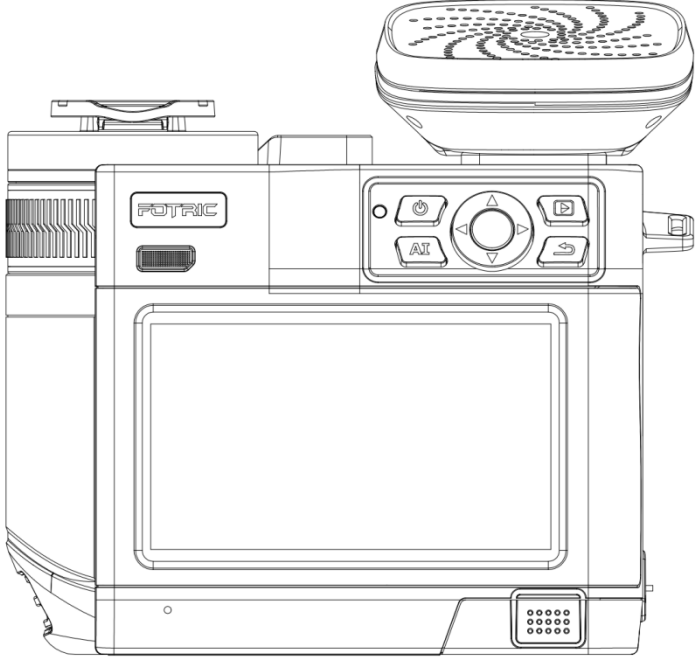


FOTRIC Inc.

P Series Quick Start Manual



June 2023

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Security Information

This product meets the Class B digital device requirements outlined in Chapter 15 of the FCC Rules. These requirements aim to minimize interference in residential installations. Please note that this equipment generates and uses radio frequency energy, which may interfere with radio communications if not installed and used correctly according to the provided instructions.

Definition

! Warning > Represents a dangerous situation or behavior that could result in personal injury or death.

! Caution > Represents a condition or action that may result in damage to the thermal imaging camera or permanent loss of data.

! Note > represents a useful reminder for the user.

Important information - please read before using the instrument

! Warning > Do not disassemble or modify the thermal imaging camera battery. The battery is equipped with safety and protection devices which, if tampered with, may cause the battery to overheat and may result in explosion or combustion. If the battery leaks and fluid gets into your eyes, do not rub it, wash it with water and get immediate medical attention.

! Warning > Use a thermal imaging camera with a laser pointer. Do not look directly at the laser beam with the human eye. The laser beam can cause eye irritation.

! Caution > Because thermal imaging cameras use very sensitive thermal sensors, do not point the lens directly at a strong radiation source (such as the sun, direct laser beam or reflection, etc.) under any circumstances (on or off), as this will cause permanent damage to the camera!

! Caution > The original box must be used during transport. Do not strongly bump the camera during use or transportation.

! Caution > When storing the camera, it is recommended to use the original box and place it in a cool, dry, ventilated place without strong electromagnetic fields in the environment.

! Caution > Avoid staining and damaging the lens surface with oil and various chemicals. After use, close the lens cap.

! Caution > Do not use the camera in high temperature environments exceeding +50°C (+122°F) unless otherwise specified in the product specifications. High temperature environments may damage the camera.

! Caution > To prevent the potential risk of data loss, regularly copy (back up) your data to your computer.

! Caution > Do not open the case or modify it without permission, and repairs should only be performed by authorized personnel of our company.

! Note > After the camera is turned on, it may take approximately 5-10 minutes for the camera to warm up before accurate readings are taken.

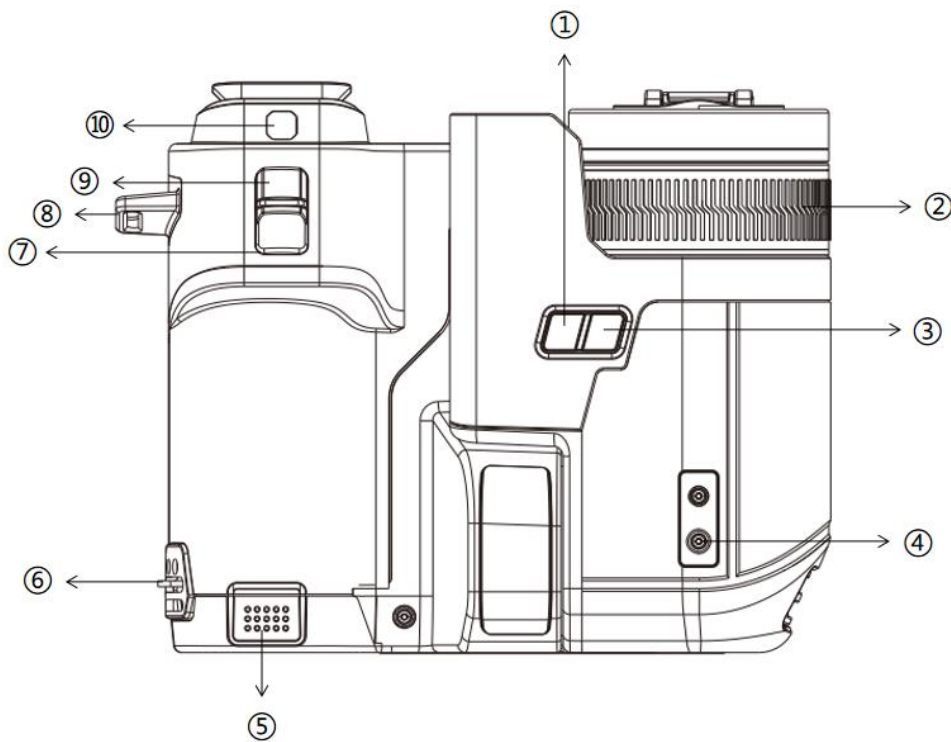
! Note > Every thermal imaging camera is factory calibrated for temperature.

