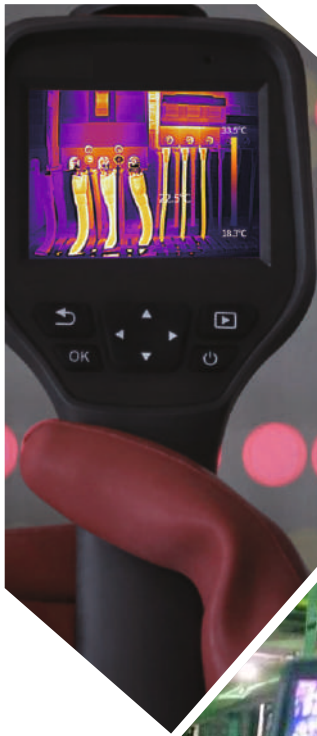# Handheld Thermal Imaging Cameras Introduction

STAN ONE ®

The Thermal Imaging infrared cameras featured on the following pages provide model options of basic to advanced thermal imaging cameras for measuring temperature differences for maintenance of industrial equipment, electrical installations, power generation & solar panels, HVAC, automotive ,product R&D, PCB's & NDT.

Power line maintenance technicians can locate overheating joints, building engineers can see leaks in cooling or heating, steel manufactures & treatments plants can observe furnaces, automotive applications include engines, wiring & metal treatment.

The thermal imaging camera option provide multiple color palette including white/ black/ rainbow/iron/molten metal.

While the rainbow palette is most suitable for viewing subtle differences in temperature based on thermal sensitivity, black & white palette is good for viewing image details.

Resolution : A 256 x 192 detector produces an image composed of 49152 pixels whereas a 640 x 512 detector will provide an image of 327680 pixels. Each pixel is showing a temperature point & therefore higher pixels mean more data points- higher resolution produces visibly clearer images. **Higher resolution provides better capability to measure the smallest objects from a larger distance while maintaining sharp focus.**

How to choose the right camera for your application:

Sensitivity: Higher the sensitivity, grades the ability to distinguish discernibly between two surface points. As an example, 0.04 allows $4/100^{th}$ of a degree temperature difference measurement capability.

PIP: Fusion of Infrared Imaging & visible image providing a superimposed infrared image inside a visible-light image.

Fusion: The blending feature in an instrument provides a fusion of the Min/Max/ Average temperature in the display image on the screen.

Simultaneous capture of Thermal & Visible Image : is a feature available in select instruments such as S300N, S500 etc which allows to capture both of the images on one click with temperature data.

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How to choose the right camera for your application:

Timed Photography: In case an installation requires continuous monitoring over a period of time, model options with timed photography can be mounted on a tripod; temperatures changes can be monitored to trigger an alarm. Useful in both equipment operation analysis & research.

FOV : Field of view is determined by the camera lens used and is the angular path of what an infrared camera sees, measured in degrees.
Narrow angles are more ideal for application scenarios where finer detail is required for relatively smaller objects viewed at a shorter distance for ex, 24.8° x 18.9°, for viewing breaker panels in power distribution applications,

Whereas larger FOV, say, of 56° x 42.2° provides scanning of a wider view to identify possible points of interest. **Larger the value, Larger the visible image section that can be inspected.**

IFOV : Denotes the instantaneous field of view , is the smallest target size an infrared thermal imaging camera can discernibly view at a given distance with a specific lens type and detector.

Smaller the mrad value, narrower the viewing angle and better the resolution of the images. Typically values below 2.0mrad will provide a very fine detail for objects as small as 0.5 inch at a distance of 6 meters. **IFOV therefore defines the smallest object size recognizable @1meter distance.**

Thermal Sensitivity (NETD) : Thermal sensitivity / NETD (Noise equivalent temperature difference) is the smallest possible difference in temperature that the thermal imaging camera can display, value measured in millikelvin (mk) . As example, if the instrument NETD is 35mk, denotes that the instrument will be able to record temperature differences as of 0.035 deg C.The NETD value therefore serves as an essential selection guide based on quality of temperature measurement required by the user.

Free Focus Vs Manual Focus :

1. Free focus thermal imagers are for quick scanning of targets from short distances of a few feet. Thermal imaging cameras with free focus are utilised for first level troubleshooting for various applications such as electrical maintenance, automotive applications etc.

2. Manual focus based thermal imaging cameras are high performance instruments which allow the user to adjust the focus for high resolution capture - manually, similar to an SLR Camera for distances as low as 6 " or focus on objects even as far as 20 meters away, depending on the instrument. Applications include inspection of breaker panels, power lines, building inspection etc.

