

## EVOLUTION<sup>®</sup> 5000 Series

*The Optimal Thermal Imaging System For Each Need*

# EVOLUTION® 5000 Series – Modular & Versatile Thermal Imaging System

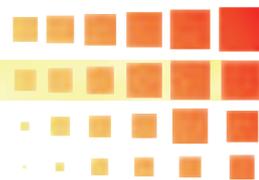
MSA has succeeded, with the aid of the latest technologies, in accelerating the EVOLUTION 5000 series and in helping people master the element fire by the most modern means. Four Thermal Imaging Camera (TIC) models have been developed to suit all your needs and applications. All models feature the same ergonomic design, robust components and extreme durability. The image quality is best-in-class. The individual features of each TIC model have been designed to meet the specific requirements of a variety of tasks and applications. For details please see page 7.

- **EVOLUTION 5800** – the Versatile
- **EVOLUTION 5200 HD** – the Brilliant
- **EVOLUTION 5200** – the All-rounder
- **EVOLUTION 5600** – the Economical

The practical modular system allows all four types of camera to be enhanced with a Video Transmission System or a Video Capture. The Video Transmission System gives the back-up team insight into what is happening on the fire ground in real time. Furthermore a unique Video Capture for documentation purposes is easily adaptable to all four cameras.



	Features	Benefits
Ease-of-use	Ergonomic design	Can be easily handed over in the team
	Balanced weight	Prevents fatigue
	Instant on	Ensures fast reaction
	One button-operation	All major functions can be controlled easily
	Instant mode switching	Never miss important information
Get detailed scene information	Two sensitivity modes with a wide temperature range	Optimal image quality in every temperature environment
	State-of-the-art sensor	High image quality
	Quick-Temp with bargraph and digital readout	Fast temperature information
	Heat Seeker PLUS	Determines the intensity & direction of a fire
	"Image Detail Enhancement"	More detailed image in scenes with extreme-temperature dynamics
Added safety	5 user-selectable colour palettes (EVOLUTION 5800)	Customizable image depending on the application
Durable	Shutter indicator for automatic calibration	Never miss any image information
	Rugged rubberised housing	Withstands 2 m drop test
Easy system enhancement	IP 67	Resistance to water and dust ingress
	Retrofittable VideoCapture and VideoTransmitter	No camera upgrade needed; Purchase can be done at any time; Mounting in seconds



## Fields of Application



Our state-of-the-art cameras help you in various situations, e.g. fast and safe navigation in smoke filled rooms. Whatever the applications, one of the four TIC models will offer the optimal price/performance ratio for you:

### ■ Fire Attack

Every EVOLUTION 5000 TIC model is ideal for locating the seat of any fire, as well as for pin-pointing and isolating hidden fires.



### ■ Incident Control, Ventilation

The high definition EVOLUTION 5200 HD or the all-round talent EVOLUTION 5200 are designed for observing what is occurring inside the fire area using real time video transmission. These devices enable the user to locate areas of heat accumulation and possible ventilation points.



### ■ Hazardous Materials, Maintenance

The EVOLUTION 5800 and EVOLUTION 5200 HD offer very detailed information, especially for identifying and tracking the sources and movements of contaminants. With the Image Detail Enhancement feature and the five user-selectable palettes the EVOLUTION 5800 supports code inspections and maintenance. Overheated electronic components can be located within systems in order to prevent fires.



### ■ Situation Analysis, Search and Rescue, Wildland Firefighting

The economic EVOLUTION 5600 and the all-round talent EVOLUTION 5200 are the best options when you need to get a speedy overview of the situation – to locate missing/injured persons or to quickly scan areas for hot spots.

### ■ Fire Watch

To ensure that there are no hidden fires or smouldering materials left in the area, the economical EVOLUTION 5600 is the perfect solution.

### ■ Post-Fire Investigation

With EVOLUTION 5800's colour grading minimal temperature differences will be displayed to locate e.g. the origin of the fire.



### ■ Special Tasks

Search and rescue missions, as well as premises scan/search, surveillance, pursuit and search and seizure/arrest operations will benefit from the brilliant, high resolution image of the EVOLUTION 5200 HD. The technology enables functions such as scanning complex zero-visibility environments, displaying visible images of elusive or hidden individuals and detecting fresh prints.

# All 4 Cameras Feature ...



## User-Friendliness

All components of the EVOLUTION 5000 series feature ergonomic, compact and lightweight design with convenient single button operation.

