

CIOE WEBINAR 



The Importance of **Thermal Imaging Cameras** in the Field of Security

May 10th, 2022 BJT 16:30-17:00

Zoom Webinar



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Raybeam Optronics Co., Limited

**CIOE
2022**

**THE IMPORTANCE OF THERMAL IMAGING
CAMERAS IN THE FIELD OF SECURITY**

**THE IMPORTANCE
OF THERMAL
IMAGING
CAMERAS IN THE
FIELD OF SECURITY**

- *Content*

- *Infrared market Application*
- *Infrared market scale forecast*
- *Main infrared product introduction*
- *Company profile of RAYBEAM Optronics*

Market development needs of infrared thermal imager products

The infrared market share

Infrared thermal imaging technology has applications in both military and civilian applications.

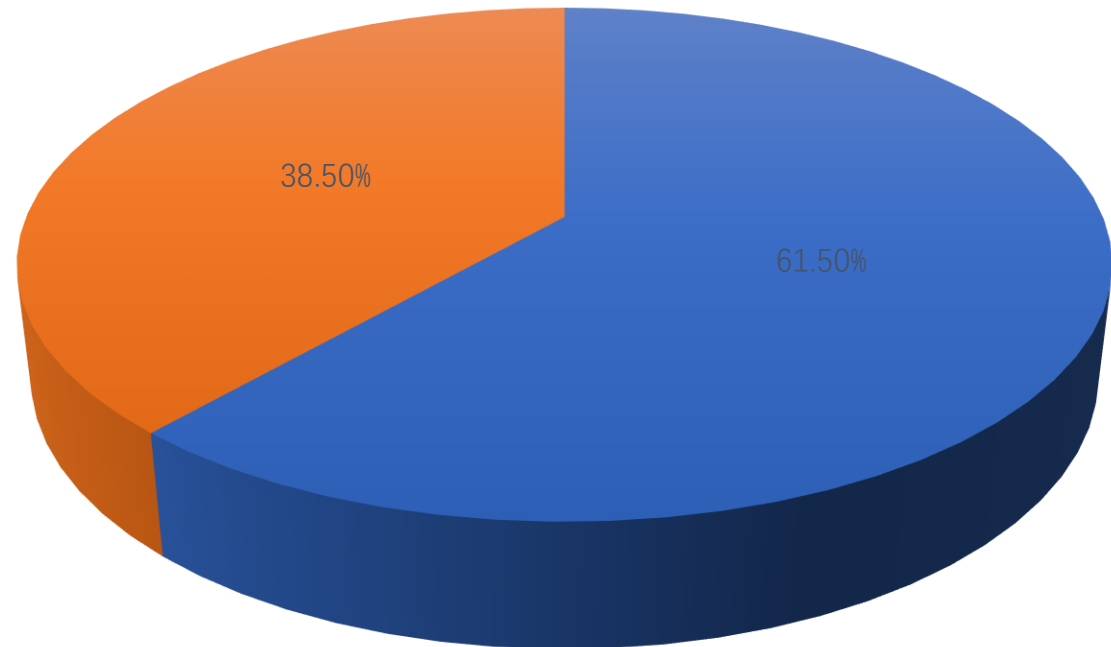
It originated in the military and gradually turned to civilian use.

In civilian use, it is generally called thermal imager. It is mainly used in research and development or industrial testing and equipment maintenance.

It is also widely used in city monitoring security protect for police , UAV air inspection .

China's infrared thermal imaging market can be divided into two categories by application: military infrared thermal imaging and civilian infrared thermal imaging. In 2021, military infrared thermal imaging will account for the largest proportion in China's infrared thermal imaging market, accounting for 61.5%, and civilian infrared thermal imaging will account for 38.5%.

