HIRDA-Ex
Explosion-proof infrared thermal imaging temperature detection and analysis system
Technical specification

2024 年 2 月

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1 System Introduction

1.1 System brief

HIRDA-Ex explosion-proof infrared thermal imaging temperature detection and analysis system is a special infrared thermal imaging product for use in the explosive environment of gas and dust. The system adopts full radiation temperature measurement technology, which can obtain multiple temperature values at the same time. Measuring temperature range up to 2000℃; Self-developed temperature measurement algorithm, high temperature measurement accuracy; Through gas explosion-proof and dust explosion-proof dual certification, explosion-proof level up to Ex db IIC T6 Gb /Ex tb IIIC T80℃ Db.

This product has been widely used in coal mine, coal yard, petroleum, chemical industry and many other flammable and explosive industry temperature monitoring.

The system composition is shown in Figure 2.

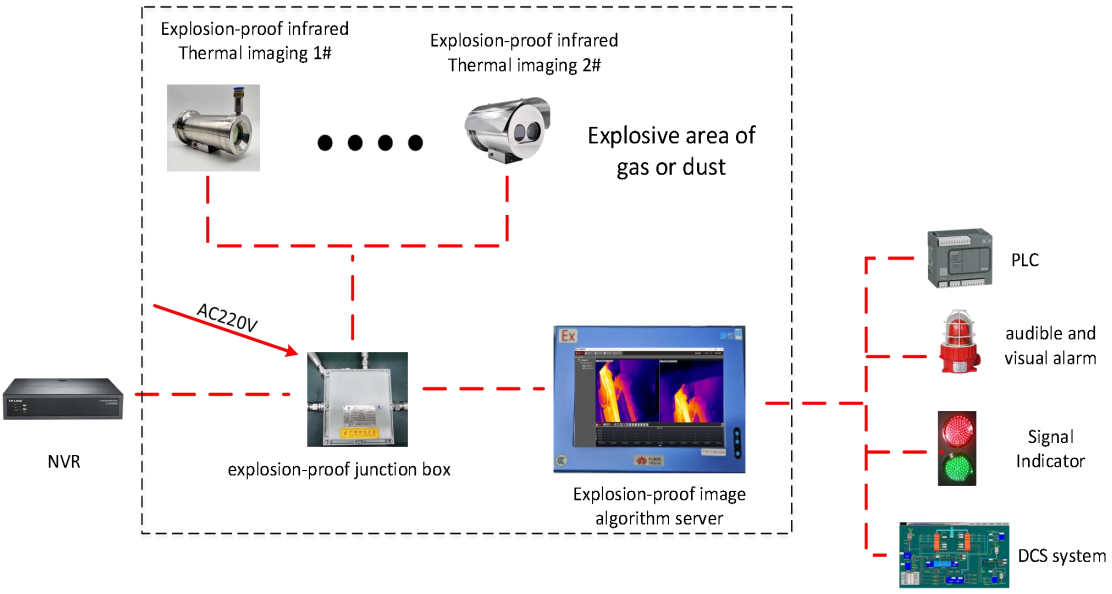


Figure 1 Block diagram of HIRDA-Ex system

1.2 System Features

- Passed professional explosion-proof test certification, suitable for gas explosion-proof and dust explosion-proof environment;
- High protection level, the highest protection level up to IP68;
- Full-screen real-time temperature measurement, covering a wide range;

- does not depend on system platform, can directly log in to the web page to access the image and configuration, can directly output alarm signal to PLC or alarm;
- supports onvif protocol and can access mainstream NVR;
- Temperature data can be connected to LED screen and PLC;
- Electric/auto focus, focus operation at any time through the software;
- Temperature range can be customized, the maximum support -20℃ to 2000℃;
- The temperature measurement accuracy is better than ±2℃ or ±2%;
- supports modbus and connects to the DCS for temperature data transmission.

2 Application Scenarios

Coal mine, coal yard, petroleum, chemical, pharmaceutical, textile and other gas and dust explosive environment.

3 System Composition

The temperature detection and analysis system of HIRDA-Ex explosion-proof infrared thermal imaging is mainly consisted of by explosion-proof infrared thermal imaging Temperature meter, explosion-proof junction box, explosion-proof image algorithm server, etc.

