

# Perfect Prime IR0002



## Thermal Imaging Camera Manual

### 1. Introduction

IR0002 is a thermal Imaging Camera combining functions of surface temperature measurement and real-time thermal imaging.

Normal Infrared thermometer measures each temperature points one by one, this instrument help reduce measurement time by identifying potential problems through thermal image on the color screen, users can quickly locate the central point to measure cursor and temperature. This product is equipped with a vision camera to improve recognition, it can turn thermal image into visible image base on practical requirements.

Thermal image and visible image can be stored in the memory card, captured images can be stored in PC for report or for printing.

This product is most suitable for electrician; maintenance personnel and house owners for identifying potential problem areas.

The following functions help to improve accuracy and usability of this product:

- Adjustable radiation coefficient and reflection background compensation, it helps to improve accuracy of measuring semi-reflective surfaces.
- The marking of hot spot and cold spot can help user to locate the hottest and coldest area of thermal imaging temperature.
- Choice of different color palettes.

### 2. Safety Precautions

Please carefully read this manual before operation to ensure accurate measurements. Please strictly follow this manual to operate this product, in case of any problems due to operational errors, maintenance charge may be incurred.

Do not use this product under explosive; damp or corrosive environment.

If the product is damaged, broken or has just been repaired, the measurement results might be inaccurate.

Please refer to radiation coefficient to get the accurate temperature measurements. Measured temperature might be lower than actual temperature because of reflective surface and these surfaces might cause potential burning hazard to users.

### 3. Product Specifications

Display screen	2.4full-angle high resolution
color screen	
Resolution of infrared image	60*60 (3600 pixels)
Resolution of visible image	0.3 mega pixels
Field angle/shortest focal distance	20°20/0.5m
Thermal sensitivity	0.15°C
Range of temperature measurement	-20°C to +300°C
Accuracy of temperature measurement	±2% or ±2°C(±2% or ±4)
Emissivity	Adjustable 0.1-1.0
Image capturing frequency	6Hz
Range of wave length	8-14um
Focal distance	Fixed focal distance
Color palette	Iron red, rainbow, rainbow high contrast, gray scale (white glow) and gray scale (black glow)
Vision option	25% step infrared to visible to infrared and visible image
Memory card	Mini SD card
File format	bmp
Power supply	AA battery * 4
Battery life	6 hours
Auto power-off time	12 minutes
Authentication	CE (EN61326-1:2006)
Dimension of product (L*W*H)	212mm*95mm*62mm
Weight	320g
Warranty period	2 years
Operating temperature	-5°C to ±40°C
Storage temperature	-20°C to ±50°C
Relative humidity	10% RH to 80% RH

### 4. Structure

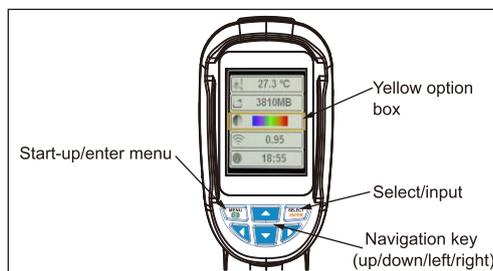
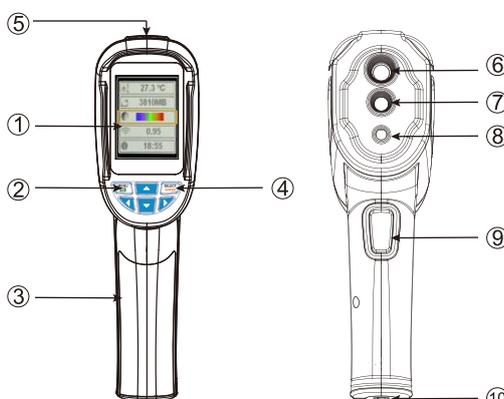


Figure 1- Basic Functions



Item	Description	Item	Description
1	TFT high definition color screen	6	Infrared imaging sensor
2	Start-up/menu key	7	Visible light camera
3	Battery cover	8	LED
4	Select/enter key	9	Image capturing key
5	Small SD card	10	Interface for the installation of tripod

Figure 2 Structure of Product

### 5. Battery Installation

1. Slide the battery cover open for inserting new batteries into IR0002
2. Ensure polarity of batteries inserted are correct
3. Close the battery cover.

