Infiray, Sense Difference

Temperature Measurement Product

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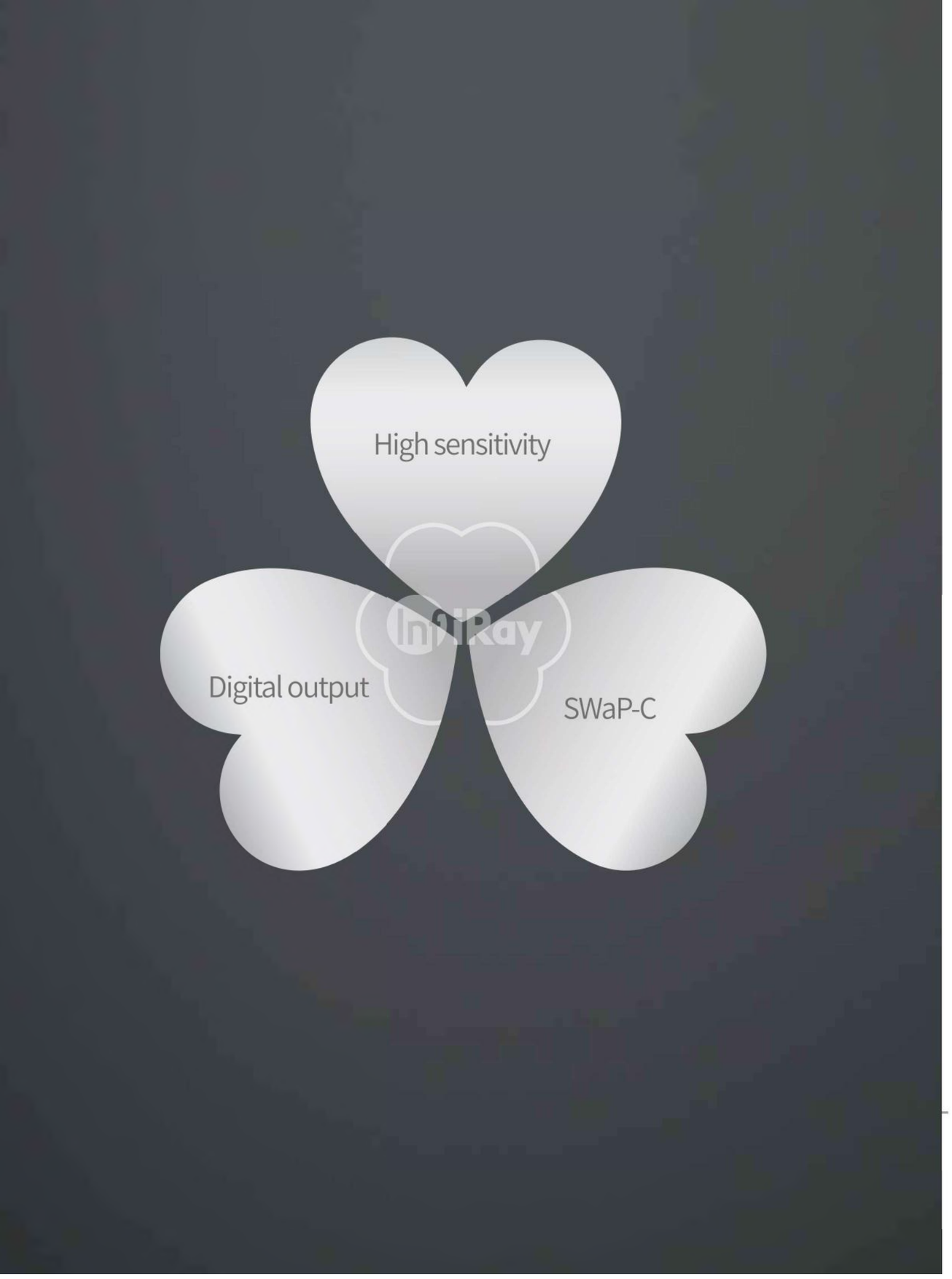


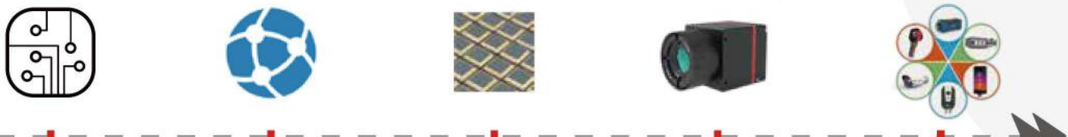
Company Profile

IRay Technology concentrates on developing infrared thermal imaging technologies and manufacturing relevant products, with completely independent intellectual property rights. IRay is committed to providing global customers with professional and competitive infrared thermal imaging products and solutions. The main products include IRFPA detectors, thermal imaging modules, and terminal thermal cameras and imagers.

With R&D personnel accounts for 48% of all employees, 930 intellectual property projects in terms of IRay have been authorized and accepted: 718 patented technologies authorized and accepted in China (including those for integrated circuit chips, MEMS sensors design and manufacture, Matrix III image algorithms and intelligent precise temperature measurement algorithms, etc.); 22 patented technologies authorized and accepted overseas; 147 software copyrights; and 43 integrated circuit layout designs.

IRay products have been applied in various fields, including industrial thermography, night vision observation, AI, machine vision, automatic driving, security and fire control, Internet of Things, and epidemic prevention and control.

iRay Optoelectronic Industry Chain



Explore
Perceive the Future

2010-2011

IRay was established in Yantai, Shandong Province, China (2010)

IRay's industrial production of infrared detector was listed as the First Strategic Emerging Industry Projects in Shandong Province (2011)

2012-2014

Released 384×288 35μm uncooled infrared FPA detector (2012)

Released 640×512/384×288 25 μm uncooled infrared FPA detector (2013)

Released 640×512/384×288 20μm uncooled infrared FPA detector (2014)

2015

Released 640×512/384×288 17μm high-performance uncooled infrared FPA detector

Released 25mm×25mm VGA Micro Series module

Released 1024×768 14μm uncooled infrared FPA detector with large array, high sensitivity, and high resolution

2016-2017

Released 640×512/384×288 17μm ultra-sensitive uncooled infrared FPA detector (NETD≤30mK) (2016)

Released 640×512 17μm wide spectrum (3~14μm) uncooled infrared FPA detector (2016)

Released the WLP uncooled infrared FPA detector (2017)

Released 640×512 12μm uncooled infrared FPA detector with ceramic package and digital output (2017)

2018

Released 12μm megapixel uncooled infrared FPA detector with ceramic package and digital output

Released the Nano Series module (Power consumption≤0.5W and Weight≤15g)

2019

Released the 1st 1280×1024 10μm VOx uncooled infrared FPA detector

Released 256×192 12μm WLP infrared detector and thermal module

Released 12μm high-accuracy temperature measurement

Released IRay's 1st VOx shutterless module

Released 12μm outdoor thermal cameras

2020

Released world's 1st megapixel temperature measurement thermal camera - AT1280

Released handheld and online temperature measurement thermal cameras

Achieved mass production of a full series of thermal modules with self-developed ASIC image processing chips

2021

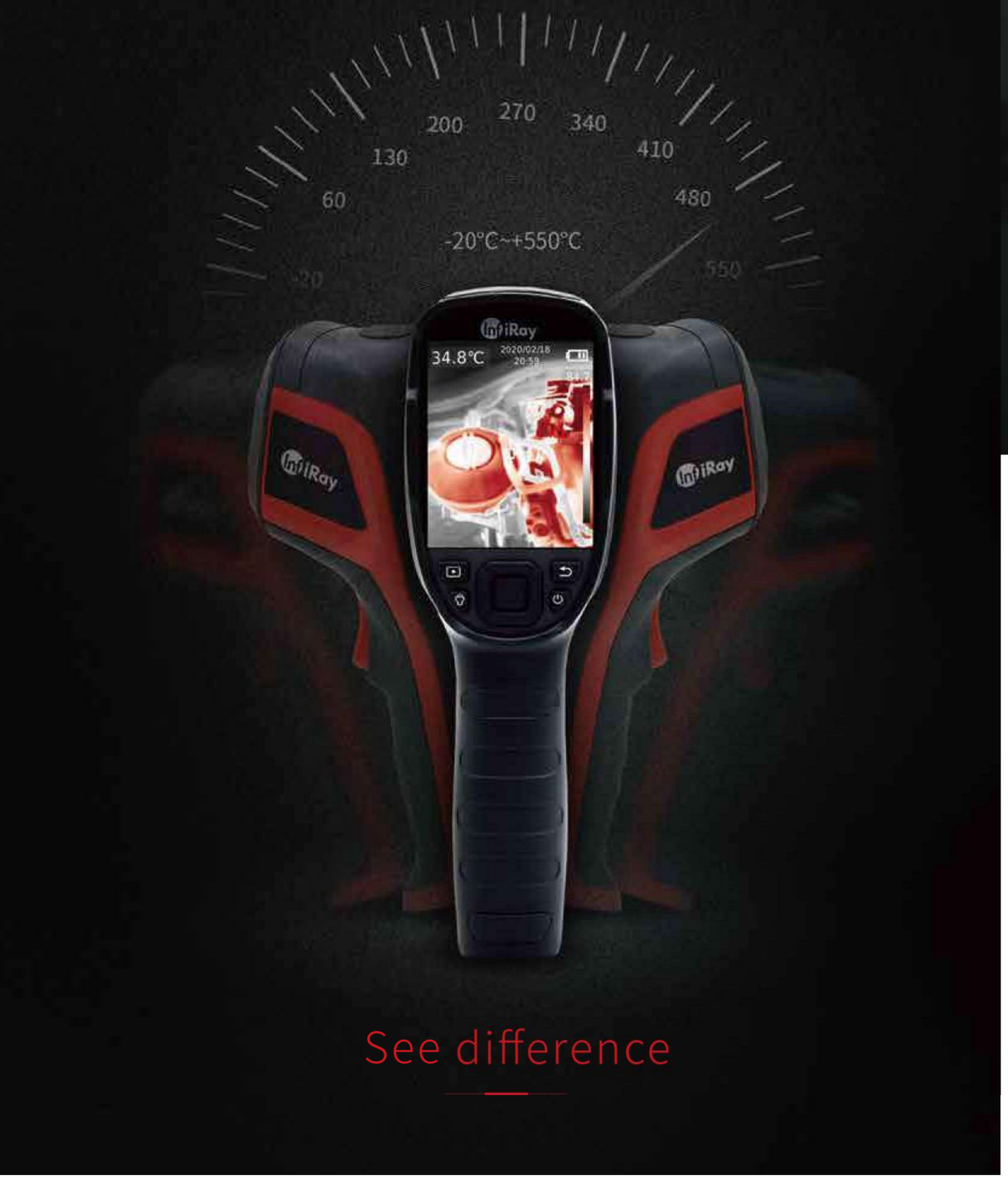
Released the world's 1st 1920×1080 8 μm uncooled infrared detector

Released the world's 1st 1920×1080 8 μm uncooled infrared detector

Raytron passed CNAS Laboratory Certification

IRay launched the Infrared Open-Source Platform - a community for infrared devices fans around the world

Tianshu Series
Handheld Thermal Camera C200



1

An Ultra-performance, hot spot spoting tool

- **0.04℃ Thermal sensitivity**

  Ultra thermal sensitivity makes tiny abnormal temperature clearly visible. Tianshu C series is also suitable for the inspection of building quality, material defect, and precision devices.