Market share of thermal imaging cameras in China in 2021



■ Military thermal imaging camera ■ Civil infrared thermal imager

Data source: China Business Data Research Institute

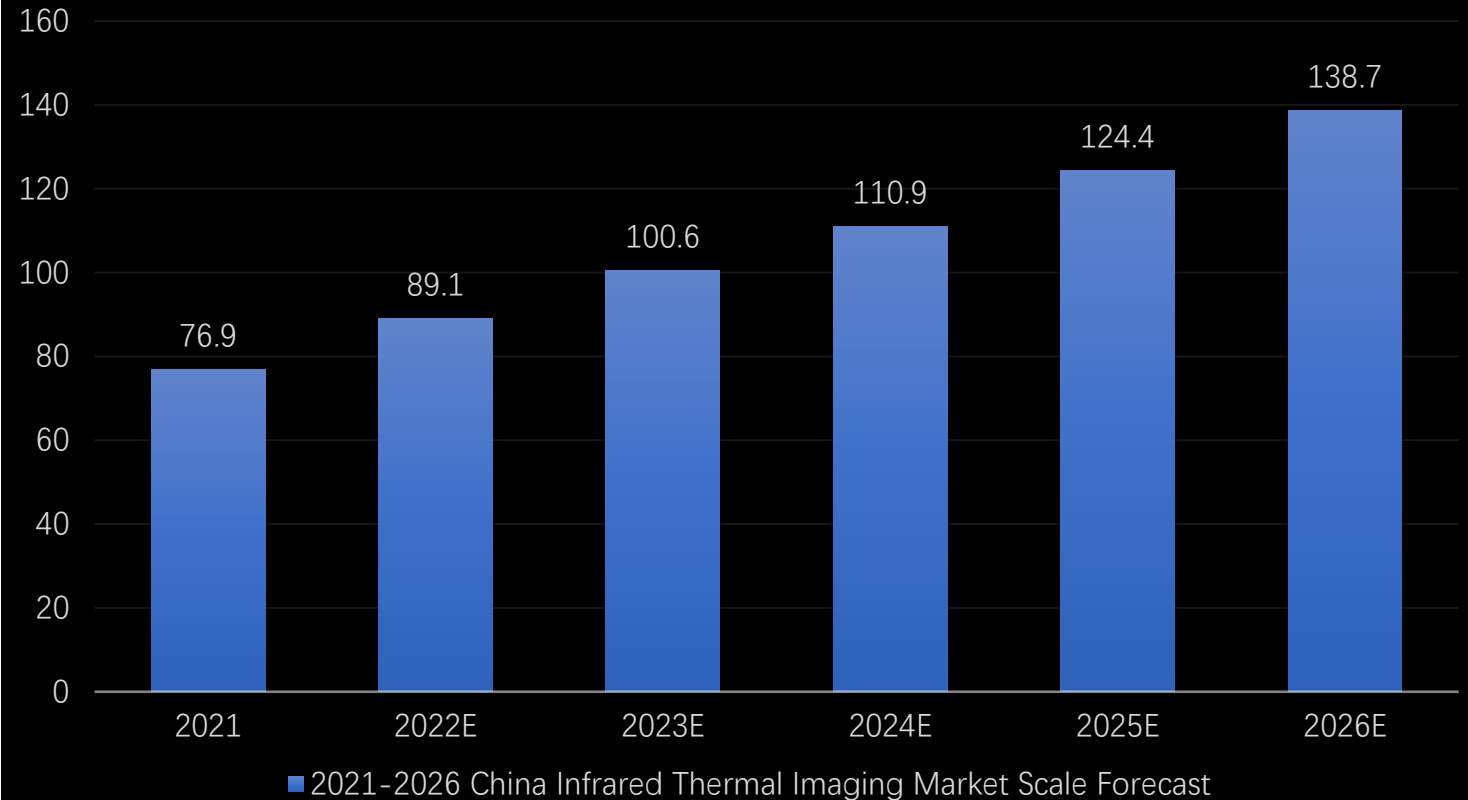
Market development needs of infrared thermal imager products

The Market scale of military field

In 2021, the scale of China's infrared thermal imaging market will reach 7.69 billion US dollars, and it is expected to continue to grow at a compound annual growth rate of 9.2%- 10.8% in 2022, and its market size will reach 8.91 billion US dollars.

It is expected that China's infrared thermal imaging market will reach 13.8 billion US dollars in 2026

2021-2026 China Infrared Thermal Imaging Market Scale Forecast



Data source: China Business Data Research Institute

Market development needs of infrared thermal imager products

The background of Market Applications for Military

The military field of infrared thermal imager is mainly used in three fields after subdivision, army barracks, fire rescue, urban anti-terrorism patrol;

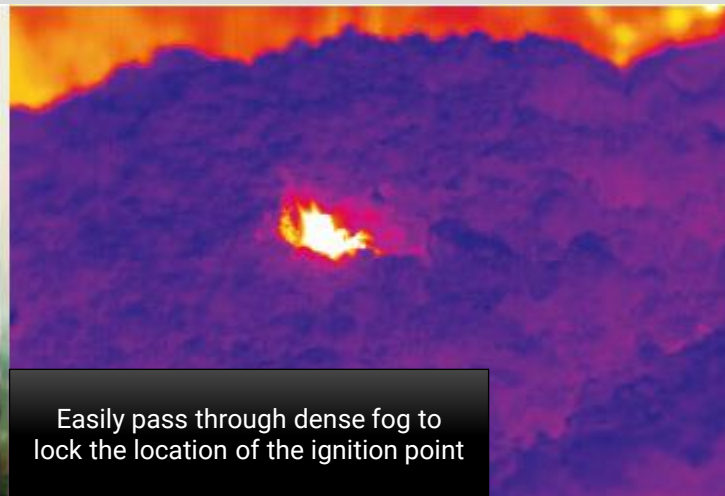
Thermal imaging cameras are used in the security needs of the army for border and coastal defense,

The field of fire protection is relatively extensive. In addition to penetrating the dense fog to quickly find the ignition point, it also needs to detect the temperature of the fire field, carry out the preparation of individual soldiers, and join the communication system.

