

# Evolution<sup>®</sup> 5200HD<sup>2</sup> TIC Product Specification



## I. Purpose

To establish minimum standards for the MSA Evolution 5200HD<sup>2</sup> Thermal Imaging Camera (TIC) and Evolution 5000 Series Universal Truck-Mounted Charging System. Evolution 5200HD<sup>2</sup> TICs are a tool for firefighters and first response emergency personnel, used for search and rescue, fire scene size-up, overhaul, location of victims, and advanced firefighting and first response applications.

## II. Type

The thermal imaging camera covered by this specification shall be of the type incorporating a 320x240 vanadium oxide microbolometer focal plane array sensor. Evolution 5200HD<sup>2</sup> Series TICs display black and white scene representations scene on a 3.5" diagonal LCD display. TIC is optimized for firefighters in ergonomic design and ease of incorporation with firefighting gear. TIC features dual-handle design for easy handoff and handling and high-impact, heat-resistant housing to withstand rigors of firefighting environments. TIC is further protected by a rubber bumper system to provide additional protection from extremely harsh environments. TIC shall be tested to and comply with the following standards:

<b>WATER/DUST INGRESS</b>	International Standard CEI, IEC 529, IP 67 Classification
<b>DIRECT FLAME/HEAT EXPOSURE</b>	Simulated NFPA 1981-2002 Ed., NFPA 1982-1998 Ed.
<b>VIBRATION</b>	MIL-STD-810E Category 1 Loose Cargo Transport
<b>RADIO FREQUENCY INTERFERENCE</b>	CE/EN 50081-2:1992, EN 50082-2: 1992, FCC Part 15
<b>ROLLOVER (TRUCK CHARGER)</b>	Simulated NFPA 1901-12, 1.7

## III. Component Parts

The product shall consist of the following component parts. TICs and accessories can be purchased in standard configurations or custom configurations via the Assemble-To-Order system.

1. Evolution 5200HD<sup>2</sup> Thermal Imaging Camera
2. Lithium-ion battery packs
3. Stand-alone battery charger with wall plug and cigarette lighter adapter
4. Vehicle-mounted charging system
5. Attachments: carabiner, wrist strap, shoulder strap, retractable lanyard
6. Video-out connector
7. Tripod attachment
8. Carrying case
9. Operating manual
10. Optional direct temperature measurement
11. Optional Heat Seeker PLUS Indicator
12. Optional 2X digital zoom



*Because every life has a **purpose...***

## IV. Specific Requirements

### 1. Evolution 5200HD<sup>2</sup> TIC

<b>SENSOR:</b>	
TYPE	Uncooled vanadium oxide microbolometer focal plane array detector
ARRAY SIZE	320x240
SPECTRAL RESPONSE	8-14 microns
NETD	≤65mK (in High Sensitivity), ≤240mK (in Low Sensitivity)
DYNAMIC RANGE	--40° to 320°F (-40° to 160°C) in High Sensitivity, -40°F to 1040°F, (-40°C to 560°C) in Low Sensitivity
VIDEO STANDARD	16 bit real time analog
FRAME RATE	30 Hz
VIDEO OUTPUT	NTSC
<b>MECHANICAL:</b>	
DIMENSIONS	10.8" x 8.1" x 4.4" (275 mm x 205 mm x 112 mm)
BASE WEIGHT	45 oz. (2.8 lbs)
MATERIALS	Outer case and bumper materials pass simulated NFPA 1981:2002 edition direct flame and heat exposure tests.
OUTER HOUSING	Bayer PCPET Makroblend
RUBBER BUMPERS	FR neoprene
DISPLAY COVER	Heat- and scratch-resistant polycarbonate
<b>ELECTRICAL:</b>	
POWER SUPPLY	Supplied by integral battery pack
POWER CONSUMPTION	<6 W nominal
VIDEO OUTPUT	RS-170 standard SMA connector is included under display for direct connection to remote video source.
DISPLAY	3.5" LCD backlit display
<b>ENVIRONMENTAL</b>	The Evolution 5200 TIC provides the following temperature tolerances:
<b>AMBIENT TEMP:</b>	<b>OPERATING TIME:</b>
80°C, 176° F	> 30 minutes
120°C, 248° F	> 20 minutes
260°C, 500° F	> 8 minutes
-30°C, -22° F	> 40 minutes
-40°C, -40° F	> 25 minutes
<b>WATER/DUST INGRESS:</b>	TIC shall resist dust and water and must conform to International Standard CEI IEC 529; Degrees of Protection Provided by Enclosures (IP Code); IP67 classification.
<b>IMPACT/DROP:</b>	Dropped 3 consecutive times onto concrete from 6 ft at any angle with no operational defaults or physical compromise of outer housing.
<b>VIBRATION:</b>	TIC and components housed within carrying case shall be resistant to vibration and must conform to MIL-STD-810E, Category 3, loose cargo transport.
<b>RFI/EMC:</b>	TIC should not interfere with standard firefighter frequency bands at power levels found in hand-held (3-5W) and vehicle-mounted systems (~100W). Communication/electronic devices cannot affect TIC to the point where TIC navigation is compromised when subjected to RF interference of 80 MHz to 1 GHz at 30V/m. TIC must meet RFI emissions and susceptibility of CE/EN.
<b>OPTICAL:</b>	
LENS	19mm, F1.4
FIELD OF VIEW	34° horizontal, 26° vertical
FOCUS	Optimal 3 ft to ∞ (1m to ∞)
DIGITAL ZOOM	2X (optional)
<b>WARNINGS/INDICATORS:</b>	There will be 1 green LED to indicate TIC status, functioning as follows:
GREEN	TIC in normal mode and functioning correctly
FLASHING GREEN	TIC in standby mode and functioning correctly
<b>BATTERY STATUS:</b>	Total battery capacity will be indicated in viewing area with row of 3 LEDs, functioning as follows:
GREEN	Full battery capacity
YELLOW	Marginal battery capacity
RED	Battery warn – lit for 15 minutes before shutdown
FLASHING RED	Battery shutdown – flashes for 60 seconds before shutdown
SHUTTER INDICATOR	On-screen indicator appearing as small block in upper left display corner when camera shutters, indicates that area re-scan is necessary.
LOW SENSITIVITY INDICATOR	On-screen indicator appearing as letter "L" in lower left screen portion indicates activities when TIC is in Low Sensitivity.
<b>OVER-TEMPERATURE WARNING:</b>	There will be 1 red LED to indicate TIC's over-temperature status, functioning as follows:
NOT LIT	TIC is within operational thermal limits
FLASHING RED	TIC has exceeded recommended operational thermal limits

