Infrared Camera

Instruction Manual

HT-18

Dongguan Xintai Instrument Co.,Ltd.

Add:No 149,Chun feng Road,Longbeiling,Tangxia Town,
Dongguan City,Guangdong,china
Postcode:523710
Tel:+86-769-82612006
Fax:+86-769-82612005
Website :www.hytechcn.com.cn www.xintest.com.cn
Email:kevin@xintest.com.cn

Contents

1.Overview

HT-18 is a inferred camera that integrates surface temperature measurement and real-time thermal image. The traditional inferred thermometer needs to measure every component one by one while it is not necessary for thermal image, thus saving time. The potential problems may be displayed on color display screen clearly. This is helpful for users to locate the measurement cursor of the central point quickly and measure the temperature.

In order to increase the differentiation degree, the product is provided with a visual camera. The thermal images and full vision images can be stored in the device and can be called through USB or saved in a computer to generate report and printing.

HT-18 is easy to use; Test may be conducted in several seconds after powering on. The product can be used in fields of medical treatment, fire fighting, archaeology, traffic, agriculture, geology, energy, smelting, electronic manufacture, etc and is the ideal selection for electrician and maintenance personnel and technicians and can be used to find the problem area quickly.

The following major functions increase the product’s accuracy and usability:

- The adjustable radiation coefficient increase the measurement accuracy of half reflection surface.
- The thermal point and cold point temperature mark may guide the users to the area with highest or lowest temperature of thermal image.
- The selectable color palette.

2. Considerations and Safety Maintenance

Please read the instruction for use carefully in order to ensure correct measurement result:

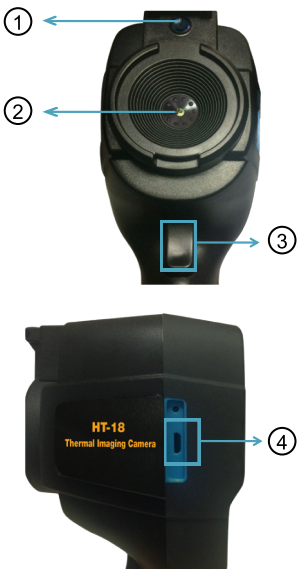
- Don’t use the device in explosive, flammable or corrosive environment.
- The product belongs to precision electronic and sensitive optical devices. Don’t impact and drop it to avoid damage.
- Don’t dismantle and remodel the products.
- When the product works, there is light sound of clicking every several seconds. This is normal phenomenon that the lens captures images.
- Please use damp cloth or weak soap to clean the enclosure of the device. Don’t use abradant, isopropanol or solvent to clean. Special optical lens cleaner is used to clean the screen.

3. Performance Index

Display screen	3.2 full angle TFT display screen
Infrared image resolution	220×160
visible image resolution	0.3 million pixel
Field angle/shortest focus length	27°×35°/0.5m
Thermal sensitivity	0.07℃
Temperature measurement range	-20~300℃(-4°F~572°F)
Test and measurement precision	±2.5℃ or ±2.5%
Emissivity	Adjustable from 0.1 to 10.0
Image capture frequency	8Hz
Wavelength coverage	8-14um
Focus mode	Fixed
Color palette	Rainbow, iron oxide red, cold color, black & white, white & black
View option	Full infrared and full vision Visible image with 25% step length
Storage medium	Built-in 4G
Image format	JPG
Power supply	Built-in chargeable 18650 batteries
USB	Micro USB2.0
Automatic power-off time	Selectable: 5 mintues/20 minutes/ not power off automatically
Product size (length × width × height)	90mm×105mm×223mm
Product Weight	389g
Work temperature	0℃- 50℃
Storage temperature	-40℃- +80℃
Relative humidity	< 85%RH

