

Thermal Imaging Camera IR0280H (for Human Body Temperature)

Instruction Manual



**Perfect
Prime**

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1. Overview

IR0280H Thermal Camera is a body temperature thermometer with thermal imaging, which have two types of measurement modes: Human body temperature measurement, and object surface temperature measurement. Object surface temperature measurement mode: It can effectively detect the temperature changes and perform accurate temperature measurement on the target surface.

Human body temperature measurement mode: It can measure the human body temperature from a longer distance with the effective range, and has a tracking mode to chase for the highest temperature, fever alarm, and taking photo for fever alarm functions.

The handheld body thermal camera is designed based on ergonomics. It is most suitable for handheld for a long period of time. And, it can also be fixed on the tripod for continuous monitor function. It is suitable for operating in a variety of working environments, such as electricity, mechanical, pipelines, and data center equipment.

The human body temperature measurement function can be used at home, office, shopping mall, school, etc.

The following are the major features of IR0280H:

- 1. High accuracy:** The adjustable radiation coefficient increases the measurement accuracy of reflective surfaces.
- 2. Time-saving:** The traditional infrared thermometer needs to measure every component one by one, this is not necessary for the IR0280H.



1. Overview

- 3. Easy to use:** Turn on the device and start measuring temperature right away.
- 4. Image & Video:** The IR0280H has the capabilities to take both images and videos, making it easier for users to analyze the situation.
- 5. Adjustable:** 9 types of color palettes and wide range of emissivity values provided.

The product can be utilized in many fields, for instance:

- 1. Detect spills and leaks of chemicals** which have different thermal signatures to the surroundings.
- 2. Fire fighting:** Vision can be obscured by smoke and debris in the event of a fire, thermal imaging can see through this and locate victims or re spots.
- 3. Locate the source of abnormal leaking of heat** of a house or a machine, find out the problem area and fix it.
- 4. Enable drug-enforcement** units to locate cannabis plants by detecting abnormal amount of heat spot in buildings.
- 5. Moisture detection:** Areas with lower temperatures to its uniform surroundings can be a source of moisture staining or damage.
- 6. Measure body temperatures:** Point the thermal imaging camera at a person to find their surface body temperature.



1. Overview

- 7. Night vision:** Measuring the electromagnetic energies given off when objects emit heat, the IR0280H translates those energies into visible light for users to see them in the dark.
- 8. Building inspection:** Check that heat is retained uniformly in a building.

IR0280H is the ideal selection for electrician, maintenance personnel, technicians and even the emergency personnel.



2. Safety & Considerations



Please read the instructions carefully so as to ensure accurate measurement results and safety:



Do not use device in explosive, flammable or corrosive environment.



Do not dismantle the product, doing so can damage it and revoke the warranty.



Since the product is a precision electronic and sensitive optical device. Do not drop it or allow impacts to occur to prevent damage.



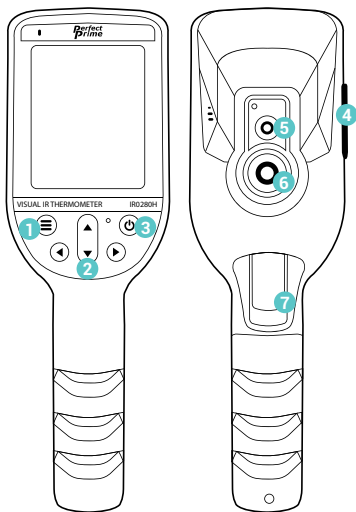
Please use a damp cloth or gentle soap to clean the enclosure of the device. Do not use abrasant, isopropanol or solvent to clean. Special optical lens cleaner should be used to clean the screen.



It is suggested to used the attached USB cable.



