



HIRDA- LT

High protection infrared thermal imaging temperature detection and analysis system

Technical Specification

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catalogue

1. Overview.....	3
2 System Introduction.....	3
2.1 System description	3
2.2 System features	5
2.3 Requirements for system public works	5
2.3.1 Power supply	6
3 Application scenarios.....	6
4 System composition.....	6
4.1 High protection type infrared thermal imaging thermometer	6
4.2 Overall structure size	7
4.3 Thermal imaging control cabinet	9
4.4 High temperature resistant cable	9
4.5 Image intelligent server	10
4.6 Installation accessories	10
5 System software.....	11
5.1 Software interface	11
6 Configuration list.....	12
7 Schematic diagram of on-site installation.....	13
8. Division of labor between the two parties.....	14
9 Acceptance criteria.....	15
10. After-sales commitment.....	15



HIRDA-LT high protection infrared thermal imaging detection and analysis system

Technical Specification

1 summary

In the production process of steel metallurgy, non-ferrous smelting, thermal power generation, cement kiln, lime kiln, glass furnace and other industries, it is necessary to monitor the real-time temperature of machinery, materials and containers to ensure production safety and fine control of production process.

Infrared thermography cameras convert the temperature distribution of a target into visible images and precise temperature values through infrared radiation detection, signal processing, and photoelectric conversion. These devices accurately quantify the heat detected in real-time, forming a comprehensive image of the targets overall condition. This allows for the precise identification of suspected faulty areas that are heating up. Operators can initially assess the heat generation and fault location by observing the color and hotspot tracking functions displayed on the screen, followed by rigorous analysis to confirm the issue, demonstrating high efficiency and accuracy.

The infrared thermal imaging thermometer adopts advanced technology. Non-contact infrared detection technology, Rapidly, accurately, conveniently, and intuitively display the distribution of surface temperature fields on the object being measured, measuring the surface temperature of the object. Without direct contact with the surface of the object being measured, it can quickly test the surface temperature reading and reliably measure the temperature of hot, dangerous, or hard-to-reach surfaces. thermal infrared imager The measurement speed is very fast, and the temperature change of the surface of the object can be tested intuitively and continuously.

2 System introduction

2.1 System description



HIRDA-LT high protection infrared thermal imaging detection and analysis system is an infrared thermal imaging product specially used in harsh environment. The system mainly consists of infrared thermal imaging camera core, infrared lens, metal protective cover, thermal imaging control cabinet, image algorithm server and client software.

The system employs full-area radiation temperature measurement technology, capable of acquiring multiple temperature points simultaneously; the maximum temperature measurement range can reach 2500 °C ; it features self-developed temperature measurement algorithms for high precision; the metal protective cover ensures an IP66 protection rating; the system software can achieve functions such as displaying target infrared thermal images, collecting and storing thermal data, analysis, high and low-temperature alarms and location, and temperature tracking.

This product has been widely used in steel metallurgy, non-ferrous metals, electric power, cement, glass and many other industries temperature monitoring.

The on-site application diagram of the product is shown in Figure 1.



Figure 1 Application of HIRDA-LT high protection infrared thermal imaging detection and analysis system

The system composition is shown in Figure 2.