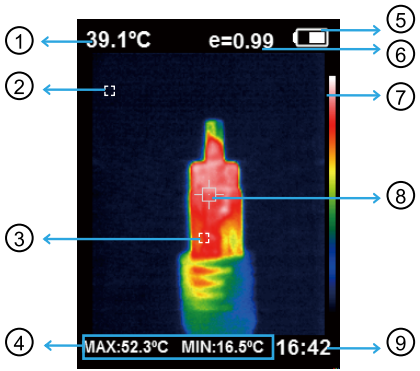
4. Product Description

4.1. Instruction to structure



① Visible light camera
② Infrared imaging sensor
③ Image capture key
④ Micro USB

4.2. Key description



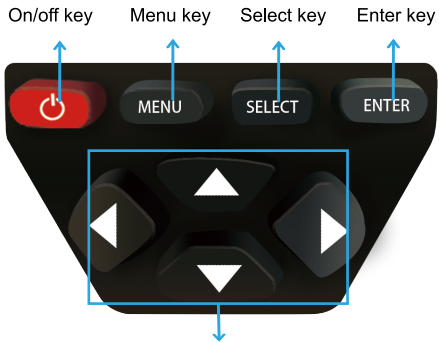
① Central point temperature
② Cold point temperature cursor
③ Cold point temperature cursor
④ Maximum value/minimum value of field temperature
⑤ Battery power
⑥ Current emissivity
⑦ Color code
⑧ Temperature cursor at central point
⑨ Time

Central point temperature cursor: The central position temperature at the screen area.

Thermal point temperature cursor: The cursor moves along with the highest temperature within the screen area and the location of cursor is the highest temperature.

Cold point temperature cursor: The cursor moves along with the lowest temperature within the screen area and the location of cursor is the lowest temperature.

4.3. Key description



5. Initial Operation

1.Charging: the product is provided with built-in 18650 lithium battery. When the battery power is not sufficient, please charge it through Micro USB interface in time.

2.Power on/off the instrument: hold down " ⏻ " key.

3.Convert to full vision image by the inferred camera: press "◁" and "▷"keys to switch between the mode of inferred thermal imaging and full vision images.

4.Image capture: the instrument saves the image into the device automatically when the image capture key is pressed.

5.Image check: press the menu key to select the image. Press " ▷ " to enter the image menu and use navigation key to select. Press "SELECT" key to check image. Press "ENTER" to exit.

6.Image deletion: after entering image checking, press "△" key and the deletion mode appears. Press "MENU" key to delete images and press "SELECT" key to cancel deletion.

7.The function of concealing the bottom bar: press " △ " to hide the maximum value/minimum value and time of the field temperature at the lower part of the screen. Press "△" to exit the concealing.

8.Image export: to capture the saved image, use Micro USB to connect the computer to check and export.

6. Introduction to “Setting” Submenu

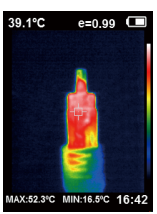
Settings		
Auoto shutdown	Auoto shutdown	NO 5min 20min
Display intensity	Display intensity	Low Medium Hight
Language	Language	Enghlish Chinese
Unit	Unit	Celsius Fahrenheit
Time format	Time Format	24 hour AM/PM
Set time	Set time	Year 2017 Month 12 Day 28 Hour 15 Minute 15 Second 15
Spot	Spot	Off On

7. Color Palette

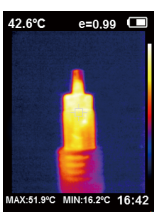
The menu of color palette can change the false color on the display screen or capture inferred image. The product provides five types of color palette: rainbow, iron oxide red, cold color, black white and white black.

Suitable selection of color palette displays the details of the target objective better. Rainbow, iron oxide red and cold color palettes focus on display of color. Such color palettes are very suitable for high heat contrast and are used to improve the color contrast between high temperature and low temperature. But the black & white and white & black color palettes provide even linear color.

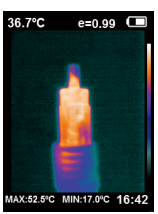
The following is the image of the same object with selection of different color palettes.