Thermal imaging camera

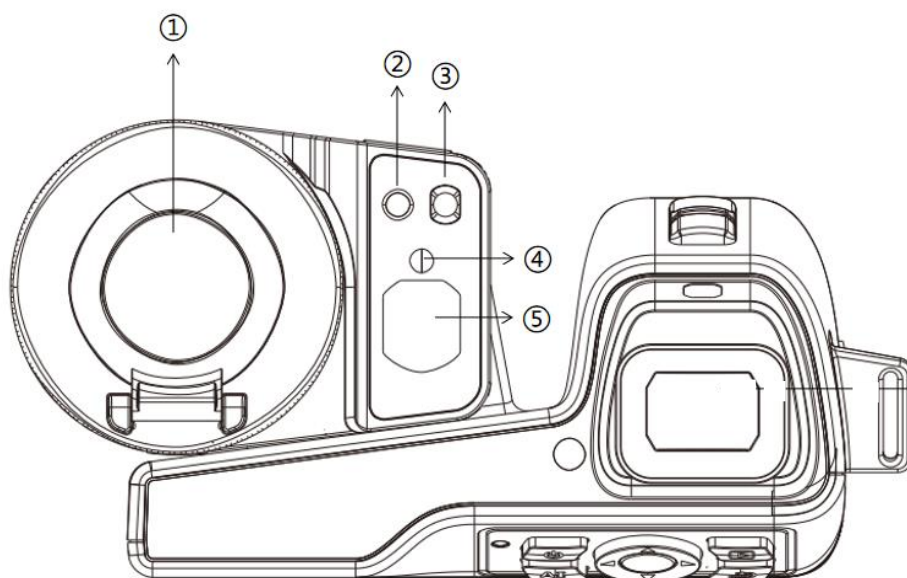
Front View

- 1 - Speaker
- 3 - Indicator LED
- 5 - Arrow keys
- 2 - AI key
- 4 - Power button
- 6 - Confirmation key
- 7 - Gallery button
- 8 - Back button
- 9 - 5" LCD screen
- 10 - Battery
- 11 - Microphone
- 12 - Manual focus ring

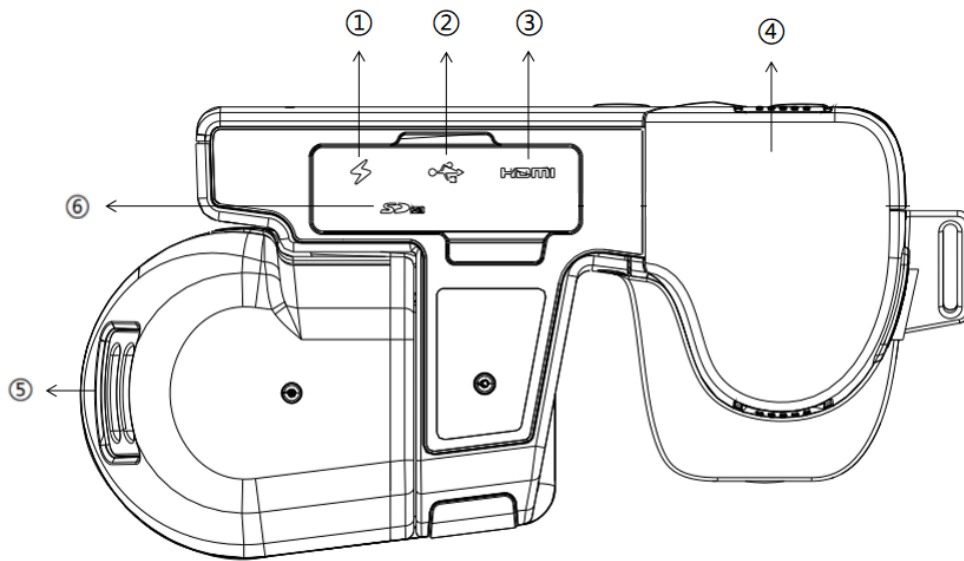
Rear view



- 1 - AI key
- 2 - Manual focus ring
- 3 - Laser key
- 4 - Tripod fixing interface
- 5 - Battery
- 6 - Wrist band lower connection
- 7 - Freeze image and snapshot button
- 8 - Wrist band upper connection
- 9 - Autofocus button
- 10 - Digital camera