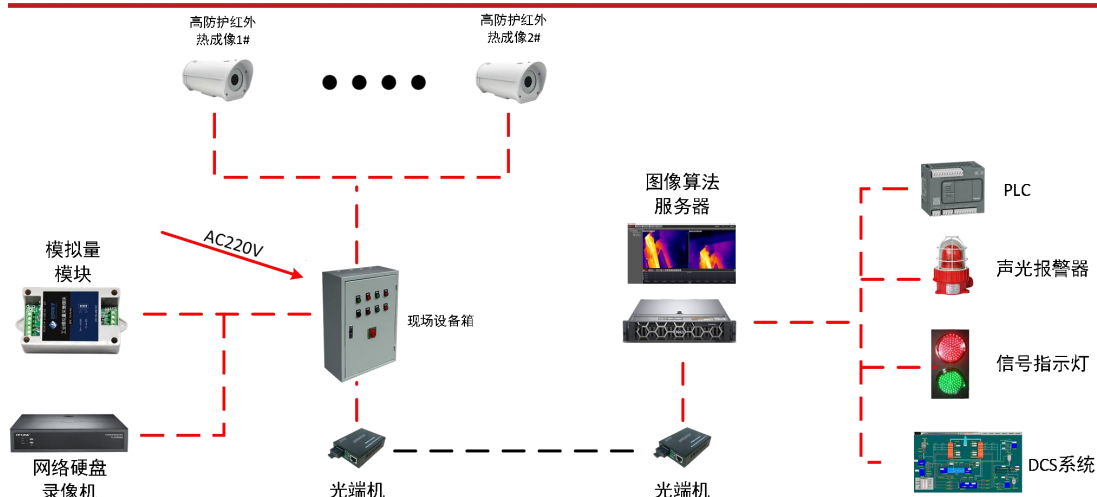


Figure 2 HIRDA-LT high protection infrared thermal imaging detection and analysis system composition block diagram

2.2 System features

- The working temperature range is wide, which can work in the ambient temperature of $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$;
- High protection level, the highest protection level can reach IP66;
- Full screen real-time temperature measurement, wide coverage;
- Not dependent on the system platform, you can directly log in to the web page to access images and configurations, and can directly output alarm signals to PLC or alarm;
- Supports onvif protocol and can access mainstream NVR;
- Temperature data can be accessed to LED screen and PLC;
- Electric/automatic focus adjustment, focus operation can be carried out at any time through software;
- The temperature range can be customized, up to -20°C to 2500°C ;
- The temperature measurement accuracy is better than $\pm 2^{\circ}\text{C}$ or $\pm 2\%$;
- Supports modbus protocol, which can be connected to DCS system for temperature data transmission.

2.3 System common engineering requirements



2.3.1 Power supply

The power supply of the on-site probe is 220VAC 50/60HZ, and the power is 50W/suites

Control room power supply: 220VAC 50/60HZ power 300W

3 application scenarios

Temperature collection of furnaces, materials and solutions in high temperature industries such as steel smelting, non-ferrous metals, cement and glass




And analysis.

4 system composition

HIRDA-LT high protection infrared thermal imaging detection and analysis system is mainly composed of high protection infrared thermal imaging temperature measurement

It is composed of instrument, thermal imaging control cabinet, image intelligent server, etc.

4.1 High protection type infrared thermal imaging thermometer

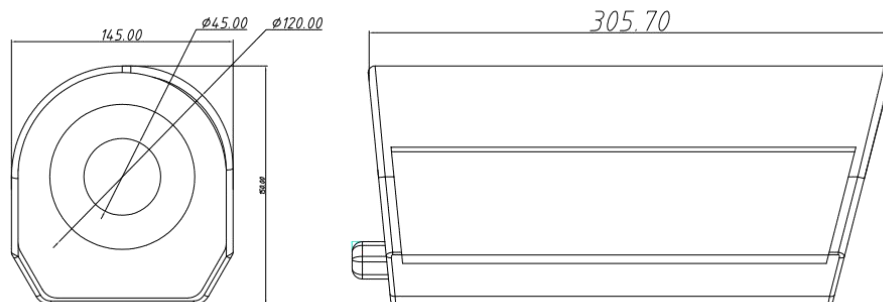
model	PDG190-NSxxEx (Single Infrared)		P DG 3 00- NSxxEx (Single Infrared)		P SG350- NSxxEx (Bi-lum)	
product picture						
Visible light resolution	-				200W、400W	
Visible light ratio	-				18X、25X、30X	
Infrared resolution	384× 288	640× 480	384× 288	640× 480	384× 288	640× 480
Infrared lens selection	8、13、 25、35	8、19、 25、35	8、13、 25、35	8、19、 25、35	8、13、25、35	8、19、25、35
Infrared field of view	45°、25°、15°、10°					
Infrared wavelength range	8~14μm					
Thermal	≤50mk@30℃					



