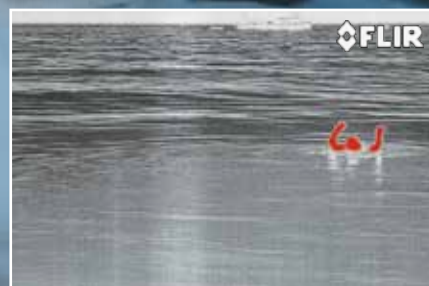# Handheld thermal imaging cameras for maritime applications

FLIR Systems: The world leader in thermal imaging cameras

FLIR is the world leader in the design, manufacturing and marketing of thermal imaging systems for a wide variety of commercial, industrial and government applications.

FLIR thermal imaging systems use state-of-the-art infrared imaging technology that detects infrared radiation - or heat. Based on detected temperature differences, thermal imaging cameras can create a crisp image. At FLIR we design and manufacture all of the critical technologies inside FLIR products, including detectors, electronics, and special lenses ourselves.

FLIR Stockholm, Sweden

FLIR Boston, USA

FLIR Santa Barbara, USA

FLIR Paris, France

Rapidly emerging markets and organisation
Interest in thermal imaging has grown considerably over the last few years in a large variety of markets. To face this increased demand, FLIR has expanded its organisation drastically. Today we employ more than 4,000 people. Together, these infrared specialists realise a consolidated annual turnover of more than 1 billion US dollars. This makes FLIR the largest manufacturer of commercial thermal imaging cameras in the world.

Manufacturing capabilities
FLIR currently operates 6 manufacturing plants: three in the USA (Portland, Boston and Santa Barbara) one in Stockholm, Sweden, one in Estonia and one near Paris, France.

More than a camera, a complete solution
There is more to the world of thermal imaging than building a camera. FLIR is not only committed to providing you with the best camera, we are also able to offer you the best software, service and training to suit your thermal imaging needs.
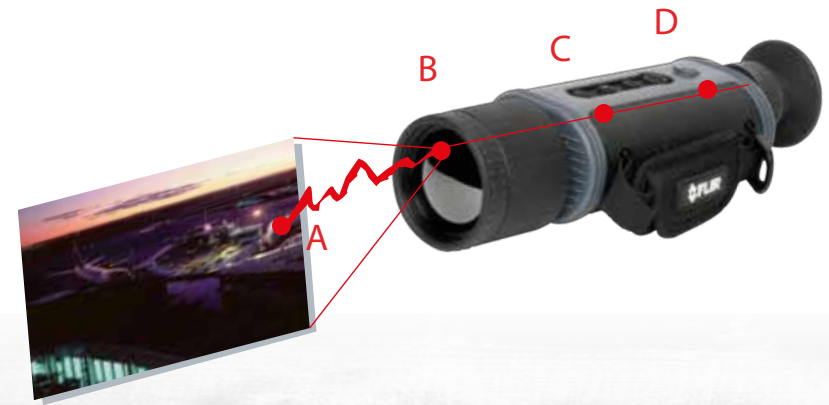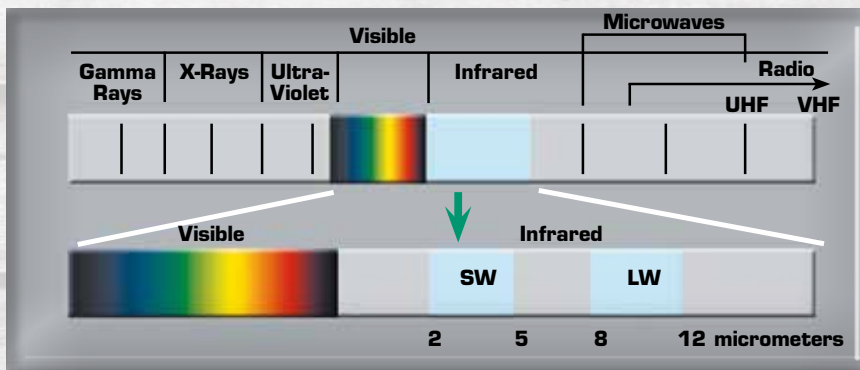
Infrared:

more than meets the eye

Infrared -
### part of the electromagnetic spectrum

Our eyes are detectors that are designed to detect visible light (or visible radiation). There are other forms of light (or radiation) that we cannot see. The human eye can only see a very small part of the electromagnetic spectrum. At one end of the spectrum we cannot see ultraviolet light, while at the other end our eyes cannot see infrared. Infrared radiation lies between the visible and microwave portions of the electromagnetic spectrum. The primary source of infrared radiation is heat or thermal radiation.