Thermal imager monitoring in urban counter-terrorism and key intersections and UAV inspections



Boarder security



Easily pass through dense fog to lock the location of the ignition point

Market development needs of infrared thermal imager products

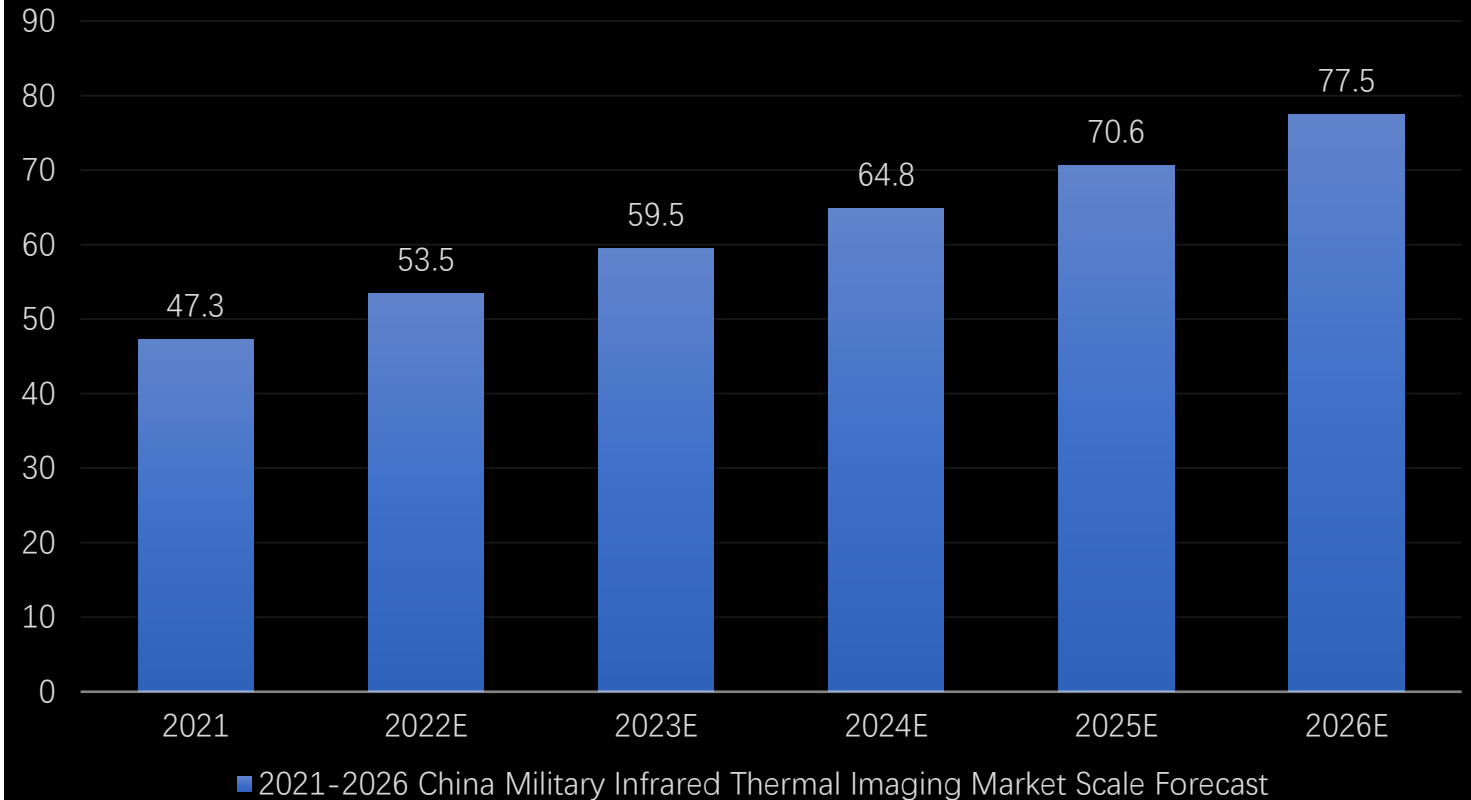
The Market scale of military field

China's national defense industry needs infrared thermal imaging products from individual soldiers, land weapons, flying weapons and naval ships.

With the acceleration of national defense modernization, my country's military infrared thermal imaging equipment is in a period of rapid growth.

The military infrared thermal imaging market size will reach USD 4.73 billion in 2021 and is expected to reach USD 5.35 billion in 2022.

