

How to Purchase a Thermal Imaging Camera

Interested in buying an infrared thermal imaging camera but not sure where to start or what to look for when purchasing? Perhaps you want to start an infrared inspection business or need information for purchasing a thermal imaging camera for research, process control, medical, electrical, or other applications?

At Infrared Cameras Inc. we have been designing, manufacturing, training, and selling infrared cameras for over 15 years now. Our CEO has been working in thermography for over 31 years and has experience in every infrared application in the world and outer space.

We are dedicated to the end user and build thermal imaging cameras for professional thermographers. We build extraordinary cameras that consistently beat our competitors in independent studies. If you have any questions please feel free to call us at anytime to discuss your application and how our infrared cameras can work for your application.

Feel free to call our staff of trained thermographers at 1 866 861 0788.



Thermal Imaging Camera Buyers Guide

Many factors should be weighed when purchasing an infrared thermal imaging camera. This guide goes over some of the basic factors to be considered as well as tips to purchasing the correct thermal camera for your application.

Thermal Imaging Buyers Guide Contents

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General Information

- Infrared **Thermography** is the discipline concerned with the acquisition, storage and analysis of radiated energy using a thermal infrared imaging system.
- Infrared Instruments DO NOT Measure Temperature!
- They measure Infrared Radiated Energy only!
- Typically you will hear both infrared and thermal imaging. They are really the same thing. **Thermography**, however, refers to active collection and interpretation of infrared data. Thermography is the measurement of temperature remotely to indicate equipment health and assigning a color based on the temperature.

Qualitative or Quantitative?

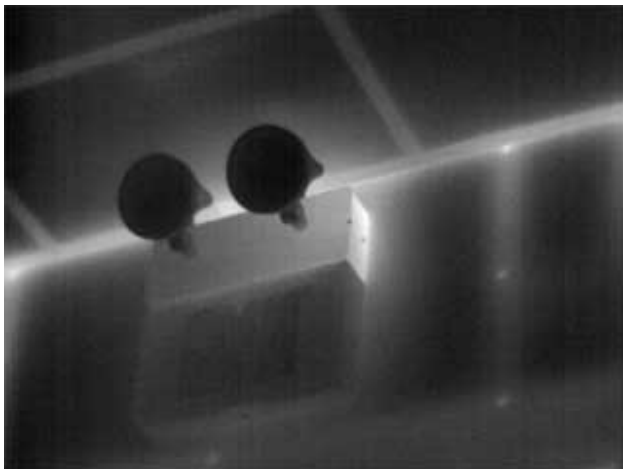
Determine the Type of Infrared Camera that best suits your application; qualitative or quantitative?

- **Qualitative Measurement** - the process of obtaining and interpreting thermal images based on thermal contrast in order to identify anomalies; the purpose is more to determine where a temperature difference exists than what the temperature difference is between the target and its surroundings.
- **Quantitative Measurement** - the process of obtaining thermal images with correct temperature readings. Especially useful in situations when the exact temperature or temperature difference of the target determines whether it falls in or out of a determined criteria or range of acceptability. Also important to R & D and process control situations.

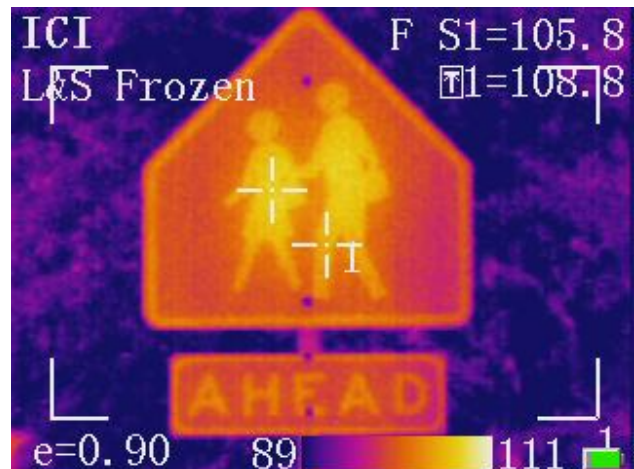
Basically Qualitative means that you will not get a temperature reading, but will be able to view thermal differences, while a quantitative thermal camera will give you accurate temperature readings.

