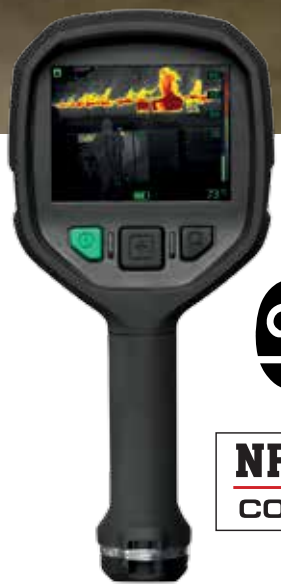
TECHNICAL NOTE

NFPA-COMPLIANT FIREFIGHTING CAMERAS

Thermal imaging cameras (TIC) have found their way in the toolkits and trucks of firefighting teams around the world. But with the several different types and brands of TICs on the market, it can be hard to decide which camera to purchase. To simplify that choice and to guarantee that TICs have minimum quality standards which allow firefighters to do their job, the National Fire Protection Association (NFPA) has defined specific criteria for the design, performance and production of thermal imaging cameras. With the FLIR K65, FLIR Systems offers firefighters a dedicated TIC that has been designed, developed and tested according to the NFPA 1801-2013 standard.



NFPA 1801 COMPLIANT

The NFPA 1801-2013 certification has been assisted by the Safety Equipment Institute (SEI), a private, nonprofit organization which assists manufacturers of safety equipment in meeting their goal of protecting the workers and consumers with safety equipment in keeping up with recognized standards and the current state of the art.

WHO IS NFPA?

The mission of the international organization NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing consensus codes and standards, research, training, and education. NFPA is the world's leading advocate of fire prevention and an authoritative source on public safety. It develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks.

With the NFPA 1801-2013 standard, the organization has outlined requirements for new thermal imagers used by fire service personnel during emergency incident operations. NFPA 1801-2013 was established to provide minimum design, manufacturing, testing, performance, and certification requirements for fire service thermal imaging cameras.

CURRENT STANDARDS FOR THERMAL IMAGING CAMERAS

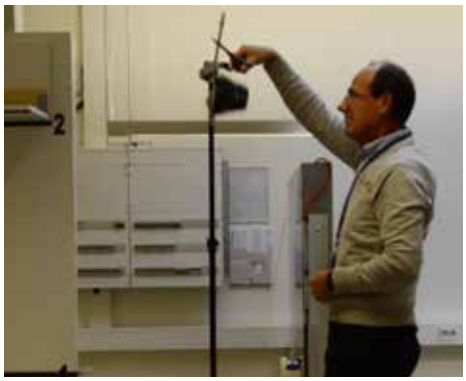
The NFPA 1801-2013 standard focuses on three main areas, viz. interoperability/usability, image quality, and durability.

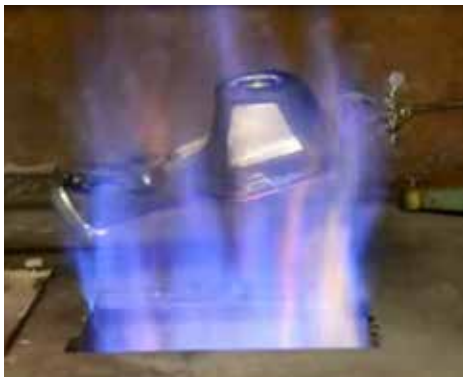
- Interoperability/usability

TICs from different types or brands should have similar functionality, so that firefighters can use them with minimal training. The idea behind this is that uniformity in the user interface and ease of camera operation should facilitate training and, ultimately, acceptance of thermal imagers by end users. Among other things, this means that TICs should have a green power button and a basic image mode that merely displays a grayscale image with a temperature bar, digital temperature readout and heat-indicating color with a color reference scale. Another requirement is that a TIC should be easy to operate with a gloved hand.

- Image quality

For firefighters, it is critical that a thermal imager provides a quality image, so they can quickly visualize a plan of attack, locate hot spots, or even





The NFPA 1801-2013 has durability requirements to help ensure that TICs are fit for fire ground duty. From left to right: durability test (tumble test), impact acceleration resistance test (drop test) and heat & flame test.

to save lives. NFPA 1801-2013 imaging performance tests pay attention to field of view, contrast, spatial resolution and sensitivity. Another important criterion is image recognition, which means that firefighters should easily recognize things on the thermal image and that the quality of the image is high enough for use on the fire ground.

- Durability

Needless to say, that firefighters need to operate in rough environments. That is why the NFPA 1801-2013 has durability requirements to help ensure that TICs are fit for fire ground duty. TIC durability tests conducted include those for ingress protection, heat/flame resistance, impact acceleration and vibration resistance, and corrosion.

Firefighters might also operate in potentially explosive environments. That is why NFPA-compliant TICs must meet ANSI/ISA 12.12.01 Class 1 Division 2 requirements, meaning that TICs are suitable for use within conditions where potentially explosive quantities of dust or vapor may be present.

FLIR K65: NFPA-APPROVED FIREFIGHTING CAMERA

The K65 is FLIR's new NFPA-approved TIC which allows firefighters to see more clearly in the darkest, smokiest environments, maneuver more strategically, stay better oriented, and find victims faster.

- Easy-to-use, even with gloves on

The K65 has an intuitive and simple user interface and can be controlled by 3 large buttons on top of the unit - ideal for a gloved firefighter's hand.

- Clear and Crisp Thermal Images

The K65's maintenance free uncooled microbolometer sensor produces crisp images at 320 x 240 pixels. Thermal images are displayed on a large bright 4" LCD. The K65 also has FLIR's proprietary FSX™ Flexible Scene Enhancement technology which enhances thermal images through real-time digital processing inside the camera. The result is an ultra-sharp image that shows extraordinary structural, edge, and other instantly-recognizable detail. This helps make it much easier for firefighters and rescue teams to find their way through the smokiest, darkest environments, and to instantly identify targets in scenes with extreme temperature dynamics.

- Rugged & Reliable

The K65 is designed to meet tough operating conditions. It withstands a drop from 2 meters onto a concrete floor, is water resistant (IP67) and fully operating up to +260°C/+500°F for 5 minutes.

Firefighters sometimes operate in potentially explosive environments, such as oil platforms, petro-chemical or power generation industries. That is why the NFPA-compliant K65 also meets the HazLoc standard, meaning that it is suitable for use in hazardous, potentially explosive conditions. As possible ignition sources, the K65's USB port and battery compartment are well protected, in such a way that they cannot be opened during normal operational conditions or operational maintenance. They are sealed to restrict entry of an external atmosphere.

A thermal imaging camera should be easy to operate with a gloved hand.

For more information about thermal imaging cameras or about this application, please visit:

www.flir.com/fire

The images displayed may not be representative of the actual resolution of the camera shown. Images for illustrative purposes only.