Automatic thermal temperature measurement and screening system Introduction

Common ways to take temperature

Fever is an important manifestation of the activation of the human immune system, which indicates that people are infected with bacteria or viruses. The main temperature measurement methods can be divided into **contact and non-contact**.

	Infrared thermography	Forehead thermometer	Mercury thermometer
Principle	Non-contact plane surface array temperature measurement	Point contact temperature measurement	Direct contact temperature measurement
Distance	3-6 meters	1-3 centimeters	0
Time	Real-time	3-5 seconds	3 minutes
Data	Temperature Measurement data and photos	Temperature figure	Temperature scales

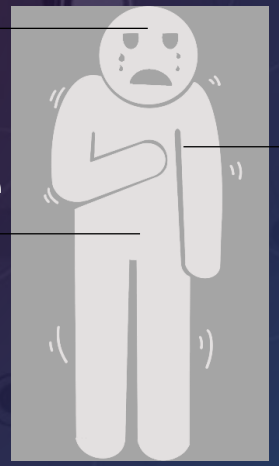
How thermal equipment take body temperature

According to the principle of physics, every object with temperature higher than absolute zero (- 273.15 ℃) in nature would radiate infrared rays, which is a kind of electromagnetic wave and invisible to human eyes. The physical characteristic of infrared radiation contains temperature information. The thermal equipment passively absorbs the infrared radiation of the target, followed by "photoelectric conversion" on the infrared detector (sensor), and then figures out the corresponding temperature through an advanced algorithm.

The body temperature of a human being is relatively constant, namely about 37 ° C. The thermal equipment take the temperature by detecting the infrared thermal radiation on the human body surface. The human body temperature is indicated by the temperature measurement algorithm based on the big data analysis of human body temperature measurement.