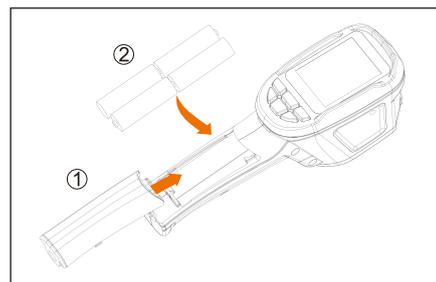


Figure 4 Replace Battery

### 6. Menu Description

Icon	Description
12:12	Time setting
5000	Save image
50%	Background light setting
°C	Temperature unit setting
25°C	Background temperature setting
11088MB	Capacity of memory card
	Color palette setting
0.95	Emissivity setting

Figure3-Menu's Icons and Description

### 7. Focal distance

IR0002 is of fixed-focal thermal Imaging Camera design and applicable distance is 50cm (20min).

### 8. Elimination of noise

Start up the instrument and then put the head of sensor close to the worktop. Press "up" key for 5 seconds to eliminate the noise.

### 9. LED light

Press "image capturing" key for 5 seconds to turn on LED light to assist working of visible camera if needed.

### 10. Product Operation

Press "Start-up" key for 5 seconds to power up the instrument.

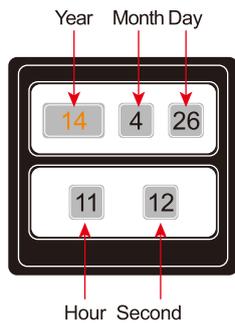
Press "menu" key for 1 second to enter mode setting of basic functions.

The LCD shows 5 function setting options in 1 screen, press "up" or "down" key to scroll through the menus and select the function for adjustment by the yellow option box.

Press "select" key and select "menu" option and edit the value. Press "up" or "down" key to edit the value. After adjustment, confirm the new value and press "menu" key to exit the edit mode.

## 11. Time setting

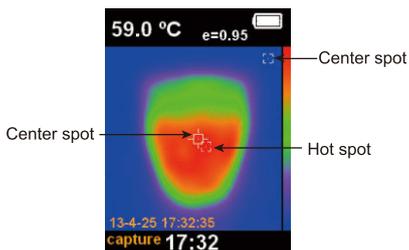
Under Time Setting menu, press “left” or “right” key to select digit for adjust, press “up” or “down” key to increase or decrease the time value. After setting, press “menu” key to exit.



## 12. Measurement

The measured temperature at the pixel center is displayed at the upper left corner and radiation coefficient is displayed at the upper right corner respectively.

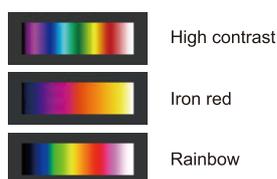
Move the product until hot spot or cold spot coincides with the center of pixel. Direct the product to the object whose temperature is higher or lower than the surrounding temperature to get the optimum measured results.



## 13. Color palette

“Color palette” menu can change the representation color of the infrared image displayed on the screen or captured. A number of color palettes are available with some color palettes more applicable to some special areas. Gray-scale color palette provides balanced linear color, so it can help to fully reveal details. High-contrast color palette can emphasize the displayed color and is applicable to hot-cold contrast situation. It is used to improve the color contrast of high-temperature and low-temperature.

Iron red and rainbow color palettes provide a mixed high-contrast gray-scale color palette.



## 14. Temperature of reflective background

The background temperature can be set between 0°C and +36°C. Set the temperature compensation for reflective background in the option of background. Over-hot or over-cold object may influence the object or the surface temperature and measurement accuracy of measured object. When the radiation coefficient of the surface of the measured object is low, this phenomenon is obvious. Under many situations, adjust the temperature of reflective background to get the optimum measured result.