2021-2026 China Military Infrared Thermal Imaging Market Scale Forecast



Data source: China Business Data Research Institute

Market development needs of infrared thermal imager products

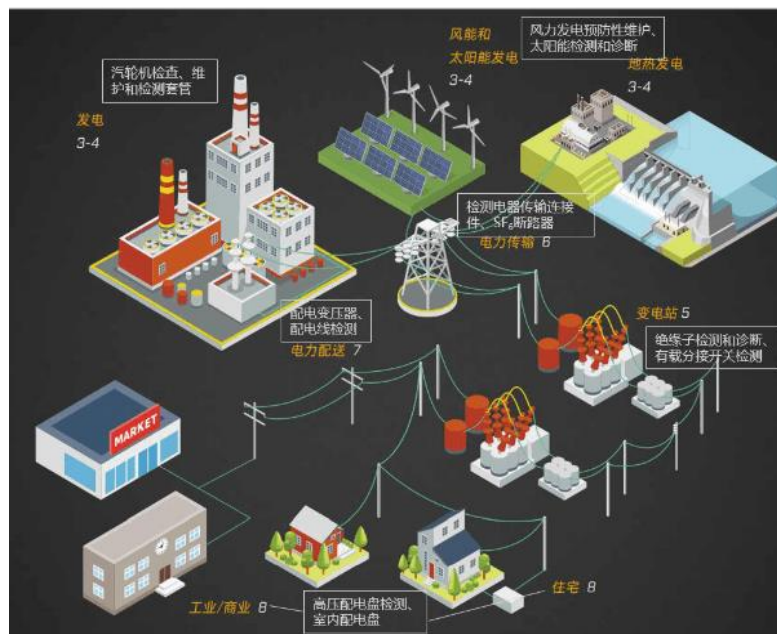
The Applications for Civilian field

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Thermal imager monitoring in city counter-terrorism and key intersections and UAV inspections