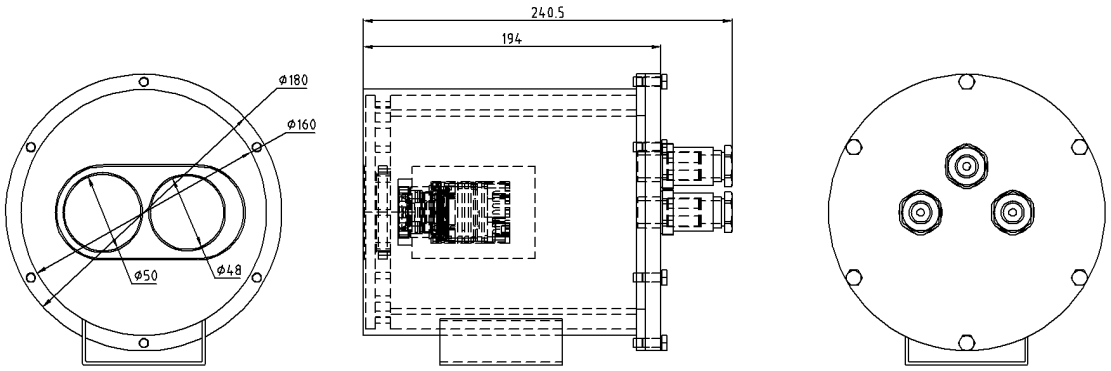
3.1 Explosion-proof infrared thermal imaging thermometer

Model	BS2S25KN（Double light）		PSWExDG300-NS（Single red strip purge）	
Product picture				
Visible resolution	200W、400W		-	
Visible light power	20X、25X、30X		-	
Infrared resolution	384×288	640×480	384×288	640×480
Infrared lens selection	4、8、13、25	8、19、25、35	4、8、13、25	8、19、25、35
Infrared field Angle	80°、45°、25°、15°			
Wavelength coverage	8～14μm			
Heatsensitivity (NETD)	≤50mk@30°C			
Frame frequency	25Hz			
Focus	Electric, auto focus			

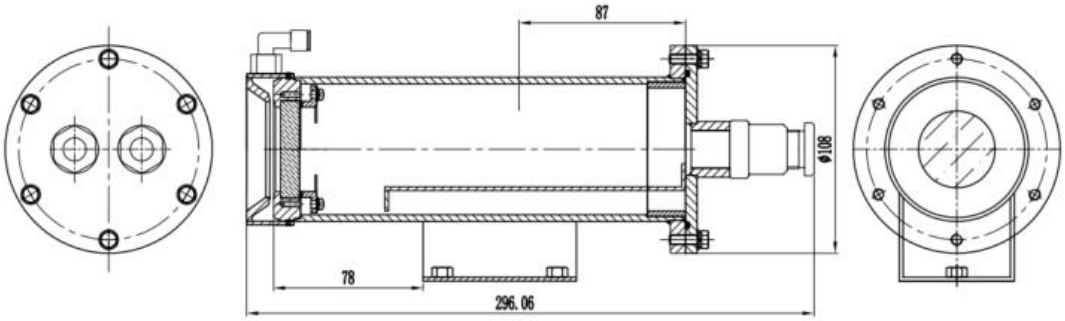
Accuracy of measuring temperature	±2℃ or ±2%	
Temperature range	-20℃ ~ 1600℃ (need to be segmented), can be extended to 2500℃	
Network video compression format	H.264/H.265	
Web standard	Gigabit network/Adaptive 100M/1000M	
Protocol support	IPv4/IPv6、TCP、UDP、NTP、HTTP、RTSP、RTP、ICMP、WebSocket、ONVIF	
Temperature output	Support analog 4--20ma, RS485, Modbus TCP/RTU	
External triggering	Supports RS485 level and TTL level	
Level of protection	IP68	IP65
Size	Φ180mm×214mm	Φ78mm×235mm
Way to install	Equipped with PTZ support	
Weight	≤10Kg	≤5Kg
Operating temperature	-20℃～+60℃	

3.2 Overall structure dimensions

The structure and dimensions of the whole machine are shown in the following figure.