The four cameras, the Video Capture and the Transmitter resist ingress of dust, water, heat, flame, impact, dropping as well as vibration. All components are tested to highest standards, which are specified on page 11. Moreover the cameras are designed to float, which is useful in extreme situations.

## Sensor Performance

Today's TIC sensors are made up of thousands of pixels on a chip of the size of a fingernail. Working together, those pixels measure thermal energy and then convert that measurement into an image.

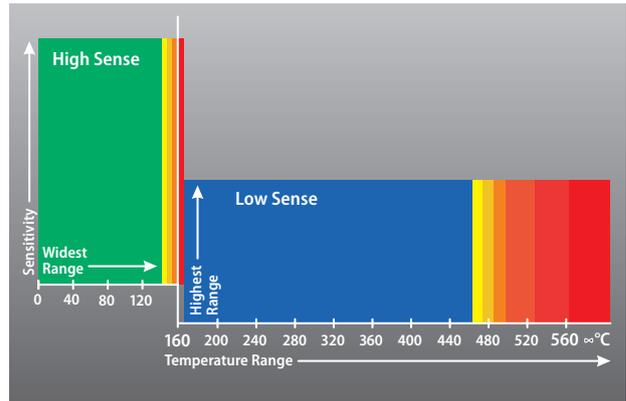
EVOLUTION 5000 TICs feature an uncooled vanadium oxide microbolometer sensor, which is small and lightweight but which nonetheless offers high image quality. MSA's four TIC models have different resolutions in order to ensure the optimal cost-performance ratio for each application. For details please see page 7.

## Image Quality

The superiority of the image quality results physically from the very high ISDR (Instantaneous Scene Dynamic Range) value of 4795 for the EVOLUTION 5800, 5200 HD and 5200 models. The higher the ISDR value, the more sensitive the measurement and the higher the measurement range of each mode. This is achieved through an expansion of the dynamics as well as an increase in the measurement range of each mode.

Thus the EVOLUTION 5800, 5200 HD and 5200 models in High Sense mode have a sensitivity of 0.065 °C in a temperature measurement range of up to 160°C.

In the Low Sense mode with a temperature range of up to 560°C the sensitivity is still 0.24°C.



Dynamic Range of High and Low Sense Mode for the EVOLUTION 5800, 5200 HD and 5200 models

$$\text{High Sense } \frac{160}{0.065} + \text{Low Sense } \frac{560}{0.24} = 4795 \text{ ISDR}$$



High Sense Mode: Note multiple heat temperature differences

## Sensitivity Modes

All EVOLUTION 5000 cameras feature two different temperature sensitivity modes.

### High Sense Mode

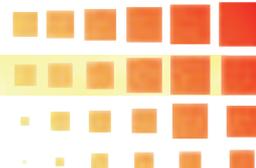
For a low ambient temperature up to 160°C.

The higher sensitivity provides finer grading in a lower dynamic range.

### Low Sense Mode

For a high ambient temperature up to 560°C.

Thanks to an increased sensitivity in a higher dynamic range the Low Sense Mode in the EVOLUTION models allow detailed views of objects in high temperature environments – even behind a fire source. It offers market leading image quality.



Low Sense Mode: Note wall and ceiling separation

### Instant Mode Switching

If more than 32% of the thermal image is saturated in the High Sense Mode, the EVOLUTION 5800 and the EVOLUTION 5200 HD switch automatically to Low Sense Mode. The EVOLUTION 5600 and 5200 cameras switch at 15% saturation. This switching takes less than one second and prevents the user from missing information.

### Shutter Indicator

The Shutter Indicator notifies the user if automatic calibration is running. This is shown by a green square in the upper left corner of the display during the shutter cycle, a safety feature unique to MSA. The loss of important information is thus avoided.

### Heat Seeker PLUS

The revolutionary Heat Seeker PLUS technology with colour pixels ranging from light yellow to dark red indicates changes in structural temperature. This is essential for determining the intensity and direction of a fire and creates thermal images in a quality never achieved before.