- **-20℃~+550℃ Wider range suitable for more scenarios**

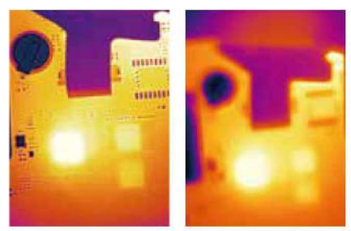
  From HVAC to automotive maintenance, One good temperature measuring tool is enough.

- **Benefit from high resolution and sensitivity**

  Application scenarios can be expanded to product development and process testing.

- **256×192 With nearly 50,000 temperature measurement pixels**

  It can output clear thermal images to pinpoint the fault at a glance. It can achieve accurate search, getting rid of fuzzy images.



Clear image
obvious details

Blur image
lost details

2

Better Performance，Faster inspection

- **Dual vision　Visible light fusion**

Infrared/visible light/dual vision fusion/ picture-in-picture mode can easily compare and Locate hot spot. Up to 7 plates are adaptive to more scenes;

- **11h ultra-long battery Life**

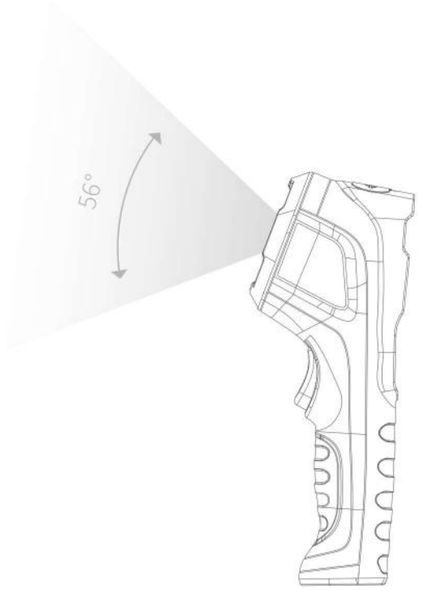
With the Type-C charging interface, it is fully charged in 4h. With 11h battery life, it is ready to use with no-worry power supply;

- **Auto tracking of highest and lowest-temperature points**

The highest/lowest temperature point could be displayed real-time on screen for easy trouble shooting, also the alarm threshold could be set.

- **56° FOV Focus-free design with wide FOV**

Inspection in a narrow space has never been more easy. It can cover the entire electric cabinet at 1m distance and scan 10m^2 indoor floor at one glance



3

Friendly interaction, simple design with rich functions

- **5 buttons　Easy operation, pick and scan**

Measure temperature with ultra easy button navigation, no additional training needed, just unbox and power up.

- **Ergonomic body design, ultra comfortable to grab**

Its camera trigger has perfect radius with the non-slip texture for better touch. Made of two-color injection molding environmental protection material, the first impression after picking it up is comfortable.

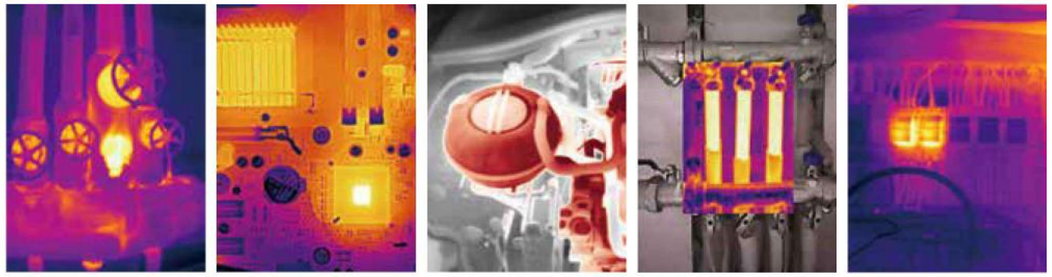
- **Support PC offline temperature analysis**

The backstage supports professional temperature analysis and image optimization, and the analysis report can be formed with one click.

- **Compact and Robust**

Design of IP54 encapsulation and 2m drop-proof.

Application Fields



Machinery maintenance　Product testing　Automotive maintenance　HVAC maintenance　Electrical diagnosis

Main Specifications

Model	C200
Detector Type	VOx uncooled infrared FPA detector
Resolution	256×192
Spectral Band	8～14 μm
Pixel Pitch	12 μm
NETD	<40mK
FOV	56°×42.2°
IFOV	3.8mrad
Focusing Mode	Focus-free
Measuring Range	-20 ℃～ +550 ℃
Temperature Measurement Accuracy	±2℃ or ±2% of the reading (the larger one shall prevail)
Measurement Tools	Central Spot measurement/Hotspot and cold spot tracing
Image Modes	Thermal imaging, fusion, PIP, visible imaging
Palette	7
Temperature Alarm	Full frame high/low temperature alarm
Alarm Mode	Support image and LED alarm
Photo Function	Support, with temperature data
Secondary Analysis	Provide PC analysis software for secondary analysis of data
Screen Size	2.8LCD（320×240）
Lighting	LED fill-in light
Storage	Standard 16GB SD card, supporting expansion
Tripod Support	Yes, at the bottom of the handle
Operating Time	11h, @25°C indoor
Charging Time	About 4h, @25°C indoor
Dimension	237×75×92mm
Weight	520g
Operating Temperature	-10°C~+50°C
Storage Temperature	-20°C~+60°C
Operating Humidity	Relative humidity 10%~95%, non-condensing
Drop Protection	2m
IP Encapsulation	IP54

Tianshu Series

Handheld Thermal Camera C200Pro

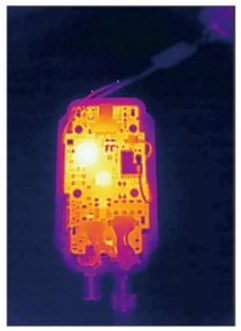
See Difference

InfiRay Tianshu C200 Pro is a handheld thermal camera with an upgraded thermographic detector. Operating efficiency is upgraded: InfiRay self-developed high-performance 12μm infrared detector, 256×192 high resolution, and 0.04°C temperature resolution are C200 Pro’s "trump cards" to provide infrared thermal images of rich details and accurate temperature measurement. With pro-grade 2,000,000-pixel visible light and low lag, it can meet professional work requirements easily. What's more, it features timed photographing, 15h long battery life, plug-and-analyze through USB. Tianshu C200 Pro, powerful upgrade of the detector.

1 Powerful Upgraded Detector

- **Pro-grade high-performance infrared detector**

With pro-grade 256×192 resolution, thermal sensor,2m Visual camera and pro-grade low lag, it can meet professional requirements easily. Matrix III intelligent image algorithm optimizes the short-distance imaging. With 56 ° wide FOV, it provides efficient short-distance details observation, to get clear thermal images with rich details.

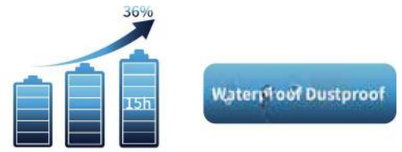


- **Pro-grade built-in thermal imaging functions**

For professional users, Interval Snapshot and automatic alarm snapshot function were added;the number of photos to take and the time interval can be set, and meanwhile, the automatic alarm and snapshot can be set. To automatic record and trace of abnormal temperature. real-time record of equipment status separated from PC, target temperature trend, ultra-long battery life, external power supply, and quick deployment.

- **Pro-grade easy-to-use thermal imager**

Industry leading 15h battery life, increased by 36% compared with the last generation. IP54 waterproof and dustproof and 2m drop protection make it easier to use: even in a complicated environment, it can still provide crisp and clear thermal images.



- **Pro-grade software support**

For professional users, the analysis function has been greatly upgraded: support plug-and-analyze through USB on PC. It supports not only real-time screen projection and offline image analysis but also full-frame real-time point/line/area temperature analysis.One-click report gereration, helping professional users output infrared inspection results and work efficiently

2 Professional

- **0.04°C temperature resolution and ±2°C measurement accuracy**

With its ultra accruacy & NETD performance, C200 Pro can easily fit in your high-accuracy inspection tasks, such as material defect detection and precise component testing.

- **-20°C - +550°C wide measurement range**

Meet the demands to inspect different industrial temperature targets. C200 Pro can meet all the requirements such as building HVAC and vehicle maintenance.

- **4 modes +7 palettes**

4 popular modes with 7 palettes provide plenty combinations of on-device thermal image display, to support various complicated observation tasks of professionals.

- **Focus-free design and 56° wide FOV**

The focus-free lens, 56 ° wide FOV, and 256×192 high resolution ensure that the area you cannot approach can be inspected at a safe distance, and meanwhile to get crisp thermal images with rich details.

3 Solid · Reliable

- **Continue the famous design appearance**

Inherited from the last generation, the camera trigger has a perfect radius with a non-slip better touch. The boxing glove appearance and lower gravity center makes it so handy & comfortable to hold in your daily use.

- **IP54 +2m-drop protection**

It has IP54 waterproof and dustproof performance. With drop protection, even if it falls from 2m height, it still can provide clear thermal images.

- **Handheld or Fixed**

Besides handheld operation, it also has a 1/4 common threaded at the bottom, via which it can be fixed on a tripod for operation. With upgraded Real-time USB Radiometric transfer function & InfiRay's perfessional software,C200 Pro can perform even more complcated temperature Analysis & monitoring tasks.