## 2. Rechargeable Lithium-Ion Battery Pack

<b>BATTERY TYPE:</b>	Rechargeable lithium-ion battery pack
<b>BATTERY LOCATION:</b>	Inside handle
<b>BATTERY WEIGHT:</b>	3.2 oz.
<b>OPERATING TIME:</b>	2 hours

## 3. Stand-Alone Battery Charger

<b>BATTERY CHARGE TIME:</b>	2 hours nominal
<b>POWER SUPPLY:</b>	110 VAC (220 VAC optional) 12 VDC cigarette adapter included

## 4. Evolution 5000-Series Truck-Mounted Charger

<b>FUNCTIONALITY:</b>	Optional truck-mounted charger will charge TIC and 1 spare battery when properly installed in vehicle. Each truck charger includes vehicle installation mounting kit. Charger will draw less than 1.5 amps of power.
<b>BATTERY CHARGE TIME:</b>	3 hours nominal, trickle maintenance charge
<b>POWER SUPPLY:</b>	12-24 VDC
<b>VIBRATION:</b>	Truck-mounted charger must safely charge TIC while in a moving vehicle – reference MIL-STD-810E — vibration resistance.
<b>ROLLOVER:</b>	Truck-mounted charger must meet rollover requirements identified in NFPA 1901-12-1.7
<b>LED INDICATORS BATTERY STATUS:</b> NOT LIT FLASHING GREEN-SLOW FLASHING GREEN-FAST GREEN RED	Truck-mounted charger user interface will consist of 3 LEDs: 1 LED for each battery (inside TIC and 1 spare) and 1 system status LED, operating as follows: Battery not present Charge pending Charge in process Battery fully charged Fault, lost signal to battery
<b>SYSTEM STATUS:</b> NOT LIT GREEN	System fault Power on, system operational
<b>DIMENSIONS:</b>	10 3/8" L, 5 3/4" W, 6" H

## 5. Attachments and Carrying Options

<b>CARABINER:</b>	Each TIC shall be equipped with carabiner attachment for securing TIC to tool belt or other gear.
<b>WRIST STRAP/BUNKER CLIP:</b>	Optional wrist strap/bunker clip attachment is available, constructed of fire- and heat-resistant materials.
<b>SHOULDER STRAP:</b>	Optional flame- and heat-resistant shoulder strap is available, includes emergency release clip.
<b>RETRACTABLE LANYARD:</b>	Optional retractable lanyard for use with TIC/carabiner assembly is available. Retraction line is to be made of Kevlar core material, housing is to be heat-resistant.

## 6. Video Connector

All TICs shall come standard with SMA video-out connector. SMA to BNC cable is also included.

## 7. Tripod Mounting

Tripod mounting attachment shall be available as an option.

## 8. Carrying Case

<b>CONTENTS:</b>	Case will hold as minimum, TIC, 2 lithium-ion battery packs, manual, carrying attachments, stand-alone battery charger assembly, tripod mount, SMA to BNC adapter cable.
<b>WATER/DUST INGRESS:</b>	Case shall resist dust and water ingress and must conform to International Standard CEI IEC 529; Degrees of Protection Provided by Enclosures (IP Code); IP-54 classification.
<b>IMPACT/DROP:</b>	Dropped 3 consecutive times onto concrete from 3 ft (1m) at any angle with no operational defaults or physical compromise of case or contents.

## 9. Operation and Instruction Manual

## 10. Optional Direct Temperature Measurement

<b>INSTALLATION:</b>	Integrated inside TIC without add-on devices. Capability can be included at time of purchase or added to base camera by MSA Repair and Service Center.
<b>DEVICE:</b>	Measurement taken from FPA
<b>RANGE:</b>	32°F to 300°F (0° to 150°) in High Sensitivity, 32°F to 1000° (0° to 500°C) in Low Sensitivity
<b>TICK MARKS:</b>	100°F and 200°F (50°C and 100°C) in High Sensitivity; 250°F, 500°F, 750°F in Low Sensitivity
<b>ACCURACY:</b>	± 27°F (15°C) or ±10% whichever is greater. For temperatures greater than 435°F (225°C) ± 20%.
<b>READOUT:</b>	Thermometer-style bar indicator in Fahrenheit or Celsius available. Digital temperature feature displays approximate number value of object temperatures located in spotter.

## 11. Optional Heat Seeker PLUS Indicator

<b>INSTALLATION:</b>	Integrated inside TIC without add-on devices. Capability can be included at time of purchase or added to base camera by MSA Repair and Service Center.
<b>DEVICE:</b>	Measurement taken from FPA
<b>READOUT:</b>	Graduated color (yellow to orange to red) of portions of scheme that are above 275°F, (135°C)-yellow, 297°F (147°C)-red, in High Sensitivity, or 842°F (450°C)-yellow, 914°F, (490°C)-red, in Low Sensitivity mode.

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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