Top view

- 1 - Laser ranger
- 2 - Digital camera
- 3 - Flash light
- 4 - Laser emitter
- 5 - Digital camera

Interface

1- Charging port

2- USB interface

3- HDMI interface

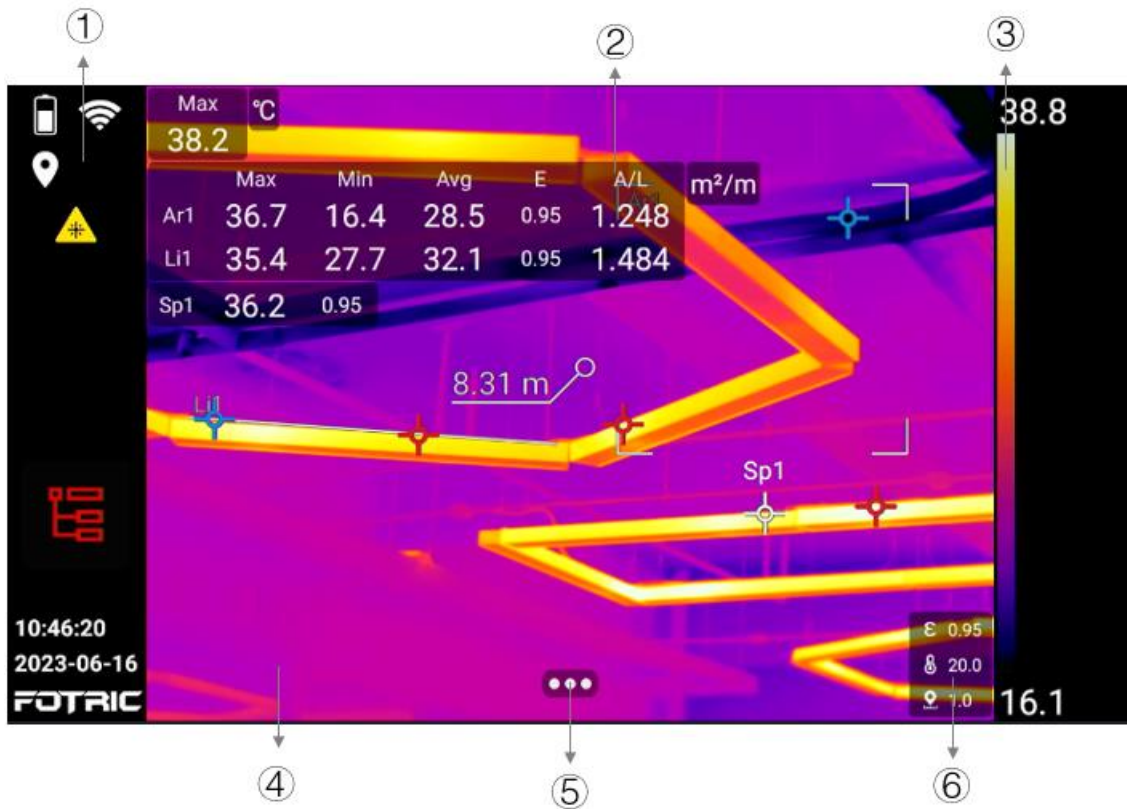
4- Battery

5- Thread hanger

6- SD memory card interface

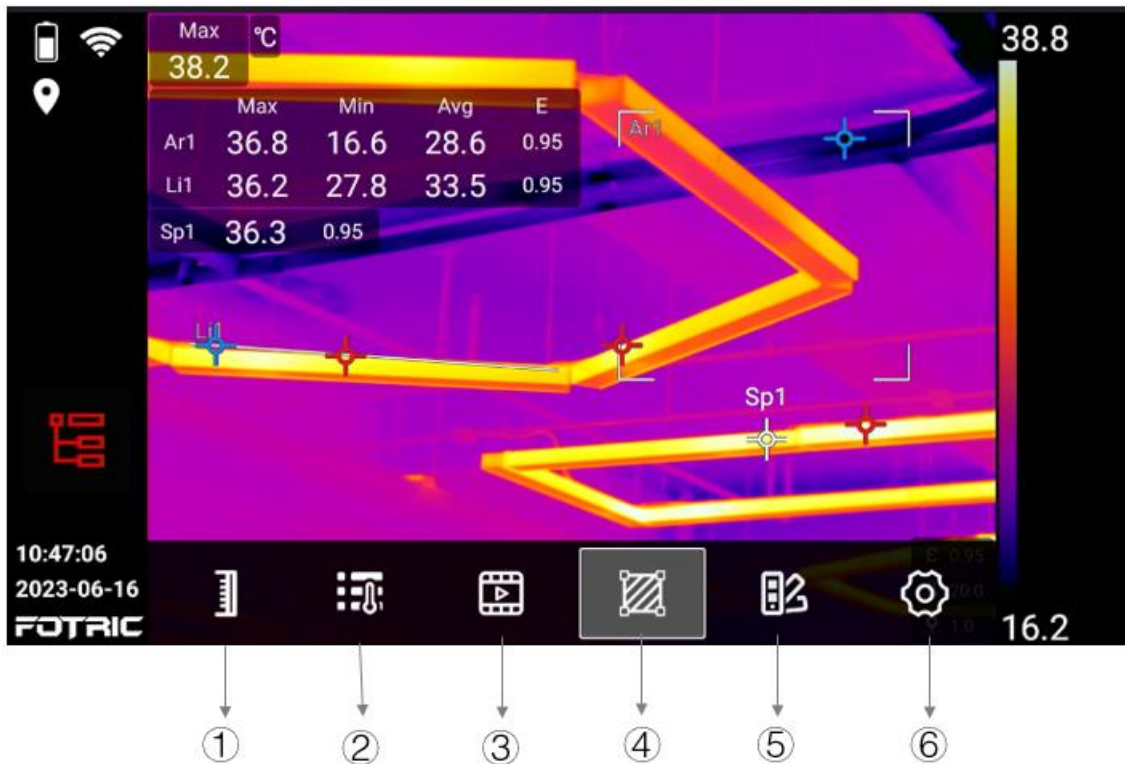
Interface Introduction

Main Interface



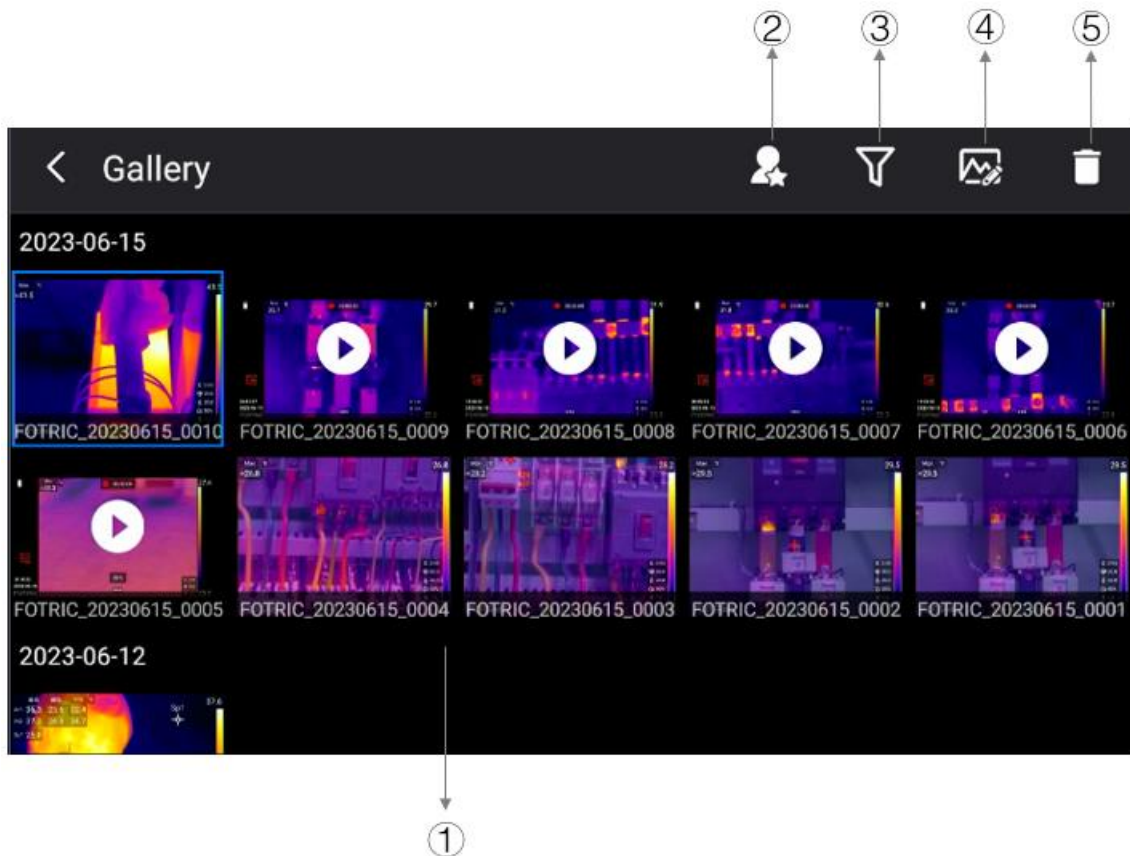
- ①: Display battery, Wi-Fi, cellular network, Bluetooth, GPS, SD card capacity low, laser warning Compass, time, Logo and other reminder icons.
- ②: Displays global and area temperature, emissivity, area, length, and other values.
- ③: Displays the values of the palette color band and the upper and lower temperature span/scale limits.
- ④: Displays real-time thermal image, temperature measurement markers(ROIs) and target distance.
- ⑤: Enable users to adjust the temperature span/scale, temperature measurement parameters, image mode, ROIs, color palette and to summon settings menu.
- ⑥: Displays emissivity, reflected temperature, ambient temperature, relative humidity, target distance and other measurements