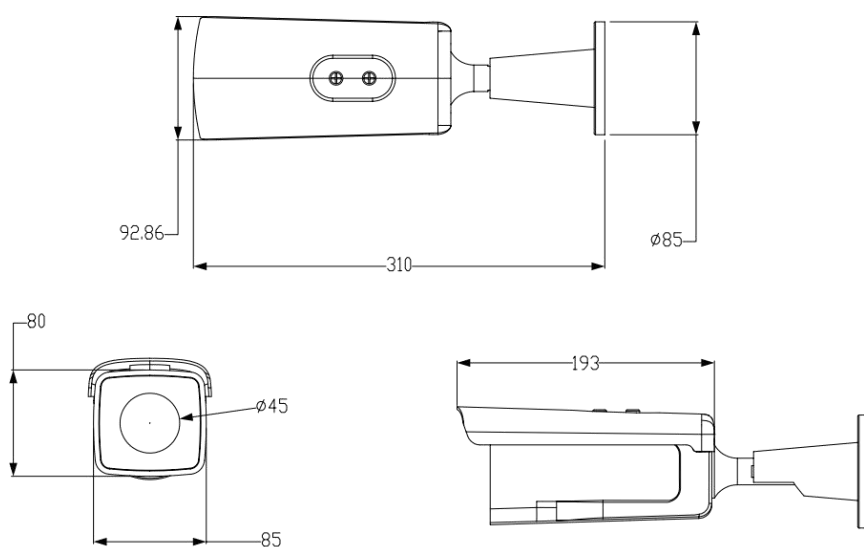
sensitivity (NETD)		
frame frequency	25Hz	
focus	Electric/automatic	
Image algorithms	Gamma correction and enhancement algorithm	
temperature measurement accuracy	$\pm 2^{\circ}\text{C}$ or $\pm 2\%$	
Temperature measurement range	$-20^{\circ}\text{C} \sim 1600^{\circ}\text{C}$ (segmented), which can be extended to 2500°C	
Video compression format	H.264/H.265	
data type	H264, H265, 16Bit original temperature data	
Network standards	Gigabit network/adaptive 10M/100M/1000M	
Agreement supported	IPv4/IPv6、TCP、UDP、NTP、HTTP、RTSP、RTP、ICMP、WebSocket、ONVIF	
Temperature output	Supports analog 4--20m A, RS485, Modbus TCP/RTU	
External trigger	Support RS485 level, TTL level	
levels of protection	IP66	
size	PDG300-NS: $\Phi 145\text{mm} \times 305\text{ mm}$ PDG190-NS: $193\text{mm} \times 92\text{mm} \times 85\text{mm}$	$346\text{mm} \times 246\text{ mm} \times 145\text{mm}$
way to install	Equipped with a gimbal stand	
weight	PDG190-NS $\leq 1\text{ Kg}$ PDG300-NS $\leq 3\text{ Kg}$	$\leq 5\text{ Kg}$
working temperature	$-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$	

4.2 Overall machine structure size

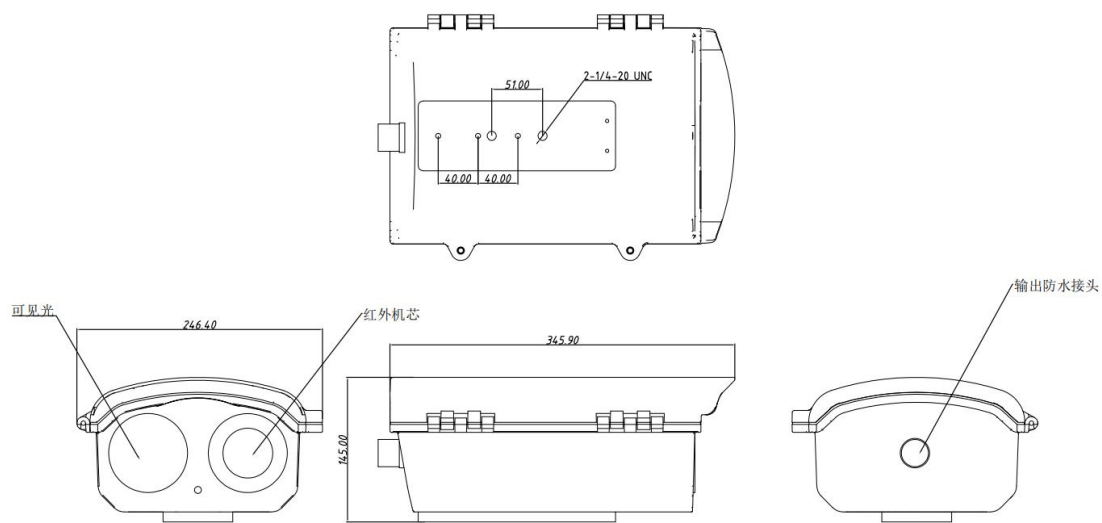
The structure size of the whole machine is shown in the following figure.