- Do you need to be able measure temperature, or just see differences in thermal energy?
Most thermal imaging cameras are qualitative; meaning that they have the built in software (when the correct variables are input by a thermographer) to produce an accurate temperature reading.

Several times a week we get calls in the office asking about security cameras; they do not necessarily need temperature measurement or radiometric cameras and are usually just as well off with night vision or infrared illuminator ccd security cameras for a fraction of the cost of an infrared fully radiometric camera. We do not sell these types of ccd security cameras and would not suggest someone buy a radiometric infrared camera if it is not needed for their application. [Read more about Night Vision](#)



Example of **Qualitative** Measurement



Example of **Quantitative** Measurement

Portable, Fix Mounted, or Pan & Tilt Thermal Imaging Unit?

At ICI we offer a variety of infrared cameras and enclosures ranging from airborne vehicle mounted, fix mounted, vehicle mounted with stabilization, pan and tilt, and handheld thermal imagers.

Portable Handheld Thermal Imager – The most popular thermal imaging cameras are our handheld units. These types of thermal imaging cameras are generally useful for a number of applications including research, electrical, mechanical, medical, veterinarian, fire fighting, process control, building inspections, and energy audits. Their ease of use, portability, and light weight make them ideal for many jobs and applications. When purchasing a handheld camera the buyer should be aware of the design and weight of the hand held thermal camera. Ruggedness and environmental protections should be considered as well.



Portable Hand Held Thermal Imaging Unit - ToughCam EL

- Weight and Design can be a factor if the camera will be used for any extended period of time.
- Battery Charge time, accessories, etc. should be considered depending on the job at hand.
- There are literally 100's of different types of hand held thermal imaging cameras. Each with a unique set of functions and features, below are some features to consider::
 - Voice Annotation
 - Size of LCD - ability to rotate or move screen for difficult angles
 - Lens size
 - Image storage capacity
 - Video output
 - Resolution
 - Image Refresh rate

Fix Mounted and Pan & Tilt – When buying a fix mounted or pan and tilt thermal imaging camera, many factors should be considered.

- Does the camera need to have any special environmental protections, will it be exposed to extreme heat/cold or humidity?
- Does the camera need to be fix mounted or should it be able to pan and tilt. Does the system need to be autonomous? Depending upon your particular application, there are several designs and models to choose from. At Infrared Cameras, we will custom design and manufacture to your specifications.
- If a thermal imaging camera is to be in one position, all weather and environmental factors should be weighed into the purchase of a thermal imaging camera. For certain environmental conditions, heating and/or cooling for the camera may be required.

Other considerations should be how thermal camera will be hooked up to power and monitoring stations. We can modify our thermal cameras to run on alternative power sources; such as solar panels. An addition of Wifi can then allow thermal cameras to be placed in remote locations.

- Vehicle mounted thermal imaging cameras require specially outfitted enclosures. Mounting to vehicles, aircraft, and boats will also require stabilization as well as conversion to run off the vehicles power. Thermal Imaging Cameras can be mounted on practically any vehicle, including robots, satellites, etc.



ICI Flare Monitoring Fix Mounted Thermal Imaging Camera



X32 Pan & Tilt Thermal Imaging Camera System

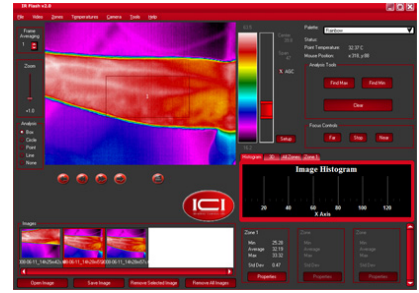
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Ensure software has the functions necessary for your application.

Is the full version of the software included?

Several unscrupulous companies may try to sell you a “watered down” version or a lite version of their software to allow viewing only of the images or limited functionality. At ICI we offer several software packages, but all of them are the full software suite with all functions enabled.