Application Fields

Electrical maintenance | Equipment inspection | HVAC | Vehicle maintenance | Product R&D

Main Specifications

		C200 Pro
Thermal Module	Detector Resolution	256×192
	Pixel Pitch	12μm
	NETD	<40mK
	Focal Length	3.2mm
	FOV	56°×42°
	IFOV	3.8mrad
	Focusing Mode	Focus-free
Temperature Measurement	Temperature Measurement	Center/highest/lowest/**3 adjustable points**
	Measurement Range	-20 °C～ +550 °C
	Measurement Accuracy	±2% or ±2°C
	Measurement Unit	°C, °F, K
	Measurement Resolution	0.1°C
	Emissivity	0.01 - 1.0, adjustable
System Function	Lighting	LED fill-in light
	Image Mode	Thermal imaging, thermal fusion, visible light, PIP
	Palettes	White-hot, black-hot, molten metal, iron red, rainbow, high-contrast rainbow, black red
	Temperature Alarm	Full frame highest/lowest-temperature alarm
	Alarm Mode	Image alarm, LED alarm
	Automatic Alarm Snapshot	**Support automatic alarm snapshot; Photo number and time interval can be set.**
	Interval Snapshot	**Support. Photo number and time interval can be set.**
	Photo Storage	Automatic/Manual
	Image Data	Image and temperature data
	USB Video Transmission	Support, **real-time analysis of temperature**
	PC Analysis Software	Support
	Display Size	2.8LCD （320×240）
	Memory Card	16GB Micro SD card
	Battery Type	Rechargeable lithium-ion battery
	Power Supply	USB type-C
	Charging Time	About 4h @Power off
	Operating Time	**15H**
	Power Management	Adjustable (automatic shutdown, 5 min, 10 min, 20 min)
Others	Tripod Support	Yes, at the bottom of the handle
	Operating Temperature	-10°C~+50°C
	Staging Temperature	-20°C~+60°C
	Relative Humidity	10% - 95%, non-condensing
	IP Grade/Drop Protection	IP54 2m
	Dimension (L × W × H)	237×75×92（mm）
	Weight	520g
	Accessory	USB cable, 16GB SD card, user guide

Tianxuan Series
Handheld Thermal Camera M200A

InfiRay® Tianxuan M200A is an focus-free handheld thermal camera equipped with a 3.5-inch large touch screen. It inherits the advantage of "Check Clearly, Solve Quickly" from the Tianxuan M series, and is installed with the self-developed 12μm high-sensitive 256×192 infrared detector and 2,000,000-pixel visible light camera for clear locating. It features the 40mK thermal sensitivity and 25Hz high frame rate, focus-free design, and USB plug-and-play analysis, to provide accurate data and clear images satisfying the requirements of process monitoring and R&D analysis.

CE RoHS dgm FC

Check clearly, Solve quickly

01

Large screen shows clear data

Clear view, accurate measurement, and broad range

- M200A is equipped with a 3.5-inch 480×640 touch screen, lifting the fineness and details of infrared images to a completely new level.
- 256×192 self-developed infrared detector, 25Hz frame rate, and 49152 temperature measurement points on a frame. Clear view, missing no temperature details and improving inspection efficiency.
- 40mK high-sensitive detector chip + professional temperature measurement algorithm. Accurate temperature measurement provids more detailed temperature resolution and dual vision: infrared for measurement and visible light for location.
- 56° wide FOV + focus-free design provides a larger inspection range at the same distance. Broad inspection range covers a whole cabinet in 1m and achieves high-efficiency inspection in narrow spaces.
- Two levels of temperature measurement: -20°C to +150°C, 100°C to 550°C; ±2°C measurement accuracy, satisfying temperature requirements in different scenarios.

3.5-inch 480×640 touch screen

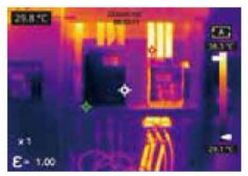
256×192 self-developed infrared detector

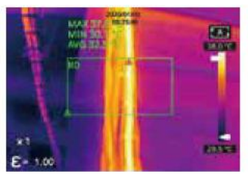
25Hz frame rate 49152 measurement points

High-sensitive detector chip

56° wide FOV and focus-free design

2,000,000-pixel visible light





02

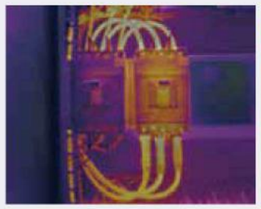
See temperature difference with intelligent software

Support UVC, settable thresholds, and alarms

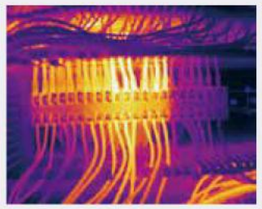
- M200A is connected to the InfiRay® software ecosystem. With the USB real-time image analysis function, you can measure and analyze temperature at one time. It supports dual-platform analysis on both PC software and App, with rich software functions, curve generation for temperature rise by a click, settable alarm threshold, and multi-area flexible alarm.
- It is equipped 3.5-inch touch screen and supports the highest temperature, central spot, and cold/hot spot tracing as well as temperature display. Temperature measurement can be directly conducted on points, lines, and areas to facilitate partial area measurement and partition measurement.
- 4 modes+7 color palettes are suitable for more measurement modes. Wide temperature range for you to adjust manually, size and position settable for PIP mode. In dual-vision fusion mode, the infrared image can be adjusted on the touch screen to implement dual-vision registration. 4× digital zoom is supported for infrared images. One device can satisfy multi-scenario and multi-purpose requirements of users.

Dual-vision registration touch screen adjustment

USB plug-and-play analysis



Thermal fusion mode



Thermal imaging mode

Visible light mode

PIP Mode

03

Strong, durable, and rigid

IP54, 2m drop protection, and 8h long battery life

- Well made with fine materials, M200A supports IP54 and 2m drop protection. With the perfectly curved camera trigger, you can short press it for photographing or long press it for recording. The internal 32G memory is sufficient for use!
- M200A is equipped with two quick removal batteries, rechargeable on a portable 5V mobile power supply, to achieve ultra-long battery life for you to use at will. This prevents process delays due to insufficient power for users.

2m
drop protection

IP54
grade

Application Fields

Product R&D

Building inspection

Equipment maintenance

Electric routine inspection

Electrical maintenance

Main Specifications

	Model	M200A
Detector	Focal plane array/Spectral range	Uncooled FPA microbolometer (VOx)/8-14μm
	Pixel pitch	12 μm
Imaging and optical data	Infrared resolution	256x192 pixels
	NETD	⩽0.04℃@30℃ (⩽40mk)
	FOV	56°×42°
	Focal length	3.2mm
	Spatial resolution/IFOV	3.75mrad
	Focus	Focus-free
	f number	1.1
	Image frequency	25Hz
	Digital zoom	2x, 4x
Image presentation	Resolution	1920x1080 pixels, CMOS
	Visual camera	2 Megapixels
	Screen	3.5 inch touch screen, 640x480
	Color palette	7 color palettes (white hot black hot iron lava rainbow rainbowHC RdGy)
	Temperature Range of Color Code	Manual/Automatic temperature range
	Image mode	IR/Visual/PIP/Fusion
	Laser pointer	Available, class 2, <1mW/650nm, eye-safe
Measurement analysis	Temperature Range	-20℃- +550℃
	Accuracy	±2℃ or ±2% (of reading, whichever is greater)
	Measurement mode	Central spot (for full frame), hot spot, cold spot
	Spotmeter	10 in live mode
	Line	10 in live mode
	Area	10 in live mode
	Automatic hot/cold detection	Automatic maximum/minimum markers within area
	Temperature alarm	Full frame high/low temperature alarm
	Alarm mode	Image alarm
	Auto/timed photograph	Support auto photograph when trigger alarm and timed photograph, photo numbers and time interval can be set
	Video streaming	Real-time radiometric infrared-video streaming over UVC
	Settings	Data/time, ℃/°F/K, language (12, English/Russian/ Polish/German/French/Korean/Portuguese/Spanish/Hungarian/Italian/Turkish/Traditional_Chinese)
	Emissivity correction	Variable from 0.01 to 1.0 (increment: 0.01)
	Atmospheric transmissivity adjustment	Object distance setting (0.5-4m, step size 0.25m);Ambient temperature(adjustable, –10℃~+50℃, step size 1℃)
Storage	Memory card	32G Micro SD card
	File format - thermal	JPG, with original temperature data
	File format - visual	JPG, without temperature data
	Non-radiometric infrared-video recording	H.264 to memory card
	Image naming	Support automatic naming/text input/naming through QR code scanning
	Voice annotation	voice recording (unlimited time), stored with images (microphone built-in)
	Text annotation	available
Power supply	Interface	USB Type C
	Battery	Rechargeable li-ion battery
	Battery Operation time	About 8 hours continuous operation
	Charging time	About 3 hours
	Power management	Auto shut-down (5 min, 10 min, 20 min, off)
Environment	Working temp.	-10℃-+50℃
	Storage temp.	-20℃~+60℃
	Humidity	10%-95% (Non-condensing)
	Encapsulation	IP54(IEC 60529)
	Impact and Vibration	Impact 25g (IEC 60068-2-27); vibration 2.5g (IEC 60068-2-6)
	Drop resistance	2m
	Wifi	available
	Certificate	CE/FCC/RoHS2.0
Dimension & Weight	Weight	635g
	Dimension	258mm×105mm×102mm
	Tripod	1/4"-20-UNC
Interface	Power input	DC 5V
	Accessories	5V 2A power adapter, USB cable, SD card, documentation, battery charger

Tianxuan Series
Handheld Thermal Camera M300G

Tianxuan M300G Handheld Thermal Camera comes with 384×288 VOx infrared detector and the optimized circuit, Matrix III intelligent image processing algorithm, and patented temperature measurement algorithm. It provides clearer thermal images and more accurate and stable temperature data. Also, it is equipped with an intelligent touch screen, manual focusing lens, dual vision, and various built-in analysis functions, to ensure accurate test results and efficient analysis and diagnosis.

CE RoHS FC

Check clearly, Solve quickly

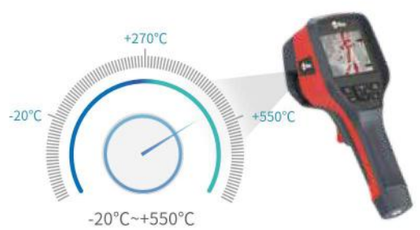
1

Even more powerful performance Makes M300G to greater

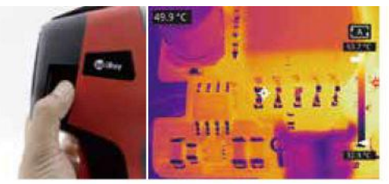
- With 384×288 thermal resolution, thermal sensitivity of 0.035°C, and 43.7° FOV, M300G can display rich details that low resolution products cannot, and make sure the abnormal temperature targets were not missed.

384×288 thermal resolution

- It has a wide measurement range of -20°C~+550°C. From building detection to vehicle maintenance, it is adaptive to various scenes and purposes. There is no need to switch equipment, to save costs and improve efficiency.



- Manual focusing provides clear images of targets from far to near. Especially for observing tiny near targets. The lens equiped on M300G is close to the quasi macro level, so tiny targets at the size of 1mm (at thedistance of 0.1m) can be distinguished.
- 3.5-inch LCD high definition (640×480) capacitive touch screen, with adjustable screen brightness, is more convenient for observation and analysis.



- It has powerful image fusion functions. With a 5 million pixels digital camera, it can provide more comprehensive and richer information, easier for observation under complex conditions.

Powerful image fusion functions

2

Intelligent analysis. Discover more, within the image

- Support WiFi transmission. After connected to mobile phone APP, it can analyse and share thermal images and temperature data at any time and anywhere.
- Intelligent PC analysis software supports the resetting of the measurement parameters. Click to form the detection report, convenient for data sorting, analysing, and mining.