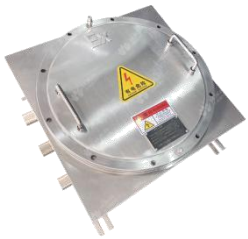
BS2S25KN Structural dimensional drawing



PSWExDG300-NS Structural dimensional drawing

3.3 System Accessories

explosion-proof junction box



Explosion-proof electric control box

Explosion-proof flexible tube

Explosion-proof sound and light alarm

4 System Software

4.1 software interface

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

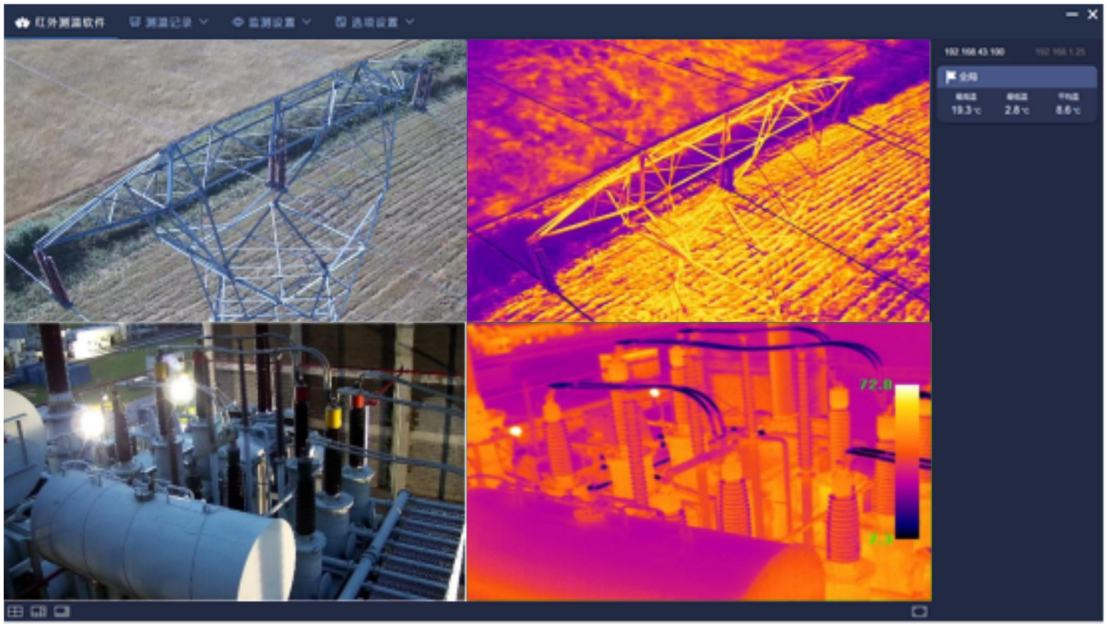


Figure 3 System software interface

The basic functions of the software are as follows:

- Real-time video display: real-time display of full radiation heat map and

high-definition visible light video, you can view the temperature of any position in the infrared heat map, and record, take photos and analyze abnormal situations.

- Temperature tracking: Automatically analyze the temperature upward trend of the entire infrared heat map or a specific area to find hidden areas in advance.
- Data capture: thermal imaging data can be periodically collected for further analysis.
- High temperature trigger shooting and alarm: When the temperature is abnormal, it can be found in time,then trigger the alarm, the software background will take infrared pictures and visible pictures during the incident.
- Fault self-diagnosis: When the terminal equipment is downtime, the system automatically alarms.
- User-defined alarm threshold and level: The system can define multiple different alarm thresholds and levels to assist the staff to assess the urgency and development of hidden dangers.

5 Explosion-proof certificate

编号：CNEx23.5604X

CNEX
国家防爆

防爆合格证

制造单位	武汉华景康光电科技有限公司 武汉东湖新技术开发区高新四路以南，佛祖岭二路以东葛洲坝太阳城第 10 幢 3 层 1 号
产品名称	双光防爆在线测温摄像机
型号规格	BS2S25KN DC12V
防爆标志	Ex db IIC T6 Gb，Ex tb IIIC T80℃ Db
产品标准	Q/HJK010-2023
总装图号	BS2S25KN.00.00

经对上述产品图样及技术文件的审查和样品检验,确认符合下列标准：
GB/T 3836.1-2021《爆炸性环境 第 1 部分：设备 通用要求》
GB/T 3836.2-2021《爆炸性环境 第 2 部分：由隔爆外壳“d”保护的设备》
GB/T 3836.31-2021《爆炸性环境 第 31 部分：由防粉尘点燃外壳“t”保护的设备》

记事：
1.外壳防护等级：IP68（水下 1m、40min）
2.环境使用温度：-40℃～+60℃
3.本产品配用已取得防爆合格证，且防爆标志不低于此认证产品的防爆填料函，使用时请严格按照其原证书及产品使用说明书的规定使用。

中心主任

颁发日期 2023 年 10 月 24 日
本证有效期 2023 年 10 月 24 日至 2028 年 10 月 23 日

南阳防爆电气研究所
国家防爆电气产品质量检验检测中心