

# EVOLUTION® 6000 TIC Frequently Asked Questions



## Introductory

### *How will I benefit from purchasing an NFPA-compliant thermal imaging camera?*

Purchasing an NFPA-compliant TIC ensures a rugged, easy-to-use product that provides a quality thermal image.

### *Why is the Evolution 6000 Series TIC 320x240 core better than the Evolution 5800/5200HD TIC 320x240 core? Why choose the Evolution 6000 TIC if the same image quality is offered in Evolution 5800 or 5200HD TICs?*

The Evolution 6000 TIC all-digital camera core image is directly displayed to users, enabling better image quality than that of Evolution 5200HD and 5800 TICs using analog conversion that takes place between core and display. Additionally, the Evolution 6000 TIC's Germanium lens is larger, allowing for use of a higher quality lens, increasing Evolution 6000 Series TIC image quality.

### *How do users tell the difference among Basic, Plus and Xtreme models?*

Basic model has a black keypad, Plus and Xtreme models have gray keypads. Xtreme model provides two USB ports in the battery bucket, Basic and Plus models provide one. Branding labels on the camera sides list 6000, 6000 Plus or 6000 Xtreme.

### *Can a Basic model be upgraded to a Plus or Xtreme model?*

Yes, a Basic model can be upgraded to have functionality not originally installed in production.

### *Why is the Evolution 6000 TIC larger than small format TICs?*

The Evolution 6000 TIC uses ergonomic dual handle design that provides many fireground benefits, including one-handed operation, easy handoff, easy crawling, and ergonomically correct use. The Evolution 6000 TIC is not the smallest TIC available, but it is the most comfortable and easy to use on the fireground.

### *Does the Evolution 6000 TIC screen turn off to save power?*

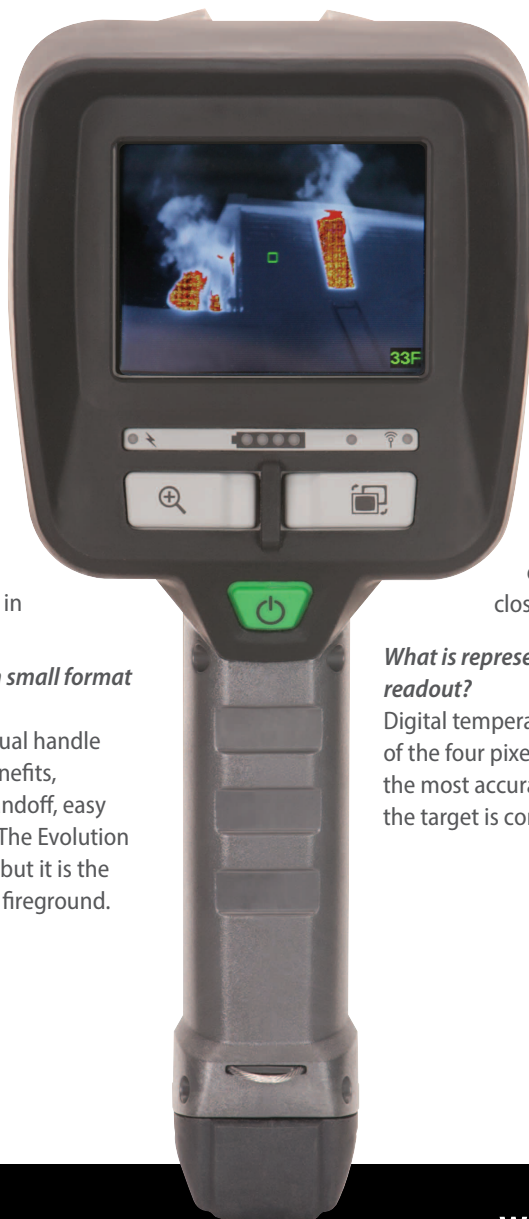
The Evolution 6000 TIC screen displays as long as the camera is powered on. TIC should be ready to go when firefighters need it, without taking additional action to awaken the camera from standby mode.

### *How do users read the camera's date code?*

The letter indicates the month (A=January, B=February, etc.); the two following digits indicate the year.

### *Does the Evolution 6000 TIC float?*

Yes, the Evolution 6000 TIC floats, always on its side, offering screen and LED visibility to aid users in finding the camera if it is dropped into water while turned on.