3. Product Features



- 1 Menu Button
- 2 Up, Down, Left and Right Keys
- 3 Power Button
- 4 USB Port & SD Card Slot
- 5 Visible Light Camera
- 6 Thermal Camera
- 7 Measure Button



4. Product Specifications

Display Screen	2.8" LCD Color Display
Infrared Image Resolution	32 x 32 (1,024 Pixels)
Visible Image Resolution	0.2 Mega Pixels
Field Angle / Shortest Focus Length	33° x 33°/0.1m
Human Mode Temperature Range	32°C~42°C (89.6°F~107.6°F)
Industrial Mode Temperature Range	-30 to 1000 °C (-22 to 1832 °F)
Measuring Accuracy for Human Mode	± 0.3°C (± 0.6°F)
Measuring Accuracy for Industrial Mode	±2 % or ± 2 °C
Emissivity	Adjustable from 0.01 to 1.0
Spectral Range	8-11.5um
Image Frequency	9Hz
Focus Mode	Fixed
Color Palettes	9 Options
View Option	Full Infrared and Full Vision Thermal Overlay with 25% Increment
Storage Medium	1GB Internal Memory + 16GB SD Card Included
Image Format	BMP, JPG, MP4
Power Supply	3.7V Lithium-ion Chargeable Battery 2500mAh, Size 18650



4. Product Specifications

USB	Mini USB
Auto-Power off Time	Selectable from 0 to 30 mins
Product Size (Length x Width x Height)	215 x 55 x 62 mm
Product Weight	230g
Work Temperature	-10 to 50°C
Storage Temperature	-20 to 60°C



5. Operation Flow

5.1. Power ON: Press & Hold Power button for 2 sec.

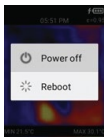


Opening Screen
(wait for
initialization)

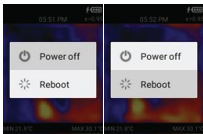


Measurement
Screen

5.2. Power OFF: Press & Hold Power button for 2 sec.



- A pop-up menu appears for Power Off or Reboot selection.



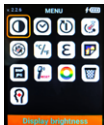
- Use Up/down button to select, and press Measure button to confirm.

5.3. Display OFF (Sleep Mode): Press Power button once to turn off display. Press Power button again to turn on it.

Remark:

a. The Measurement screen is the default screen when turn on the display.

5.4. Menu Screen: Press the Menu button to enter Menu mode.



The default selection is first icon (i.e. Display brightness)

- Use Up/Down/Left/Right button to select the icon. Then, press Measure button to open the selected item.
- Press Measure to confirm and back to Menu mode.

The summary of Menu icons:



Display Brightness: To set the brightness of display



Date and Time: To set time and date



Auto-Off Timer: To set the auto-off timer for the Display



Fever Alarm: To set the fever temperature alarm



Fever Image Capture: Takes photo of individual who sets of fever alarm



Temperature Unit: To set temperature unit degree C° / degree F°



Emissivity: To adjust the emissivity from 0.01 to 1.0



View Image: To view the captured thermal image/video



Image format: To set the image output format (Bitmap or JPEG)



Factory Reset: To reset factory setting



Color Palette: To select the thermal image color palette



Delete: To delete image/video permanently

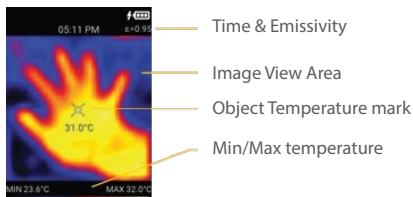


Body Temperature Filter: To enable the body temperature mode



Cast Screen: To connect with a monitor via Wifi

5.5. Measurement Screen



- Press Up/Down to select image mode: Thermal Image, Visual Image, Overlay Image.

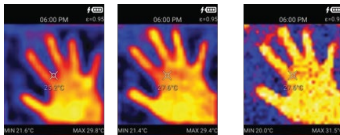


Thermal
Image

Visual
Image

Overlay
Image

- Press Left button to select filter mode: Temporal filter, Wide Gaussian filter, No filter.