Any object that has a temperature above absolute zero (-273.15 degrees Celsius or 0 Kelvin) emits radiation in the infrared region. Even objects that we think of as being very cold, such as ice cubes, emit infrared radiation. We experience infrared radiation every day. The heat that we feel from sunlight, a fire or a radiator is all infrared. Although our eyes cannot see it, the nerves in our skin can feel it as heat. The warmer the object, the more infrared radiation it emits.

The thermal imaging camera

Infrared energy (A) coming from an object is focused by the optics (B) onto an infrared detector (C). The detector sends the information to sensor electronics (D) for image processing. The electronics translate the data coming from the detector into an image that can be viewed in the viewfinder .
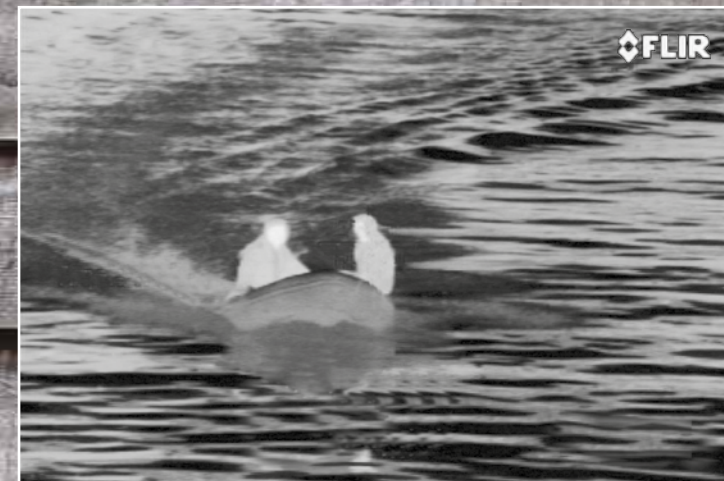
Thermal imaging versus image intensification (I²)

Image intensification: image is saturated by looking directly at a light source.

Thermal imaging: is not affected by the light and produces a clear image.

Image intensification, also referred to as I² technology, amplifies small amounts of visible light thousands of times so that objects can be seen at night. Image intensification does require a certain level of ambient light, but even starlight can produce an image on a cloudless night. Because the system requires at least a minimum level of ambient light, conditions such as heavy overcast can limit its effectiveness. Similarly, too much light may overwhelm the system and reduce its effectiveness. Thermal imaging cameras offer substantial benefits over image intensification. They work by detecting the heat energy being radiated and need no light at all to produce a clear image in the darkest environments. Thermal imaging cameras are not affected by the amount of light so that you will not be blinded when looking at a light source.

InstAlert™

InstAlert™

The unique InstAlert feature colors the hottest parts of the scene red. This makes it extremely easy to spot people and animals in the thermal image.

FLIR thermal imaging cameras
On board of every vessel

FLIR Systems markets a full range of thermal imaging cameras for the most demanding maritime applications. Our thermal imaging cameras are rapidly finding their way to pleasure craft and yachts, commercial vessels, work boats, fishing boats, cruise ships and many other types of vessels.

They will help you to navigate, detect other vessels, assist in overboard searches, secure your vessel in the harbour and at open water (anti-piracy) and give you a good overview of what is happening in the dark.

A large number of applications

Anti-piracy

Being able to spot small vessels at long distances, thermal imaging cameras will make you aware of approaching vessels so that you have time to react.

Night time navigation

Thermal imaging cameras can help captains to navigate safely at night. Other vessels, outcroppings of land and other obscurants become clearly visible on a thermal image.

Finding people in the water

Coastguard and rescue workers use thermal imaging to find people floating in the water before hypothermia sets in.