## Temperature

### *What is the maximum temperature that is readable by the Evolution 6000 TIC?*

600°C, or 1112°F maximum, meaning that the TIC will read AT LEAST those temperatures, and likely higher within certain situations. Readings greater than specified maximum are possible.

### *What is the Evolution 6000 TIC's temperature reading accuracy? As compared to the Evolution 5000 TIC?*

Specified accuracy of temperature measurements is +/- 10°C for the Evolution 6000 TIC and +/- 15°C for the Evolution 5000 TIC. Typical measurement error for both cameras, however, is much closer to +/- 5 in most situations.

### *What is represented by the display's digital temperature readout?*

Digital temperature readout is the average temperature of the four pixels inside the TIC display target. To obtain the most accurate temperature reading, make sure that the target is completely over the object or area of interest.

**WHEN YOU GO IN, WE GO IN WITH YOU.**

# EVOLUTION 6000 TIC **Frequently Asked Questions**

## **Battery**

**Does the 2.65 lb weight include the battery?**

Yes.

**What is maximum battery run time?**

The battery is rated for 3.5 hours; testing indicates average run time of 3.75 hours. Four hours run time is possible in certain situations.

**For how many charge cycles is the battery rated?**

The battery is rated for 300 cycles (until battery capacity reaches 80% of rated capacity). However, this scenario is intended for complete discharge and charge cycle. If only 50% capacity is used during every cycle, the number of cycles available roughly doubles.

**What is maximum battery run time for various models and options when running?**

Without flashlight, range finder and video transmitter, Basic and Plus model run times are similar. The flashlight running at 100% capacity reduces run time to approximately three hours. The Xtreme model with operating video capture (but nothing else) run time is approximately 2 hours.

**How do users read the battery's date code?**

The four-digit code to the right of the bar code is the date code. The first 2 digits indicate the week number (01 through 52), and the following 2 digits indicate the year.

**What results if the battery loses connection during camera configuration?**

Configuration changes will not be saved. Camera will use its existing configuration.

**Must the battery be installed to run the PC application?**

Yes, the battery must be installed to configure the camera using the PC application.

**Does the Evolution 6000 TIC offer a disposable or off-the-shelf battery?**

The Evolution 6000 TIC does not have a disposable or off-the-shelf battery available, as the Evolution 6000 TIC battery pack is designed to be NFPA compliant.

**Are battery statistics viewable when the camera is used with PC software?**

Not at this time.

**Are adapters available for Evolution 5000 Series TIC batteries and chargers?**

No, there are no adapters available.

**Will previous version Evolution 5000 Series TIC batteries work with the new Evolution 6000 TIC?**

Evolution 5000 Series TIC batteries and chargers are not compatible with the Evolution 6000 TIC.

## **Laser Pointer/Range Finder**

**What is the purpose of the Evolution 6000 TIC laser pointer?**

Laser pointer allows firefighters to highlight areas in which to take action during operations, especially critical as communicating voice commands during an active fire operation can be challenging. Laser pointer also acts as a buddy light for firefighters operating the TIC.

**Will the laser pointer hurt my eyes if I look at it directly?**

The Evolution 6000 TIC's laser pointer is considered to be eye safe and will not harm your eyes during brief contact.

**What's the difference between the laser pointer and the laser range finder?**

Laser pointer provides a red dot that highlights area that is in need of action. Laser range finder provides distance measurements.

**At what distance do the laser pointer and on-screen temperature spotmeter fall out of alignment?**

Spotmeter and laser pointer alignments are set in manufacturing and optimized for approximately 30 feet (10m).

**How does the laser range finder work?**

The laser range finder uses a time-of-flight method to determine distance to an object. The red laser displayed after pulling the trigger is meant only to be used for targeting. An infrared (IR) laser is used to make the actual measurement by sending a rapid string of light pulses toward the target.

The time it takes for each pulse of IR light to bounce off of the target and return to the range finder's receiver is measured. Distance can be calculated once the speed of light and elapsed time are determined. Multiple pulses are used to allow filtering and averaging to produce a more accurate reading.

**What is laser range finder accuracy?**

Laser range finder accuracy is +/- 3 feet (1 meter).



## Color Palettes

### *What are the advantages of viewing different color palettes?*

Different color palettes provide alternative views of thermal information. For example, palettes show thermal layers and highlight the hottest thermal scene spot. Reference MSA's Evolution 6000 TIC color palette guide for additional information.

### *Can users rename color palettes using the PC application?*

Color palette names are not changeable using the PC application.