# STAN ONE® | S280

Handheld Thermal Imaging Camera

S280 Thermal imager is an economical thermal imaging camera for use as a **first level troubleshooting tool** for a variety of applications such as electrical panels, bearing checks, PCB inspection etc.
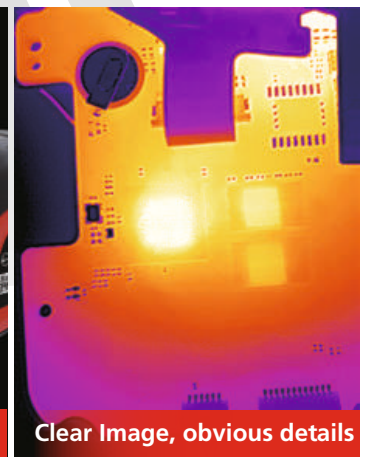

1 256×192 Resolution
Professional Temperature Measurement

Built in intelligent image algorithms for optimizing short distance imaging- ensuring clear images with rich detail.
Use between 0.5 to 5 meters distance.
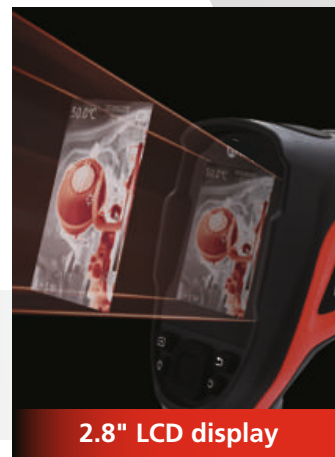
2.8" LCD display

Clear Image, obvious details

11h Ultra-long Battery Life

With the Type-C charging interface, it can be **fully charged in 4hours**. With 11h battery life, it is ready to use for a full day.
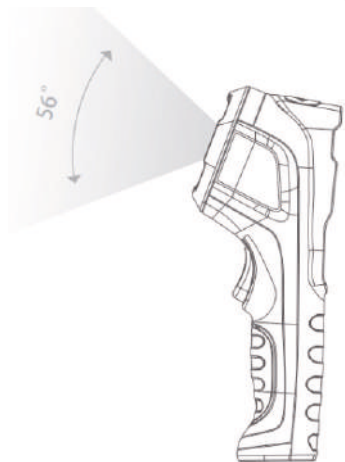

Type-C charging interface

Dual-spectrum Vision

It has infrared+visible light imaging function. Dual-spectrum fusion can better adapt to different observation scenes.

Handheld Thermal Imaging Camera

56° FOV

Focus-free design brings large FOV at the same distance. It can cover the entire electric cabinet at 1m distance and scan 10m² indoor floor in one glance. Inspection in a narrow space has never been easier.

Thermal Imaging/dual-spectrum/picture-in-picture/visible light mode

7 palettes can easily locate hot spot and enhance detection efficiency
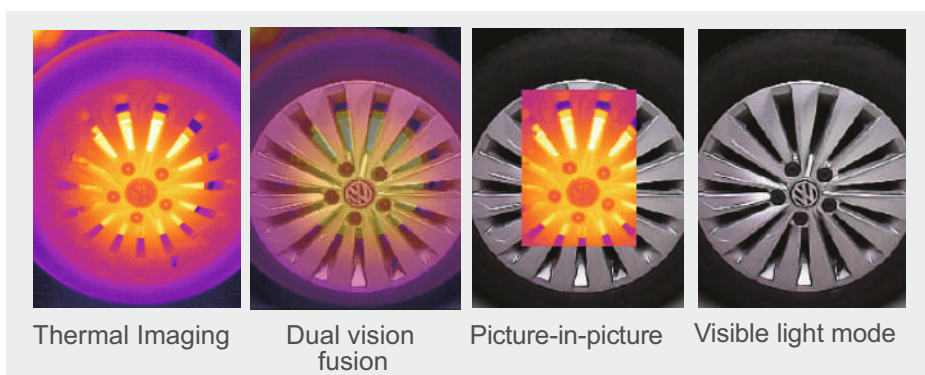
| Thermal Imaging | Dual vision fusion | Picture-in-picture | Visible light mode |

+270°C

Measuring range -20°C~+550°C

+550°C

-20°C~+550°C Wider Range, Meet More Needs

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

2 Powerful Performance, Fast Inspection

Built-in high-performance 12µm Vox detector , providing more intricately detailed images.

Auto Tracking Of Highest/lowest-temperature Points

The center/highest/lowest temperature point are displayed in real-time. Image and LED alarm are supported. The alarm threshold could be set for easy troubleshooting.

NETD<40mK

Tiny abnormal temperature point are clearly shown. It is also suitable for the inspection of building quality, material defect, and precision devices.