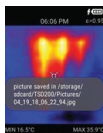


Temporal
Filter

Wide Gaussian

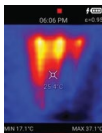
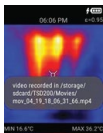
No filter

5. Operation Flow



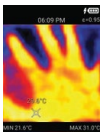
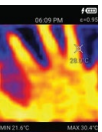
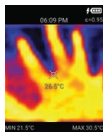
- Press Measure button to capture image; Press & Hold Measure button to take video.

If external SD card is not present, the image will be saved to the internal memory. If external SD card is present, the image will be saved to the SD card.



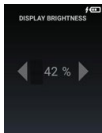
The recording icon appear to indicate the video recording. The video is saved in mp4 format. When the measure button is released, the recording will stop and be saved.

- Touchable object temperature mark



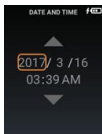
Touch the screen to move the object temperature mark, and show the temperature of that location.

5.6. Display Brightness



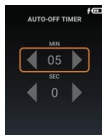
- Press Left/Right button to increase/ decrease the % of display brightness.
- Press Measure to confirm.
- Press Menu to return to the previous screen.

5.7. Date and time



- Press Up/Down button to increase/decrease the selected item.
- Press Left/Right button to select the item for change.
- Press Measure to confirm.
- Press Menu to return to the previous screen.

5.8. Auto-off timer

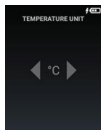


- Press Left/Right to increase/decrease the selected item.
- Press left to show seconds timer and press down to adjust
- Press Measure to confirm.
- Press Menu to return to the previous screen.

Remark:

- The minimum Auto-off timer is 0 min,30 sec.
- The maximum Auto-off timer is 30 min,0 sec.
- The timer is for Display OFF only.

5.9. Temperature Unit



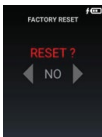
- Press Left/Right button to select degree °C or degree °F.
- Press Measure to confirm.
- Press Menu to return to the previous screen.

5.10. Image Format



- Press Left/Right to select BMP or JPG image format.
- Press Measure to confirm.
- Press Menu to return to the previous screen.

5.11. Factory Reset



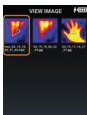
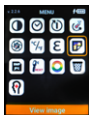
- Press Left/Right button to select YES or NO.
- Press Measure to confirm.
- Press Menu to return to the previous screen.

5.12. Color Palette



- Press Up/Down button to select the color palette.
- Press Measure to confirm.
- Press Menu to return to the previous screen.

5.13. View Images/Videos



- Press Up/Down/Left/Right button to select Image Icon
- Press Measure to open the image or video
- Press Menu to return to the previous screen.

a) View Image or Video



Image



Video

- For the video, press Measure. button to start the video
- Press Left/Right button for Previous/Next Image or Video.
- Press Menu button to return to the previous screen

b) View Image with touchable object temperature mark



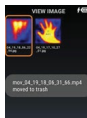
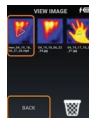
Original Image



New movable temperature mark

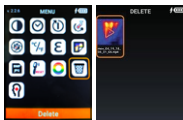
- Touch the screen to show the temperature of that location.

c) Delete Image or Videos



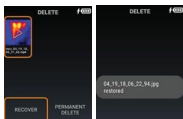
- Hold the measure button until the pop-up menu appears.
- Press Left/Right button to select BACK or Trash icon.
- Press Measure to confirm.

5.14. Deleted Images/Videos



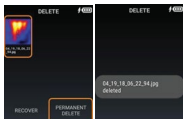
- Press Up/Down/Left/Right button to select Image Icon.
- Press Measure to open the image or video; Press and Hold Measure to pop-up the recover or permanent delete menu.
- Press Menu to return to the previous screen.

a) Recover Image



- Press and Hold Measure to pop-up the recover or permanent delete menu.
- Select the Recover button, and press Measure to confirm.
- The selected item will be recovered.

b) Permanently delete image



- Select the Permanent Delete button, and press Measure to confirm.
- The selected item will be deleted permanently.