Shipboard security

Both yachts and commercial vessels contain a lot of valuable equipment that is susceptible to theft. A thermal imaging camera can help you to see what is happening around your vessel.

Ice detection

Even ice gives off heat, and FLIR technology detects the temperature difference between the ice and the seawater. Where radar and spotlights fall short, thermal imaging increases vessel safety in arctic waters, making passage safer and more cost-effective.

Oil spill detection

Thermal imaging can detect floating oil even when the naked eye cannot. FLIR thermal imaging systems can help commercial mariners avoid oil spills or limit their impact, and can assist response crews with clean up around the clock.

FLIR MLS- / MS-Series

Ultra-compact handheld thermal night vision cameras

The new FLIR MLS- / MS-Series thermal imaging camera gives every boater the power to see clearly in total darkness. It can be used for many maritime applications. Whether you are anchored in port or sailing in the open sea, you will be able to see in total darkness.

Extremely affordable
The FLIR MLS- / MS-Series are extremely affordable units. From now on, everyone can afford thermal night vision. Price is no longer an issue. There is no longer a need to use a less effective night vision technology.

Crisp thermal images
The FLIR MLS- / MS-Series are equipped with an uncooled, maintenance free, microbolometer detector. It delivers crisp thermal images in any day or night situation.

The FLIR MLS-618 produces thermal images of 640 x 480 pixels. Users that do not need this high resolution can choose for the MLS-317 or MS-324b which produce images of 320 x 240 pixels or MS-224b which produces images of 240 x 180 pixels. All cameras are equipped with advanced internal camera software that delivers a crisp image without the need for user adjustments.

Extremely portable and rugged
The FLIR MLS- / MS-Series are extremely compact and extremely light systems. They are ideal for go-anywhere operations, in all circumstances. They are IP67 rated.

Easy-to-operate
Ergonomic and easy-to-use, the MLS- / MS-Series are fully controlled with just 4 buttons on top of the unit. Conveniently placed the buttons are all right underneath your fingertips.

LED Tasklight/Laser Pointer
The FLIR MS-Series comes with a LED tasklight on the front of the unit. It can be used to illuminate a small area.

The FLIR MLS-Series has a Laser Pointer to safely and quickly locate objects in the dark.

Long battery life
The FLIR MLS- / MS-Series comes with long-life rechargeable Li-Ion batteries. The FLIR MLS- / MS-Series operate 5 to 7 hours on a single load.
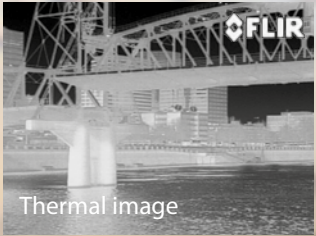
Good range performance
The FLIR MLS-618 can detect a small vessel at a distance of no less than 3.25 kilometers away. The MLS-618 also comes with a 4x digital zoom so that you can have a closer look at the situation when necessary.

Different versions available

	MS-224b	MS-324b	MLS-317	MLS-618
See without being seen	✓	✓	✓	✓
See in total darkness, through smog, smoke and light precipitation	✓	✓	✓	✓
Image quality (pixels)	240 x 180	320 x 240	320 x 240	640 x 480
Freeze Frame	✓	No	No	No
Digital zoom	No	2x	2x	4x, continuous
InstAlert	✓	✓	✓	✓
Laser pointer			✓	✓
Led tasklight	✓	✓		
Focal length	19 mm	19 mm	19 mm	35 mm
Detect man-sized target	320 m	440 m	640 m	1080 m

Freeze frame (MS-224b only) / Digital zoom

Color palette selection

Brightness

USB-connectivity

Power button

Standard tripod mount

MS-series: LED-tasklight / MLS-series: Laser pointer

Your vision

Thermal image

Your vision

Thermal image

Your vision

Thermal image

FLIR HM-Series

the power of thermal imaging in the palm of your hand

The HM-Series are portable shock-resistant thermal imaging cameras. They produce a crisp image in the darkest of nights. With the HM-Series captains of all types of vessels will be able to clearly see at night.

Being a monocular the HM-Series are extremely compact and lightweight. They can easily be stored in a pouch or hung on a belt. Another advantage of a monocular is that you always have one hand free.