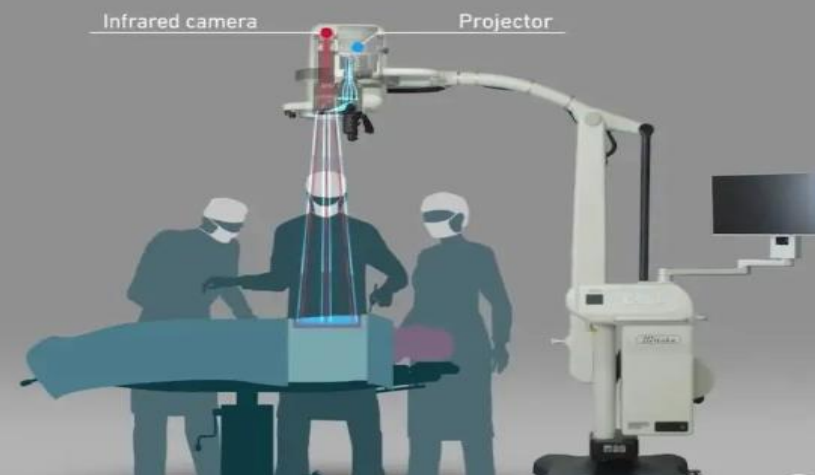


Industrial field & Electricity transfer



Infrared applications for vehicles

Infrared applications for Medical

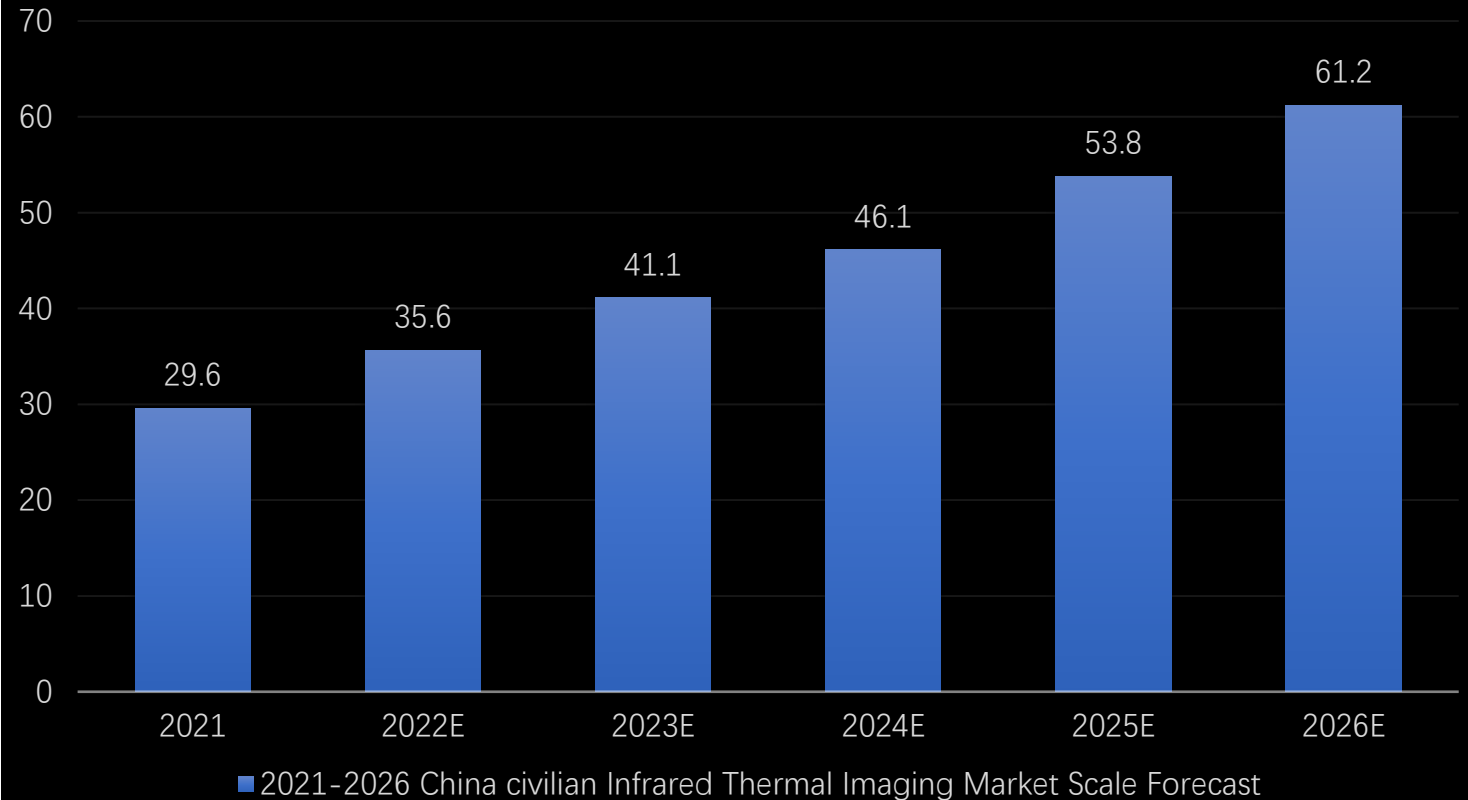


Market development needs of infrared thermal imager products

The Market scale of civilian field

In 2021, the scale of China's civil infrared thermal imaging market will reach US\$2.96 billion. It is expected that the market size of civilian infrared thermal imaging will maintain a sustained and stable growth trend in the future, and its market size is expected to reach US\$3.56 billion in 2022.

2021-2026 China civilian Infrared Thermal Imaging Market Scale Forecast

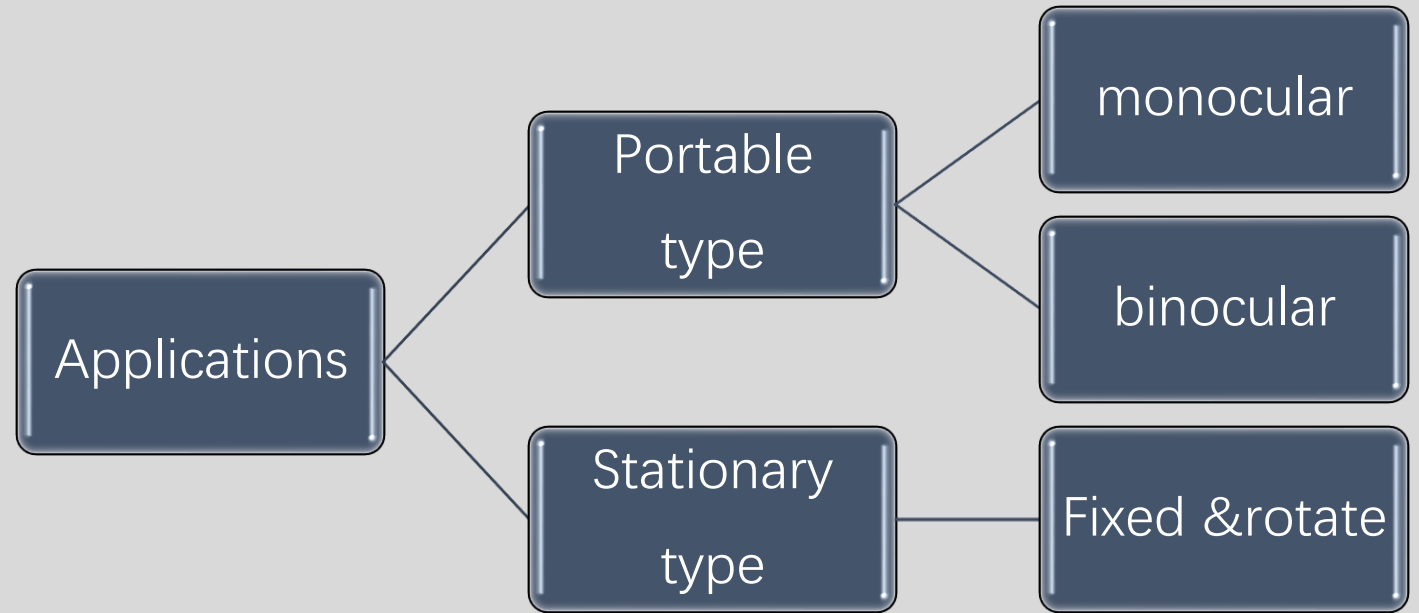


Data source: China Business Data Research Institute

RAYBEAM OPTRONICS MAIN
PRODUCT INTRODUCTION

IR KEY DETECTOR PARTS

According to different application scenarios, different products need to appear to match the development of the times and application scenarios. They can be simply divided into portable or handheld, and ultra-long-distance and large-area monitoring needs to be equipped with fixed type. Manufacturers develop related products accordingly. The product.