3

Professional design, expert's choice, choose to be an expert

- It supports both screen-touch and button operation. The touch panel is clear to see, easy to use, and convenient to analyse the data. The physical buttons are user-friendly, and convenient to operate with gloves.
- The operation interface is clear and user friendly. It can be easily operated without training.
- It needs only one button to take photos or videos. Voice annotation is supported to perfectly restore the scene and simplify the complicated work procedures.
- The large capacity 4500mAh battery is designed to be quickly detachable . Each M300F is shipped with two batteries and a charging dock, to meet heavy daily usage.
- 3.5-inch LCD high definition (640×480) capacitive touch screen, with adjustable screen brightness, is more convenient for observation and analysis.
- Compact and robust design with IP54 protection and 2m drop-proof. all these are to ensure you can work without worry.
- Dual modes support hand-held operation and fixed operation on the tripod, flexible and reliable.
- Laser pointer can locate targets quickly and accurately, improving inspection efficiency.
- Built-in high/low-temperature alarm supports user-defined alarm temperature.

Application Fields

Electrical diagnosis | Machinery maintenance | Product assessment | Automotive maintenance | HVAC maintenance

Main Specifications

Model	M300G
Detector Type	VOx Uncooled infrared FPA detector
Detector Resolution	384×288
Spectral Band	8~14μm
Pixel Pitch	12μm
NETD	<35mK
Frame Rate	25Hz
FOV	43.7°×31.9°
IFOV	1.98mrad
Focusing Mode	Manual focusing
Measuring Range	-20 ℃~+550 ℃
Temperature Measurement Accuracy	±2℃ or ±2% of the reading (whichever is the greater)
Measurement Tools	Central spot measurement/Hotspot and cold spot tracing
Image Modes	IR, Visible, PIP,Fuse
Palette	7
Temperature Alarm	Full frame high/low temperature alarm
Secondary Analysis	Equipped with PC and app analysis software for secondary analysis of data
WiFi	Support WiFi data transmission
Screen Size	3.5" LCD (640×480) touch screen
Laser	Laser pointer
Storage	Standard 32GB SD card
Tripod Support	Yes, at the bottom of the handle
Operating Time	4h, @25℃ indoor
Charging Time	About 3h, @25℃ indoor
Weight	670g
Dimension	256.4×105.1×102.3mm
Operating Temperature	-10℃~+50℃
Storage Temperature	-20℃~+60℃
Operating Humidity	Relative humidity 10%~95%, non-condensing
Drop Protection	2m
IP Encapsulation	IP54

Tianxuan Series
Handheld Thermal Camera M600G

IRay Tianxuan M600G Series Handheld Thermal Camera is a high-resolution manual focusing temperature measurement thermal camera. It is provided with a built-in InfiRay self-developed high-performance 12μm infrared detector and a 5-million-pixel visible light camera of 35 mK thermal sensitivity and 30 Hz high frame rate. With its accurate manual focusing function, it can save focusing time and provide accurate data and clear images to meet the requirements of research and analysis work. With its excellent characteristics, Tianxuan Handheld Thermal Camera is the right-hand assistant of engineers in scientific research, professional equipment, and building inspection.

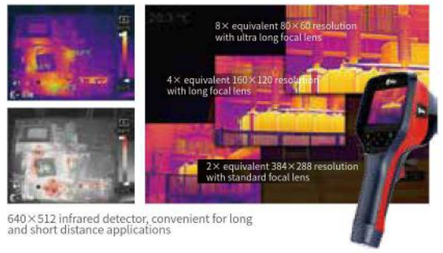
Check clearly, Solve quickly

1

High-performance temperature measurement core
Tianxuan M600G performs well in key tasks, with one handheld serving several purposes

- **Real 320,000 real-time infrared temperature measurement points + 5 million pixels visible camera**

  The 12μm high-performance 640×512 infrared detector, together with an accurate manual focusing lens, can observe the very detailed structure of circuit board accurately from a close distance, or inspect power lines and building facades far away. With 8x digital zoom and ultra-high infrared resolution, it can perfectly replace the combination of Lower resolution devices with multiple lens, no need to bother with taking multiple lens & changeing lens.



640×512 infrared detector, convenient for long and short distance applications

- **High resolution, high frame rate, high accuracy, wide range, all in Tianxuan M600G**

  Tianxuan M600G can distinguish a temperature difference of 0.035℃, and together with the 25 Hz high frame rate, can capture delicate and smooth images and videos in scientific research works, with no detail missing. Its measurement accuracy reaches ±2℃, and meanwhile, it provides a wider measurement range to ensure the accuracy of temperature data.

- **Start analysis once the USB is plugged, support full-frame real-time transmission and analysis of temperature information**

  It supports cloud services and interval snapshot. The software on PC terminal supports real-time and offline analysis. The photos and videos taken can be uploaded to the cloud and can be downloaded, opened, and analyzed at multiple clients. The report can be output by pressing one key, which further supports the applications in scientific research and equipment monitoring and temperature measurement assessment.

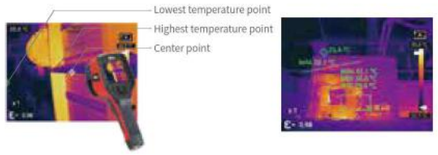
Plug and analyze through USB

2

Advanced interaction function Tianxuan M600G visualize temperature data clearly

- **Three-point temperature display, custom point/line/area**

Tianxuan M600G can automatically trace the highest and lowest temperature points and the temperature of the central point; it can perform movable point/line/area temperature measurement; hot spot tracing can be displayed for line/area temperature measurement; the highest temperature value can be displayed for line temperature measurement, and the highest, lowest and average values can be displayed for area temperature measurement;



- **Powerful PC software & userfriednly mobile APP**

It can upload the thermal image and visible light image with temperature data to the analysis software on PC terminal for professional analysis. It supports WiFi transmission and can be connected to App for analysis and sharing temperature images and data, which is efficient and fast;

- **Built-in 4 image modes+10 palettes settings**

Tianxuan M600G has 4 image modes including detail enhancement, IR, visible light, PIP, and fusion, with 10 pseudo color settings, to meet the temperature measurements of different requirements and increase the efficiency of temperature measurement;

- **Support full-frame high/low temperature alarm interval snapshot**

When the temperature in the inspection area exceeds the threshold value, a temperature alarm is sent in order to discover the fault point in advance to "nip in the bud" so as to effectively reduce the loss caused by high-temperature accident. It especially supports timed photographing to record temperature rise changes so as to help equipment operation analysis and various scientific research applications.

3

Easy and reliable overall performance Tianxuan M600G is your efficient and right-hand thermal imaging assistant

- Solid and durable, IP54 + 2m-drop protection

It features a 2m-drop protection and is waterproof/dustproof. Its IP grade reaches IP54, so that its temperature measurement accuracy, imaging quality, and application functions will not be influenced even if the tools drop off, are trampled, or get stained with water or dirt.

- Laser pointer module, quick observation target positioning

Tianxuan M600G has a built-in laser pointer to help you quickly locate the observation target and obtain an accurate temperature measurement value.

- HD thermal image displayed on a 3.5-inch HD touch screen

After the 640×512 HD infrared thermal image is obtained, you can view more temperature information details of each image on the 3.5-inch HD touch screen.

- Voice annotation and QR code naming functions free your hands

It can help you quickly distinguish the necessary information for imaging during a long time period of temperature measurement work and recognize the real-time site situation at that time accurately. The images can be named automatically, or by scanning QR code, or by entering a name manually.

Application Fields

Product R&D | HVAC inspection | Equipment maintenance | Electric inspection | Electrical maintenance

Main Specifications

	Model	M600G
Thermal Imaging Performance	Detector Type	Uncooled VOx Infrared Detector
	Detector Resolution	640×512
	Spectral Range	8~14μm
	Pixel Pitch	12μm
	NETD	35mk
	IFOV	1.31mrad
	Frame Rate	25Hz
	Focal Length	9.1mm
	FOV	48°×38°
	Focusing Mode	Manual focusing
	Measurement Range	-20℃~+550℃
	Accuracy	±2℃ or ±2% of the reading (whichever is the greater)
	Measurement Resolution	0.1℃
Thermal Camera Functions	Temperature Measurement Mode	Center/highest/lowest point tracing and temperature display
	Custom Point, Line and Area	Movable point/line/area temperature measurement; displaying hot spot tracing for line/area temperature measurement; displaying the highest temperature value for line temperature measurement, and displaying the highest,
	Temperature Measurement	lowest and average values for area temperature measurement;
	Measurement Unit	Centigrade, Fahrenheit, Kelvin
	Palettes	10 palettes
	Temperature Alarm	Full frame high/low temperature alarm
	Temperature Range of Color Code	Manual/automatic temperature range
	Laser Pointer	Yes
	Visible Light Camera	5 million pixels
	Digital Zoom	Max. 8×
	Photo/Video Storage Function	IR .jpg picture + visible light .jpg picture with temperature data; video without data;
	Annotation Function	Voice annotation via microphone
	Display Size	3.5-inch touch screen (480×640)
	File Naming	Automatic naming, naming by scanning QR code, naming by manually enter
	Memory Card	Standard 32GB Micro SD card
	Cloud Function	Transfer shooting data to cloud drive, share data and perform secondary analysis at multiple clients; support automatic time synchronization;
	Battery Type	Rechargeable and dismountable Li-ion battery
	Power Supply	USB TypeC
	Connection Type	USB,SD card, WiFi (AP mode or networking mode)
	Charging Time	About 3h
	Operating Time	About 3h(Per battery)
	Power Management	Automatic shutdown: 5 min, 10 min, 20 min, non-automatic shutdown
Physical Characteristics	Analysis Software	PC&APP
	Installation	Tripod support
	Operating Temperature	-10℃~+50℃
	Staging Temperature	-20℃~+60℃
	Relative Humidity	10% - 95%, non-condensing
	Drop Protection	2m
	Protection Grade	IP54(IEC 60529)
	Impact and Vibration	Impact 25g (IEC 60068-2-27); vibration 2.5g (IEC60068-2-6)
	Dimension (H×W×D)	256.4 ×105.1 ×105.3(mm)
	Weight	About 670g
	Authentication	CE/FCC/RoHS2.0
	Accessor	5V 2A power adapter, USB cable, SD card, user guide, desktop charger

Tianquan Series
Compact Thermal Camera P200

InfiRay P200 Compact Thermal Camera is an ultra-modern thermography tool featuring rotatory lens to provide accurate and intelligent temperature measurement. It is named after the star in the northern circumpolar constellation of Ursa Major - "Megrez".
The unique gravity-sensing UI, rotating menu, and 56° large FOV can satisfy the requirements in special spaces. The 256×192 resolution, 3.5-inch touch screen, and 16G internal memory produce smooth intelligent experiences. Benefiting from the self-developed user-friendly InfiRay temperature measurement analysis software, P200 makes infrared data analysis easy and efficient. It can be connected to the cloud through Wi-Fi to achieve real-time data sharing among multiple devices. It also supports real-time image analysis through USB and settable alarm threshold and multi-area flexible alarm on one screen. P200 has become the right-hand assistant for operation and maintenance engineers, HVAC engineers, and equipment inspectors.

