Thermal & Optical Bi-spectrum Camera

User Manual

English (V1.0)

Copyright Notice

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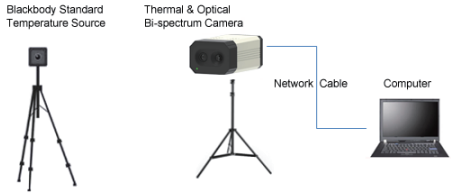
Warning

This is class A production. Electromagnetic radiation at specific frequencies may affect the image quality of TV in home environment.

Catalogue

1 Product Connection

1.1 Network Connection



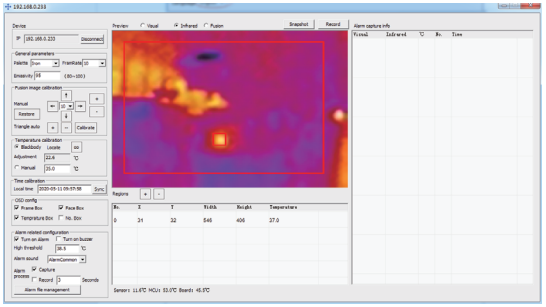
Note: Three main equipments are needed on the human body detection site:

Temperature Measurement Blackbody: Provide standard temperature source, can provide real-time calibration for thermal & optical bi-spectrum camera on site.

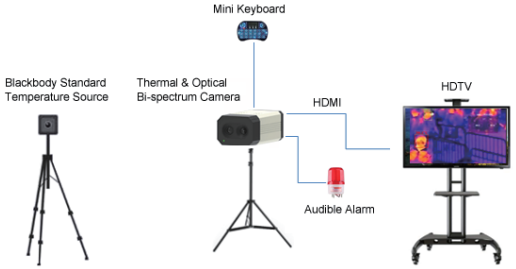
Thermal & Optical Bi-spectrum Camera: perform face recognition, human shape recognition, body temperature detection on the site personnel, and screen temperature abnormal personnel.

Analysis Computer: control the thermal & optical bi-spectrum camera, display the image of the person, and perform temperature analysis, and alarm, take pictures, record video, report abnormal situation information when the temperature exceeds the limit.

The thermal & optical bi-spectrum camera lens is compared with the black body radiation surface. The thermal & optical bi-spectrum camera can be connected to the analysis computer through the network cable, and the computer can automatically judge and analyze through the software.



1.2 TV Connection



The site is mainly composed of five devices:

- Temperature Measurement Blackbody: Provide standard temperature source, can provide real-time calibration for thermal & optical bi-spectrum camera on site.
- Thermal & Optical Bi-spectrum Camera: perform face recognition, human shape recognition, body temperature detection on site personnel, and screen personnel with abnormal temperature.
- Acousto-optic Alarm: When the temperature exceeds the limit of personnel, sound and light alarm.

- TV: Display the detection screen, display the image of the personnel, and display the temperature.
- Mini Keyboard: Connect to the thermal & optical bi-spectrum camera to configure, control, modify and adjust.

2 Product Features

The concept is based on the current domestic and foreign markets' latest requirements for infrared thermal imaging in terms of product performance, lightweight structure, cost and intelligence, and product stability. It adopts advanced dual-spectrum fusion technology design technology to establish an internationally leading level of dual-spectrum Linkage intelligent algorithm technology, the product represents the latest requirements in the market and the future consumer trends in the market.

- The video output can be Ethernet or HDMI output, and can be equipped with a computer and a TV for display.
- Two modes, PC-free temperature measurement and PC-based temperature measurement, can be used to minimize on-site installation.
- Visible light and infrared dual simultaneous human body detection, visible light to identify human face and human body, infrared for accurate forehead positioning and temperature measurement.
- Blackbody provides standard temperature calibration at the scene, and will not cause temperature measurement deviations due to differences in environmental changes.
- Infrared thermal imaging supports 80*60, and visible light supports 1080P.
- Infrared thermal image and visible light picture are combined for temperature measurement, visible light picture temperature measurement, and thermal imaging picture temperature measurement can be switched and displayed.