System Menu



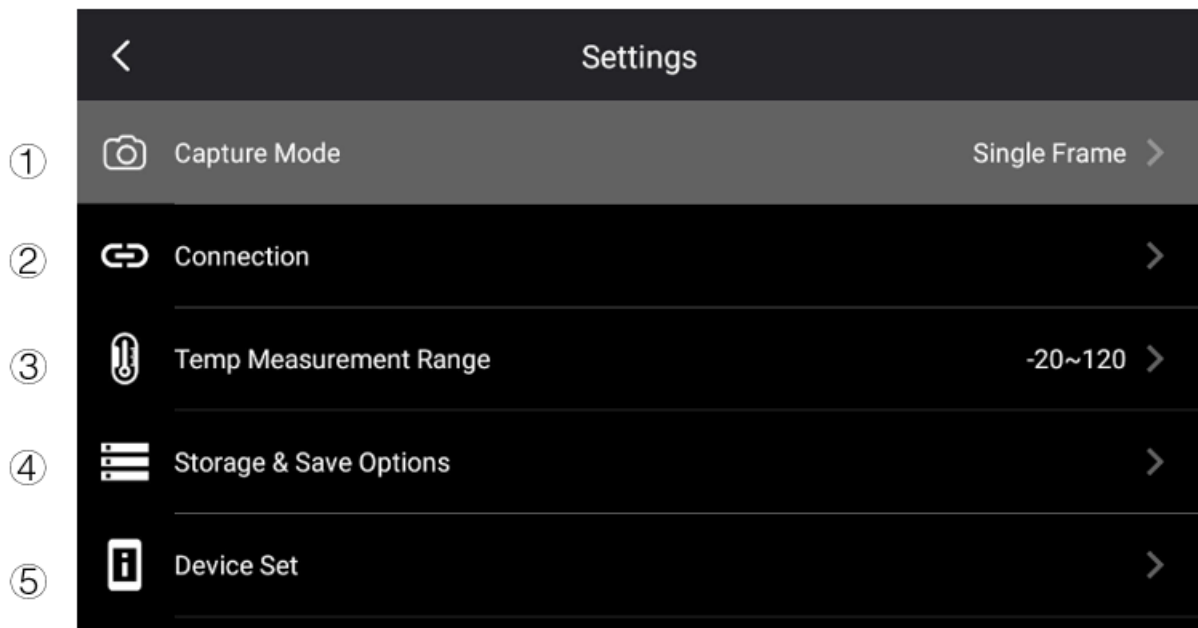
- ①: Select among automatic temperature span, manual temperature span, touch temperature span setting.
- ②: Adjust emissivity, reflection temperature, ambient temperature, relative humidity, target distance, infrared window compensation factors.
- ③: Switch between infrared, visible light, picture-in-picture, and image fusion mode.
- ④: Apply ROIs such as spot, rectangle, circle, line. Calculate temperature rise among ROIs or against a specific temperature value.
- ⑤: Apply various color palettes and inverse palettes, including color alarms (isotherms).
- ⑥: Change settings about capture mode, network connection, temperature measurement range, storage and save options, device settings, etc.

Gallery



- ①: Displays the captured thermal image, visible light photo, full radiometric thermal video, non-radiometric videos. Short click to select, long press to multi-select;
- ②: Display only images with the favorite toggle activated;
- ③: Filtering by tags attached to the images;
- ④: Enter the analysis mode to analyze the captured thermal images and full radiation video files;
- ⑤: Delete the selected file.

Settings



①: Capture mode: switch between single-frame shooting, recording (radiometric or MPS), and time-lapse mode;

②: Connection: WLAN, hotspot, Bluetooth, FTP transfer, and Network;

③: Temperature range: Switch among 3 different temperature ranges, can also enable intelligent range;

④: Storage and save option: Super resolution, video compression format, saving visible light image as separate JPEG photos, saving measurement settings such as distance, and deletion of all saved files;

⑤: Device set: language, time and region settings, focus type, display settings, geolocation, energy saving mode, manual span/scale mode, volume, reset and camera information.