Rotate to Unlock Your Thermal Potential

01 Rotate: The Vision is Up to You

Free rotating of 90°, for more possibilities

There is no need for user to adapt to the position and angle of the target. With P200 0-90° rotary lens, temperature measurement and inspection have never been so easy and convenient.The gravity-sensing UI can be switched between horizontal and vertical measurement at will. The rotating menu and 56° large FOV are also optimized for wider and taller targets.

No Fear of Tall Targets

Not Awkward for Low Positions

No Difficulty in Narrow Spaces

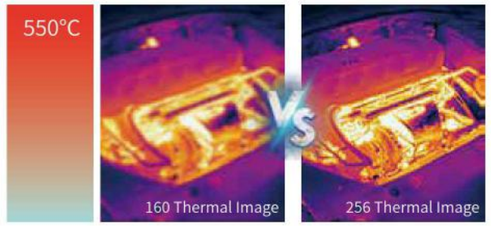
02 Accurate Enough: More Precise and Powerful

One Step Faster to Become the Leader

P200 is embedded with InfiRay self-developed high-sensitivity VOx infrared detector with 256×192 resolution and ⩽ 0.04°C. It can provide extraordinary high-definition thermal images with amazing details, higher temperature accuracy, and better troubleshooting. The frame rate of 25Hz makes imaging more smooth. Everything seems more real.

256×192 Resolution, Clear and Accurate

The resolution of 256×192 reveals more temperature details. The temperature resolution of 0.04°C brings high definition. The measurement range up to 550°C satisfies the requirements of high-temperature targets.



One-Hand Operation

Put the overall situation in your hand. P200 is portable, pick-and-play, and reliable, to improve efficiency continuously.

2,000,000-pixle Visible Light at the Same Time

Infrared module for temperature measurement and daylight module for positioning, with fusion and PIP mode to help fast defect locating and improve inspection efficiency.

56° Wide FOV, Efficiently Measurement

Cover ultra-wide area in a glance, providing multiplied inspection efficiency.

03 Smart enough: Built-in InfiRay Cloud Ecosystem

Benefit Beyond the Screen

Accessing InfiRay Cloud Services through Wi-Fi, Multiple Devices Sharing Data

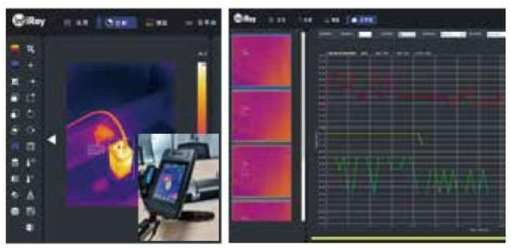
Collect data here and analyze on the cloud, "once and for all"

Portable or Fixed? Meet more monitoring and analysis requirement

Support USB plug-and-play analysis, flexible alarm threshold setting, and multi-area real-time alarm on one screen

Professional Software and Temperature Analysis

InfiRay self-developed user-friendly temperature measurement analysis software displays the temperature of points, lines, and areas directly.



Application Fields

Appliance Repair | Pipeline Inspection | Property Maintenance | HVAC | Vehicle Maintenance

Main Specifications

	Model	P200
Detector	Focal plane array/Spectral range	Uncooled FPA microbolometer (VOx)/8-14μm
	Pixel pitch	12 μm
Imaging and optical data	Infrared resolution	256x192 pixels
	NETD	⩽0.04°C@30°C (⩽40mk)
	FOV	56°×42°
	Focal length	3.2mm
	Spatial resolution/IFOV	3.75mrad
	Focus	Focus-free
	f number	1.1
	Image frequency	25Hz
	Digital zoom	2x, 4x
Image presentation	Resolution	1920x1080 pixels, CMOS
	Visual camera	2 Megapixels
	Screen	3.5 inch touch screen, 960x640
	Color palette	7 color palettes (white hot black hot iron lava rainbow rainbowHC RdGy)
	Image mode	IR/Visual/PIP/Fusion
	Fill-in LED	available
Measurement analysis	Temperature Range	-20°C- +550°C
	Accuracy	±2°C or ±2% (of reading, whichever is greater)
	Measurement mode	Central spot (for full frame), hot spot, cold spot
	Spotmeter	10 in live mode
	Line	10 in live mode
	Area	10 in live mode
	Automatic hot/cold detection	Automatic maximum/minimum markers within area
	Temperature alarm	Full frame high/low temperature alarm
	Alarm mode	Image alarm
	Auto/timed photograph	Support auto photograph when trigger alarm and timed photograph, photo numbers and time interval can be set
	Video streaming	Real-time radiometric infrared-video streaming over UVC
	Settings	Data/time, °C/°F/K, language (12, English/Russian/ Polish/German/French/Korean/Portuguese/Spanish/Hungarian/Italian/Turkish/Traditional_Chinese)
	Emissivity correction	Variable from 0.01 to 1.0 (increment: 0.01)
	Atmospheric transmissivity adjustment	Object distance setting (0.5-4m, step size 0.25m); Ambient temperature(adjustable, -10°C~+50°C, step size 1°C)
Storage	Memory card	16G Micro SD card
	File format - thermal	JPG, with original temperature data
	File format - visual	JPG, without temperature data
	Image naming	Support automatic naming/text input/naming through QR code scanning
	Voice annotation	voice recording (unlimited time), stored with images (microphone built-in)
	Text annotation	available
Power supply	Interface	USB Type C direct-charging
	Battery Operation time	About 6 hours continuous operation
	Charging time	About 3 hours
	Power management	Auto shut-down (5 min, 10 min, 20 min)
Environment	Working temp.	-10°C-+50°C
	Storage temp.	-20°C~+70°C
	Humidity	⩽95% (Non-condensing)
	Encapsulation	IP54(IEC 60529)
	Drop resistance	2m
	Wifi	available
Dimension & weight	Weight	210g
	Dimension	142mm×76mm×19mm
	Tripod	1/4"-20-UNC
Interface	Power input	DC 5V
	Accessories	Strap, portable bag, USB cable, user manual

Kaiyang Series
Handheld Thermal Camera T300/600

InfiRay Kaiyang T Series Handheld Thermal Camera is embedded with the self-developed VOx infrared detector with high performance, resolution and sensitivity. It is the first infrared thermal camera with auto-focusing function and replaceable lens. The powerful hardware configuration shines in application fields such as production equipment inspection, manufacturing process inspection, and metallurgy and chemical industry. More breakthroughs have been achieved in terms of software functions, including smart shooting (inspection task package), smart database management (picture retrieval, comparison and analysis), and smart diagnosis, providing comprehensive and efficient inspection solutions for users in the power industry.

01

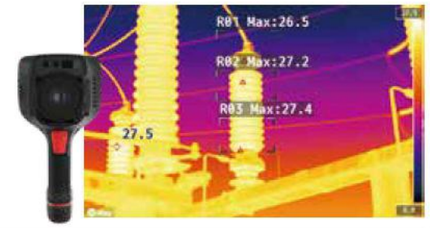
Comprehensive Leading Thermal Imaging Performance

Make Inspection Efficient, Clear, and Accurate

■ 384×288/640×512 High Infrared Resolution, 35mK High Thermal Sensitivity

Kaiyang T Series offers two solutions, T300 and T600. T300 is cost-effective for daily and some fine inspections, while T600 with higher resolution can fully meet the most demanding professional requirements for fine inspection.

Both T300 and T600 have ultra-high thermal sensitivity of 35mK, highlighting more temperature details and finding out the potential risks that are difficult to find by low-sensitivity equipment during inspection.



■ Various Lenses from Wide-angle to Long-focus is Optional, Suitable for Multiple Scenarios

Kaiyang T Series has replaceable lenses. Various lens clusters from wide angle to long focus are provided for engineers to cope with all kinds of thermal imaging applications. They can conduct fast checking with wide-angle lens around near area and can deal with small target inspection in distance.

■ Fully Automatic Infrared Focusing System, Fast for Improving Efficiency

The newly introduced automatic infrared focusing system realizes quick and accurate focusing on the target. It enables engineers to focus and take pictures quickly with only one hand in a complex environment, thereby improving work efficiency and safety.

■ Optional Extended Temperature Measurement Range up to 2,000°C

It can fully meet the inspection requirements of various high-temperature targets and cover most industrial application scenarios.

02

Combining Multiple Advantages Together

Classic Product Worth Every Penny

5-inch Touch Screen, Intuitive and Easy-to-operate

Larger display brings clearer view and more accurate operation. It is convenient to use point/line/area temperature measuring tools on site for efficient and clear observation and analysis of targets.

5,000,000-pixel Visible Light Camera, Recording Inspection Results with Dual-spectrum

Kaiyang T Series supports 4 image modes, including infrared, PIP (picture-in-picture), dual-spectrum fusion, and visible light. They are integrated to efficiently find targets and record visible light at the same time for detailed analysis of site conditions.

More Extended Functions

Kaiyang T Series has flexible and diverse file and video transmission modes, including 4G, WiFi, HDMI and USB.Multiple functions are available, such as GPS, Bluetooth, laser rangefinding, audible and visual alarm, so as to improve the speed and efficiency of inspection and maintenance.

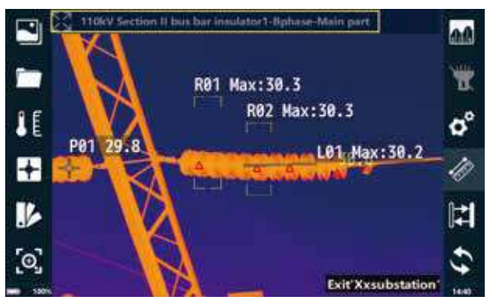
03

Professional and Diverse Software Functions

Smart Equipment to Improve Efficiency

Smart Shooting - Power Inspection Task Package

The chart of the inspection task can be imported in advance to automatically generate the inspection task package. It can save the working effort by saving the photos automatically according to the naming rules in the inspection task package.



Database Management - Image Retrieval, Comparison, and Analysis

Kaiyang T Series supports intelligent database management to enable the functions of equipment image retrieval and equipment status comparison and analysis. The data are traceable as the basis for equipment status prediction reducing misjudgment.

Generation Test Reports Automatically

Click for professional report. The data processing cost and learning cost for users are greatly reduced.