## 15. Marking of spot temperature

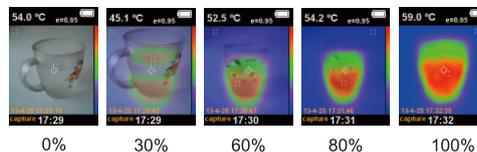
Turn on or off the marking of spot temperature. If turning on, the marking of spot temperature indicates that the hot spot or cold spot in the screen needs additional appraisal. If turning off, it indicates that user can focus on the measured pixel per time.

## 16. Unit of temperature

The product displays the temperature in unit of °C or °F.

## 17. Image mixing

IR0002 can capture visible image of infrared image to accurately display the temperature distribution of target area, and allow their mixing to make the understanding of infrared image become easier. To use this mixing function, press “left” or “right” key to adjust the mixed image from 0% to 100%.



## 18. Image Capture and Storage

IR0002 can store up to 25,000 images on the micro SD card. Press image capturing button and the symbol of “store photos yes no” will display on the screen. Press “MENU” key to store image. Press “SELECT” key to delete the captured image.

If “NO SD” displayed at the lower left corner of screen, it indicates SD card is not installed.

If “FULL” is displayed at the lower left corner of screen, it indicates that SD card is full.

## 19. Check internal storage

1. Press “menu” key to enter into the mode of “menu”.
2. Select the image storage module using the arrow keys.
3. Press the “SELECT” button to select the picture you want to view.
4. Press the arrow keys to view other pictures.
5. Press the SELECT button to view pictures.
6. Press the above key on the screen will display “Delete photo yes no”, then press the MENU key to delete the picture, Press “SELECT” to cancel.
7. Press the MENU button to exit Review.

## 20. Notes on Emissivity

Every object have radiated infrared energy and the amount of infrared energy depends on the object temperature and radiation coefficient of their surface. IR0002 can sense the infrared energy on the surface of object and estimate the temperature based on the sensed value of infrared energy. Many objects (e.g. coated metal, wood, water, skin and texture) can radiate energy, so it is easy to get the accurate measured value. As to the surface which is easy to radiate energy (high radiation coefficient), the radiation coefficient is greater than 90% (0.90).

This simple rule is not applicable to glossy surfaces or coated metal because their radiation coefficient is less than 60% (0.60). These materials are not easy to radiate energy so they are classified as low radiation coefficient materials.

To accurately measure the temperature of low radiation coefficient materials, the radiation coefficient can be adjusted for more accurate estimation of actual temperature.

Emissivity can be adjusted from 0.10 to 1.00 with step size of 0.01, with default value at 0.95. Correct setting of emissivity is important to the accurate measurement of temperature. The surface emissivity has great impact on the measured temperature of our product.

## 21. Emissivity of normal materials

Knowing the emissivity of measured surface helps to get more accurate result of temperature, the following table can be used as a reference (This is for reference only and may not apply in all cases)

Materials	Thermal radiation	Materials	Thermal radiation
Asphalt	0.90-0.98	Black cloth	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Bubble	0.75-0.80
Sand	0.90	Charcoal dust	0.96
Soil	0.92-0.96	Paint	0.80-0.95
Water	0.92-0.96	Matt paint	0.97
Ice	0.96-0.98	Black rubber	0.94
Snow	0.83	Plastic	0.85-0.95
Glass	0.90-0.95	Wood	0.90
Ceramic	0.90-0.94	Paper	0.70-0.94
Marble	0.94	Chromic oxide	0.81
Gypsum	0.80-0.90	Copper oxide	0.78
Mortar	0.89-0.91	Ferric oxide	0.78-0.82
Brick	0.93-0.96	Texture	0.90

## 22. Maintenance

Use wet cloth or liquid soap to clean the shell. Do not use abrasive compound or isopropyl alcohol or solvent to clean the shell or lens or window.

Registration First, Website:  
<http://www.perfect-prime.com/productregistration.html>

## THANK YOU FOR PURCHASING