PDG300-NSxxEx structural size diagram



P DG190-NSxxEx structural size diagram



P SG350-NSxxEx structural size diagram

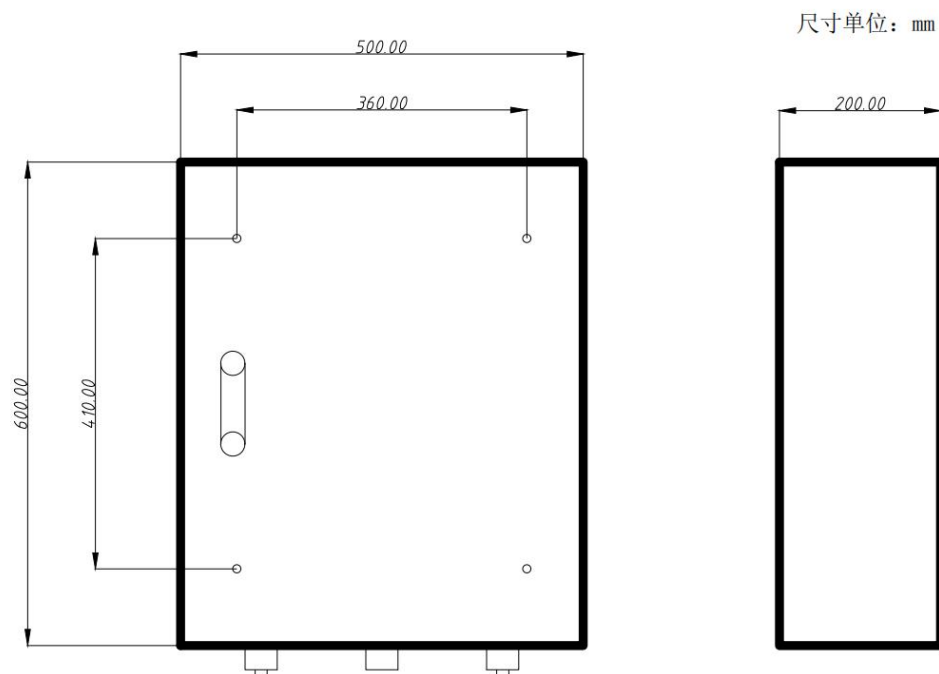


4.3 Thermal imaging control cabinet

The thermal imaging control cabinet includes an industrial Ethernet switch (photoelectric conversion), power adapter, filter, etc

Lightning protection module, etc., the main function is to provide reliable and stable power supply for infrared thermal imaging, network switching (photoelectric conversion), data conversion.

- Input interface: 100M/1000M Ethernet, RJ45 interface
- Output interface: 1000M port/ optical port
- Transmission rate: up to 1000M
- Standard: IEEE802.3, IEEE802.3u, IEEE802.3x
- Power supply: AC 220V \pm 10% 50W
- Environmental temperature: -20 $^{\circ}$ C~6 0 $^{\circ}$ C
- Environmental humidity: \leq 90%
- Dimensions: 500 (W) x 600 (H) x 200 (D) mm
- Dimensional drawings:



4.4 High temperature resistant cable



Due to the high ambient temperature at the work site, in order to ensure the stability and reliability of communication and video transmission, the cable is selected as a comprehensive cable with high temperature resistance, fire resistance and shielding net.

The main technical parameters are as follows:

- ◆ Rated temperature: $-65^{\circ}\text{C}\sim+250^{\circ}\text{C}$ (maximum ambient temperature: 250°C , minimum ambient temperature: -65°C)
- ◆ Rated voltage: 600V
- ◆ Implementation standard: GJB773A-2000
- ◆ Conductor: multi-strand tinned copper wire
- ◆ Color: Red, black DC12V 0.5m²; Orange white, orange, green white, green, blue white, blue, gray white, gray net line.
- ◆ Ultimate body: polytetrafluoroethylene (PTFE)
- ◆ Performance: corrosion resistant, strong acid resistance, strong alkali resistance, oxidation resistance; high voltage resistant, non-flammable, non-aging
- ◆ Test voltage: 7000V without breakdown

4.5 Image intelligent server

- Intel ® Core ™ i7 processor (four-core, 8MB, 3.60GHz)
- Memory 16GB 1600MHz DDR3 non-ECC
- Solid state 256G + 1TB 3.5-inch SATA (7,200 rpm) hard disk
- Display 23.8 inches
- Windows 10 Professional version, 64-bit operating system

4.6 Install accessories

- 1 high temperature resistant cable
- Adjustable cloud platform bracket
- The pre-installation assembly and pre-test are completed at the



factory

5 operational software

5.1 software interface

The client software interface of IRT system is shown in the following figure.