48.3°C   2020/02/18 21:02
73.1
ε = 0.90
-2.0

LED alarm   **Image alarm**

STAN ONE® | S280

Handheld Thermal Imaging Camera

STAN ONE®

3 Friendly Interaction, Simple Design With Rich Functions

5 Buttons Easy to operate, pick-and-scan

Measure temperature with ultra-easy button navigation, no additional training needed. Just unpack and power up.

PC offline temperature

LED light
Used for dark environments
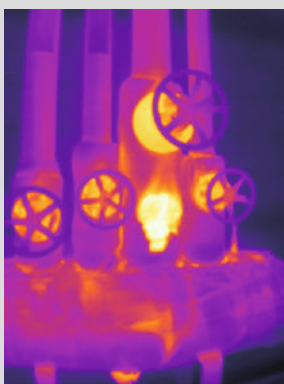Infrared lens
visible light lens

Snapshot trigger

Display
Back
Power
Menu
Gallery
LED light

1. **256 x 192 Thermal resolution**
2. **0.3 Million pixels visible camera**
3. **0.05°C Thermal sensitivity**
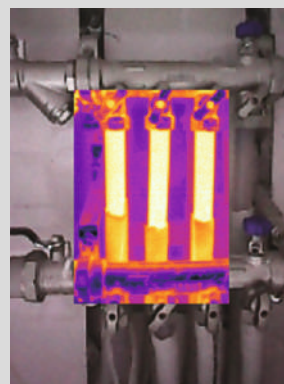4. **Automatic Hot/Cold center point capture**

Application Fields :

Pipeline Inspection
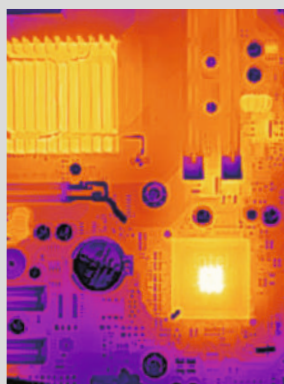
Product Development

Automotive Maintenance

HVAC Maintenance

Electrical Diagnosis

STAN ONE® | S280

Handheld Thermal Imaging Camera

Specifications :

| Model	S280
Detector Type	VOx uncooled infrared detector
Detector Resolution	256×192
Spectral Band	8~14 μm
Pixel Size	12μm
Thermal Sensitivity (NETD)	<40mK
Frame Rate (In Hz)	25
FOV	56°×42.2°
IFOV	3.82mrad
Focal length (In mm)	3.2
Focusing Mode	Focus-free
Measurement Range	Range 1: -20 to +150 ℃ ; Range 2: 100 to 550℃
Measurement Accuracy	±2% or ±2°C of the reading (the larger one shall prevail)
Measurement Resolution	0.1℃
Measurement Unit	℃, ℉, K
Distance Setting	0.25 to 5m
Measurement Tools	Automatic Center temperature measurement/Hotspot and cold spot tracing
Image Modes	Thermal imaging, fusion, PIP visible imaging,
Palettes	7 palettes
Alarm Mode / Temperature Alarm	Support image and LED alarm / Full frame high/low-temperature alarm
Visible Camera Resolution	0.3 MP
Photo Function	Support, with temperature data
Display Screen Size (Inch), Resolution	2.8 LCD (320×240)
Data Storage	Standard 16GB SD card, supporting expansion
Battery Type	Rechargeable Li-ion battery
Power Supply	USB direct charging types C
Battery Operation Time (Hours)	11h, @25℃ indoor
Charging Time	About 4h, @25℃ indoor
Lighting	LED fill-in light
Tripod support	Support, at the bottom of the handle
Operating Temperature | Storage | RH%	-10℃~+50℃ | -20 to +60℃ | RH 10% to 95%
Environmental | Drop Protection	IP54 | 2m
Dimension (L × W × H) | Weight	237×75×92 (mm) | 520g
Product Supply Includes	USB cable, 16GB SD card

High- Performance Handheld Thermal Imaging Camera

PC analysis software offered for all "M" models and S280 Pro to:

1. Perform real time monitoring of thermal imaging using device, directly on PC, by connecting USB Cable from thermal imaging camera to PC.