InstAlert™

InstAlert™ highlights the hottest part in the scene red, making it easy to spot people in the water.

Crisp thermal images
The HM-Series produce thermal images of 320 x 240 pixels on which the smallest of details can be seen. Users that do not need this high image quality can choose for a 240 x 180 pixels version.

Advanced internal camera software delivers a crisp image without the need for user adjustments.

Digital zoom
Digital zoom allows you to have an even closer look at the situation when necessary.

Extremely portable and rugged
Weighing 660 grams, batteries included, the FLIR HM-Series are extremely compact and extremely light systems. They are ideal for go-anywhere operations, in all circumstances. They are IP67 rated.

Easy-to-operate
Ergonomic and easy-to-use, the HM-Series are fully controlled with just 5 buttons on top of the unit.

Image storage
HM-224b allows the user to freeze images. HM-224b Pro, HM-324b XP+ and HM-307b XP+ allows the user to store thermal images in JPEG and video in AVI format on a removable SDHC-card.

Hot shoe
The HM-Series comes standard with a "hot shoe" which can easily be mounted on the camera. The "hot shoe" has a power-in and video-out connection. This means that the HM-Series can be fully operational on a tripod while charging the batteries.

Long battery life
The HM-Series have an operating time of over 5 hours on a single charge. They work on 4 rechargeable AA NiMH batteries. The HM-Series can also run on standard commercial off the shelf non-rechargeable Alkaline AA-batteries.

Extender lens
The HM-224b and HM-324b versions of the HM-Series can be equipped with a 2X extender lens. It offers a 12° field of view for longer range performance.

320 x 240 pixels

	HM-324b XP+	HM-324b with 2x extender	HM-307b XP+
Lens	19 mm	19 mm	65 mm
Field of view	24°	12°	7°
Detect man-sized target at:	440 m	880 m	1.55 km
Zoom	2x	2x	2x
SD-card	Still image capture and video capture to SDHC-card		

240 x 180 pixels

	HM-224b	HM-224b with 2x extender	HM-224b Pro
Lens	19 mm	19 mm	19mm
Field of view	24°	12°	24°
Detect man-sized target at:	320 m	660 m	320 m
Zoom	2x	2x	2x
SD-card	N/A	N/A	Image capture to SDHC-card

Shuttered eye-piece

The HM-Series have a bellows eye cup. It prevents light from coming out of the viewfinder, helping the operator to stay covert.

Lens protection

A lens cap, able to open 180°, assures that the lens is protected when the HM-Series are out in the field but not in use. It does not hinder the operator when the HM-Series are in operation.

Power button

Image Capture/Video Record Button

Zoom/Freeze frame button

Palette button

Brightness Button

SD-card slot

Hand strap

Rugged design

Thermal image

Your vision
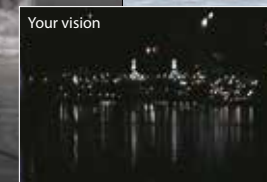
FLIR BHM-Series

see without beeing seen, now with InstAlert™

BHM-Series are shock-resistant thermal imaging cameras. They produce a crisp image in the darkest of nights. The BHM-Series will dramatically increase your situational awareness. The BHM-Series can be used on board of all types of vessels. Yachts, commercial ships, tug and tow boats, work boats, police and law enforcement boats will all benefit from the power of thermal imaging.

The BHM-Series are bi-oculars. This means that it is less tiring to use for the eyes than a monocular. By using a bi-ocular the ability to detect faint objects is enhanced. This means that you have more chance to detect small objects against the background. It is also easier to hold bi-oculars steady when looking at an object. An advantage if you are looking at small things which are far away.

Extended Range Options
The BHM-Series is equipped with an uncooled vanadium oxide detector. This provides excellent long range viewing with sharp 320 × 240 native resolution in the viewfinder and a 2× digital e-zoom step to 160 × 120 resolution.

Powered by FLIR's 640 × 480 core, the BHM-6X+ delivers greater range performance with crisp, clear 320 × 240 native resolution in the viewfinder AND while in the 2x digital e-zoom mode, plus an additional 4× digital e-zoom step to 160 × 120 resolution. Full 640 × 480 resolution imagery from the BHM-6XR+ Series is also accessible via the "aux video" jack in the hot shoe.