- Visible light and infrared can delimit different areas simultaneously.
- Image output mode: connect to computer or TV via Ethernet or HDMI.
- Support face recognition, human body recognition.
- Intelligent positioning personnel forehead temperature, accuracy error is less than 0.4℃.
- If the temperature exceeds the limit, local alarm can be given, and the data confirming the fever can be uploaded to the command center.
- The product has an Ethernet port and can be externally connected to a 4G/5G router.
- The secondary temperature calibration software can be used by the customer to perform secondary calibration and calibration according to different regional environments.
- For people with high body temperature, visible and infrared photos can be automatically taken and archived for easy traceability.
- The temperature measurement information can be reported to the government statistical center in real time, so as to quickly understand the information.

3 Packing List

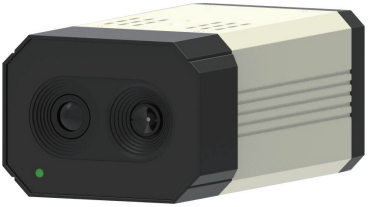
Network Connection:

No.	Device Name	Description	Quantity	Note
1	Thermal & Optical Bi-spectrum Camera	HD lens 1080P, thermal imaging lens 80*60 resolution	1	Standard
2	Black Body Radiation Source	Room temperature +5℃～50℃, open cavity 50mm	1	Optional
3	Computer	4G RAM above I3	1	Optional
4	Analyzing Software		1	Optional
5	Thermal Image Tripod		1	Optional
6	Black Body Tripod		1	Optional
7	Power Strip		1	Optional

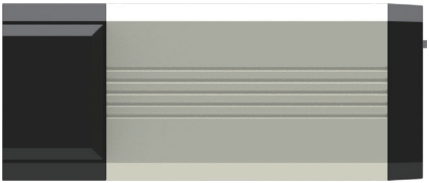
TV Connection:

No.	Device Name	Description	Quantity	Note
1	Thermal & Optical Bi-spectrum Camera	HD lens 1080P, thermal imaging lens 80*60 resolution	1	Standard
2	Black Body Radiation Source	Room temperature +5℃～50℃, open cavity 50mm	1	Optional
3	TV		1	Optional
4	Mini Keyboard		1	Optional
5	Thermal Image Tripod		1	Optional
6	Black Body Tripod		1	Optional
7	Power Strip		1	Optional
8	Audible Alarm		1	Optional

4 Product Specification



45 angle view



side view

rear interface diagram

The specification of thermal & optical bi-spectrum camera:

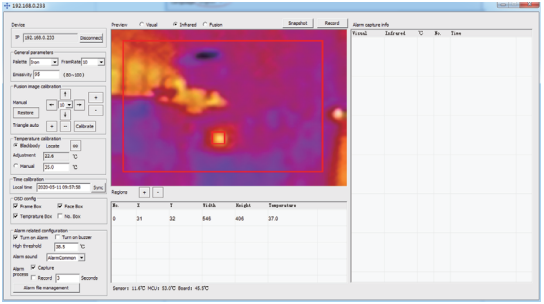
Parameter		Description
Infrared thermal image	Resolution	80x60
	Working Band	8~14um
	Frame Rate	25Hz
	NETD	70mK@25℃
	Angle of View	90 degrees horizontal
	Temperature Measurement Range	10℃~50℃
	Temperature Measurement Accuracy	The temperature compensation algorithm can reach ±0.4℃ for human body
	Temperature Measurement	The temperature measurement area can be set, and the temperature of the face can be automatically measured by human body recognition and face recognition
	Swatches	Enhanced iron red, white hot, black hot, iron red, rainbow, red hot, cold blue, etc.
Visible Light	Resolution	1080P
	Angle of View	120°
	Frame Rate	25Hz
	Minimum Illumination	0.5 Lux @ (F1.8，AGC ON)
	BLC	Support
	Digital Noise Reduction	2D & 3D Digital Noise Reduction
	Signal Noise Ratio	⩾55dB
General	Interface	RJ45 Network Interface
		HDMI Interface
		RS485 Interface, can be connected to PTZ
		Alarm Interface
		USB Interface

General	No PC Operation	Remote sensing keys can be used for PC-free operation, and mini keyboard operation configuration can be used
	Operating Temperature	0°C ~ +40°C (According to the requirement of accurate temperature measurement of human body, it is recommended to be the best under the ambient temperature of 10°C ~ +30°C)
	Storage Temperature	-10°C ~ +50°C
	Waterproof and Dustproof	IP54
	Product Size	129mm x 73mm x 61mm (L x W x H)
	Net Weight	295g
	Picture Storage	Support infrared, visible light, fusion photo storage
	Installation	Use standard tripod installation or gimbal lifting
Software	Intelligent Application	Human body recognition, face recognition
	Temperature Display	Human body temperature measurement, face recognition temperature measurement, high temperature tracking in the measurement area, and fixed temperature measurement of the center temperature
	Alarm	It supports temperature alarm exceeding the set threshold, which can be audible and capture photos at the same time and store them