Forehead Temperature
35~36.5℃

Rectal temperature
36.3~37.5 ℃

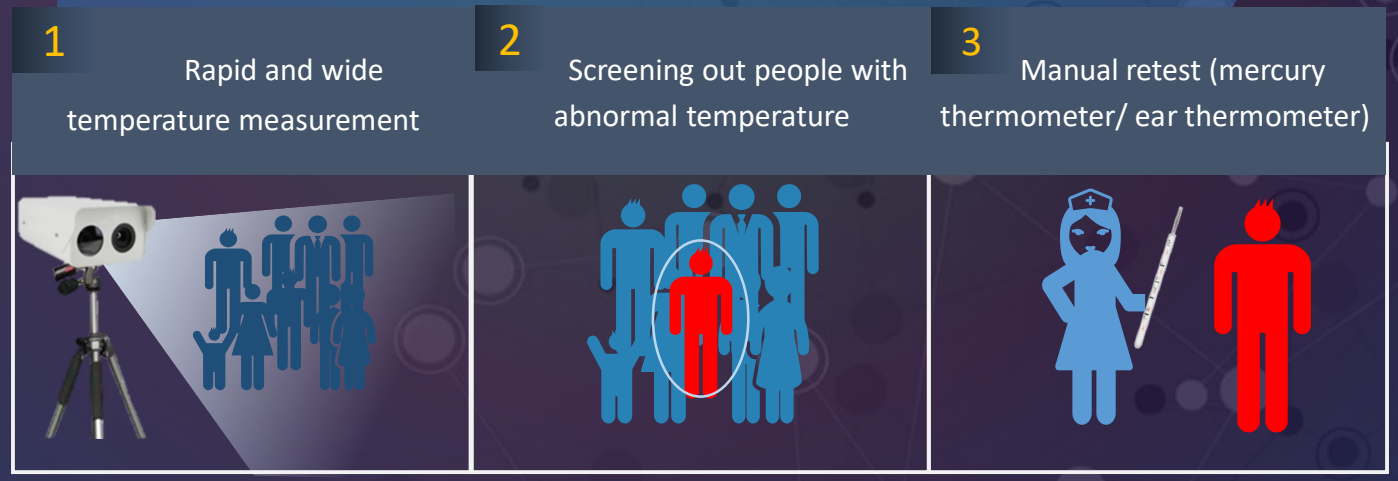


Axillary temperature
36~37 ℃

Rapid body temperature screening

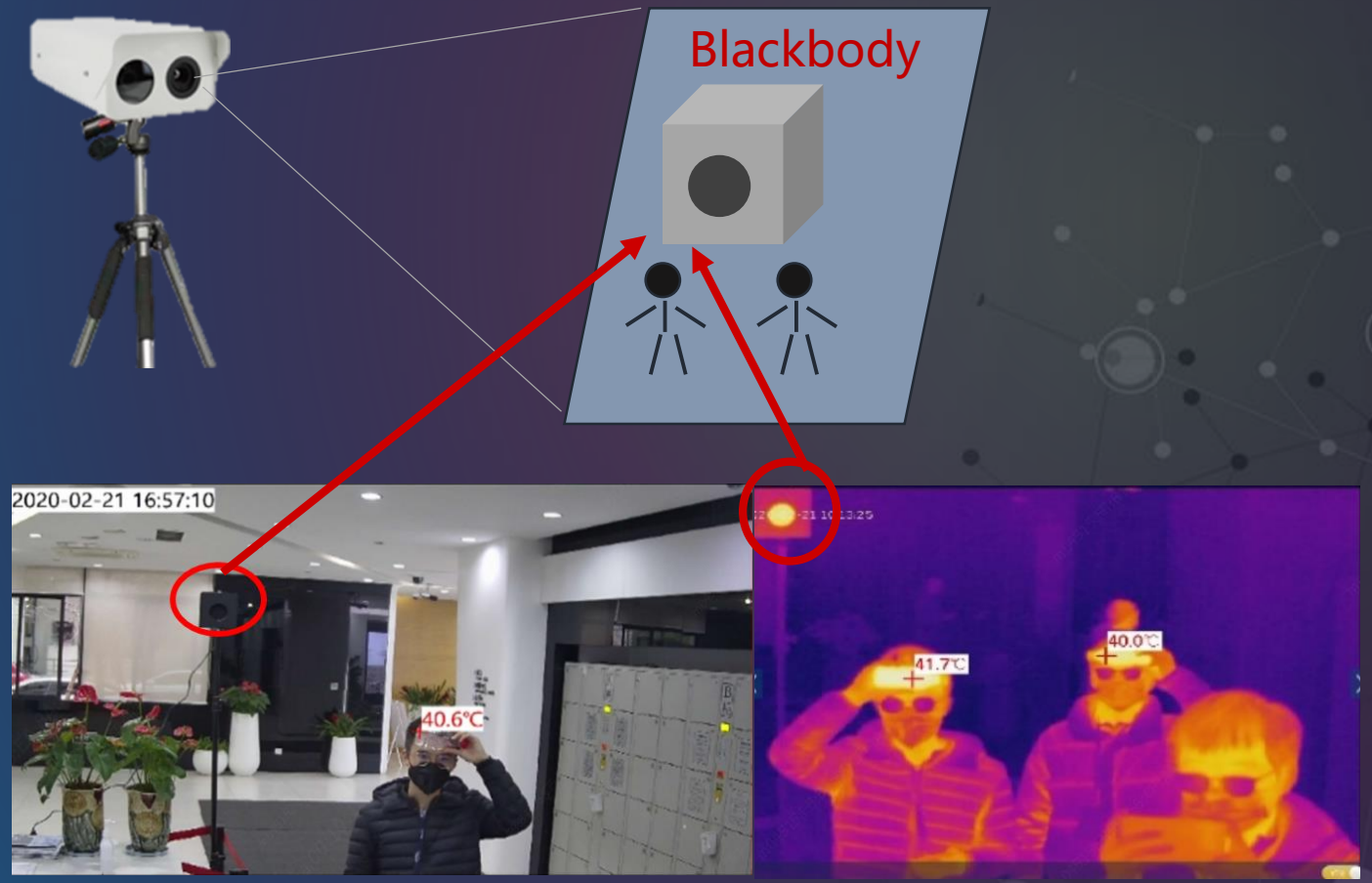
Automatic thermal temperature measurement and screening system can quickly and widely measure the body temperature of the crowd through non-contact temperature measurement, screen out the individuals with abnormal fever in real time. The medical staff can use the thermometer to retest immediately after locking the suspected target to ensure that no fever personnel will be missed, which is especially suitable for prevention and control of epidemic situation in the traffic intensive areas such as airports, railway stations, subway stations, hospitals, government agencies, schools, shopping malls, large factories, office.