RAYBEAM OPTRONICS MAIN PRODUCT INTRODUCTION

IR KEY DETECTOR PARTS

The infrared detector is the core component of the infrared thermal imager. It is made of polysilicon or VOX material, 8-14um infrared long wave, and has a strong ability to penetrate fog.

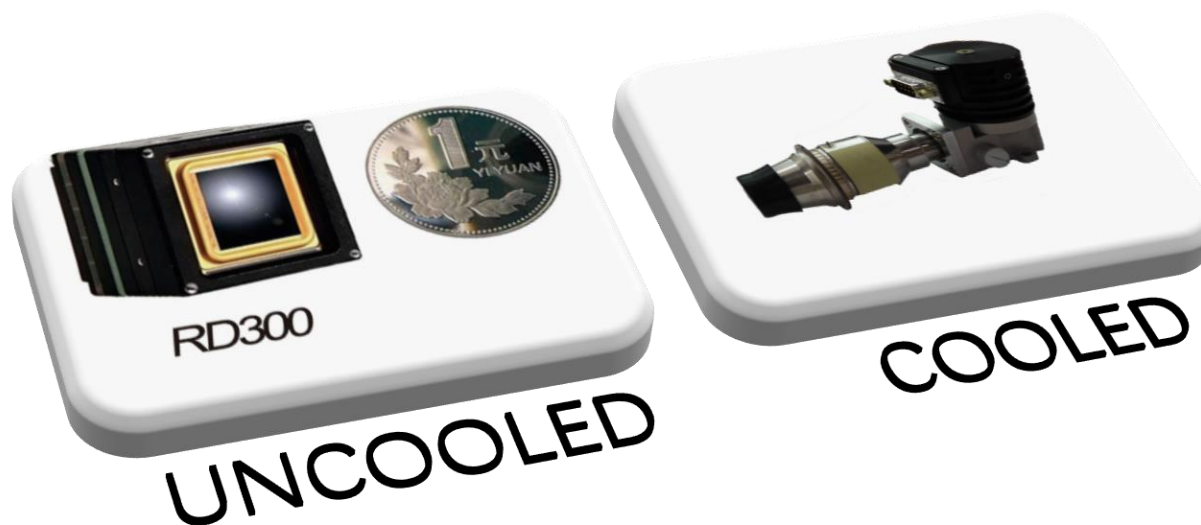
It does not need to rely on illumination light and ambient light, but is generated by the radiation of the target and the background. Scene image, work 24 hours a day, and will not be disturbed by strong visible light like other night vision equipment, and the lifespan of uncooled infrared thermal imager can reach 45,000 hours, much higher than the 1,000 hours of ordinary infrared lamps and laser lighting of 10,000 hours.

The detection distance is also from 100 meters to the observation of people over 3 kilometers and vehicles over 6 kilometers, and the detection of aircraft tail flames over 100 kilometers.

Our product RB20 multi-purpose detector is accurate and clear for the detection of human targets within 300 meters, but its own weight is less than 300g;

RB3225P is more than 8km for the early warning detection of 9*9m target hidden fire points in the forest;

EC1100 model uses three generations of 640 *512 refrigerated detector achieves stable and ultra-long-distance 24-hour detection through optical path improvement, and reaches more than 40km for ship targets.



RAYBEAM OPTRONICS MAIN
PRODUCT INTRODUCTION

PRODUCT LIST -G

Our product line is currently divided into 5 series, namely monocular, binocular, multi-functional fusion, ultra-large lens, photoelectric pod series, which can be applied to individual soldiers and border law enforcement and other application environments.



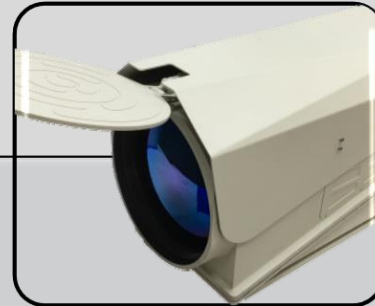
RB20
RB35
RB60G
RB90G
RB120



RB90B
RB100D
RC300L



RB100L
RB60GL
RBF15L
RB300LC



RB250L
RB800C
RB1100C
RB3225P



DPAD170
DPAD200
DPAD290

RAYBEAM OPTRONICS MAIN PRODUCT INTRODUCTION

MONOCULAR SERIES

Detector

Detector	Uncooled FPA Microbolometer
Spectral Range	8-14 μ m
Pixels	384X288 (640X480 option)
Pitch	17 μ m
NETD	\leq 60mk

Optics

Focal Lens	20mm
F#	1.0
FOV	18.5°×13.9°/ 30.4 °× 24.5°

Image Presentation

Video Output	PAL
Non-uniform Calibration	Shutterless
Offset & Gain Control	Automatic/ Manual
Electronic Zoom	1X 2X 4X
Image Color	White Hot, Black Hot
Integrated Display	OLED 600×800

Interfaces

Video Output	Composite video output/power input
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Power System