Quick Start

Please follow these steps:

1. Place the battery in the camera's battery compartment.
2. Before turning on the camera for the first time, charge the battery to full power.
3. Insert the SD card into the corresponding slot.
4. Long press the power button to turn on the thermal imaging camera.
5. Aim the thermal imaging camera at the target object.
6. Tap the autofocus button or rotate the manual focus ring to clearly image the target object.
7. Press the snapshot button once to freeze the image, and the user may conduct analysis and make adjustment on the thermal image.
8. Press the snapshot button again to save the image and changes user made.
9. Transfer the AnalyzIR software package from the USB drive in your PC.
10. Install AnalyzIR and related drivers on the PC.
11. Start AnalyzIR professional analysis software.
12. Connect the camera to the computer using a Type-C USB cable or connect to the SD card with a reader.
13. Copy the images from the Gallery folder in the SD card of the camera to the PC.
14. Open AnalyzIR and drag thermal image(s) into the software interface
15. Analyze, save and generate reports.
16. Click Export to export the report as a Word file.

Main Accessories

The documentation shall indicate that only accessories which meet the manufacturer's specifications shall be used.

Power adaptor

Model No.: ABT030120A

Input: 100-240V ~ 50/60Hz 1.5A

Output: 12Vdc 3.0A

Battery charging dock

Part No.: F900033ACC

Input: 12V dc 3.0A

Batteries

Lithium-ion rechargeable batteries (3.6V, 9900mAh) 35.64Wh

Model No.: F90032ACC

Operation temp: -20~50 °C

USB cables

USB type-C type; conforms to USB 3.0 / 2.0 specification, supports USB OTG; USB 3.0 has a maximum speed of 5Gbps; USB 2.0 supports a maximum speed of 480Mbps, and is downward compatible with full speed (12Mbps) mode

HDMI cables

Micro HDMI type, comply with HDMI 1.4 specification, support 1080p image video transmission at 60Hz frame rate

The two snap on type magnetic rings shall be buckled mounted at both ends of HDMI cable respectively, and the position shall be close to the cable inlet and outlet as close as possible, which distance shall not be more than 50mm.

Laser distance Ranger and laser pointer

General

The laser distance ranger consists of a laser transmitter and a laser receiver. The laser distance ranger determines the distance to a target by measuring the time it takes for a laser pulse to reach the target and return to the laser receiver. This time is converted to a distance, which is displayed on the screen. The laser receiver also works as a laser pointer. When the laser distance ranger is on, you will see a laser dot approximately at the target.

Label

An identification label is affixed on the bottom of camera.

A laser warning label with the following information is attached to the camera.

Please see samples of above-mentioned labels as following.

Laser rules and regulations

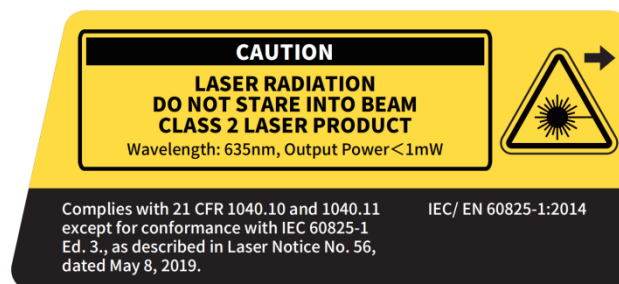
Wavelength: 635 nm.

Maximum output power: 1 mW.

This is Class 2 Laser Product.

Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



Specifications

Power interface input	12V dc 3.0A
Operating Temperature	-20°C to +50°C(-4°F to 122°F)
Storage Temperature	-40°C to +70°C(-40°F ~158°F)
Relative Humidity	< 95%RH
Safety	GB 4943.1-2022/EN 62368-1:2014/AC:2015 (Power Supply) EN 61010-1:2010+A1:2019
Vibration	2g (GB/T 2423.10-2019/IEC 60068-2-6:2007)
Shock	25g(GB/T 2423.5-2019/IEC 60068-2-27:2008)
EMC	EN IEC 61326-1:2021 (immunity) EN IEC 61326-1:2021 Class A (emission) FCC 47 CFR Part15 Class A (emission)
Enclosure Rating	IP54 (protected against dust, limited ingress; protection against water spray from all directions), GB/T 4208-2017/IEC 60529:1989+AMD1:1999+AMD2:2013
Drop	Engineered to withstand 2 meters (6.5 feet) drop with standard lens