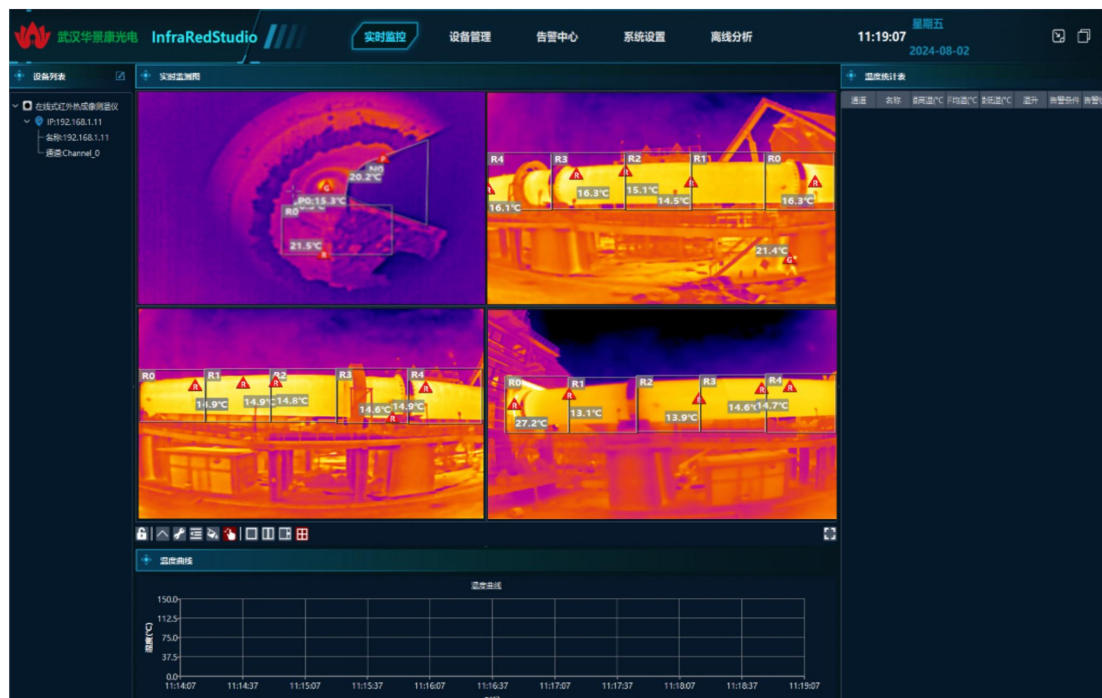


Figure 3 System software interface

The basic functions of the software are as follows:

1) Real-time video display

- Real-time display of full radiation heat map and high-definition visible light video;
- Up to 32 temperature measurement objects can be drawn, such as point, line, circle, rectangle, polygon;
- 3D temperature field and isotherm display, temperature distribution more intuitive;
- Up to 12 color palettes, suitable for more application scenarios;
- Maximum temperature, minimum temperature, average temperature multi-point temperature tracking;
- Supports up to 32 devices online at the same time; automatic reconnection when



disconnected;

- Adaptive display screen resolution, support vertical display.

2) Intelligent analysis

- Real-time display of temperature curve, custom display of time period and temperature range, temperature data can be stored in real time;
- Record videos in various video formats and take photos at regular intervals;
- Offline analysis of video and picture with temperature data;
- Temperature correction can be made by adjusting the emissivity, reflection temperature, distance and secondary calibration;
- Target outline extraction, size calculation.

3) Alarm center

- Multiple types and levels of alarms such as high temperature, low temperature, interval temperature, temperature rise and temperature difference;
- Store short video, photos and temperature information and other logs when alarm is raised for easy query after the event;
- IO, RS485, Modbus and other alarm output forms;
- Custom alarm threshold and level: assist staff to assess the emergency degree and development trend of potential hazards.

4) User management

- Support multi-user login;
- User permissions can be set in a hierarchical manner.