Power Supply	110/220V AC Adapter to 5V DC
Power Dissipation	<4W
Battery Type	Rechargeable 3.7V Li-ion
Battery Operating Time	2hours

Environmental Parameters

Operating Temperature	-25°C~+55°C
Storage Temperature	-40°C~+70°C

Physical Characteristics

Color	Black
Size	56×59×155mm
Weight	< 300g Without Battery
Detection Range	Human:300m Tank:2000m
Recognition Range	Human:100m Tank:850m

Information Classification: General



20mm

Detection range : 600m



35mm

Detection range : 600m



60mm

Detection range : 1200m



Detection range : 1500m



Detection range : 2000m



Detection range : 1200m and
LRF

RAYBEAM OPTRONICS MAIN PRODUCT INTRODUCTION

BINOCULAR SERIES



90B

IR & Take picture & record



100D

Visible light & IR



SH10

LRF 10KM

Detector	
Detector	Uncooled FPA Microbolometer
Spectral Range	8-14μm
Pixels	384X288 (640X480 option)
Pitch	17μm
NETD	< 60mk
Optics	
Focus Type	Automatic
F#	1.0
Focal Length	90mm
Image Presentation	
Video Output	PAL
Non-uniform Calibration	50Hz
Offset & Gain Control	Automatic/ Manual
Electronic Zoom	2X
Image Color	White Hot, Black Hot
Integrated Display	OLED 600×800
Interfaces	
Video Output/Power	Composite Video Output/Power Input/RS232 Serial
Storage	Photo Storage Up to 8 Hours On SD RAM
Calibration	Without Shutter
Power System	
Power Supply	110/220V AC to 4.2V
Battery Type	Rechargeable 4.2V Li-ion
Battery Operating Time	3 hours
Environmental Parameters	
Operating Temperature	-30°C~+55°C
Storage Temperature	-40°C~+65°C
Physical Characteristics	
Color	Black
Size	240x108x108mm
Weight	2kg Without Battery

RAYBEAM OPTRONICS MAIN PRODUCT INTRODUCTION

MULTIFUNCTION SERIES



100L

uncooled & GPS & Laser
Angle/height/speed testing & IR



15L

Visible light & IR



RB300LC

Cooled & GPS & Laser
Visible light & IR

- 1- Dual field of view Cooled array detector
- 2- Objective O.E.D technology
- 3- Target locating capability
- 4- User friendly and ergonomic design
- 5- Optional laser range finder

Detector	
Detector	Uncooled FPA Microbolometer
Spectral Range	8-14μm
Pixels	384X288(640X480 option)
Pitch	17μm
NETD	≤80 mk ≤60mk
Optics	
Focus Type	Motorized
FOV	3.74°×2.8°/ 6.23 °× 4.98°
F#	1.4
Focal Length	100mm
Image Presentation	
Video Output	PAL
Non-uniform Calibration	50Hz
Offset & Gain Control	Automatic/ Manual
Electronic Zoom	2X
Image Color	White Hot, Black Hot
Integrated Display	2 OLED 600×800
Interfaces	
Video Output/Power	Composite Video Output/Power Input
Power System	
Power Supply	110/220V AC
Power Dissipation	≤8W
Battery Type	Rechargeable 7.2V Li-ion
Battery Operating Time	> 4 hours
Equipment	
Including	GPS, Compass, Laser Range Finder
Environmental Parameters	
Operating Temperature	-30°C ~ +60°C
Storage Temperature	-40°C ~ +70°C
Physical Characteristics	
Color	Black、Khaki
Size	365×110×198mm
Weight	3.3kg

RAYBEAM OPTRONICS MAIN PRODUCT INTRODUCTION

ULTRA LARGE LENS SERIES

Model	RB250C	RB1100C
Detector	Cooled FPA Microbolometer HgCdTe	
Spectral Range	3~5μm	
Pixels	640 x512	
Pitch	15μm	
NETD	<10mk	
Activation Cooling System	<8 Minutes	
F#	4	
Optics		
Lens	18mm/2 50mm	200mm/1000mm
Lens Type	Continuous Zoom FOV	
FOV	2.2°×1.8° / 30 ° × 0.5°×0.4°/ 2.7 °× 2.1° 24°	
Image Presentation		
Video Output	PAL	
Non-uniform Calibration	50Hz	
Adjust	Auto/ Manual	
Polarity	Brightness&Contrast Adjustment B&W, B&W Inverse	
Interfaces		
Video Output	RCA/BNC	
Command And Control	RS422	
Power System		
Power System	24V DC	
Power Dissipation	≤18W at 25°C	
Environmental Parameter		
Operating Temperature	-20 °C ~+55 °C (-40 °C ~+60 °C Optional)	
Storage Temperature	-40 °C ~+70 °C (-40 °C ~+60 °C Optional)	