Digital zoom
The BHM-3X+ comes with a 2x digital zoom. The BHM-6XR+ has both a 2x and a 4x digital zoom. This allows you to have a closer look at the situation when necessary.

Portable and rugged
The FLIR BHM-Series are compact and extremely light systems. They are IP66 rated and operate between -20°C and +50°C.

Easy-to-operate
Ergonomic and easy-to-use, the BHM-Series are fully controlled with just 5 buttons on top of the unit.

One touch video recording
Just press a button and start recording thermal video on a removable SD card.

Image storage
Both versions of the BHM-Series allow to store thermal images in JPEG format on a removable SD card. Images can be used as evidence.

Choice of lenses
The BHM-Series can be ordered with different lenses. Longer lenses have a narrower field of view and allow you to see objects farther away. Lenses are interchangeable. The specific lens(es) you require for your application need to be specified at time of order.

320 x 240

640 x 480

The following lenses are available:

BHM-3X+: 320 x 240 pixels			
LENS OPTIONS	**35 mm**	**65 mm**	**100 mm**
FOV	13° × 10°	7° × 5°	5° × 3°
Detect man-sized target at:	830 m	1.55 km	2.4 km

BHM-6XR+: 640 x 480 pixels			
LENS OPTIONS	**35 mm**	**65 mm**	**100 mm**
FOV	18° × 14°	10° × 8°	6° × 4°
Detect man-sized target at:	1040 m	1.95 km	2.95 km

FLIR

Different versions available

	BHM-3X+	BHM-6XR+
See without being seen	✓	✓
See in total darkness, through smog, smoke and light precipitation	✓	✓
Image and video storage	✓	✓
Image quality (sensor)	320 x 240 pixels	640 x 480 pixels
Digital zoom	2x	2x, 4x

Image Capture/Video
Record Button

Zoom Button

Polarity Button

Brightness Button

Power Button

Different lens options available

Hand strap

Rugged design

Long battery life

The battery compartment holds 4 rechargeable AA NiMH batteries. Good for 4 hours continuous operation. The BHM-Series can also run on standard commercial off the shelf non-rechargeable Alkaline AA-batteries.
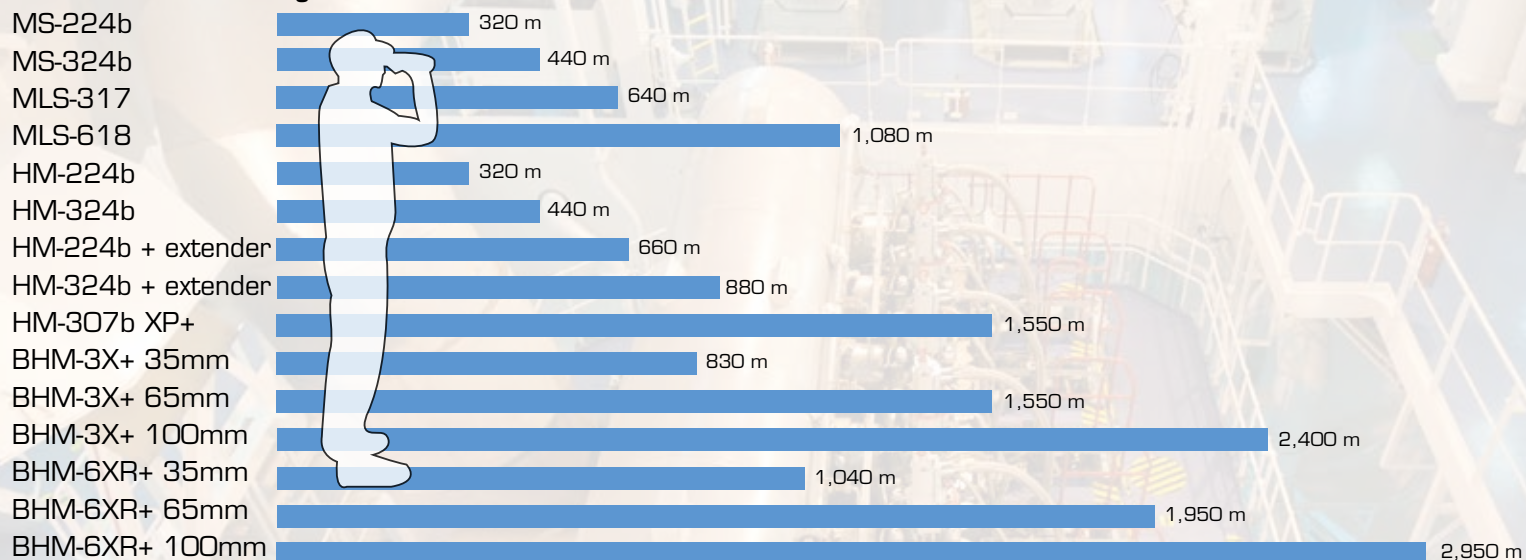
Hot shoe