Software	Picture Frame Temperature Measurement	Support picture frame temperature measurement, set temperature measurement separately according to different entry and exit channels of personnel
	Temperature Compensation	According to the different environment, the staff set the temperature compensation by themselves
	Photograph	Open manual photo, alarm automatic photo
	Internet Cloud Upload	Need to be customized according to different cloud needs
	Language	Chinese Simplified, Traditional, English, Russian

5 Software Function

The software interface is as shown in the figure below. The display image can be displayed in three modes: single infrared, single visible light, and superimposed and integrated screen.



Item	Category	Name	Description
System		Palette	Switchable iron red, pseudo color, enhanced iron red.
		Image Switch	Switchable infrared, visible light, dual picture fusion.
		Area Temperature Measurement	Different areas can be set to measure temperature separately.
		Temperature Measurement Method	Choice of full-screen maximum temperature, regional maximum temperature, automatic temperature measurement by personnel.

System		Secondary Temperature Adjustment	Provide temperature calibration function, can perform secondary temperature compensation correction on site according to different environmental changes.
		Output Record	The camera can capture and write videos and still pictures to the Micro SD card, and simultaneously send them back to the designated background via Ethernet.
Video Output		Mode	Switchable HDMI or Ethernet output.
Alarm	Alarm Mode	GPIO Interface Alarm	Configurable GPIO alarm mode.
		PC Sound Alarm	Support computer sound alarm.
		Alarm Display	Alarm pop-up window, and take photo automatically.
Firmware	Upgrade	Firmware	The camera support firmware upgrade.
		Live Upgrade	The camera supports network port and Micro SD card upgrade or downgrade firmware.
		Prompt	The camera can recognize the latest firmware and prompt the user to upgrade to the latest firmware.

Artificial Intelligence		Features	Human shape recognition, and line drawing Face recognition, and mark the face profile Intelligent calculation of forehead position, infrared aiming at forehead, temperature sampling.
Communication		Communication Guarantee	The camera should be able to communicate with the PC through software under unknown IP conditions, or set the reset button to modify the IP address to ensure that field operations can communicate with the PC.
Data Storage	Visible light images and videos	Take Photo	Can shoot infrared images, visible light images, three pictures on the scene picture.
		Video	Can be set to automatically record video, and manually record the video files.
Picture	Picture Adjustment	Image Adjustment	You can adjust the brightness, white balance, contrast, saturation, sharpness and other parameters of the image and video.
		Image Flip	Image can be flipped horizontally and vertically.

OSD		OSD Function	Support OSD function.
		Time Information Overlay	OSD supports time information superimposed on images and videos.
		Temperature Information Overlay	OSD supports temperature and other information superimposed on images and videos.
Report the epidemic situation	Reporting Interface	Reserved Reporting Interface	Confirm the epidemic personnel, report manually, personnel information, name, symptoms, photos, other information, work situation.