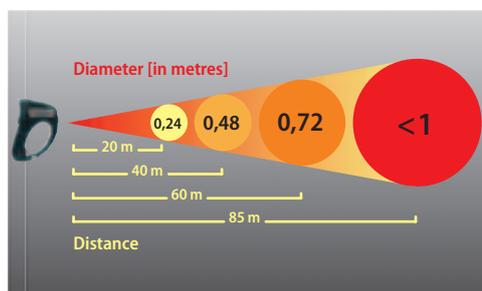
### Standby Mode

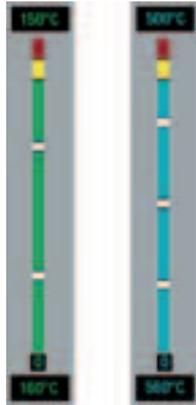
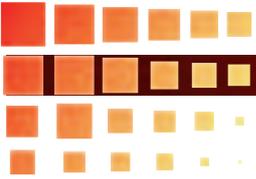
With one simple press of the button, each of the cameras in the EVOLUTION 5000 range will go into Standby Mode. In order to preserve battery lifetime, the display switches itself off.

### Temperature Measurement

When using temperature sensing on a TIC, the accuracy of the temperature reading can be affected by the aspect ratio of the sensor. With an aspect ratio of 20:1, the further the TIC is from the hot object, the less accurate the temperature measurement is, since it will be giving the average temperature of everything located at the scene.

The EVOLUTION 5000 models have a sensational aspect ratio of 85:1 for pinpoint accuracy. The area of the target over which the temperature is measured depends on the distance to the target. The ratio is approx. 85:1, i.e. at 85 m distance the area being measured will be < 1 m. The picture on the right gives some examples.





### Quick-Temp

An MSA exclusive: The advanced feature “Quick-Temp” displays the temperature readout in two ways: with a temperature bar and with a digital readout. The High Sense Mode is indicated by green temperature symbols, while the Low Sense Mode has blue temperature symbols.

### Power Supply

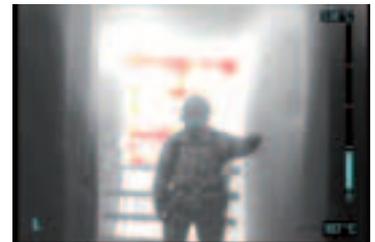
The lithium ion battery used in the entire EVOLUTION series is state-of-the-art: smaller, lighter, lower maintenance and without memory effect.

### Display

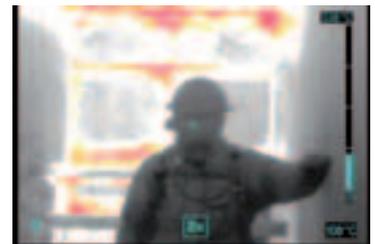
All EVOLUTION 5000 models feature an 8.9 cm display making it easier for multiple users to see the screen simultaneously.

### Digital Zoom

The EVOLUTION 5800 and the EVOLUTION 5200 HD have an optional highly functional 2x digital zoom for enhanced picture imagery in Fire Service applications like search and rescue. This feature is of particular value in situations requiring closer observation.



Normal EVOLUTION 5200 HD & 5800 image



2 x Zoom EVOLUTION 5200 HD & 5800 image



White Hot Imagery



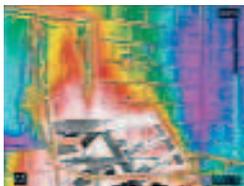
Black Hot Imagery



Fire and Ice Imagery



Fusion Imagery

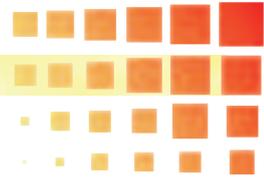


Rainbow Imagery

### Enhanced Imagery and Colour Palette

The Image Detail Enhancement (IDE) software improves the imagery so that it matches the total dynamic range of the original view. It makes image details visible, even in scenes with extreme-temperature dynamics.

The EVOLUTION 5800 combines this enhanced imagery with five user-selectable palettes, to give fire fighters a customized image that maximizes the scene information you need for your plan of attack, even in low-contrast environments.