The BHM-Series come standard with a "hot shoe" which can easily be attached to the camera. It allows to charge the camera and connect the camera to an external video monitor while the camera is mounted on a tripod.
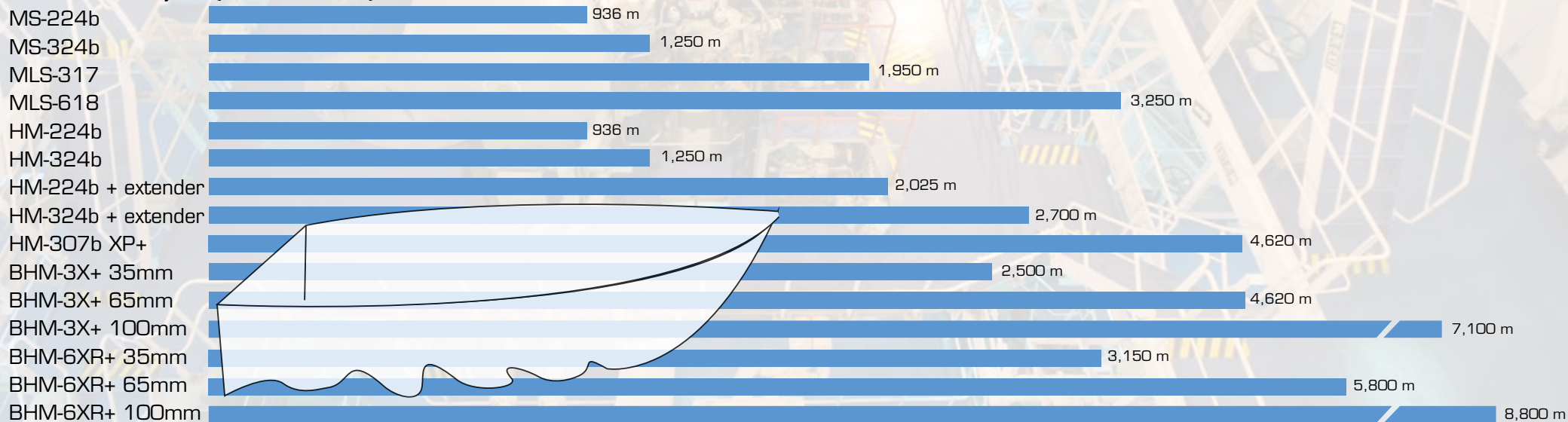
Range performances

Detect Man-Sized Target (1.8 m x 0.5 m)

Model	Range
MS-224b	320 m
MS-324b	440 m
MLS-317	640 m
MLS-618	1,080 m
HM-224b	320 m
HM-324b	440 m
HM-224b + extender	660 m
HM-324b + extender	880 m
HM-307b XP+	1,550 m
BHM-3X+ 35mm	830 m
BHM-3X+ 65mm	1,550 m
BHM-3X+ 100mm	2,400 m
BHM-6XR+ 35mm	1,040 m
BHM-6XR+ 65mm	1,950 m
BHM-6XR+ 100mm	2,950 m

Detect small object (2.3 m x 2.3 m)

Model	Range
MS-224b	936 m
MS-324b	1,250 m
MLS-317	1,950 m
MLS-618	3,250 m
HM-224b	936 m
HM-324b	1,250 m
HM-224b + extender	2,025 m
HM-324b + extender	2,700 m
HM-307b XP+	4,620 m
BHM-3X+ 35mm	2,500 m
BHM-3X+ 65mm	4,620 m
BHM-3X+ 100mm	7,100 m
BHM-6XR+ 35mm	3,150 m
BHM-6XR+ 65mm	5,800 m
BHM-6XR+ 100mm	8,800 m

Actual object detection range performance may vary depending on environmental conditions.
All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.