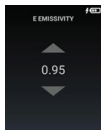
5.15. CSV Files

For every image you take, CSV Files of each image would be saved for you to analyze and generate reports. The file shows the temperature point of each 32 x 32 pixel. You can view these files in **Internal Storage/SD Card -> DCIM -> Csv**.

Here is an example of what the file looks like:

	A	B	C	D	E	F	G	H	I	J	K
19	26.85	27.05	27.25	27.05	26.95	27.15	27.45	27.75	27.85	27.65	27.75
20	26.85	27.15	27.35	27.25	27.25	27.15	27.25	27.45	27.65	27.55	27.75
21	26.95	27.45	27.75	27.75	27.55	27.25	27.05	27.05	27.15	27.35	27.75
22	27.15	27.75	28.05	27.85	27.55	27.25	26.95	26.75	26.75	27.05	27.75
23	27.05	27.45	27.65	27.45	27.15	27.05	26.95	26.65	26.45	26.65	27.75
24	26.85	27.05	27.25	27.15	27.05	26.95	26.85	26.55	26.25	26.35	26.75
25	26.75	26.95	27.25	27.25	27.05	26.85	26.65	26.55	26.35	26.45	26.75
26	26.65	26.95	27.15	27.05	26.85	26.75	26.65	26.65	26.55	26.65	26.75
27	26.55	26.75	26.75	26.65	26.55	26.55	26.55	26.55	26.45	26.55	26.75
28	26.55	26.55	26.55	26.45	26.45	26.55	26.55	26.35	26.15	26.15	26.75
29	26.65	26.65	26.65	26.65	26.65	26.65	26.55	26.25	26.05	25.95	26.75
30	26.75	26.95	26.85	26.75	26.75	26.75	26.55	26.25	26.05	26.05	26.75
31	26.65	26.95	26.95	26.85	26.85	26.75	26.55	26.35	26.35	26.45	26.75
32	26.55	26.95	27.05	27.05	27.15	26.95	26.75	26.75	26.85	26.85	26.75
33											
34											

5.16. Emissivity



- Press Up/Down button to adjust the emissivity.
- Press Measure to confirm
- Press Menu to return to the previous screen.



5. Operation Flow

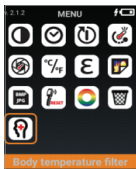
There are four types of object measurement mode:

1. Coarse object (easy to give out energy)(0.95);
2. Semi-matte object (0.80);
3. Semi-shiny object (0.60);
4. Shiny object (0.30);

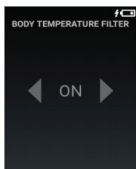
The table of Emissivity Table:

Substance	Thermal radiation	Substance	Thermal radiation
Bitumen	0.90-0.98	Black cloth	0.98
Concrete	0.90	Human skin	0.88
Cement	0.96	Foam	0.75-0.80
Sand	0.90	Charcoal dust	0.96
Earth	0.92-0.96	Paint	0.80-0.95
Water	0.92-0.96	Matte paint	0.97
Ice	0.96-0.98	Black rubber	0.9
Snow	0.83	Plastic	0.85-0.95
Glass	0.90-0.95	Timber	0.90
Ceramics	0.90-0.94	Paper	0.70-0.94
Marble	0.94	Chromium hemitrioxide	0.81
Gypsum	0.80-0.90	Copper oxide	0.78
Mortar	0.89-0.91	Ferric oxide	0.78-0.8
Brick	0.93-0.96	Textile	0.90

5.17. Body Temperature Mode

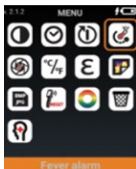


- Press Menu button to enter the Menu Mode.
- Select the Body temperature filter icon, and press measure to enter.
- Press Measure to confirm and press menu to return to previous screen



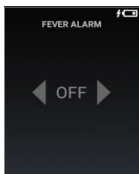
- Press Left/Right to Select ON or OFF for body temperature filter.