Cautions

- It is very important to properly adjust the focus when taking the image. Poorly focused images will not only affect the thermal image clarity but also compromise the temperature measurement accuracy.
- By default, the thermal imaging camera will automatically adjust the temperature span/scale, but the temperature span/scale can also be adjusted manually if needed.
- After the camera is turned on, it is recommended to let it warm up for about 5~10 minutes for better temperature measurement.
- You may manually select the appropriate temperature range based on the inspection scene; Alternatively, you can also choose the intelligent range, which allow the camera to automatically adjust its temperature range.
- Thermal imaging cameras have a 'clarity' limit that depends on the detector resolution, field of view, and the distance to the target.
- Please make sure to keep the camera away from hazardous areas or energized electrical components.
- Please be mindful when inspecting the a highly reflective surface at a perpendicular angle, as you may be the primary source of reflected radiation.
- Please always select an area with high emissivity (e.g., an area with an unsmooth surface) for measurement if possible.
- Shiny objects (and objects with low emissivity) may appear warm or cold in the thermal imaging camera because they are reflecting radiation from its vicinity.
- Please avoid direct sunlight exposure if possible.
- Various types of faults (such as those occurring in building construction) may produce similar heat distribution pattern.
- Proper analysis of infrared images requires the certain expertise.
- Please make sure the battery is fully charged before storing the camera away for a long time.

This manual may be inconsistent with the product due to product enhancements or version changes. In case of inconsistency, please refer to the actual product.

Please read the manual before use

Please visit the following website to read or download the brochure:

<https://www.fotric.com/support>

Software Download

The product comes standard with the PC analysis software AnalyzIR in a USB drive.

Users may also visit the following website to download the software:

<https://www.fotric.com/fotric-analyzir>

For instructions on using the software, please refer to 'AnalyzeIR User Manual' on the same page.

Appendix

Emissivity Table

(For reference only)

Material Name	Surface Condition	Temperature (°C)	Emissivity (ε)
Aluminum	Non-oxidized	100	0.20
	Oxidized	100	0.55
Brass	Polished brown	20	0.40
	Unpolished	38	0.22
	Oxidized	100	0.61
Copper	Severely oxidized	20	0.78
Iron	Oxidized	100	0.74
	Rusty	25	0.65
Cast iron	Oxidized	200	0.64
	Non-oxidized	100	0.21
Wrought iron	Roughened	25	0.94
	Polished	38	0.28
Nickel	Oxidized	200	0.37
Stainless steel	Oxidized	60	0.85
Steel	Oxidized at 800°C	200	0.79
Common brick	Surface	20	0.93
Concrete	Surface	20	0.92
Glass	Polished plate	20	0.94
Lacquer	White	100	0.92
	Natural color black	100	0.97
Carbon	Smoke black	25	0.95
	Candle soot	20	0.95
	Graphite rough surface	20	0.98
Paint	Average of 16 colors	100	0.94
Paper	White	20	0.93
Sand	Surface	20	0.90
Wood	Polished	20	0.90
Water	Distilled water	20	0.96
Skin	Human	32	0.98
Pottery	Fine	21	0.90
	Abrasive	21	0.93

Wi-Fi performance

Frequency/Mhz	Efcieny/dB	Efficiency/%	MaxGain/dBi
2400	-12.89	5.14	7.33
2405	-12.85	5.19	-7
2410	-12.88	5.15	7.74
2415	-12.82	5.22	7.03
2420	-12.78	5.27	7.12
2425	-12.77	5.28	7.56
2430	-12.76	5.3	6.82
2435	-12.75	5.31	7.5
2440	-12.6	5.5	-6.94
2445	-12.51	5.61	6.38
2450	-12.7	5.37	-7.38
2455	-12.66	5.42	-6.63
2460	-12.53	5.58	-6.71
2465	-12.61	5.48	6.9
2470	-12.52	5.6	6.36
2475	-12.53	5.58	6.95
2480	-12.51	5.61	6.46
2485	-12.39	5.77	6.02
2490	-12.54	5.57	6.88
2495	-12.56	5.55	6.45
2500	-12.39	5.77	6.33
5200	-6.78	20.99	2.96
5210	7.31	18.58	2.83
5220	7.04	19.77	2.97
5230	-7.17	19.19	2.83
5240	6.91	20.37	3.24
5250	6.58	21.98	2.97
5260	6.33	23.28	3.23
5270	6.52	22.28	3.08
5280	6.48	22.49	3.16
5290	6.66	21.58	2.85
5300	7.21	19.01	3.04
5310	7.4	18.2	2.86
5320	-7.35	18.41	3.13
5330	7.5	17.78	3.05
5340	7.29	18.66	3.46
5350	7.31	18.58	3.42
5360	7.51	17.74	3.9
5370	7.47	17.91	4.05

