function

On the CAM mode, press the ▼ button to enter video taking mode, then press START with ▼ button to take videos,

press STOP with ▼ button to stop the video.

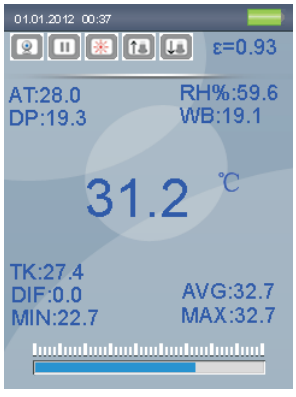
Zoom

Long press the ▲ button to zoom -, Long press the ▼ button to zoom + .

6-2-3. IR Mode

Use to measure IR temp, air temp, air humi, dewpoint temperature and wet bulb temperature without camera. It can display the IR MAX temp., MIN temp., DIF temp., AVG temp.

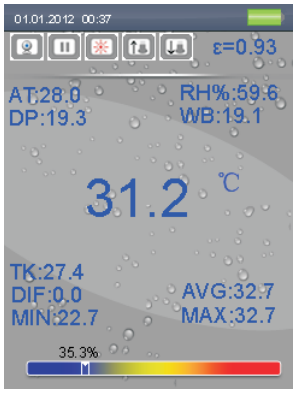
Press and hold trigger to measure the temperature.



6-2-4. DEWPOINT Mode

measure the IR temp. and dewpoint temp.

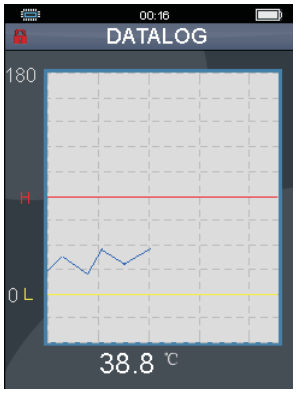
Press and hold trigger to measure the temperature.



This is that the IR temperature and dewpoint temperature close to the percentage of

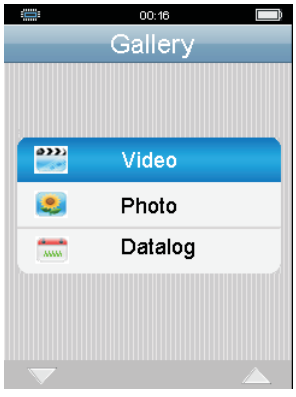
6-2-5. Data Log

In the DATALOG mode, first set the parameter, like high alarm value, low alarm value, interval time, and the line color, then press the trigger to start logging. The unit will automatically record data, press the ESC buttom to esc the DATALOG mode, then the data will automatically save.



6-2-6. Gallery

Items	Descriptions
Video	Play the saved videos
Photo	Display the saved pictures
Datalog	Display the data log and view



Press the▲and ▼ button to select the picture, video or Logs. Then press the ENTER button to enter.

• Video playback

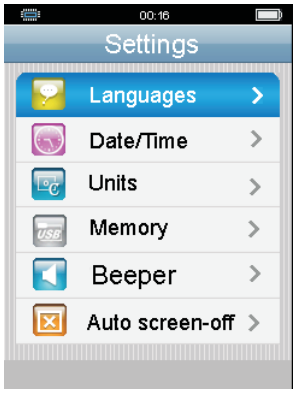
Press the ENTER button to pause or play, press the▲button to last file, press the▲button to next file.

• Photo view

Press the ENTER button to open the menu, press the▲ button to last a sheet of photo, press the ▼ button to next a sheet of photo.

6-3. Settings

Items	Settings
	Languages
	Date/Time
	Units
	Memory
	Beeper
	Auto screen-off
	Auto power-off
	System default setting
	System upgrade



Press the ▲ and▼ button to select the Items, Then press the ENTER button to enter

6-3-1. Languages

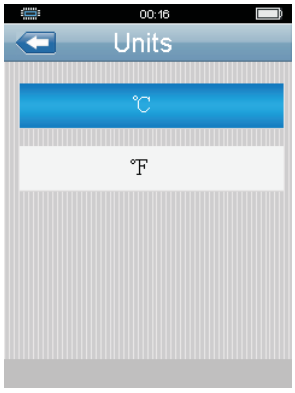
Press the▲ and ▼ button to select the language, press ESC button to esc and save the select the language.

6-3-2. Date/Time

Press the ▲ and ▼ button to select the date or time, Then press the ENTER button to enter, Press the ▲ and ▼ button to adjust the value, press the ESC button to esc and save.