- How many users will need access to the software, is there a charge for multiple licensed users for the software? Infrared Cameras Inc. offers no restrictions to multiple users across multiple computers.
- Does the software include all the analysis tools needed? Not all software is created equal, make sure to review the features the software offers.
- Is the software included with the price of the camera? Most manufacturers will include software with their cameras, but not necessarily the full version.
- Does the software work with your computer specifications? If you have a 64 bit or Macintosh computer, you may have difficulty finding the correct software and drivers.



*IR Flash Professional Thermal Imaging
Analysis Software*

ICI only offers full working versions of our software, we do not have any limited or lite versions available. All of our cameras come with the full version of the software. Our software also allows for unlimited installations and user access. So you will never have to pay an additional fee for an extra software CD so you can install it on your home and work computer. If you lose your software we will send you another CD for the cost of shipping or allow you to download it for no charge.. We believe the end user should not have to be burden with “hidden fees” that could hinder there ability to work and make an income.

Ensure the Thermal Imaging Camera has the built in features necessary for your application.

- Do you require single or multiple temperature measure points?
- All IR cameras should have accuracy at the industry standard of $\pm 2^{\circ} \text{C}$ or $\pm 2\%$. This is the industry standard and anything above that may provide unreliable and inaccurate temperature measurements.
- Make sure your camera allows you adjust the emissivity settings. If you cannot adjust emissivity you cannot get accurate readings.
- Buy a camera with video output if you need to view or record live video, ensure the camera is HD 50/60Hz with a high resolution for the best possible viewing.
- Buy a thermal imaging camera that outputs to industry standard format image, such as Jpeg and Tiff that are industry standards and easily emailed to clients.
- Ensure your camera will be able to measure temperature high or low enough for your application.
- Buy a thermal imaging camera with trade in potential –buy from manufacturer that offers loaners – trade ins, rentals , and demos.

- Buy from a well known manufacturer with a sales staff trained in thermography.
- Does the camera include temperature tracking, visible camera, laser pointer, alarming features, correct focal length, and the correct angle of lens?
- What type of lens is include? What type of lens best suits your application? – are optional lenses available for upgrade?
- Are all the accessories included in the price?(case, battery, charger, etc.)
- Buy a camera with no proprietary accessories or batteries. Having the option to pick up a back-up battery at your local radio shack can save you a lot of money and time.

Other Considerations and Tips.

- Warranty - Ensure that the camera comes with a standard 1 year warranty. Many manufacturers offer a 2 year warranty or the ability to purchase an extended warranty. If your thermal camera is critical to your business's success, ensure that a loaner camera can be provided in case your thermal camera needs repairs.
- Thermography Training - To ensure accuracy, all personnel using the thermal imaging camera should be properly trained in level 1 thermography. Training can help one better determine the type of camera needed as well as many instructors will review individual cameras and software's for the benefits of their students. Consider renting or getting a demo unit during your training class before actually purchasing the thermal camera. At ICI we offer a "Try before you Buy" rental program. You rent the camera as usual, but if you decide to purchase the unit, we will waive the rental fee up to one week.
- Medical Applications - When purchasing a thermal imaging camera for medical purposes, ensure that the camera has been cleared by the FDA for use as a medical device. This ensures that the camera is of the highest quality and accuracy for medical use. Infrared Cameras Inc. has recieved FDA 510k Clearance to market our S and P series thermal imaging cameras as medical devices.
- Thermal Sensitivity or NETD - Thermal sensitivity is measured in terms of milliKelvins (mK). The lower the sensitivity the more sensitive the camera is. A low sensitivity indicates the cameras overall image quality and can thus affect accuracy when calculating temperatures.
- Calibration and Repair - Another good point to consider is whether the manufacturer you are purchasing from has their own Calibration and Repair center. The majority of thermal cameras require calibration every year or two depending on use. If the camera has to be sent overseas for repair or calibration, you may be without a camera for several weeks or even months. Therefore it is important to find out if a loaner camera will be sent while your camera is away for calibration or repair.

Conclusion

This buyer's guide was written by Infrared Cameras Inc. for general informational purposes. Most manufacturers will meet or exceed these suggested buying requirements. Feel free to [contact us](#) for more information or questions regarding your purchase of a new thermal infrared imaging camera.

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