5380	7.25	18.84	4.26
5390	-7.3	18.62	4.13
5400	-7	19.95	4.8
5410	7.06	19.68	4.61
5420	6.89	20.46	4.7
5430	6.94	20.23	4.6
5440	6.7	21.38	5.17
5450	6.79	20.94	5.01
5460	6.63	21.73	5.04
5470	6.83	20.75	4.85
5480	6.54	22.18	5.36
5490	6.81	20.84	4.9
5500	6.7	21.38	4.88
5510	6.3	23.44	4.72
5520	5.98	25.23	5.17
5530	6.14	24.32	4.86
5540	5.92	25.59	5.24
5550	6.04	24.89	5.12
5560	5.76	26.55	5.54
5570	5.76	26.55	5.26
5580	5.56	27.8	5.78
5590	5.68	27.04	5.59
5600	4.17	38.28	5.86
5610	3.9	40.74	5.61
5620	-3.78	41.88	6.09
5630	3.99	39.9	5.72
5640	3.91	40.64	6.15
5650	4.11	38.82	5.99
5660	4.09	38.99	6.39
5670	4.45	35.89	5.94
5680	4.49	35.56	6.26
5690	4.85	32.73	6.04
5700	4.58	34.83	6.39
5710	5.2	30.2	6.06
5720	5	31.62	6.45
5730	5.17	30.41	6.38
5740	4.98	31.77	6.76
5750	-5.7	26.92	6.81
5760	5.73	26.73	7.29
5770	5.84	26.06	7.16
5780	5.71	26.85	7.4
5790	5.73	26.73	7.48
5800	5.59	27.61	7.64

Statement

Federal Communications Commission (FCC) Declaration of Conformity

Note:

This device complies with Part 15 of the FCC. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Exposure to Radio Frequency (RF) Energy

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. And user must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The mobile device is designed to meet the requirements for exposure to radio waves established by the Federal Communications Commission (USA). These requirements set a SAR limit of 1.6 W/kg averaged over one gram of tissue.

The highest SAR value reported under this standard during product certification for use when properly worn on the body is 1.47 W/kg.

According to Article 10 (10) of Directive 2014/53/EU, the packaging shows that this radio equipment will be subject to some restrictions when placed on the market in Belgium (BE), Bulgaria (BG), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE), the United Kingdom (UK), Turkey (TR), Norway (NO), Switzerland (CH), Iceland (IS), and Liechtenstein (LI).

The WLAN function for this device is restricted to indoor use only when operating in the 5150 to 5350 MHz frequency range.



BE	BG	CZ	DK	DE
EE	IE	EL	ES	FR
HR	IT	CY	LV	LT
LU	HU	MT	NL	AT
PL	PT	RO	SI	SK
FI	SE	UK	TR	NO
CH	IS	LI		

About this brochure

The photographs, graphics, icons, and illustrations provided in this manual are for illustrative purposes only and may differ from the actual product. This manual may be updated by FOTRIC without prior notice due to product version upgrade or other needs.

The trademarks and images used in this manual are for illustrative purposes only and are the copyright of the trademark owner.

Disclaimers

the products (hardware, software, etc.) provided in this manual may be defective, faulty or malfunctioning, and FOTRIC disclaims all warranties of any kind, express or implied, including, but not limited to, warranties of merchantability, satisfactory quality, fitness for a particular purpose, non-infringement of third party rights, etc. FOTRIC shall not be liable for any special, incidental, consequential or indirect damages arising out of the use of this manual or our products including, but not limited to, loss of business profits, loss of data or documentation.

To the maximum extent permitted by law, none of our liability will exceed the amount you paid for this product.

After the product is connected to the Internet, it may be exposed to risks including but not limited to network attacks, hacker attacks, virus infections, etc. The company will not be responsible for any abnormal work of the product, information leakage and other problems caused by this, but will provide technical support for you in a timely manner.

Products can sense motion detection and fire events when properly installed and configured, but cannot prevent accidents or resulting personal injury or property damage.

Thermal imaging products are classified as export controlled by the U.S. Department of Commerce, Export Control Classification Number (ECCN) 6A003.b.4.b. This product contains a focal plane array, Export Control Classification Number 61002. a3.f. This product may not be used in controlled countries (e.g. North Korea, Iran, Syria, Cuba, Sudan, etc.) and should not be brought into or used in controlled countries. You will be responsible for any loss or liability arising from the above actions.

In using this product, you are requested to strictly comply with applicable laws. You agree that this product is for civilian use only and may not be used in violation of the rights of third parties, medical/safety equipment or other applications where the failure of the product could result in life-threatening or personal injury, and for purposes such as mass destruction fog, biochemical weapons, nuclear explosions or any unsafe use of nuclear energy or dangerous or inhumane uses. Any loss or liability arising from such use will be borne by you. In the event of a conflict between the above and applicable law, the provisions of the law shall prevail.

How to contact FOTRIC

If you need to contact FOTRIC, please address the following email: info@fotric.com

FOTRIC website: www.fotric.com