## 4 High-Tech TIC Models in Comparison

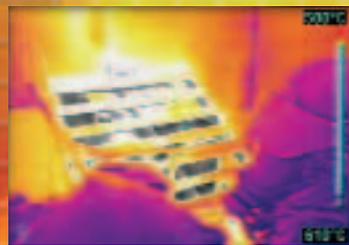
EVOLUTION		5800	5200 HD	5200	5600
Applications	Fire Attack	++	++	+++	+++
	Incident Control	+++	+++	++	+
	Ventilation	+++	+++	++	+
	Hazardous Materials	+++	+++	++	++
	Maintenance	+++	++	+	+
	Situation Analysis	+++	++	+++	++
	Search and Rescue	+++	+++	++	++
	Wildland Firefighting	+++	++	+++	+++
	Fire Watch	+++	++	+++	+++
	Post-Fire Investigation	+++	+++	++	+
	Special Tasks	+++	+++	++	+
	For guidance only		Suitable: + good ++ better +++ best		
Image Quality	Sensor	uncooled vanadium oxide microbolometer			
	Resolution (in pixel)	320 x 240	320 x 240	160 x 120	120 x 120
	ISDR (Instantaneous Scene Dynamic Range)	4795	4795	4795	3482
	High Sensitivity Mode (mK)	65	65	65	85
	Low Sensitivity Mode (mK)	240	240	240	350
	Viewing Angle (horizontal/vertical)	36°/27°	36°/27°	55°/41°	41°/41°
Features	Digital Zoom 2x	□	□	-	-
	Standby Mode	□	□	■	■
	Video Output	■	■	■	□
	Quick Temp	■	■	□	■
	Heat Seeker PLUS	■	■	□	■
		■ standard feature □ optional feature			
Mechanics & Electrics	Weight (with battery)	1.2 kg			
	Dimensions (H x W x D)	275 x 205 x 112 mm			
	Power Supply	Rechargeable Lithium ion battery pack			
	Operating Time	> 2 hours			
	Energy Consumption	less than 6.0 W nominal at 22 °C			
	Video Output	RS-170			

## 4 High-Tech TIC Models To Meet Your Individual Needs



### EVOLUTION 5800 – the Versatile.

- 5 user-selectable palettes
- Image Detail Enhancement
- maximizes scene information
- optional 2 x digital zoom



### EVOLUTION 5200 HD – the Brilliant.

- brilliant, high resolution image
- Image Detail Enhancement
- offers detailed information
- optional 2x digital zoom





**EVOLUTION 5200 –  
the All-rounder.**

- high image quality
- widest viewing angle
- for various applications



**EVOLUTION 5600 –  
the Economical.**

- state-of-the-art image resolution
- excellent price-performance ratio
- for the speedy overview



# Video Capture & Transmission System



## Video Capture

With the Video Capture module for TICs, video recordings of the scene of operations can now be created quickly and easily. This is a unique feature ideal for documentation or training purposes.

- The small and independent module can be easily fitted to or removed from any TIC of the EVOLUTION 5000 series within seconds
- An integrated standard flash memory card provides up to 2 hours filming capacity in MPEG-1 format. Simple to download on any PC with a standard card reader
- Every 5 minutes a new file is opened which is very useful for documentation purposes

## Video Transmitter

Real time video broadcast directly from the scene of operations to the incident command control: with the EVOLUTION Video Transmission System – consisting of a Transmitter and a Receiver Station.

- Small and easy to use stand alone unit
- Retrofittable and removable to any EVOLUTION 5000 series TIC within seconds, no camera upgrade needed
- Flexibility to deploy a video transmission system where and when you want
- Two channel analogue system



## Receiver Station

The EVOLUTION Receiver Station, robustly integrated in a wheeled carrying case for every situation.

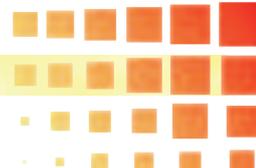
- Comprehensive and intuitive system
- Available with or without a 12" LCD monitor
- Built in video output for connection to an external monitor or recording device



## Video Transmission Distances

- Line of sight: > 5000 metres
- Forest: 200 – 1000 metres (dependent on density)
- Subway tunnel: approx. 750 metres
- Concrete supply tunnel: approx. 60 metres





# Tests & Technical Data

## Tests Conducted On All Components

<b>Water/Dust Ingress</b>	CEI, IEC 529, IP 67 Classification (IP 54 for the Receiver)
<b>Direct Flame</b>	Simulated NFPA 1981-2002 Edition
<b>Heat Exposure</b>	Simulated NFPA 1982-1998 Edition
<b>Vibration</b>	MIL-STD-810E Category 1 Loose Cargo Transport
<b>Radio Frequency Interference</b>	Compliance with: directive 89/336/EEC in accordance with EN 61000-6-2 and EN 61000-6-4, FCC Part 15
<b>Rollover (Truck Charger)</b>	Simulated NFPA 1901-12.1.7
<b>Impact/Drop</b>	3 consecutive times onto concrete from 2 metres at any angle (For Video Capture & Transmitter 1.22 m)
<b>Heat</b>	260 °C for > 8 minutes 120 °C for > 20 minutes