### *Can users remove, swap or re-order color palettes using the PC application?*

Yes, the PC application allows for color palettes to be removed, swapped or re-ordered.

## Picture/Video Capture

### *What are the benefits of picture and video capture?*

Picture and video capture allow for creation of picture and video files for follow-up review. These pictures and videos provide great training tools, post incident evaluation and investigation value.

### *Does the camera record or transmit audio for video capture or transmitter?*

The Evolution 6000 TIC does not provide audio.

### *Can users view pictures or playback video directly on the Evolution 6000 TIC display?*

Video and pictures must be downloaded from the TIC and viewed on a PC.

### *Does capture/transmitted video quality match that of the camera display?*

Captured/transmitted video quality is the same as that of the camera display.



### *Can users change the Xtreme model's video capture five-minute time segment recording setting?*

This setting is fixed at five minutes.

### *Why is video/picture capture capacity noted in minimums?*

### *What is the maximum amount of available data (number of videos, number of pictures)?*

Video and image files sizes can vary greatly due to color and/or motion captured. As a conservative minimum estimate, expect 4 times the quoted minimum when using white hot and no color modes.

### *Can a video transmitter be added to Plus or Xtreme models after purchase?*

Yes, Plus and Xtreme models can be upgraded to have functionality not originally installed in production.

## Miscellaneous Technical

### *How often should the compass be re-calibrated?*

There is no fixed compass calibration interval, however, monthly calibration is suggested.

If the camera has been exposed to large magnetic fields (industrial motors, transformers, magnets, etc.), calibration following the event is recommended.

### *Do charging handheld radios stationed near a TIC in the truck charger affect compass calibration? Do any additional truck interference sources exist that could affect compass calibration? Should customers be advised as to where to mount the truck charger with this consideration?*

Compass calibration should not be affected any electrical device (such as a charger) or large steel object (such as a fire truck), but may affect accuracy of the instantaneous compass reading. Very strong magnetic fields are able to alter compass calibration, but these fields are unlikely to occur.

***What does NetD tell me about the camera?***

NetD (noise-equivalent temperature difference) is a measure of camera ability to provide the highest sensitivity over the widest image temperature range for both high and low sensitivity modes. The higher the number, the longer the camera can provide higher sensitivity images.

***Does the NFPA specify a high sense/low sense switching point?***

The NFPA does not specify a high/low switching point; the NFPA provides image quality specifications over a thermal range that the camera must meet.

***Can end users change the Evolution 6000 TIC's high/low sense switch point?***

This setting is part of the camera core and cannot be changed.

***What is storage drive size of the Xtreme model?***

Storage is a non-removable eMMC memory chip; capacity is 8/16Gb.

***Explain in ordinary terms the definition of Class 1, Div 2.***

Div 2 approval indicates that the device has been certified as nonincendive, meaning that during normal use/operation, no camera components become hot enough or arc/spark with enough energy to ignite a combustible atmosphere.

***Are carabiner attachment cables easily replaced if one should break?***

Carabiner attachment cables can be replaced by factory repair and service.

***Is there a torque requirement for screws used on the replacement Germanium lens?***

Yes, torque specifications and complete instructions are provided with the replacement lens kit.

***How does Heat Seeker (image colorization) work?***

A thermal image is composed of thousands of individual picture elements (pixels) that independently output a signal that is proportional to infrared energy (temperature) hitting the pixel. In a typical gray-scale, white-hot image, each pixel's temperature is mapped to a shade of gray. A processing unit automatically scales the pixels such that the coldest pixel is the darkest shade of gray and the warmest pixel is the lightest shade of gray, regardless of the real temperature span within the scene. The resulting image is thermal energy converted to human visible image via the LCD display. When image colorization is employed (Heat Seeker in MSA cameras), each pixel's scaling is changed such that any pixel in a certain temperature range is colored from light yellow to dark red. The gray scale is still dynamically scaled from dark gray (coolest) to light gray (warmest) up to the temperature at which colorization starts, but any pixel hot enough to fall into the map's colorization portion will be colored according to its temperature.

Note: This Bulletin contains only a general description of the products shown. While product uses and performance capabilities are generally described, the products shall not, under any circumstances, be used by untrained or unqualified individuals. The products shall not be used until the product instructions/user manual, which contains detailed information concerning the proper use and care of the products, including any warnings or cautions, have been thoroughly read and understood. Specifications are subject to change without prior notice.

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