Application Fields

Transmission Inspection | Distribution Inspection | Distribution patrol inspection | Metallurgy and Petrochemical Industry | Production and Manufacture

Main Specifications

Model	T600	T300
Detector Resolution	640×512	384×288
NETD	35mK	35mK
Lens	Standard 24°, optional 48°, 12°, 6°, etc., exchangeable	
Measurement Range	Standard: -20°C~+150°C (low temperature range), 0°C~410°C (medium temperature range), 300°C~650°C (high temperature range); Optional: 300°C~2,000°C	
Measurement Accuracy	±2°C or ±2% of reading	
Digital Camera	Built-in 5-megapixel digital camera with LED indicator	
Laser Rangefinder	Supported	
Lens Focusing Mode	Manual, automatic, electric	
Palette	10 palettes	
Setting of Temperature Measurement in Point, Line and Area	Up to 10 points, 10 boxes, and 5 lines, including maximum/minimum/average	
Highest/Lowest Temperature of Full Display	Supported. Capable of automatically capturing the highest/lowest temperature of full display	
Image Adjustment	Automatic/manual; linear or columnar; capable of locking maximum, minimum or temperature range	
Digital Zoom	×1, ×2, ×4, ×8	
Image Mode	Infrared, visible light, PIP (picture-in-picture), fusion	
Isotherms	Supported	
Temperature Difference	Automatic calculate temperature difference for similar analysis	
Text Notes	Select text notes from the preset list and edit them in the thermal camera	
Smart Shooting	Support inspection task package and automatic image naming	
Voice Note	Support voice note, stored with the image	
QR Code Scanning	Support scanning and reading of QR code string information	
Display	5-inch touch display	
WIFI	Remote real-time image transmission to mobile phone/computer via WIFI	
4G	Remote real-time image transmission to mobile phone/computer via 4G	
GPS	Optional	
Bluetooth	Hear audio information of images with Bluetooth headset	
Alarm Mode	Automatic audible and visual alarm of the set/excessive/inadequate temperature value	
Storage Mode	32G SD card	
Picture Format	jpg (including full temperature data)/png (including full temperature data)/standard format of State Grid	
Infrared Video Format	H.264 video or full-radiation infrared video stored to SD card	
Video Output Interface	Micro HDMI interface	
Battery Type	Removable and rechargeable lithium-ion battery	
Battery Life	About 3 hours under 25°C	
Power Management	Support sleep mode	
Charge Mode	Desktop charger	
Ingress Protection	IP54	
Weight	⩽1.3kg (including battery)	
Dimensions	260×135×136mm	
Operating Temperature	-20°C~+55°C	
Storage Temperature	-40°C~+70°C	

AT Series
AT20 Online Compact Thermal Imaging Camera

AT20 is a cost-effective thermal camera for temperature measurement and video capture, providing both thermal and visible light video and images. AT20 is compact and compatible, supporting various interface protocols, which can be widely used in electrical equipment (voltage converter, high voltage switch cabinet, elevator electrical cabinet, etc.) operation status safety monitoring, confined space (hazardous chemicals warehouse, coal bunker, etc.) fire-fighting monitoring.

■ Compact thermal imaging camera

1 High-performance thermal imaging camera

- **Excellent performance**
  - 256x192 high resolution.
  - Economical thermal imaging solution.

- **Remote operation**
  - Support remote start and reset.
  - support on-site real-time video and temperature data transmission.

- **Easy to integrate**
  - Compact housing.
  - Support various communication, network, and monitoring protocols.
  - Provide SDK to support all-platform development (Windows\-Linux\Andorid\iOS).

- **High-definition image**
  - 50,000 infrared pixels, showing all the details within high-definition images.

2 To see wider and clearer

- Infrared and visible light dual-vision imaging, convenient to observe the actual situation of the scene.

- 56 ° FOV and focus-free design support a wider monitoring area at the same distance.

- 256×192 infrared pixels and 0.04°C temperature resolution provide clear thermal images to distinguish more details and see far.

3

Analyze data efficiently and conveniently

- Support max.16 movable points, lines and areas for temperature measurement.
- Measuring range -20°C~+550°C，making it more possible to monitor more industrial targets with high-temperature requirements.
- Supports segmented video recording.
- 40 mK NETD allows more details of temperature and display.

4

User friendly, easy to install

- Small size, easy to install, suitable for limited spaces.
- LEDs and button, easy to operate on-site.
- Allow second development via SDK, easier and fast.
- Power supply and networking via POE, simplify wiring.

Application Fields

Status monitoring

Firefighting detection

Hazardous chemicals monitoring

Cabinet monitoring

Main Specifications

Model	AT20
Infrared Specification	
Detector Resolution	256×192
NETD	40mK
Frame Rate	30Hz
Lens	3.2mm
FOV Focusing	56°×42° Focus-free
Visible light	
Visible Light Pixel	200W (SC2310 CMOS sensor)
FOV	72°×61°
Fill-in Light	LED indicator
Temperature Measurement	
Measurement Range	-20°C~+550°C
Precision	±2°C or ±2% of reading, (whichever is the greater)
Point	Max. 16 (points, lines, areas)
Line	Max. 16 (points, lines, areas)
Area	Max. 16 (points, lines, areas)
Palettes	18
Environmental Variable Correction	Distance, ambient temperature, emissivity, reflected temperat
Alarm	
Alarm Function	All temperature measurement points, areas, and lines can be provided with separate alarm output
Alarm Input/Output	1-channel alarm input (optoelectronic isolation, 3 - 5.5V) 2-channel alarm output (optoelectronic isolation, 3 - 25V DC, max. 85 mA) Other alarms: image/video storage, file sending (FTP), E-mail (SMTP), flashing light alarm
Protocol	
Network Protocol	TCP、UDP、RTSP、HTTP、SMTP
Interface Protocol	ONVIF、GB28181、Modbus TCP、MQTT
Device Hot Spot	Visit the web management interface via the device hotspot Http
Image Stream	
Image Stream Format	H.264/H.265
Resolution	Visible light 1080P; support 4 times of infrared super-resolution, with the maximum of 1024×768
Image Mode	Thermal image, visible light image, dual-spectrum fusion, detail enhancement; support side-by-side display of visible light images
Frame Rate Adjustment	Support frame rate adjustment
Data Stream	
Data Stream Transmission	Visible light, infrared image, temperature stream, frame rate adjustable
Image Storage	
Storage Medium	Internal 32G memory
Storage Mode	Infrared/visible images, to be stored at the same time
File Format	jpg、mp4
Storage Form	Local storage; can be connected with monitoring system such as NVR
SDK	
SDK	SDK Multi-platform (Android\IOS\Windows\Macs\Linux) SDK that supports users' secondary development
Power	
External Power Supply	12~30V DC
POE	IEEE 802.3af
Power Consumption	⩽2W
External Interface	M12 type-A 8-pin, including 10M/100M adaptive Ethernet port and POE power supply; M12 type-A 12-pin, including DC power supply and alarm input/output
Environmental	
IP Grade	IP67
Operating Temperature	-10°C~+50°C
Storage Temperature	-40°C~+70°C
Humidity	⩽95% non-condensin
Impact	25G，IEC68-2-29
Vibration	2G，IEC68-2-6
Certifications	CE/FCC/ROHS
Dimension	109×55.9×29.5mm
Weight	appr. 170g
Product and Accessories	
Product and Accessories	AT20 Online Dual-spectrum Thermal Camera, M12 8-pin to RJ45 cable (44cm long), fixtures (screw, install stickers)
Optional Accessories	M12 12-pin to DC interface & alarm input and output cable, front/back bracket

AT Series Automatic Focusing Online thermal imaging AT31/61/1280

AT31/61 is equipped with a compact professional electric focusing lens, which adds flexibility for using & installing and makes it adaptable to more targets. It is equiped with our self-developed high performance, high resolution, and high sensitivity VOx detector. Combined with the Matrix III patented image algorithm, intelligent temperature measurement algorithm, the temperature measurement result is more accurate and reliable, providing professional customers with more comprehensive and accurate thermal imaging products and solutions.

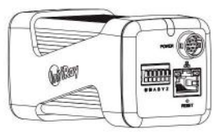
AT1280 1.3 megapixel infrared temperature measurement camera breaks the ceiling of infrared temperature measurement vision, entering a new era of megapixel thermal camera.

- Observe and analyze the thermal world

1

AT31/61 -- Accurate temperature data transmission

- Built-in various lens with both motorized focus and autofocus. Optional lenses available. Provide more accurate temperatures and output high-quality thermal images.
- 50Hz frame rate and built-in Gigabit Ethernet connection support real-time transmission of on-site temperature data.



- -20°C~+550°C wide range temperature measurement makes it possible to monitor more industrial targets requiring high-temperature measurement.
- Patented intelligent temperature compensation algorithm greatly improves measurement accuracy and adding convenience for engineers to pinpoint and troubleshoot the failure.

2

The combination of hardware and software innovation makes AT31 / 61 your ideal powerful equipment

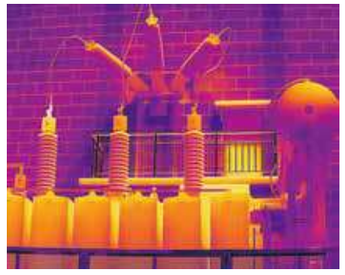
- Multiple network protocols such as TCP, UDP, ICMP, and DHCP, allows real-time temperature monitoring and alarms. Compatible with protocols such as ONVIF, GB28181, and GenICam provide convenience for on-site installation and sharing analysis and alarm results.
- Autofocus makes test and application more convenient.
- Displaying test results of more spots,Lines,and areas provides an easier way for obtaining back-end temperature data, making the application more flexible and convenient and reducing the cost.
- Provide SDK and PC software, support customized secondary development, improve practicability and feasibility, and form your unique advantage to customers.
- Comply with RoHS, CE, and other EU Environment-Protecting Directives.

1.3 million pixels high-definition thermal imager

3

1.3 megapixel infrared temperature measurement, A whole new thermal world waiting to be explored.

- Most advanced REAL 1.3-megapixel infrared temperature measurement contributes to the future;
- 1280×1024 full-picture temperature measurement thermal imager, providing rich temperature details, can easily cope with large area temperature measurement application of key nodes;
- Can be used in core power equipment inspection, large-scale petrochemical engineering equipment monitoring, high-precision scientific research test and evaluation. Break through the ceiling of infrared temperature measurement imaging and enter the new stage of megapixel.