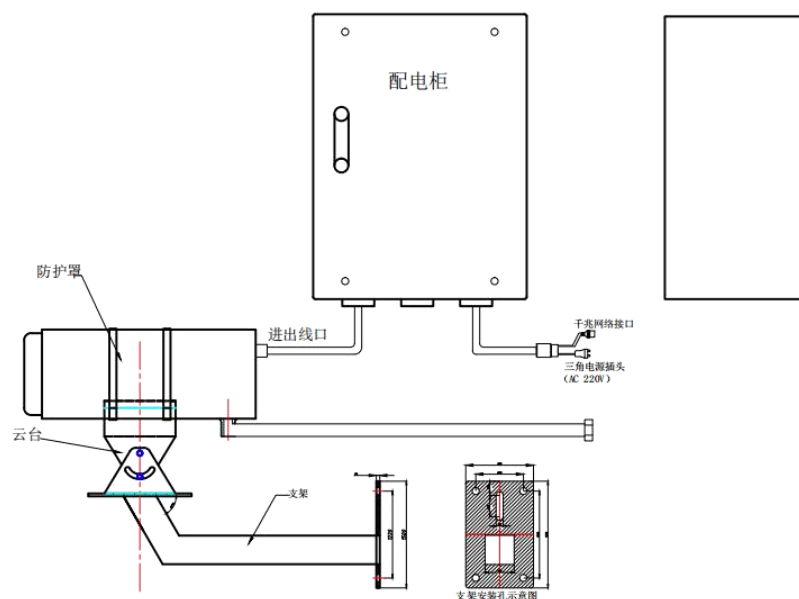
6 Configuration list

order number	name	model	unit	quantity	remarks
1	High temperature infrared thermal imaging thermometer	PDG300/PDG190-NSxxEx PSG350-NSxxEx	short for Taizhou		
2	Thermal	KZG-600×500×200	individual		



	imaging control cabinet				
3	Image algorithm server	HIRDA-IDS	cover		Hardware and software, display
4	High temperature resistant cable	/	cover		
5	Install accessories	HIRDA-FJ	cover		Contains mounting bracket and adjustment gimbal
6	4-20mA conversion module	HIRDA-DA	individual		apolegamy

7 Site installation diagram



8 Division of labor between the two sides

supplier:

1) Provide manufacturing, transportation, guidance installation and commissioning services for HIRDA-LT high protection infrared thermal imaging temperature detection and analysis system to ensure the normal operation of the system, ensure the integrity of the system and meet the requirements of on-site use.

2) Responsible for selecting the installation position of HIRDA-LT high protection infrared thermal imaging temperature detection and analysis system equipment, and providing the installation position map of the equipment before construction.

3) Responsible for training the personnel of the buyer in the debugging, use, maintenance and overhaul of the HIRDA-LT high protection infrared thermal imaging temperature detection and analysis system, so that the personnel of the buyer can independently master the operation skills.

4) Provide product certificate of conformity, inspection report, use and maintenance manual and other relevant technical data.

demand:

1) Provide relevant field data and design drawings required for the installation and commissioning of HIRDA-LT high protection infrared thermal imaging



temperature detection and analysis system equipment.

2) To undertake the piping, wiring and fiber fusion of power supply, optical fiber and cable required for the HIRDA-LT high protection infrared thermal imaging temperature detection and analysis system equipment.

3) Determine that the site has the installation conditions required by the supplier, and notify the suppliers technical personnel in advance to participate in the installation and commissioning.

4) The buyer shall assist the suppliers factory service personnel in providing working conditions.

9 acceptance level

1) It can display the infrared thermal map of the measured target on the interface of HIRDA-LT high protection infrared thermal imaging temperature detection and analysis system software, and maintain good working effect under the condition of meeting the requirements;

2) Can display the current device usage status, record temperature data;

3) Show the abnormal temperature area of the measured target and prompt alarm;

4) The supplier shall provide professional training for the designated personnel of the buyer.

10 After-sales commitment

1) The warranty period of HIRDA-LT high protection infrared thermal imaging temperature detection and analysis system is 12 months from the date of acceptance or 18 months after the arrival of the equipment (for purchased products, the warranty period for servers including internal hardware is 12 months from the date of arrival of the equipment).

2) If the thermal imaging camera is damaged due to improper use, the buyer shall order spare parts in time and the supplier shall provide maintenance services.

3) The HIRDA-LT high protection infrared thermal imaging temperature detection and analysis system software is used for a long time, and the software



upgrade service is provided free of charge.

4) When the customer calls, the supplier is responsible for guiding the customer to deal with the fault; if the customer cannot solve it, the supplier promises to arrive at the site within 48 hours. Company service phone: 400-080-4288.