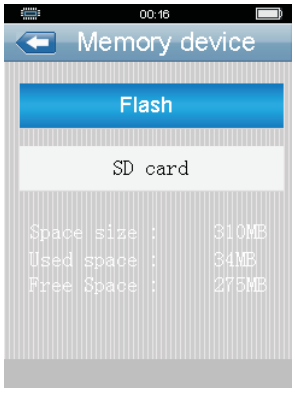
6-3-3. Units

Press the ▲ and ▼ button to select the units, press the ESC button to esc and save.

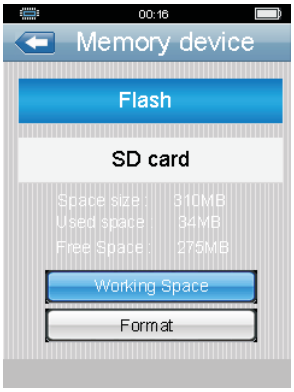


6-3-4. Memory

Press the ▲ and ▼ button to select the Memory device, press the ENTER button to enter.

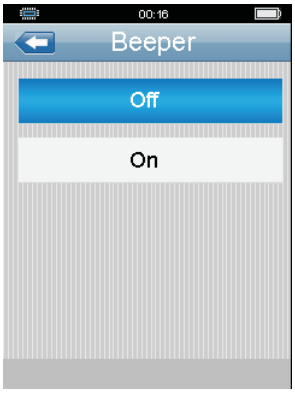


Press the ▲ and ▼ button to select the Items, Then press the ENTER button to enter, press the ESC button to esc and save.



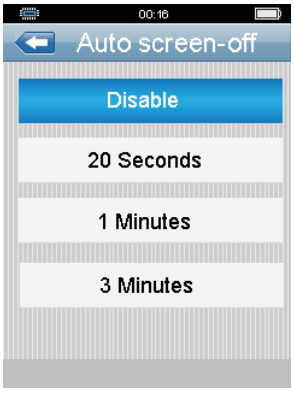
6-3-5. Beeper

Press the ▲ and ▼ button to select the beeper status, press ESC button to esc and save the select the beeper status.



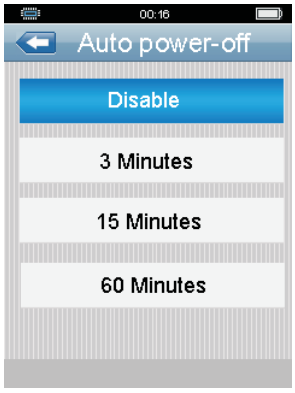
6-3-6. Auto Screen-off

Press the ▲ and ▼ button to select the screen auto off time or never screen auto off, press the ESC button to esc and save.



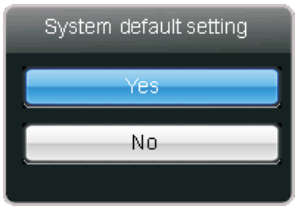
6-3-7. Auto Power-off

Press the ▲ and ▼ button to select the auto power off time or never auto power off, press the ESC button to esc and save.



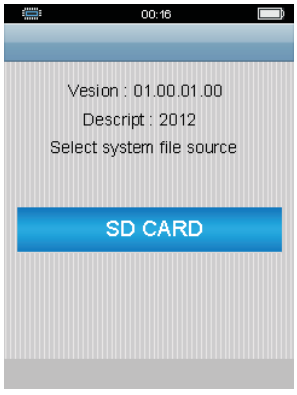
6-3-8. System Default Setting

Press the ▲ and ▼ button to select the Items, press the ENTER button to enter, press the ESC button to esc.



6-3-9. System Upgrade

Press the ENTER button to enter, press the ESC button to esc.



7. Function

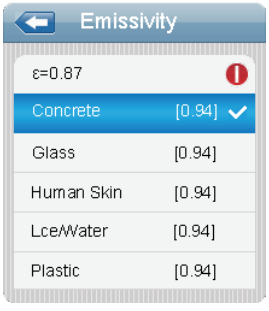
On any mode, press the ENTER button into the menu.

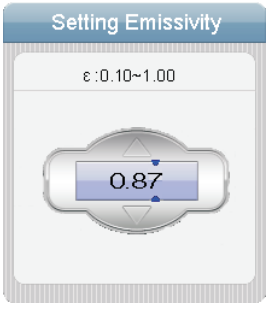
Measure set

Items	Descriptions
Emissivity set	Set the emissivity
Alarm High	On or off the high alarm and set the value
Alarm Low	On or off the low alarm and set the value
Laser	Able or disable of laser
Auto Mode	Lock to continue measure
Max/Min	Display the max. or min. IR temperature
Average/Dif	Display the average or difference of IR temp.
Ambient TEMP/% RH	Display the air temperature and humidity
Dewpoint/wet bulb	Display the dewpoint and wet bulb temperature
Type k	Enable or disable the type-k input
Color	Font color

7-1. Emissivity set

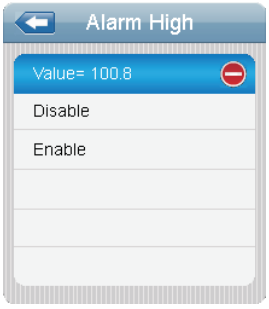
ON the first Item, press the ENTER button to adjust emissivity, Press the▲and▼button to adjust the value, then press the ENTER button conform. Press the▲and▼button to select the emissivities of the materials, press the ESC button to esc and save.

