TELEDYNE FLIR

APPLICATION NOTE
Firefighting & Public Safety

FLIR THERMAL FIREFIGHTING CAMERAS VS. THE COMPETITION: IN THE HEAT OF THE BATTLE, WHY FLIR IMAGE QUALITY WINS

Choosing the right thermal imaging camera (TIC) to help your fire crew save lives and livelihoods can be a challenge: what are the most important features to focus on? And how do you balance cost concerns with camera capabilities?

First, you need to determine what level of TIC would work best for your team and your budget. TIC models run the gamut from compact, cost-effective situational awareness cameras to full-featured, NFPA 1801 compliant* tactical TICS. A camera such as the FLIR K2 is rugged enough to provide situational awareness in the thick of the fire. This entry-level camera is compact, easy to use, and features FLIR's proprietary Multispectral Imaging (MSX®). Plus, it's priced to make high-quality thermal imaging accessible to volunteer fire departments or to provide a camera to every member of a fire crew. At the other end of the spectrum is the FLIR K65, a feature-rich tactical camera that allows fire departments to maintain NFPA-1801 compliance, if needed. This TIC has a 320 × 240 maintenance-free thermal sensor with FLIR FSX® image enhancement to help you navigate easier in dark, low visibility, or smoke-filled conditions.

TIC THERMAL RESOLUTION: WHAT'S IMPORTANT?

And speaking of resolution: if you've looked at any of the marketing for the current crop of mid-range firefighting TICs, you'll notice many companies are touting a 320 × 240 thermal resolution for a few hundred dollars less than the 240 × 180 FLIR K33. But just because these competitor TICs have more pixels doesn't mean they perform better. After all, image resolution is about more than just numbers.

We looked at the FLIR K33 and K53 next to several competitor cameras, all of which have higher-resolution sensors that look great when imaging subjects at room temperature. However, when the heat of a fire forces these cameras to shift to low-gain mode, the image quality doesn't hold up.

FLIR K65 and FLIR K2 thermal firefighting cameras.

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For our test, we imaged a fire burning in a safe, burn-and-learn location.

When looking at a hot object in ambient temperatures, the image quality of the FLIR K33 and the higher-resolution competitor cameras appears similar.

However, when looking at a side-by-side comparison, you can see the difference in image quality. What you're seeing below is the K33 and a higher-resolution competitor camera in "low-gain" mode. Low gain means that the TIC has optimized its image in a much larger temperature window, well beyond ambient temperatures. Low-gain mode makes it easier to see the high-heat fire scene—the scenario you are dealing with as firefighter.

Comparing the K33 live image with a competitor's camera.

Comparing the K33 live image with another competitor's camera.

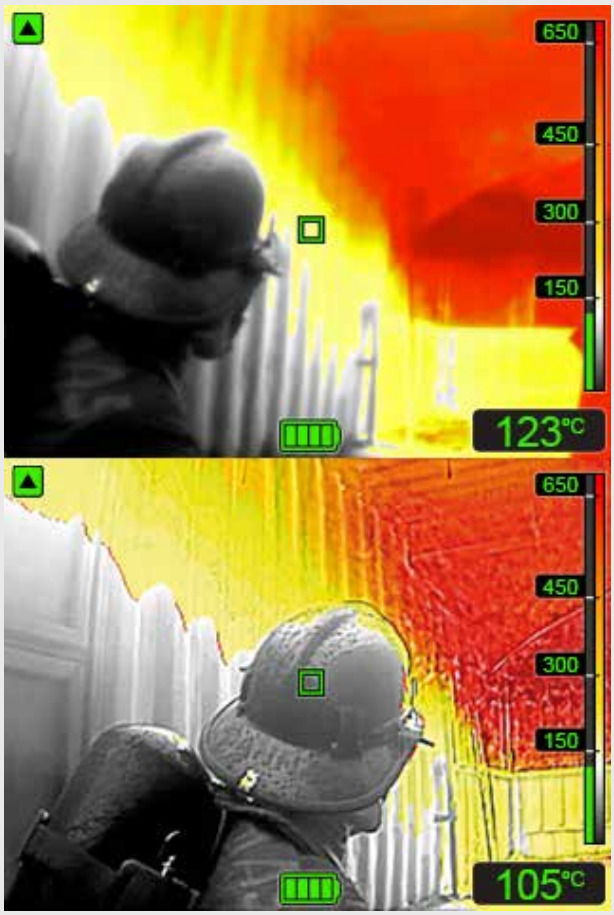
Comparing a competitor's camera with the K33. The FLIR K53 is included as a reference.

SO WHAT ABOUT FSX?

FLIR's proprietary Flexible Scene Enhancement (FSX) technology provides enhanced detail in the live thermal image that helps firefighters see low-contrast targets even in scenes with wide temperature ranges. The ultra-sharp, finer textured images show more subtle details, allowing the firefighter to recognize objects, pathways, and fire conditions more easily.

Another feature to consider when choosing a TIC is the camera design. Is it easy to hold and use when wearing heavy gloves? Will you be able to hold it in a comfortable position and use the screen to navigate through a smoky room? The pistol-grip form factor and large, single buttons used for the entire lineup of FLIR K-Series cameras is very ergonomic and easy to carry by hand, clipped to your gear, or from a belt.

While a lot of factors can go into the selection of a firefighting TIC, it's important to choose the features that have the most impact on your team's ability to quickly assess a fire scene and safely navigate the thickest smoke. A camera that produces a crisp image at high temperatures, offers detail enhancement to better understand the scene, and is easy to work with can make all the difference.



Comparing a thermal image without FSX to one with FSX.

For more information on FLIR thermal firefighting cameras, please visit:
www.flir.com/instruments/firefighting

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