

**Title: Operational Considerations for ISI
Thermal Imaging Camera**

**Date Issued: December 6, 2005
Date Last Revised: NEW
Revision Number: NEW
Total Pages: 7**

Purpose: To establish safe and proper operations for the effective use of the ISI handheld THERMAL IMAGE CAMERA (Vison3).

Scope: This guideline is to be followed by all personnel. Many of the items outlined in this document are direct manufacturers recommendations. These guidelines are to be followed at all times. Authority to deviate from the operational considerations rest with the Incident Commander. Authority to deviate from the maintenance considerations rest with the Assistant Chief / Operations.

General: Thermal Image Cameras are complex electronic equipment. This equipment can be reliable and can function for many years under normal conditions. However, it is important to remember that a thermal imager is unlike other tools in the fire service. Reasonable care must be taken when using this device. The fire service often evaluates equipment and forms opinions based on how difficult it is to break the equipment. Just for the record, YOU CAN BREAK this piece of equipment.

The VISION3 Thermal Imaging System is ruggedized and waterproofed for use in extreme, fire service conditions. However, there are limits. Please use this equipment as it was intended – to be your extra eyes, specially calibrated for the fire ground. To see through smoke, find fire, and save the lives of both firefighters and the public. Care for this equipment as if it were your own eyes.

230.07.01. GENERAL INFORMATION:

Before using the **VISION3 Thermal Imaging System**, users must understand the following:

- All users must be thoroughly familiar with the VISION3's proper operation and limitations prior to use. Improper use of the equipment in a hazardous atmosphere could result in serious injury or death.
- The VISION3 Thermal Imaging System is not life support equipment. It is a navigational tool, and under certain conditions, will provide a special visual image of immediate surroundings in smoke filled, fog covered or completely dark environments.

- The service life of the VISION3 Thermal Imaging System depends in part on the environmental conditions in which the equipment is used. Under heavy usage, or under extreme environmental conditions, the service life of the equipment may be reduced.
- The VISION3 Thermal Imaging System is complex electronic equipment and just like any other machinery, electronic systems are subject to potential failures. If a failure occurs, the user will no longer have access to the special visual image provided by the VISION3 system and will be exposed to the same conditions as personnel operating without the equipment. Therefore, tactical usage of this equipment must not deviate from standard operating guidelines used by personnel who do not have the benefit of this equipment. Failure to follow standard operating guidelines in a hazardous atmosphere may result in disorientation, injury or death should an equipment failure occur.
- The VISION3 Thermal Imaging System must be service only by authorized personnel. Under no circumstances should any attempt be made to service the equipment by unauthorized personnel. The VISION3 operates under high voltage. Unauthorized personnel should never remove the cover or casing of the VISION3.
- Personnel familiar with the usage and limitations of the system must only use VISION3 Thermal Imaging System. That includes usage in simulated fire conditions such as controlled live burn situations. Usage of the VISION3 Thermal Imaging System by unauthorized, unfamiliar or untrained users may result in injury or death.
- Exposure to high temperature environments for an extended period of time may result in degradation or loss of thermal image. Be sure not to overexpose or heat saturate the equipment. If possible degradation of the thermal image is observed, remove the equipment from the high heat environment and allow for a cool down period until the thermal image is restored to normal. Failure to provide adequate cool-down time may result in system failure, which could result in injury or death.
- Users should be conscious of the battery life. It is advised to only enter a hazardous environment when a full battery charge is indicated on the battery charge indicator. Entering a hazardous environment with inadequate battery charge could result in system failure contributing to injury or death.
- Although the VISION3 Thermal Imager is IP67 waterproof, the system will not provide thermal images underwater.

- The VISION3 Thermal Imager will not provide images through glass, water, or shiny objects. These surfaces act like mirrors to the system.
- The VISION3 Thermal Imaging System does not improve impaired vision. Users with impaired vision should continue to use ophthalmic devices while using the system.
- The VISION3 Thermal Imaging System is not rated a “**Intrinsically Safe**”. Do not use the system in environments or atmospheres where static or a spark will cause explosion.
- Electromagnetic radiation (radio transmissions) may cause interference to the VISION3 Thermal Imaging System.
- Never Point the ISI VISION3 Directly to the sun. Damage to the detector may occur.

OPERATION:

230.07.02. Turning the Camera On and Off

- To turn the camera on, press and hold the red button on the underside of the camera until you see the green indicator light to the left of the LCD viewfinder illuminate.
- Wait approximately 15 to 30 seconds for the infrared sensor electronics to self-test.
- After 15 to 30 seconds, you will notice that the thermal image will appear on the screen. Be sure to point the camera to an object or person such that a thermal image can be distinguished can be distinguished by the camera.
- After approximately 1 minute of continuous use, a small white horizontal bar will be observed on the bottom left side of the viewfinder display. This is normal.
- To turn the camera off, press and hold the red power button until the display is off. **NOTE:** The button must be held for 4 to 5 seconds to shut the camera off. This is a safety feature to avoid inadvertently hitting the switch and causing the camera to turn off accidentally.