The whole process of infrared thermography body temperature screening field application



Function of blackbody

Blackbody is a calibration device and a standard temperature source (accuracy is ± 0.1 ℃). The thermal camera with blackbody can be calibrated in real time, which can keep the temperature measurement accuracy at a high level of ± 0.3 ℃.



Precautions during installation:

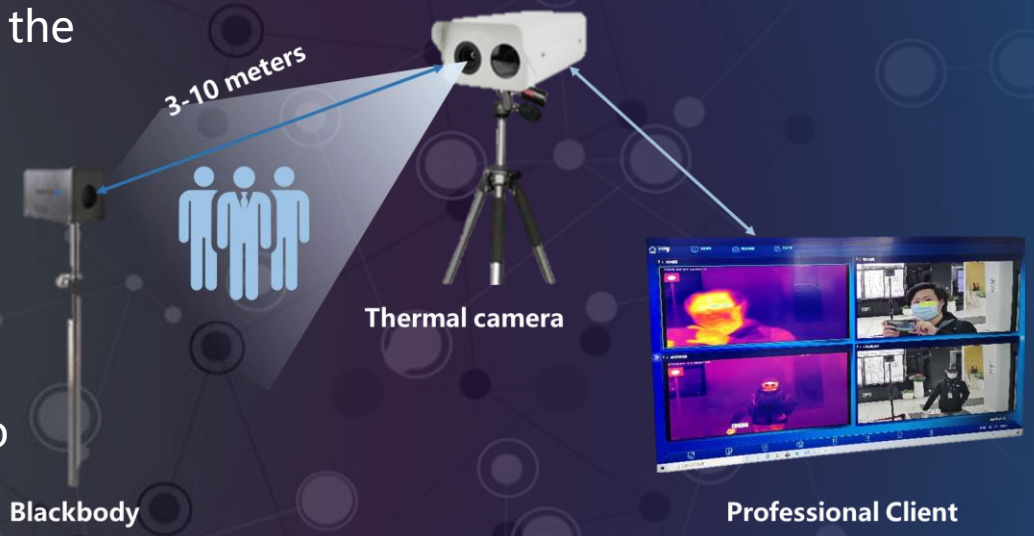
1.Thermal camera lens face blackbody radiation surface.

2. Camera installation should be higher than blackbody, and the top view angle is the best.

3. Blackbody should be **in the corner** of the thermal camera live view.

Advantages of TIC600

- ✓ Rapid screening of multiple body temperature in one minute
- ✓ Thermal camera has high response speed and efficiency, and the tested personnel do not need to stay
- ✓ Automatic alarm to reduce manual work
  Automatic body temperature screening, alarm prompt and automatic snapshot after catching the fever target
- ✓ Reduce the risk of virus infection among testing personnel
- ✓ It can measure temperature at a distance of several meters to effectively avoid close contact with potential patients
- ✓ Image storage for easy recording and tracking
- ✓ The image temperature measurement method is more intuitive. The alarm image is stored in real time, and the historical data can be queried.