Rainbow



Iron oxide red



Cold color

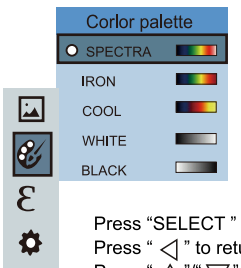
Black & white

White & black

Visible light camera

8. Application of Color Palette and Image Check

8.1. Application of color palette



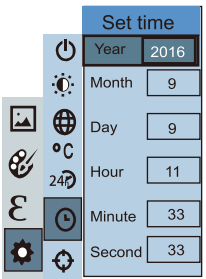
Press “SELECT ” to select;
Press “ ◁ ” to return.
Press “ △”/“ ▽” to adjust the selected items.

8.2. Check images

Press “SELECT” key to select; press “Enter” key to return under the interface of image check.

Press “△”/“▽” to adjust the selected items.

9. Time Setting



Press “ △”/“▽ ” to select year/month/day/hour/minute.

Press “SELECT” to enter edit and press “ENTER” again to confirm and return.

Press “ △” /“▽ ” to adjust the selected items.

Press left key or “MENU” key to return and complete the setting.

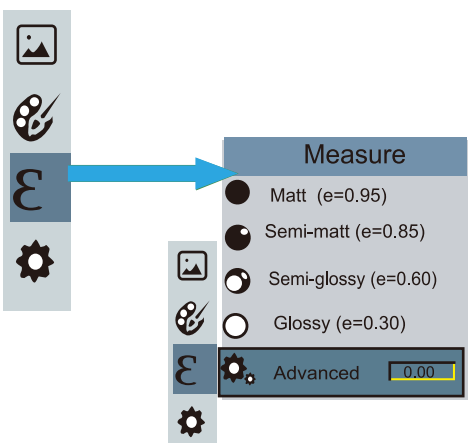
10. Capture Thermal Points

Find the “Capture thermal points” under the “setting” menu to set enabled and disabled of the function. After the function is enabled, the camera can capture cold points and thermal points automatically (three cursors on the screen) and the temperature is displayed on left and right two sides of the color bar at the bottom of the display screen.
The product supports three-point temperature. In addition to the cold point temperature and thermal point temperature, there is the central point temperature. It is displayed at the left upper corner of the display screen.

11. Measure Objects

The product is provided with four types of object measurement modes:
① Coarse object (0.95);
② Semi-matte object (0.80);
③ Semi-shiny object (0.60);
③ Shiny object (0.30);

According to the characteristics of the measured objects, users may select corresponding measurement mode and enter “advanced” option to adjust the value of emissivity (please refer to the table of “emissivity of common materials”).
The operating step is as the following:



Select the “measure objects”; press “ ▷ ” key of navigation key to enter the submenu.
After the item is selected, press “SELECT” to enter the setting state.
Press “△ ”/“ ▽” to adjust the value. After completion, press “ENTER” to exit from such setting.

12. Emissivity

The emissivity of the product can be adjusted from 0.10 to 1.00 with the default value of 0.95. Many common objects and materials (such as timber, water, skin and textile fabric) can reflect the heat energy effectively. So it is easy to obtain relatively correct measurement value. The emissivity is usually set as 0.95 when the coarse objects that are easy to give out energy. For semi-matte objects that give out less energy, the emissivity is usually about 0.8. and the emissivity of semi-gloss objects is 0.6. The shiny objects are divided into materials with low radiation coefficient. The emissivity is usually set as 0.3 at the time of measurement. Correct setting of the value of emissivity is very important for you to carry out the most correct temperature measurement. The surface emissivity will produce giant impact on surface temperature measured by the product. Understanding the surface emissivity will enable you to obtain correct temperature measurement result.

13. The Emissivity Value of Common Materials

Substance	Thermal radiation	Substance	Thermal radiation
Bitumen	0.90-0.98	Black cloth	0.98
Concrete	0.94	Human skin	0.98
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	0.94
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	0.78-0.82
Brick	0.93-0.96	Textile	0.90