230.07.03. Using the Camera in a Firefighting Mode:

- The VISION3 camera is equipped with a BST thermal detector. The system's detector is sensitive enough to provide images in fire and non-fire environments. Additionally, the VISION3 is equipped with digital saturation control that allows you to clearly image very large fires. However, for optimal viewing for search and rescue in the vicinity of a fire, do not include the fire in the viewfinder.
- The camera is IP67 waterproof and will withstand short-term immersion in water to a depth of 3 feet.
- The camera should not be used in environments exceeding 800 degrees F for longer than 2 minutes.

230.07.04. Color Enhancement

This camera is equipped with the optional color enhancement feature. This option uses a pre-assigned color palette to assign colors to shades of gray representing temperature ranges. Color enhancement is most useful in normal ambient temperatures and not necessarily in super heated atmospheres.

230.07.05. Cleaning and Maintenance

External surfaces of the case, base, visor lens, viewing window, and straps should be cleaned by wiping with a weak solution of mild detergent and warm water. Dry and polish with a soft, lint-free cloth, taking care to avoid scratching the optical surfaces.

Always be sure that the lenses, as well as the viewfinder, are always coated with an anti-fog material.

- Inspect the ISI VISION3 Thermal Imaging System for structural, heat, and/or chemical damage.
- Inspect the mechanical hardware to make sure no screws have loosened and no o-rings or gaskets have come loose or have been misplaced.
- Inspect all lenses for heat or chemical damage, cracks and breaks.

- Check that all warning labels are intact.
- Inspect all battery contacts for damage.
- Inspect all batteries and battery adapters for damage or leakage.
- Inspect battery charger.
- Check all switches including the battery charger for proper indication that systems are running correctly.
- Inspect battery charger contact points for corrosion or damage.
- Make sure battery charger is charging by placing a battery into the charger and making sure the LCD display on the battery charger reacts according. See the instructions for the battery charger details.

230.07.06. Batteries and Charging

Rechargeable NiMH Batteries

The VISION3 comes equipped with (2) Duracell DR-11 Nickel Metal Hydride (6 v, 3.6AH or greater) batteries, or equivalent. These batteries are recommended.

Placing Battery into the VISION3 Camera

- Invert the unit and place on a clean, non-abrasive surface. Release the battery cover by pushing the latch lock in a pulling on the latch tab.
- Unhook the battery latch and open the battery compartment.
- Place the battery inside the battery cover with the contact side exposed so that it faces the bottom of the camera when the battery cover is closed.
- Close and latch the battery compartment.

Low Battery Indicator

- The battery indicator is a visible LED light to the left of the monitor display. When on full charge, the LED is green. As the charge drops to half, the LED turns yellow. And as the charge drops below 1/4, the LED turns red. When there is only approximately 5 to 15

minutes left, the LED blinks red. The exact time remaining depends on the battery type, temperature, and history of use.

- VISION3 units are fitted with a battery protection circuit, which prevents excessive discharge of rechargeable battery packs. Its function is to interrupt power to the camera when the battery voltage falls below a predetermined voltage. The circuit resets automatically on replacement of the battery pack.

230.07.07. Battery Charger

RS110MH – NI-CD & NI-MH Universal Charger

This unit is especially designed to charge and refresh your battery pack from the cigarette lighter socket in your vehicle and from an AC/DC adapter.

Charging the Battery

The operation of the Ni-Cd and Ni-MH battery charger is fully automatic. Simply slide the battery on the charger, according to the arrow, to the end stop. The green charge light will turn on; indicating that fast charging has started.

Charge time required will vary depending on battery capacity and power source. A typical camcorder battery will charge fully in less than one hour from a DC source, slightly longer from an AC adapter.

When the battery has reached full charge capacity, the capacity display will indicate full. The charge rate will automatically reduce to a safe trickle charge, signaled by a beeper sounding, and the green charge light blinking continuously. The fully charged battery is now ready for use. For longest battery life, do not recharge a full battery, and do not leave a full battery trickle charging indefinitely.

Refreshing a Battery

Use of the battery refresher is recommended when operating time of the battery becomes reduced after many cycles of using and recharging. A battery may be refreshed several times consecutively for maximum effect.

To use the refresher, simply press the refresh button when the battery is in place on the charger. The amber refresh light turns on, showing that the battery is discharging. The charger will automatically discharge the

battery. The fully discharged battery will automatically be recharged, completing the refresh cycle.