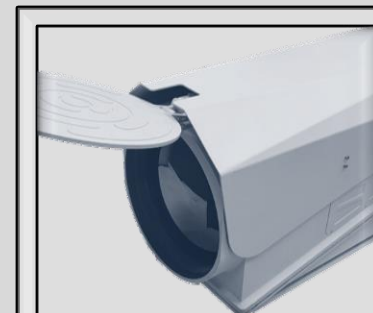
RB3225

uncooled & Angle/height/speed
testing &IR LENS



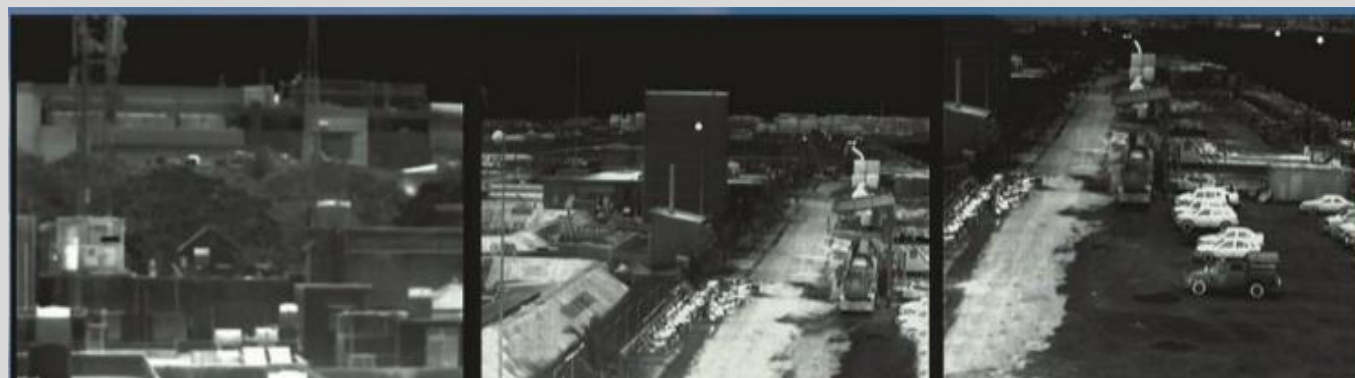
RB250C

cooled & Angle/height/speed
testing &IR LENS



RC1100C

cooled & Angle/height/speed
testing &IR LENS



RAYBEAM OPTRONICS MAIN PRODUCT INTRODUCTION

PTZ SERIES



RG170

Identification human target : 2km
Target tracking & warning



RG290

Identification human target : 2km
Target tracking & warning



RG200

Identification human target : 2km
Target tracking & warning

Technical Specifications

Stabilization Accuracy	better than 100μradian
Turret Size	310x390x290mm
Turret Weight	~ 14kg
Field Of Regard	Nx360°continuous in azimuth and -30° ~ +90°in elevation
Power Supply	Nominal operation voltage:24V DC
Humidity	95%
Operating Temperature Range	-20°C ~ +60°C
Communications Interface	RS-232/422

Day Camera

Optical Zoom	432x zoom ratio(36X optical,12X digital)
CCD Sensor	1/4 type CCD
Min. Illumination	1.4lux(1/60 sec(NTSC),1/50 sec (PAL))
Video Output	NTSC,PAL
FOV	1.7 (Tele)~57.8(Wide)

Thermal Imager/Cooled FPA Technology

Detector Type	640×512 Cooled, continues zoom
Detector Material	MCT IR FPA
FOV	Tele: 2.2°×1.8°/Wide: 30°×24°
Interface	RS232

Laser

Wave Length	1.06μm
Range Capability	10-15km(under good weather, large target)
Range Accuracy	±5m

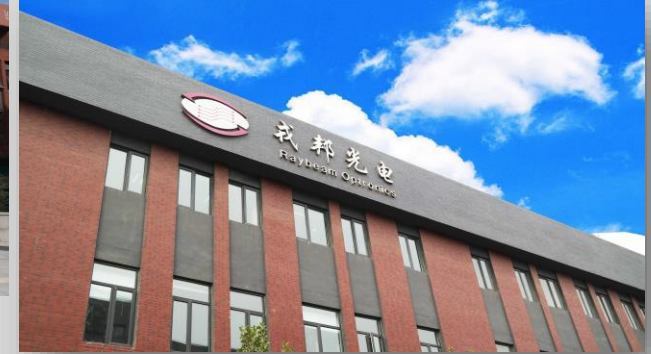
Video tracker

Processor & Target Tracking	DM6437
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Company profile

who we are & our mission

1. The company was founded in 2005 in Beijing, in 2015 moved to Beijing East Yanjiao high-tech zones, Companies focus on thermal imaging products in the research and development, production and sales, and in Beijing, Wuhan, Hong Kong, Dubai has offices, our company has completely independent research and development and technological innovation
2. With years of consistent technical breakthroughs in infrared (IR) thermal imaging and thermal measurement based hardware, systems and software applications products, Raybeam is now one of the world's sources of thermal imaging expertise and excellence.
3. We will be committed to the research, development, production and sales of infrared thermal imaging, and do our best for the world's public safety, environmental protection, and disaster relief.



Thanks

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Thanks



THANK YOU!

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