Application Fields

Electrical inspections

Petrochemical equipment monitoring

Automatic control

Firefighting surveillance

R&D test and evaluation

Resolution	384×288					640×512			
Lens(mm)	7.8	13	15	19	25	13	15	17	19
FOV (H×V)	47°×35.6°	29.6°×22°	25°×18.7°	19.6°×14.7°	14.8°×11.1°	33.7°×27°	29.4°×23.5°	25.2°×20.3°	22.8°×18.4°
IFOV	2.17mrad	1.3mrad	1.1mrad	0.89mrad	0.68mrad	0.92mrad	0.80mrad	0.706mrad	0.63mrad

Main Specifications

Model	AT31	AT61	AT1280
Detector Parameters			
Detector Type	VOx uncooled infrared FPA detector		
Resolution	384×288	640×512	1280×1024
Frame Rate	50Hz	25Hz	15Hz(30Hz Optional)
Temperature Measurement Performance			
Measuring Range	-20°C～+150°C, 0°C~+550°C		
NETD	<50mk @25°C,F1.0(<40mk Optional)		
Measurement Accuracy @Environment Temperature -20°C~60°C	±2°C or ±2% of the reading (whichever is the greater)		
Temperature Measurement Tools	Fixed/center spot, highest/lowest temperature measurement; Analysis tool for line/area monitoring;		
Ethernet			
Network Protocol	TCP、UDP、ICMP、DHCP、RTSP、ONVIF		TCP、UDP、ICMP、DHCP、RTSP、GigE vision
Network Interface	RJ45		
Image Adjustment			
Brightness and Contrast Adjustment	Manual/Auto 0 (defaulted)/Auto 1		
Polarity	Black hot/White hot		
Palette	Support 18 palettes		
Image Flip	Horizontal/Vertical/Diagonal Mirror Image		
Area-of-interest	Support		
Lens			
Focal Length	7.8mm/13mm/15mm/19mm/25mm	13mm/15mm/17mm/19mm	19mm
Lens Control	Support auto/manual focusing		
Power Interface			
Power Voltage	10~36V DC		10~16V DC
Typical Power Consumption @25°C	≤3W	≤3.3W	≤6W
Power Protection	Support overvoltage, undervoltage, and reverse connection protection		
Physical Characteristics			
Dimension	55 ×55 × 119 (mm) (L×W×H)		70 ×63 ×143 (mm) (L×W×H)
Environment Adaptability			
Operating Temperature	-20°C~+60°C		
Storage Temperature	-45°C～+85°C		
Impact	30g, 11ms, all axials		
Vibration	4.3g, random vibration, all axials		
Humidity	5%~95%, non-condensing		
Software Support			
SDK	Support		
PC Software	Support		
Environmental Directives			
RoHS2.0	Support		
CE	Support		

AT Series Fixed Focusing Online Temperature Measurement Thermal Camera AT31F/61F

AT31F/61F adopts a high-performance VOx detector with high resolution and high sensitivity. Combined with the Matrix III patented image algorithm, it provides clearer images and more temperature details. Its patented intelligent temperature measurement algorithm makes the results more accurate and reliable. Thanks to its characteristics, such as low power consumption, small size, short start-up time, it is professional, simple, and easy to use with its comprehensive analysis software.

- Observe and analyze the thermal world

1 Feature-Rich, Easy-to-Use

- Network optimized. Professional software supports multi-camera control.
- -20°C~+550°C wide range temperature measurement makes it possible to monitor more industrial targets requiring high-temperature measurement.
- Optional built-in lenses available. it can output high-quality infrared images and meet the detecting requirements for space-restricted areas and small targets.

2 Dedicated support, work together to form your exclusive advantage

- Provide Windows/Linux/Android SDK to support users' secondary development.
- Support spot, line and area temperature measurement, convenient to access back-end temperature data.
- Provide alarms in multiple ways (I/O output, log, image storage, file sending (FTP), E-mail (SMTP);

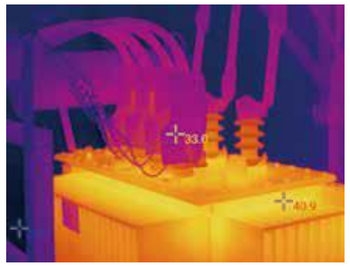
3

Rich industrial protocols, reliable transmission

- Gigabit/Mbit/adaptive Ethernet interface support real-time transmission of on-site temperature data.

- Easy to integrate, compatible with secondary development for automation application.

- Multiple network protocols, such as TCP, UDP, ICMP, and DHCP, can achieve real-time temperature monitoring and abnormal warning. Compatible with protocols, such as ONVIF and GB28181, it can provide convenience for on-site installation and share analysis and alarm results easily at the same time.



Application Fields

Industrial process control

Quality test

Equipment condition monitoring

Fire warning

R&D test and evaluation

Resolution	384×288							
Lens(mm)	4	6.2	9.7	13	19	25	35	50
FOV(H×V)	90.3°×60.7°	61.5°×45.7°	37.9°×28.7°	20.1°×15.1°	19.5°×14.7°	14.9°×11.2°	10.6°×8°	7.4°×5.6°
IFOV	4.250mrad	2.742mrad	1.753mrad	1.308mrad	0.895mrad	0.680mrad	0.486mrad	0.340mrad
Resolution	640×512							
Lens(mm)	4.1	5.8	9.1	13	19	25	35	55
FOV(H×V)	89°×75°	70°×57°	48°×38°	33°×26°	22°×18°	17°×14°	12.5°×10°	8°×6.4°
IFOV	2.92mrad	2.06mrad	1.31mrad	0.92mrad	0.63mrad	0.48mrad	0.34mrad	0.21 mrad

Main Specifications

Model	AT61F	AT31F
Detector Parameters		
Detector Type	VOx uncooled infrared FPA detector	
Resolution	640×512	384×288
Pixel Pitch	12μm	17μm
Spectral Band	8~14μm	
NETD	<50mk @25°C,F1.0(<40mK Optional)	
Frame Rate	25Hz	50Hz
Image Adjustment		
Polarity	Black hot/White hot	
Palette	Support 18 palettes	
Temperature Measurement Performance		
Measuring Range	-20°C～+150°C，0°C~+550°C	
High and low gain mode	High-gain mode, low-gain mode, and two modes automatic switching	
Temperature Measurement Accuracy	±2°C or ±2% of the reading (whichever is the greater) @Environment Temperature -20°C~60°C	
Power		
Power Supply Range	9～26V DC	
Power Protection	reverse connection protection	
Typical Power Consumption @25°C	＜3W	
Interface		
Analog Video Output	1 channel video	
Network Interface	RJ45 10M/100M/1000M self-adapted	
Alarm Interface	1 input, 1 output	
Network Protocol	Ethernet/IP, TCP, UDP, SNTP, RTSP, HTTP, ICMP, SMTP, DHCP, UPnP, PPPOE	
Ethernet	Control and transmit images	
Interface Protocol	Support customized ONVIF, GB28181	
Serial Communication Interface	Customizable RS-485, RS-232	
Compression Standard		
Video Compression Standard	H.264/H.265	
Video Format	mp4，mov	
Alarm		
Alarm Function	All temperature measurement points, the highest temperature, lowest temperature and average temperature in all temperature measurement areas can be configured with separate alarm outputs	
Alarm Output	I/O output, log, save image, file sending (FTP), email (SMTP), notification	
Physical Characteristics		
Weight(without lens)	＜150g	
Dimension(without lens)	46.5×48×83 (mm)	
Environment Adaptability		
Operating Temperature	-20°C～+60°C	
Storage Temperature	-40°C～+70°C	
Humidity	5~95%，non-condensing	
Secondary Development		
Secondary Development	Provide Windows / Linux SDK and instruction	
Accessories		
Accessories	Interface cable	

ATSeries
AT31U Online Ultra-high Temperature Measurement Thermal Camera

AT31U is a small dedicated online ultra-high temperature thermal camera, built-in InfiRay® 12μm infrared detector. 3.3mm pinhole Ge lens, combined with professional temperature measurement algorithms and excellent networking capabilities, provides advanced and reliable temperature measurement technology for metal smelting, blast furnace condition monitoring, steel rolling, laser welding and other high temperature measurement and monitoring. The highest temperature measured by AT31U can reach 1500℃. With a small size, it provides clear images and makes installation more easier. It supports secondary development and meets the needs of users for high temperature monitoring applications.

- Observe and analyze the thermal world

1 Visualize temperature, Wide range

- **Ultra-high temperature range**

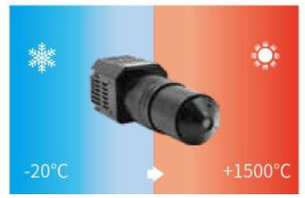
  - Up to 1,500℃, meet the requirement of ultra-high temperature measurement.

- **Solid and Robust**

  - Small window design and shell can effectively protect the lens and camera, which is suitable for harsh environment.

2 High performance

- ±2%/-20℃~1500℃: high accuracy, wider range, meet the demands of ultra-high temperature measurement.
- 384×288 infrared resolution, adopting self-developed infrared detector for clearer images at ultra-high temperature.
- 89.3 ° wider FOV displays more comprehensive temperature data, more suitable for high temperature testing scenes.
- 40mK high sensitivity displays more temperature details clearly during high temperature measurement, and no details are overlooked.



3 Excellent industrial design, suitable for harsh environment

- Ultra-small window design reduces the probability of high-temperature slag sputtering; the lens can be easily replaced, friendly maintenance.
- The device features a solid housing that can withstand high temperatures and harsh environments, protecting the device from damage.
- with a small size, the device is convenient to mount and integrate.

small windows, splash protection, protective lens

Metal shell, high protection

Mini

Compact and easy to integrate

4 Easy integration and further development

- 9~26V DC wide voltage power supply, flexible power distribution.
- Support RJ45, TCP and other interfaces and protocols to facilitate network development and data transmission.
- Provide SDK for fast, simple, and convenient secondary development.

Application Fields

Metal smelting

Furnace temperature monitoring

Hearth diagnosis

Defect diagnosis

Main Specifications

Model	AT31U
	Imaging and Optical Data
Resolution	384×288
Heat Sensitivity/NETD	<50 mk (optional 40 mk)
Image Frequency	50Hz
Focal Length	3.3mm
FOV (H×V)	89.3°×73.1°
IFOV	5.15mrad
	Detector
Detector Type	Uncooled VOx infrared focal plane detector
Wave Band	8～14μm
Pixel Size	17μm
	Temperature Measurement
Temperature Range	0～450°C / 450°C～1500°C
Precision	±2 °C or ±2% (whichever is the greater)
Measurement Tool	Fixed/center spot, highest/lowest temperature measurement;Analysis tool for line/area monitoring; line/area analysis tool; manual temperature range selection.
	Interface
Analog Video Output	1-channel video
Network Interface	RJ45 10M/100M/1000M adaptive
Alarm Interface	1-channel input, 1-channel output
Network Protocol	Ethernet/IP, TCP, UDP, SNTP, RTSP, HTTP, ICMP, SMTP, DHCP, UPnP, PPPOE
Ethernet	Control and transmit images
Interface Protocol	ONVIF, GB28181, MODBUS-TCP
	Image Adjustment
Brightness and Contrast	Manual/Auto 0 (default)/Auto 1
Polarity	Black-hot/White-hot
Palette	Support 18 pseudo colors
Image Reverse	Left and right/Up and down/Diagonal
	Power Supply System
Typical Consumption @ 25℃	⩽3W
External Power Supply and Connector Type	DC power
Voltage	9-26VDC
	Environmental
Operating Temperature	-20°C～+60°C
Storage Temperature	-40°C～+70°C
Humidity (Operating and Storage)	5% - 95% RH (non-condensing)
Impact	30g, 11ms, all axes
Vibration	4.3g, random vibration, all axes
	Physical
Weight	314g±5g
Thermal Imager (L×W×H)	46.5mm × 48mm×148mm
Shell Material	Aluminum
Product Name and Accessory	Online ultra-high temperature thermal imager, dedicated cables

LT Series Uncooled Thermal Imaging Module for Temperature Measurement

LT Supplies more stable and reliable temperature measurement performance in the industry. It provides incomparable high-quality images, more stringent electrical performance, and richer data interface, suitable for applications with very strict requirements for thermal imaging core.

