



# FAQ's

## Frequently Asked Questions



### Diagnostic Thermal Imager ELITE

#### What is the advantage of using a Thermal Imager compared to an IR spot pyrometer?

Simply stated, you can actually see thermal differences. The Thermal Imager allows you to see the radiated thermal energy, that you cannot see with the naked eye. This feature alone, makes it an invaluable tool for visually detecting thermal differences, such as an HVAC leak or blockage, an electrical component overheating due to high resistance, or a broken element in a heated seat.

#### What does the Thermal Imager actually measure?

Contrary to what you may think, the Thermal Imager does not measure temperature, it actually detects radiated thermal energy from an objects surface. This infrared radiation emitted from an object is converted by the Thermal Imager into a visual image of colored heat signatures. The displayed temperature is derived from a complex calculation that takes into account many factors that influence the infrared radiation (e.g. emissivity, the temperature of the sensor, the air between the object and the Imager, etc).

#### Why is there a difference between the temperature value displayed on a IR spot pyrometer compared to this Thermal Imager, when used on the same object?

This difference is due to how they work, both measure radiated thermal energy, but the spot pyrometer only measures a single point, whereas the Thermal Imager uses an average of multiple points. Since the Thermal Imager measures multiple points over a larger area, it may typically display a different value.

#### I compared measurements of the same object with another Diagnostic Thermal Imager ELITE, and I get different results. Why is this?

The Imager has an operating tolerance for Radiometric Accuracy that is [(at 68°F (20°C)): ±9°F (±5°C) or ±5% (whichever is greater)]. What this means is that temperature readings between two Imagers can vary up to 18°F (10°C).

#### What is the Cross-Hair in the center of the screen for?

The cross-hair is an aiming aid, and represents a small (spot) area (16 pixels) that is measured to calculate and display the temperature value in the upper left, known as the Center Region Temperature (Average).

#### What is the Color Palette Range Indicator for?

Color Palette Range Indicator is a dynamic colorized representation of the entire temperature range of the active scene.

The values displayed on the top and bottom of the color palette range indicator are the minimum and maximum temperature values of the active scene. *Note:* It is normal for these values to constantly change as the scene changes.

#### How far away from an object can the Thermal Imager be and still provide accurate readings?

The optimum distance is about 36 in. (91.44 cm).

In general, the farther away from the object, the larger the object has to be in order to still measure the temperature accurately.

The Imager has a spot size ratio of 14:1. As example, this allows for an accurate measurement of a 1 in. (2.54 mm) diameter object at a distance of 14 in. (35.56 cm).

#### What is Emissivity? Why is it important? How can I adjust it?

Emissivity is the amount of radiation emitted from the surface an object, compared to that of a perfect "blackbody" (standard of radiation) of the same temperature. Emissivity is also referred to as the intensity of infrared radiation.

As different materials and surfaces have different emissive properties, to accurately calculate temperature (from infrared radiation), the emissivity value of the object being measured must be entered in the Thermal Imager settings. The emissivity value that is set, is used to calculate the displayed temperature value.

*Note:* The reflective properties of materials influence their emissivity. Materials that highly reflect infrared (e.g. polished aluminum) have a low emissivity (0.15), however the emissivity of common materials is about (0.95).

#### The temperature reading is: Stuck on Zero, Extremely Incorrect, or Fluctuating

If this occurs, adjust the emissivity setting accordingly to the material being measured. Allow the imager to auto calibrate after adjusting the emissivity. If no change, reboot the Imager. If the issue persists, contact customer service.

## The temperature readings show a “<” or “>” with the number (Out of Range)?

">" - Indicates the temperature being measured is above the range of the current scale, or when the maximum measurable temperature for the current temperature range has been reached.

"<" - Indicates the temperature being measured is below -4°F (-20°C).

Depending on the level of emitted infrared radiation being measured, one of two preset temperature scale modes are automatically used to display the temperature reading onscreen.

- High Range Mode: -4°F – 842°F (-20°C – 450°C)
- Low Range Mode: -3°F - 356°F (-19°C – 180°C)

The temperature scale (High/Low) is automatically changed based on a percentage of the scene temperature, however if the measured object is too small the scale will not change.  
*Note:* Temperature scale changes are seamless, and cause no interruption in operation.

## What is automatic calibration and when does it occur?

Because the temperature of the internal thermal sensor influences the measured values, the Imager performs automatic calibrations to compensate for the current temperature of the sensor. Facts about calibration:

- An automatic calibration will occur when the Imager is turned on and after one minute, during “warm-up”.
- An automatic calibration will occur approximately every five minutes and once at every 3°C (6°C) temperature change of the thermal sensor.
- A symbol “~” is displayed in front of the temperature value to indicate calibration is about to occur (within one minute).
- A screen message (e.g. calibrating) is displayed during the automatic calibration process.
- An audible “click” may also be heard during calibration, and a temporary screen “freeze” occurs.

## The Imager seems like it is calibrating too often, what should I do?

This is likely caused by changes in the ambient temperature and the internal temperature of the Imager. Calibrations can occur when there is a temperature change of 6°F (3°C).

It is normal to see multiple calibrations, with intervals of 20 to 30 seconds if the Imager is moved from a cold to warm environment.

As example, if the Imager is at 30°F (-1.1°C) and then turned on, as the Imager warms up its own internal temperature may rise to 90°F (32.2°C), therefore there will be 10 calibrations. If this happens over a period of 5 minutes it will calibrate every 30 seconds. If it is moved into a warmer environment at the same time, the number of calibrations will increase.

## The Imager will not calibrate (e.g. temp values stuck at >365°F or <-3°F), what do I do?

- Reboot the Imager.
- If problem persists, call customer service.

## I see two images or ghost images, what do I do?

- Wait for the Imager to auto-calibrate again, or manually calibrate the Imager (see settings menu). If the problem persists reboot the Imager. If the screen is frozen, hold the power-button for 5 seconds to power off the Imager.
- If problem persists, call customer service.

## The screen is froze (nothing works), what do I do?

- Reboot the Imager, hold the power-button for 5 seconds to power off the Imager.
- If problem persists, call customer service.

## Can the Thermal Imager show which electrical wires have electricity running through them?

NO. Voltage or current can't be seen or measured with the Imager. Heat generated due to electrical resistance MAY be possible to see, if the area of resistance is hotter than the surrounding surfaces.

## Does the Imager need to be powered on or off to charge?

It will charge in either state, On or Off. *Note:* Faster charging occurs when the Imager is off. To achieve the fastest charge, always turn the Imager off, before connecting the charger.

## How long does it take to charge?

With the Imager Off it will typically recharge to 80% in about 3 hours, and 95% in about 4 hours.

## How do I get software updates?

There are no current or future software updates available.

## The Thermal Imager is not recognized by my Windows PC when I connect it using the USB cable?

- Disconnect the USB cable from the PC, wait a few seconds and reconnect it.
- Try a different known good USB cable.
- Connect a different known good USB device to the same USB port and verify it works, and/or try a different USB port.
- Reboot the PC and/or try a different PC.
- Some PC's may not supply an adequate USB voltage supply to operate or charge the Imager. This may result in a non-connection or disconnecting situation. The use of a powered USB hub is recommend with a minimum 500mA output.
- In the problem still persists, contact customer service.