5.18. Fever Alarm



- Press Menu button to enter the Menu Mode.
- Select the fever alarm icon and press measure to enter.

5. Operation Flow

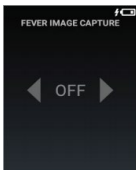
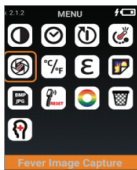


- Hold the measure button to turn on or off



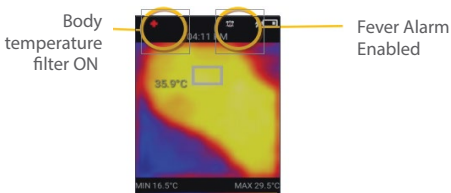
- Press measure to confirm the fever alarm setting and press menu to return to previous menu

5.19. Fever Image Capture



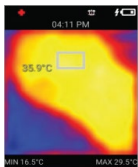
- Press Left or Right to ON/OFF the Fever Image Capture.
- Press Measure to confirm and back to Menu mode.

5.20. Thermal View



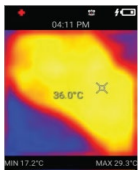
5.21. Body Temperature Filters Selections

Press the Right button to switch between the following two filters:



Mode 1 : White Box Mode

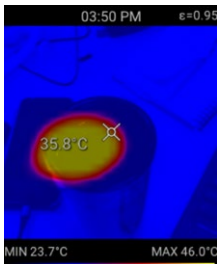
- Temperature measurement will be focused within the rectangle only in this mode. It is best recommended to point at foreheads



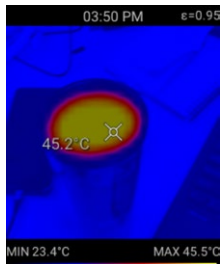
Mode 2 : Tracking Mode

- Temperature measurement will operate on the whole screen and the hottest point will always be tracked

5.22. Image Overlay Adjustment



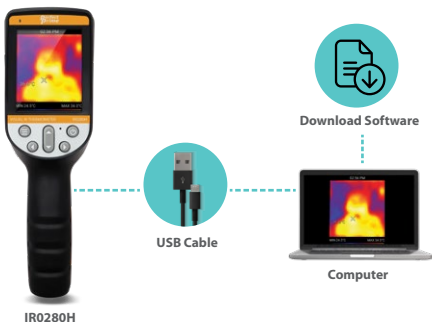
Before Adjustment



After Adjustment

1. On the detection screen, press the up button until you reach 50% thermal and 50% visual mode
2. Hold on to the menu button for about 8 seconds
3. Immediately press the menu button 2 times, hold for 3-4 seconds and let go.
4. Once you see the CaliXY at the top, you can start to adjust the overlay using the Direction Keys

5.23. Connecting to a Monitor



1. Download software from our website: PerfectPrime.com > Manuals > Thermal Camera > IR0280H > Software
2. Find the zip file named: `scrcpy-win64-v1.16`, then extract and open it
3. Connect the IR0280H to your computer using a USB cable
4. Open the `scrcpy` file/application. After a few seconds, the IR0280H screen will be shown on the computer.



5. Operation Flow

Remark : Precautions for body temperature measurement

- The best distance from the thermometer when measuring the forehead temperature with a white box is between 30cm – 50cm.
- Optimal measurement distance for fever detection is between 30 cm to 250 cm.
- When using tracking mode, please use special-temporal filter or wide-gaussian filter.
- When measuring the temperature of the forehead, the white box needs to be aligned with the forehead. There should be no hair covering.
- Indoor use.

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For B2B or project-based application, please send an email:

sales@perfectprime.com

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