2. Download the data from the thermal imaging camera for analysis. Each pixel can be checked individually for temperature data to find anomalies.
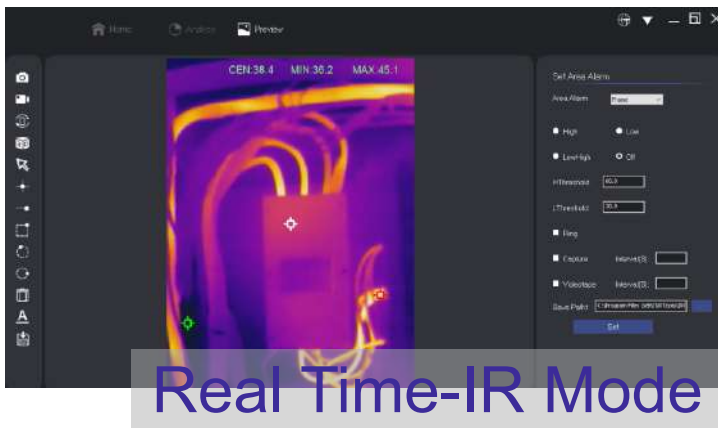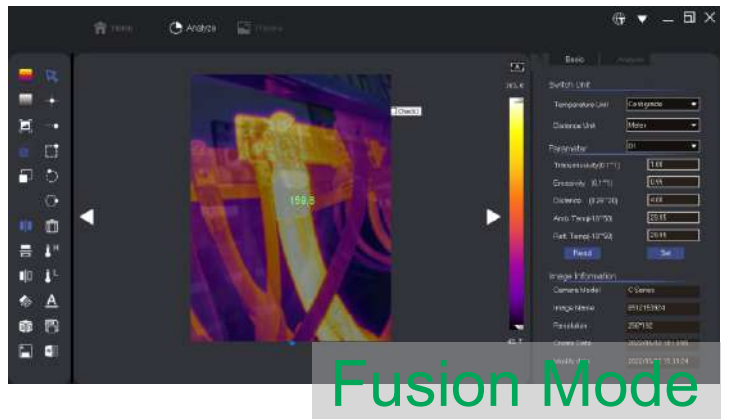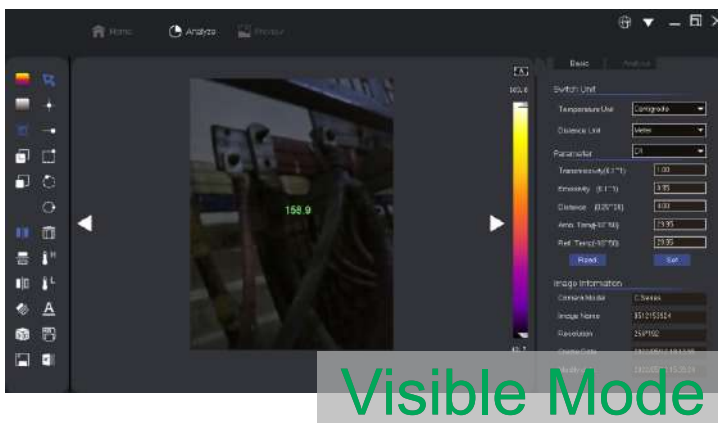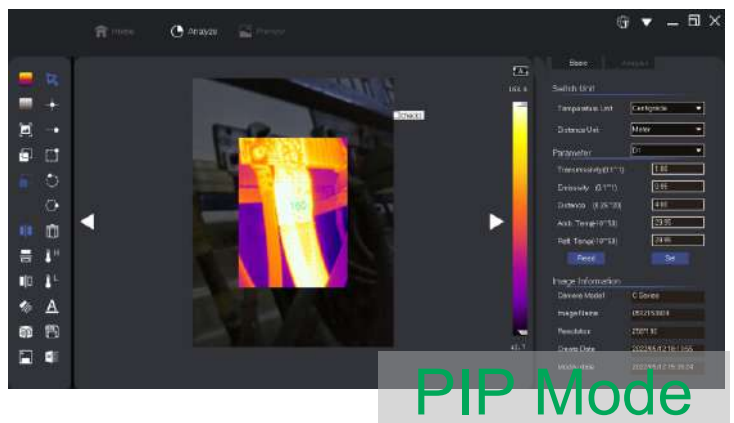

Real Time-IR Mode
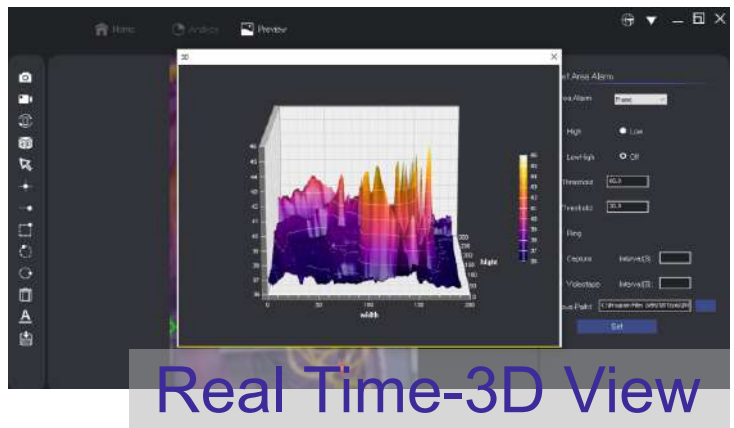
Real Time-3D View

IR Mode

Fusion Mode

Visible Mode

PIP Mode