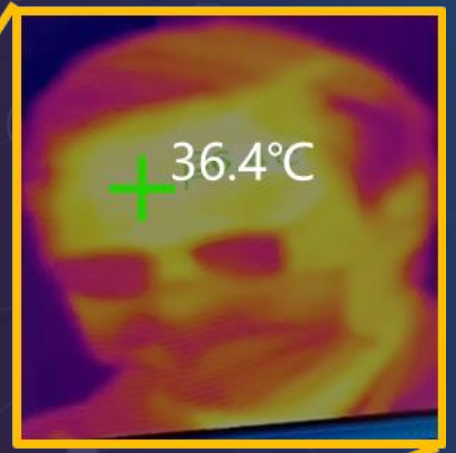
Introduction of TIC600

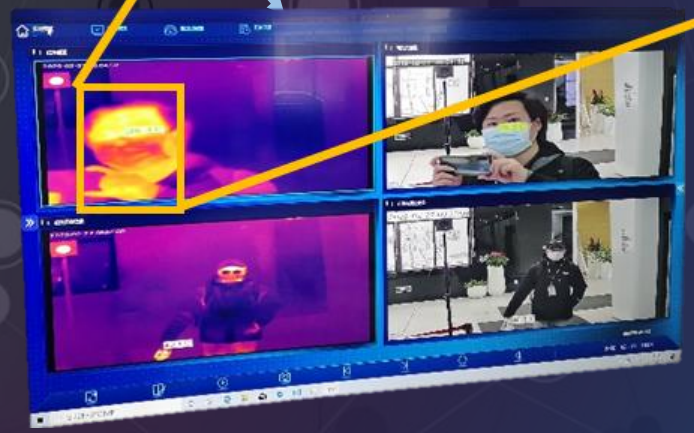
Blackbody
As a standard temperature source

3-10 meters

Thermal camera

Real time Temperature display





Professional Client

Packaged System deliverable, no other products needed, all the required accessories have been included, ready to use, greatly reducing the difficulty of project delivery

Introduction of TIC600

Key parameters

- Thermal Resolution: 384 * 288
- Visible light Resolution: 2MP
- Temperature measurement range: 32 ° ~ 42 ° C
- Recommended distance: 3-10m
- Temperature measurement accuracy: ≤± 0.3 ° C
- Applicable environment: indoor / windless

Functions

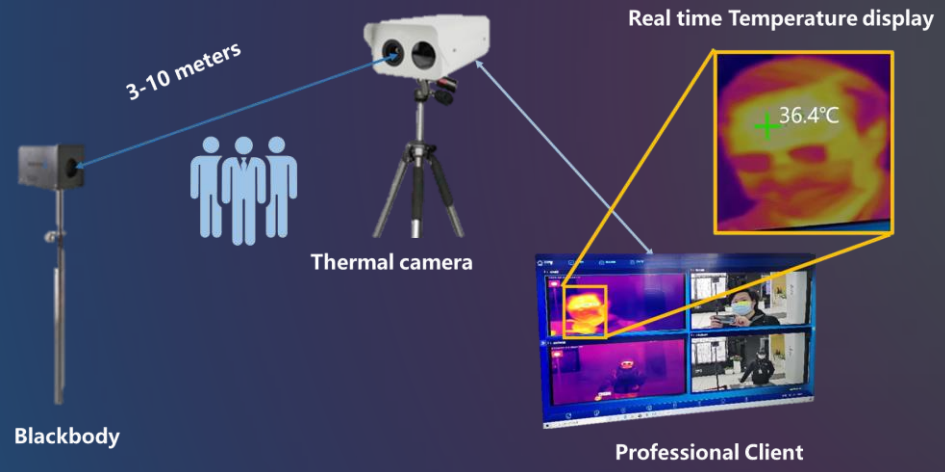
- Temperature display : Display on visible light & thermal live view
- Alarm : Alarm for abnormal temperature of multi people at the same time
- Video and snapshots: detect face and capture when alarm triggered，real time video recording
- Correction of body and surface temperatures : Auto

Specification：

Specification	Description	Parameter
Thermal module	Resolution	384×288
	Focal length	18mm
	Angle of view(H)	25°
	Angle of view(V)	19°
Visible light module	Resolution	2 MP
	Focal length	3.8~16mm
	Starlight	Colour : 0.001Lux(F1.6, AGC ON) B/W : 0.0002Lux(F1.6, AGC ON)
	WDR	120dB
	SD card	Micro SD, up to 256GB
Accuracy of temperature measurement	Range	32-42℃
	Accuracy	±0.3℃
Interface	Infrared machine head interface	Aviation plug
	Server interface	RJ45
Power	Input power	≤15W