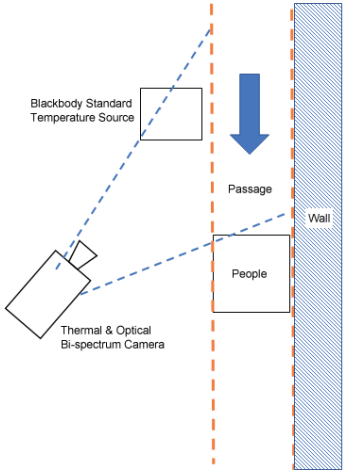
6 Installation Precautions

- The body temperature is different, and the forehead temperature is 1-2°C lower than the actual temperature. However, when the body has a fever, due to continuous fever, the difference between the forehead temperature and the actual temperature is not so large. Therefore, when you have a fever, the general default is 37.5°C.
- Environmental changes have a great influence on the temperature measurement accuracy of infrared thermal imaging. Although there are black body corrections, the large changes in the environment will also affect the black body. Therefore, try to choose a stable room temperature environment, and do not deploy thermal imaging thermometers and black bodies in places such as tuyere, air conditioner direct blow, fan direct blow, and heating equipment.
- The thermal & optical bi-spectrum camera and the black body should be arranged in the indoor environment as far as possible. The temperature of the environment should not change up and down to avoid direct sunlight on the device.
- As far as the background of the lens is concerned, try not to have other high-temperature equipment that is higher than the human body temperature, such as heating air conditioners, water heaters, high-power incandescent lamps and other high-temperature objects, to prevent false alarms.
- If there are inevitable high-temperature objects in the picture, you can draw a frame area on the software video, so that only the temperature in the area frame will be measured to avoid other interference.
- The background of thermal imaging is as simple and simple as possible. If the background is very complex, it is easy to produce false alarms, such as many lights.
- After the thermal image camera is turned on for 10 minutes, the internal temperature of the machine can reach thermal equilibrium. At this time, the temperature measurement is the most accurate, so it is recommended to start the measurement after 10 minutes of startup.

- The placement of the black body will directly affect the temperature measurement accuracy. When the device is shipped from the factory, it has been calibrated at a fixed distance. Therefore, the black body is best within half a meter of thermal imaging, and the measured person is preferably 1-2 meters away from the thermal & optical bi-spectrum camera.
- Individual non-patients with fever may have an over-temperature alarm. For example, after drinking alcohol, strenuous exercise, just drinking water, local facial inflammation, prolonged sun exposure, just coming out from a hot place, etc. At this time, the test person can be allowed to be quiet for a while or heat dissipation before the measurement screening.

7 Layout Instructions

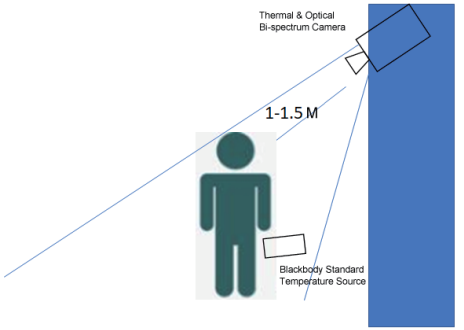
7.1 Laying by the Wall Channel



Layout points:

- The infrared thermal imager camera is diagonally opposed to the crowd, and only needs people to pass through the screen in order to complete the temperature measurement of the human body.
- The black body serves as a reference for the standard temperature source and is placed on the side close to the passage of people and needs to be displayed in the image of the thermal & optical bi-spectrum camera.
- The thermal & optical bi-spectrum camera is 1.5 meters away from the temperature measurement line, and the channel width is 1 meter.

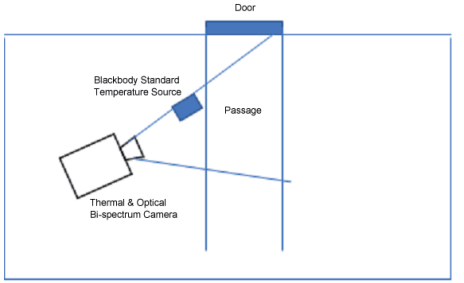
7.2 Security Door Mode



Layout points:

- The dual-spectral infrared thermal imaging camera has a downward angle of 15-30 degrees, with the head appearing in the picture 1.5 meters away from the thermal imager.
- The black body is arranged next to the security door channel. The thermal imaging can see the black body, and the personnel will not block the black body when passing through the security door.

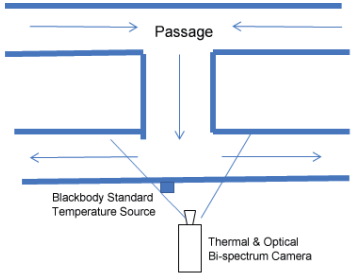
7.3 Lobby Entry Mode



Layout points:

- Do not cover the door of the thermal & optical bi-spectrum camera, because it will extend to the complex scene outside the door.
- The black body is on the side of the channel near the thermal imager to prevent it from being blocked.
- It is best for the personnel to penetrate in and not cover each other.
- The thermal & optical bi-spectrum camera reaches the left side of the channel, with a distance of 1-1.5 meters, and a channel width of 1 meter.

7.4 T-channel Layout



Layout points:

- The image of the thermal image camera is placed at the junction of the T-shaped channel, facing the pedestrian direction.
- The distance from the thermal image camera to the pedestrian channel is about 1 meter.
- The black body is arranged on the side of the channel, on the same side as the thermal & optical bi-spectrum camera to prevent it from being blocked.