# Handheld Thermal Imaging Cameras Introduction

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.

# Handheld Thermal Imaging Camera

## 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.

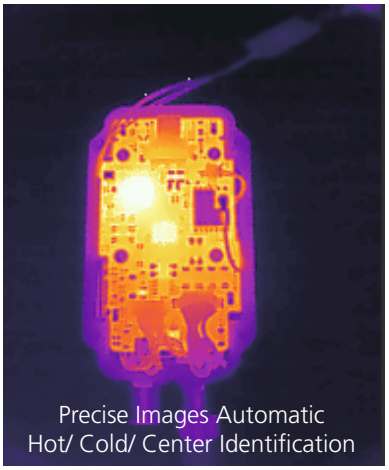
# STAN ONE® | S280 Pro

## Handheld Thermal Imaging Camera

### 1 256×192 resolution
**Powerful Upgraded Detector 2MP Visible Camera**

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

With **pro-grade 256×192 resolution, 2 megapixel visible camera** and pro-grade low lag, it can meet most professional requirements easily. 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. S280 Pro is ideal for thermal imaging of objects upto 5 meters distance.



Precise Images Automatic Hot/ Cold/ Center Identification

### 2 Pro-grade thermal imaging functions Automatic Hot, Cold & Center tracing

For professional users, the **built-in timed photographing** and **automatic alarm snapshot** are provided: the number of photos to take and the time interval can be set, and meanwhile, the automatic alarm and snapshot can be set. Besides, it features 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.

### 3 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 temperature analysis** and real-time point/line/area temperature analysis. Click to output reports, helping professional users output infrared inspection results and work efficiently.

**-20 to +550°C Wide measurement range**

### 4 Professional Grade

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

S280 Pro can discern subtle temperature differences of the target, which is also applicable to high-accuracy inspection scenarios such as material defect detection and precise component testing.


1. **256 x 192 Thermal resolution**
2. **2 Million pixels visible camera**
3. **0.04°C Thermal sensitivity**
4. **Automatic Hot/Cold center point capture**

# STAN ONE® | S280 Pro

## Handheld Thermal Imaging Camera

### Specifications :

| Model | S280 Pro |
|---|---|
| Detector Type | Vox Uncooled infrared FPA detector |
| Detector Resolution | 256×192 |
| Pixel Size | 12μm |
| Thermal Sensitivity (NETD) | <40mK |
| FOV | 56°×42° |
| IFOV | 3.82mrad |
| Focal length (mm) | 3.2 |
| Focusing Mode | Focus-free |
| Temperature Measurement | Central point/highest temperature point/lowest temperature point/3 custom points |
| Measurement Range | Range 1: -20 to +150 °C ; Range 2: 100 to 550°C |
| Measurement Accuracy | ±2% or ±2°C |
| Measurement Resolution | 0.1°C |
| Measurement Unit | °C, °F, K |
| Emissivity Setting | 0.01 - 1.0, adjustable |
| Distance Setting | 0.25 to 5m |
| Image Mode | Thermal imaging, thermal fusion, visible light, PIP |
| Palette | White-hot, black-hot, molten metal, iron red, rainbow, high-contrast rainbow, black red |
| Frame Rate (In Hz) | 25 |
| Lighting | LED fill-in light |
| Alarm Mode / Temperature Alarm | Image alarm, LED indicator alarm / Full frame high/low-temperature alarm |
| Visible Camera Resolution | 2 MP |
| Automatic Alarm Snapshot | Support automatic alarm snapshot; Photo number and time interval can be set. |
| Timed Photographing | 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 |
| Display Screen Size (Inch), Resolution | 2.8" LCD (320×240) |
| Data Storage | 16GB Micro SD card |
| Battery Type | Rechargeable li-ion battery |
| Power Supply | USB direct-charging type-C |
| Battery Operation Time (Hours) | 15H |
| Charging Time | About 4h in the shutdown status |
| Power Management | Adjustable (automatic shutdown, 5 min, 10 min, 20 min) |
| Analysis Software | PC Software Support |
| Tripod Support | Yes, at the bottom of the handle |
| Operating Temperature \| Storage \| RH | -10°C~+50°C \| -20 to + 60°C \| 10% - 95% RH |
| Environmental \| Drop Protection | Ip54 \| 2m |
| Dimension (L × W × H) \| Weight | 237×75×92 (mm) I 520g |
| Power Supply Includes | USB cable, 16GB SD card |

# STAN ONE® | PC Analysis Software

## 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.**