

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



## I. Purpose

To establish minimum standards for the MSA Evolution 5200 Thermal Imaging Camera (TIC) and Evolution 5000 Series Truck-mounted Charging System. The Evolution 5200 TIC is a tool for firefighters and first response emergency personnel and 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 160x120 vanadium oxide microbolometer focal plane array sensor. The Evolution 5200 TIC displays black and white scene representations on a 3.5" diagonal LCD display. Design 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 rubber bumper system to provide additional protection from extremely harsh environments. TIC shall be tested 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 5200 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, and retractable lanyard
6. Video-out connector
7. Tripod attachment
8. Carrying case
9. Manual
10. Optional direct temperature measurement
11. Optional Heat Seeker PLUS Indicator



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

# Evolution 5200 TIC **Product Specs**

## IV. Specific Requirements

### 1. Evolution 5200 TIC

<b>SENSOR:</b> TYPE ARRAY SIZE SPECTRAL RESPONSE NETD DYNAMIC RANGE VIDEO STANDARD FRAME RATE VIDEO OUTPUT	Uncooled vanadium oxide microbolometer focal plane array detector 160x120 8-14 microns ≤65mK (in High Sensitivity), ≤240mK (in Low Sensitivity) -40° to 320°F (-40° to 160°C) in High Sensitivity, -40°F to 1040°F (-40°C to 560°C) in Low Sensitivity 16 bit real time analog 30 Hz NTSC
<b>MECHANICAL:</b> DIMENSIONS BASE WEIGHT MATERIALS OUTER HOUSING RUBBER BUMPERS DISPLAY COVER	10.8" x 8.1" x 4.4" (275 mm x 205 mm x 112 mm) 45 oz. (2.8 lbs) Outer case and bumper materials pass simulated NFPA 1981:2002 edition direct flame and heat exposure tests. Bayer PCPET Makroblend FR neoprene Heat- and scratch-resistant polycarbonate
<b>ELECTRICAL:</b> POWER SUPPLY POWER CONSUMPTION VIDEO OUTPUT  DISPLAY	Supplied by integral battery pack <6 W nominal RS-170 standard SMA connector is included under display for remote video source direct connection. SMA to BNC adapter is included. 3.5" LCD backlit display
<b>ENVIRONMENTAL</b> <b>AMBIENT TEMP:</b> 80°C, 176° F 120°C, 248° F 260°C, 500° F -30°C, -22° F -40°C, -40° F	The Evolution 5200 TIC provides the following temperature tolerances: <b>OPERATING TIME:</b> > 30 minutes > 20 minutes > 8 minutes > 40 minutes > 25 minutes
<b>WATER/DUST INGRESS:</b>	TIC shall resist dust and water ingress 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 FIELD OF VIEW FOCUS	6.3mm, F1.2 49° horizontal, 37° vertical Optimal 3 ft to ∞ (1m to ∞)
<b>WARNINGS/INDICATORS:</b> GREEN FLASHING GREEN	There will be 1 green LED to indicate TIC status, functioning as follows: TIC in normal mode and functioning correctly TIC in standby mode and functioning correctly
<b>BATTERY STATUS:</b> GREEN YELLOW RED FLASHING RED SHUTTER INDICATOR LOW SENSITIVITY INDICATOR	Total battery capacity will be indicated in viewing area with row of 3 LEDs, functioning as follows: Full battery capacity Marginal battery capacity Battery warn – lit for 15 minutes before shutdown Battery shutdown – flashes 60 seconds before shutdown On-screen indicator appearing as small block in upper left display corner when camera shutters indicates that area re-scan is necessary. On-screen indicator appearing as letter "L" in lower left screen portion indicates activities when TIC is in Low Sensitivity.
<b>OVERTEMPERATURE WARNING:</b> NOT LIT FLASHING RED	There will be 1 red LED to indicate TIC's over-temperature status, functioning as follows: TIC is within operational thermal limits 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 (220VAC 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 within vehicle. Each truck charger includes mounting kit for vehicle installation. 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>	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:
NOT LIT	Battery not present
FLASHING GREEN-SLOW	Charge pending
FLASHING GREEN-FAST	Charge in process
GREEN	Battery fully charged
RED	Fault, lost signal to battery
<b>SYSTEM STATUS:</b>	Not lit - system fault
GREEN	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 come 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 heat-resistant materials.
<b>SHOULDER STRAP:</b>	Optional flame- and heat-resistant shoulder strap is available, including 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>	The 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 of 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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