Introduction of TIC600

Packaged System, all equipment packaged and delivered



Product name	Description	Quantity
Dual-spectral thermal camera	Optical imaging: 1920*1080 Thermal imaging: resolution 384 * 288, temperature measurement range **32 ℃ ~ 42 ℃**, typical temperature measurement accuracy 0.3 ℃; visible light: ≥2 MP, 3.8~16mm Size: 210mmx133.5mm×396.5mm Power: DC 12V, ≤15W, <5Kg	1
Tripod	For both camera and blackbody, 1.65m high	2
Blackbody	Accuracy： ±0.2℃， stability:±(0.1~0.2)℃/30min Size and weight： 135mm x 135mm x150mm, <3.5kg Power: 220V AC, 60W	1
System software	1. Real time live view, support multiple sets of equipment connection at the same time; 2. Abnormal body temperature alarm, adjustable alarm range, supporting sound and light alarm 3. Shielding area can be set; 4. Automatic capture and video recording. 5. Simultaneous temperature display on visible and thermal camera live view; 6. Automatic correction of body and surface temperature.	1

Everything else you want to know…

Q **Is infrared thermography harmful to human body?**

A Absolutely not. Thermal imaging equipment is passive detection of infrared radiation, similar to the imaging principle of visible light camera, which will not cause any harm to human body.

Q **Can the temperature measurement accuracy of 0.3 ℃ meet the application requirements in temperature measurement screening?**

A Infrared thermal camera is not an accurate medical temperature measuring instrument, the purpose of which is to quickly find out the abnormal body temperature person in the crowd. Therefore, we should pay more attention to the consistency of temperature measurement, that is, whether the temperature value obtained by testing the same temperature object at each pixel of the same thermal camera is basically the same. Through a certain amount of data acquisition and artificial intelligence analysis, the thermal camera with good consistency can easily and accurately screen out the population with abnormal temperature. Besides, a large number of applications have proved that the accuracy of 0.3 ℃ temperature measurement can fully meet the needs of the initial screening of body temperature in public places.

Everything else you want to know…

Q **Why is my equipment not accurate in temperature measurement?**

A Thermal temperature measurement has a great relationship with the applied ambient temperature and the detection distance of the target. Generally speaking, it is recommended to install the equipment in a windless and temperature constant indoor environment to avoid other high temperature sources in the picture. Please strictly follow the professional installation instructions and operation requirements;

Q **Can temperature screening equipment be installed outdoors?**

A The optimal installation environment is indoor (relatively isolated from the outside), which is the same as the surface temperature measurement methods on the market at present. According to the principle of thermal imaging human body temperature measurement, outdoor wind and sun exposure is easy to affect the human body surface temperature and the working state of equipment, thus leading to the deviation between the temperature measured on the body surface and the real human body temperature. If the user does not have a suitable indoor environment, it is recommended to build a temporary temperature measurement access in the corresponding area such as indoor and outdoor direct connection area, outdoor entrance area, etc., to create a relatively stable temperature measurement environment manually;

Everything else you want to know…

Q **What is the accuracy of thermography for human body temperature measurement?**

A Thermal imaging is mainly used for body temperature screening, which means that the temperature of human body surface is initially detected by thermal camera (non-contact), and the individual with abnormal temperature is found. After the abnormal temperature target is found, the professional temperature measurement is carried out. For example, 20-30 abnormal temperature targets are found through thermal imager screening among 100 people, and then measured and confirmed by professional means. It can effectively reducing the testing workload and improving efficiency.

Q **What are the advantages of thermography thermometer? compared with traditional detection methods such as forehead and ear thermometer?**

A
1. The thermal camera belongs to non-contact temperature measurement, and the distance is longer than that of forehead thermometer(up to 1 m), which can effectively prevent medical staff from contacting potential patients and ensure the safety of medical staff;
2. The speed of temperature measurement is faster, the detection efficiency is effectively improved, and the passing speed of personnel is improved;
3. The image temperature measurement method is more intuitive, and the abnormal personnel can be took photos for convenient recording.

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