- Smarter Machine Vision

1 High performance, meet various future demands

- Self-developed VOx detector has high frame rate, high resolution, and high sensitivity.
- -20°C~+550°C wide range temperature measurement makes it possible to monitor more industrial targets requiring high-temperature measurement.
- Real-time full-frame temperature output ensures the measurement accuracy to be ±2°C or ±2%.
- Its double calibration modes support manual correction and automatic correction. Cooperated with patented intelligent temperature measurement algorithm, it ensures measurement accuracy and improves work efficiency.
- Provide various lenses to detect targets of different depth of field target in a single lens. Provide more accurate temperature and output high-quality thermal images.

2 Various electrical performance and rich interface for wide application

- It has compact size, light weight, and is easy to install. It is applicable for space-restricted areas and brings no load on the equipment to be tested.
- Support standard USB interface (optional) to transmit real-time on-site temperature data, no need to connect the back-end with complex data cables.
- Support multiple image and temperature data output interfaces to achieve rapid transmission of image and temperature data and improve work efficiency.

3

Improve development efficiency with the support of professional software

- Provide Windows/Linux/Android SDK to support users' secondary development and improve practicality to form customer advantages.
- Professional analysis software displays more point, line, and area test results, providing an easier way for obtaining back-end temperature data and making the application more flexible and convenient while reducing the cost of use.

Application Fields

Industrial equipment

Electrical equipment

UAVs

Robots

Fire-fighting equipment, and hand-held thermal imagers

Main Specifications

Model		LT384/LT384H	LT640P/LT640PH	LT1280M
Performance Indicators				
Detector Type			Uncooled VOx Infrared Detector	
Resolution		384×288	640×512	1280×1024
Pixel Pitch		17μm	12μm	12μm
Frame Rate		50Hz	25Hz	30Hz
Spectral Band		8～14μm		
Image Adjustment				
Brightness and Contrast		Manual/Auto 0 (default)/Auto 1		
Polarity		Black-hot/white-hot		
Palette		18 palettes supported		
Digital Zoom		1.0 ~ 8.0× continuous zoom		1.0 ~ 4.0× continuous zoom
Image Flip		Horizontal/Vertical/Diagonal		
ROI		Supported		
Image Processing		Non-uniformity correction, digital filter noise reduction, digital detail enhancement		
Temperature Measurement				
Measurement Range		-20°C～+150°C, 0°C~+550°C		
High Gain Mode		High gain, low gain, and automatic switching between high gain and low gain		
Measurement Accuracy		±2°C or 2% of the reading (The greater shall prevail)@ambient temperature -20°C ~ +60°C		
Measurement Tool		10 configurable fixed points; full-screen highest/lowest temperature capture; temperature measurement at central point; 12 line/area analysis tools; 1 isothermal analysis tool		
Stable Time for Measurement		⩽ 10s (fast time)		
Temperature Correction		Manual and automatic correction		
Power Supply				
Power Supply Range		4～6V DC/5~24V DC		
Typical Service Voltage		4V DC/12V DC supported by user extension components		
Power Protection		Support over-voltage, under-voltage, and reverse connection protection		
Interfaces				
Video Output	Analog Video	1-channel PAL or NTSC		Not supported
	Digital Video	BT.656		Not supported
		BT.1120		BT.1120
		14 bit or 10 bit LVCMOS		14Bit or 10Bit/LVCMOS
		14 bit or 10 bit LVDS		LVDS
Physical Characteristics				
Weight (Without Lens)		＜90g		119g±5g
Dimensions (Without Lens)		44.5mm × 43mm (W×H)		45mm×45mm×49.85mm
Environment Adaptability				
Operating Temperature		-40°C～+70°C/(-40°C～+80°C optional)		
Storage Temperature		-45°C～+85°C		
Humidity		5~95%, non-condensing		
Product Certification		CE, KC, ROSH		

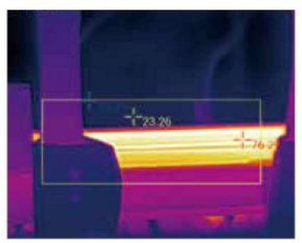
Micro III Series Ultra-Compact High Accuracy Thermographic Module

Micro III professional thermographic module has great advantages of small size, light weight, and low power consumption, thanks to its special technique and optimized circuits. With Matrix III patented image algorithm and intelligent temperature measurement algorithm, it can provide temperature data with high accuracy. Rich interfaces and functions make it easier to use and integrate, providing new solutions for thermal imaging products in various industries.

- Cherry chip, tiny titan

1 Cherry Chip, Tiny Titan

- It has ultra-small volume (26×26×22mm) and neat appearance. Its optical center coincides with geometric center overlap. And its cherry size adds convenience to integration.
- Its ultra-light weight (<20g) adds great power to light unmanned aircraft, small hand-held observation equipment, and machine vision equipment.
- Ultra-low power consumption (Full frame rate 50Hz, power consumption<900mW) brings great technical advantages, needless to worry about heat dissipation.



2 From range to accuracy, meet the demands of system integrators

- Wide range of temperature measurement (-20°C~+550°C) fits various industrial application scenarios.
- The high accuracy of temperature measurement (±3°C or ±3%) can meet the requirements of temperature measurement application in various industrial scenes.
- With a high frame rate (50Hz), the video is smooth without lag when observing the target moving at high speed moving or with rapid temperature change, which improves detection efficiency and data reliability.
- With high sensitivity (0.05°C), it can distinguish more details and detect farther targets while providing HD images.
- With Matrix III intelligent image algorithm, it can ensure high image quality while outputting accurate temperature data.

3

Everything you need is already here. Interfaces, different temperature measurement modes, RoHS, SDK for secondary development...

- Rich data interfaces (5 main types) adapt to more platforms, reducing the R&D cycle and costs.
- 6 temperature measurement modes to help engineers conduct more professional and comprehensive temperature analysis, without missing any abnormal temperature points.
- Comply with RoHS, no worry to export;
- Provide SDK and support user customization of language and reticle, improving practicality and forming customer advantage.

Application Fields

Security monitoring

Night vision/ firefighting helmet

Light UAV

Patrol Robot

Handheld temperature measurement

Main Specifications

Model		MicroⅢ384T	MicroⅢ640T
Performance Indicators			
Detector Type		Uncooled VOx Infrared Detector	
Resolution		384×288	640×512
Pixel Pitch		12μm	
Frame Rate		50Hz/30Hz	
Spectral Band		8~14μm	
NETD		⩽50mK@25°C (⩽40mk optional)	
Image Adjustment			
Brightness and Contrast		Manual/automatic/linear	
Polarity		Black-hot/white-hot	
Palette		Multiple types supported	
Reticle		Display/blank/move	
Digital Zoom		1.0 ~ 8.0 × continuous zoom	
Image Processing		Shutter-less/non-uniformity correction/digital filter noise reduction/digital detail enhancement	
Mirroring		Horizontal/Vertical/Diagonal	
Power Supply			
Power Supply Range		4~6V DC	
		3.5 ~ 18 V DC supported by user extension components	
Typical Service Voltage		4VDC	
Typical Power Consumption at 25°C		< 1.0 W (without extension component)	< 1.3 W (without extension component)
		< 1.2 W (with extension component)	< 1.6 W (with extension component)
Power Protection		Over-voltage, under-voltage, reverse connection supported by user extension components	
Interfaces			
Video Output	Analog Video	1-channel PAL system or 1-channel NTSC system	
	Digital Video	BT.656/ LVCMOS/LVDS	
Serial Communication Interface		RS-232/UART	
Type-C USB port		Typical voltage of 5V, supporting video and temperature data transmission, supporting the control protocol	
Button		4 buttons	
Temperature Measurement Performance			
Measurement Range		T series: -20°C ~ +150°C, 0°C ~ +550°C/TH series: 0°C ~ 60°C	
Measurement Accuracy		T series: ±3°C or ±3% of reading (The greater shall prevail) @Ambient temperature of -20°C ~ +60°C±2°C (optional) TH series: ±0.5°C@Target temperature of 33°C ~ 42°C; ±1.0°C@Target temperature of 20°C ~ 33°C; ±1.0°C@Target temperature of 42°C ~ 50°C	
Measurement Tool		Analysis of points, lines, and areas	
Physical Characteristics			
Weight (Without Lens and Extension Components)		21g±3g	
Dimensions (Without Lens)		26mm × 26mm	
Environment Adaptability			
Operating Temperature		T series: -40°C ~ +80°C (-20°C ~ 60°C for temperature measurement; TH series: -10°C ~ +50°C (16°C ~ 32°C for accurate temperature measurement)	
Storage Temperature		-45°C～+85°C	
Humidity		5～95%,non-condensing	
Product Certification		ROSH	

High Accuracy Temperature Measurement Products

LT Series

High-precise Thermographic Module LT384H/640H

- High-performance temperature measurement with the accuracy of ±0.5℃ (±0.3℃ with blackbody) meets various future needs;
- Various electrical specifications and interfaces widen the application range;
- Professional software improves development efficiency.

Micro III Series

Ultra-compact Professional Grade Thermographic Module Micro III 384TH/640TH

- Ultra-small SWaP meets various needs of integrators;
- Wide measuring range (0℃~+60℃) can deal with various industrial scenes;
- High measuring accuracy (±0.5℃) meets the needs of industrial temperature measurement in various scenes.

IRS-FD225-H

Dual-spectrum Turret Thermal Camera For Elevated Skin Temperature Measurement

- 1 to 4m non-contact human body temperature measurement
- Temperature measurement accuracy ±0.5℃ (±0.3℃ with blackbody)
- AI face detection& temperature measuring, max. 30 at same time
- Event linkage alarm, audible & visual alarm

Tianshu Series

Handheld Thermal Camera C200H

- Non-contact quick screening, efficient and cost effective;
- Auto snapshot of high temperature with traceable data;
- Easy to deploy, out of the box;
- Detecting distance＜1m.

AT Series

Precise Body Temperature Measurement Thermal Camera AT300/600

- Compact and miniaturized design realizes quick deployment;
- Megapixel optional, non-contact measurement with the high accuracy of ±0.3℃;
- Auto and real-time alarm with multiple methods of sound and image;
- Detecting distance: 1-5m.

AT Series

1.3 Megapixel Body Temperature Measurement Thermal Camera AT1280H

- Clear thermal details displayed by 1.3 megapixel makes temperature measurement more accurate and reliable;
- Keep a longer detection distance to improve the passage efficiency and reduces the risk of cross-infection;
- Help prevent and control the epidemic while providing a richer visual perception for future infrastructure.

IRS-AC822-H

Thermal Imaging Fever Screening Terminal

- Thermal imaging and temperature screening with resolution of 256×192
- Elevated skin temperature screening from 0.3m to 2m （within ±0.5℃）
- Support face recognition with mask
- 0.2s fast face recognition + forehead temperature measurement
- Support lock control output and face unlock

DT Series

Dual-spectrum Accurate Temperature Measurement Camera DTC300/200

- Non-contact quick measurement with the accuracy of ±0.3℃(with black body);
- Unaware quick measurement improves efficiency;
- Infrared+2-megapixel visible light optimizes recognition;
- Detecting distance: 1-3m.