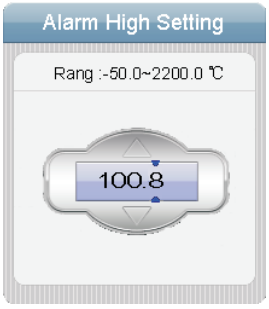




7-2. Alarm High

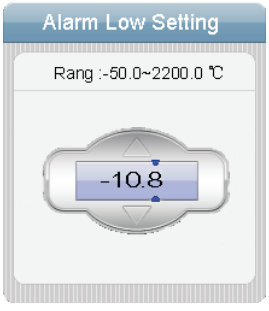
Press the ▲ and ▼ button to on or off the high alarm. ON the first Item, press the ENTER button to adjust,press the▲and▼button to adjust value. Press the ENTER button to conform, press the ESC button to esc and save.





7-3. Alarm Low

Press the▲and▼button to on or off the low alarm. ON the first Item, press the ENTER button to adjust, press the▲and▼button to adjust value. Press the ENTER button to conform, press the ESC button to esc and save.



7-4. Laser

- Enable

- Disable

Press the ENTER button to enable or disable laser, press the ESC button to esc and save.

7-5. Auto Mode

- Enable

- Disab

Press the ENTER button to enable or disable Auto Mode, press the ESC button to esc and save.

7-6. Max/Min

- Enable

- Disable

Press the ENTER button to enable or disable Max/Min, press the ESC button to esc and save.

7-7. Average/Dif

- Enable

- Disable

Press the ENTER button to enable or disable Average/Dif, press the ESC button to esc and save.

7-8. Ambient TEMP/% RH

- Enable

- Disable

Press the ENTER button to enable or disable Ambient TEMP/% RH, press the ESC button to esc and save.

7-9. Dewpoint/wet bulb

- Enable

- Disable

Press the ENTER button to enable or disable Dewpoint/wet bulb, press the ESC button to esc and save.

7-10. Type k

- Enable

- Disable

Press the ENTER button to enable or disable Type k, press the ESC button to esc and save.

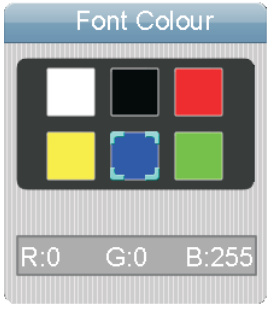
NOTE: If insert Type-k probe, Enable will be selected by default. Users can select the Disable, prohibiting LCD display

7-11. Type-k temperature

Color

- Press the ENTER button to enter selected color.

- Font color



8. Notes

- **How it Works**

Infrared thermometers measure the surface temperature of an object. The unit's optics sense emitted, reflected, and transmitted energy, which is collected and focused onto a detector. The unit's electronics translate the information into a temperature reading, which is display on the unit. In units with a laser, the laser is used for aiming purposes only.

- **Field of View**

Make sure that the target is larger than the unit's spot size. The smaller the target is, the closer you should be to it. 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 the unit becomes larger. See: **Fig: 1**.

- **Locating a hot Spot**

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

• **Reminders**

1. Do not use the unit to measure shiny or polished metal surfaces (stainless steel, aluminum, etc.). See Emissivity2. The unit cannot be measured through transparent surfaces such as glass. It will measure the surface temperature of the glass instead.
3. Steam, dust, smoke, etc., Can prevent accurate measurement by obstructing the unit's optics.

• **Emissivity**

Emissivity is a term used to describe the energy-emitting characteristics of materials.

Most (90% of typical applications) organic materials and painted or oxidized surfaces have an emissivity of 0.95 (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 time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.

• **Emissivity Values**

Substance	Thermal emissivity	Substance	Thermal emissivity
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Lather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Earth	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

9. Maintenance

- Repairs or service are not covered in this manual and should only be carried out by qualified trained technician.
- Periodically, wipe the body with a dry cloth. Do not use abrasives or solvents on this instrument.
- For service, use only manufacturer's specified parts.

Rev.150810