EVOLUTION 5000 Modular Thermal Imaging System



Flame test



IP-67 test

## Technical Details

### EVOLUTION 5800, 5200 HD, 5200, 5600

<b>Sensor</b>	uncooled vanadium oxide microbolometer
<b>Weight</b>	1.2 kg (with battery)
<b>Dimensions</b>	275 x 205 x 112 mm (H x W x D)
<b>Energy Consumption</b>	less than 6.0 W nominal at 22 °C
<b>Video Output</b>	RS-170
<b>Operating Time</b>	>2 hours

### Video Capture

<b>Weight</b>	380 g (with battery)
<b>Dimensions</b>	120 x 140 x 120 mm (H x W x D)
<b>Recording Time</b>	2 hours
<b>Memory Card</b>	Standard RS-MMC
<b>Data Format</b>	MPEG-1
<b>Operating Time</b>	> 5 hours

### Transmitter

<b>Weight</b>	460 g (with battery)
<b>Dimensions</b>	210 x 140 x 120 mm (H x W x D)
<b>Transmitting Power</b>	450 mW EIRP
<b>Operating Time</b>	> 4 hours

### Receiver Station

<b>Antenna</b>	Directional flat panel (18 dB)
<b>Video Output</b>	BNC (male) type connector NTSC on receiver without monitor PAL on receiver with monitor
<b>Power</b>	12/24 VDC and 110/230 VAC
<b>Additional Approval</b>	E1 for vehicles

### For All Components

<b>Power Supply</b>	Rechargeable Lithium Ion battery pack
<b>Warranty</b>	2 years

# Support & Ordering Information

Along with the high-tech Thermal Imaging System, MSA also provides a high level of customised support and service. MSA will happily offer you all the advice and support you need to help you determine your exact requirements, thus ensuring that the camera you choose will offer you the best price/performance ratio.

The EVOLUTION 5000 components are maintenance-free. But should you wish to avail of MSA's repair and maintenance services, which includes the replacement of equipment in repair, simply contact your distributor or local MSA company for further details.

## EVOLUTION 5800 TIC

(Video Output, Heat Seeker PLUS and Quick-Temp as standard)

10098049	EVOLUTION 5800 standard with Standby Mode
10098048	EVOLUTION 5800 with Digital Zoom 2x (without Standby Mode)

## EVOLUTION 5200 HD TIC

(Video Output, Heat Seeker PLUS and Quick-Temp as standard)

10081715	EVOLUTION 5200 HD standard with Standby Mode
10081714	EVOLUTION 5200 HD with Digital Zoom 2x (without Standby Mode)

## EVOLUTION 5200 TIC

(Video Output and Standby Mode as standard)

10063770	EVOLUTION 5200 standard TIC
10063772	EVOLUTION 5200 with Quick-Temp
10063773	EVOLUTION 5200 with Heat Seeker PLUS
10063775	EVOLUTION 5200 with Heat Seeker PLUS and Quick-Temp

## EVOLUTION 5600 TIC

(Standby Mode, Heat Seeker PLUS and Quick-Temp as standard)

10083575	EVOLUTION 5600 standard
10083576	EVOLUTION 5600 with Video Output

For all TICs, accessories must be ordered separately.

## Video Capture

10064785	Video Capture (incl. 10069791 MMC-Memory Card Reader and 10069792 RS-MMC Memory Card 1 GB)
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## Video Transmission System

10048841	Transmitter (incl. 10043960 Lithium ion battery pack)
10039300	Receiver Station with case (without monitor)
10049271	Receiver Station with monitor and case
10067721	Receiver Station (without monitor and case)

## Accessories

10043951	Desktop battery charger
10043960	Lithium ion battery
10101312	Vehicle mounted charger
10067707	Vehicle mounted bracket, non-charging
10040223	Camera case
10038970	Disposable display covers (pack of 3)
10039516	Wrist strap with clip
10039515	Shoulder strap
10040226	Retractable lanyard
10040005	Carabiner attachment
10039603	Sun shroud
10040163	Reflective trim kit
10062184	Reflective ID label kit
10090902	Tripod mount
10040004	Video adapter cable SMA to BNC
GA10007002	Permanent power supply
10032164	Antimist Agent klar-pilot spray



Permanent power supply



Vehicle mounted charger

## Your direct contact

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