MS-Series

Model specific specifications

	MS-224b	MS-324b
Detector type	240 × 180 VOx Microbolometer	320 × 240 VOx Microbolometer
Freeze frame	Yes	No
Digital E-zoom	No	2×

General specifications

IMAGING PERFORMANCE	
Focal length	19 mm
Field of view (H × W)	24° × 18°
Waveband	7.5 - 13.5 μm
Start-up from stand-by	<2 seconds
Focus	Fixed
Diopter adjustment	+2
Tasklight	LED
IMAGE PRESENTATION	
Built-In display	Color VGA LCD display
Image polarity	White Hot; Black Hot; InstAlert
USER INTERFACE	
Power button	On/Off
Polarity button	Toggles White Hot, Black Hot, and InstAlert
Brightness button	Adjusts display brightness
USB port	Software updates/USB charging
POWER	
Battery type	Internal camera battery/Li-Ion
Battery recharging	USB cable for internal battery charging; charging cradle (optional)
Battery life (operating)	5 to 7 hours (nominal)
ENVIRONMENTAL	
Rating	IP-67
Operating temperature	-20°C to 50°C
Storage temp.	-40°C to 60°C
PHYSICAL CHARACTERISTICS	
Weight (with battery)	340 g
Size (L × W × H)	172 × 59 × 62 mm
Fixed use	Standard tripod mount
Camera package includes:	MS-Series handheld thermal night vision camera, wrist strap, USB cable, Product CD; USB-charger, soft carrying pouch

MLS-Series

Model specific specifications

	MLS-317	MS-618
Detector type	320 × 240 VOx Microbolometer	640 x 480 VOx Microbolometer
Field of view (H × W)	17° × 13°	18° × 14°
Focal length	19mm	35mm
Zoom button	2×	2×, 4× & Continuous Zoom
Video refresh rate	Export versions <9Hz	Export versions <9Hz

General specifications

IMAGING PERFORMANCE	
Waveband	7.5 - 13.5 μm
Start-up from stand-by	< 2 seconds
Focus	Fixed
Diopter adjustment	+2
IMAGE PRESENTATION	
Built-In display	Color VGA LCD display
Image polarity	White Hot; Black Hot; InstAlert
USER INTERFACE	
Power button	On/Off
Polarity button	Toggles White Hot, Black Hot, and InstAlert
Brightness button	Adjusts display brightness
POWER	
Battery type	Internal camera battery/Li-Ion
Battery life (Operating)	5 to 7 hours (nominal)
LASER	
Type	Visible red (Wavelength 630-669nm)
Class	IIIA/3R (US FDA/IEC)
Power	<5mW (3.5mW typical)
ENVIRONMENTAL	
Rating	IP-67
Operating temp.	-20°C to 50°C
Storage temp.	-40°C to 60°C
PHYSICAL CHARACTERISTICS	
Weight (incl. lens)	340g
Size (L × W × H)	172 × 59 × 62 mm
Packages include	MLS-Series handheld maritime thermal night vision camera, USB charger, wrist strap, USB cable, Product CD, soft carrying pouch

YEAR 3 FULL PRODUCT WARRANTY *

YEAR 10 DETECTOR WARRANTY *

* After product registration on www.flir.com

HM-Series

Model specific specifications

IMAGING PERFORMANCE	HM-224b	HM-224b PRO	HM-324b XP+	HM-307b XP+
Field of view	24° (H) x 18°(V) / 12°(H) x 9° (V) with 2X extender	24° (H) x 18°(V) / 12°(H) x 9° (V) with 2X extender	24° (H) x 18°(V) / 12°(H) x 9° (V) with 2X extender	7° (H) x 5° (V)
Image resolution	240 x 180 pixels	240 x 180 pixels	320 x 240 pixels	320 x 240 pixels
Focus	Fixed - with 2x extender: manual	Fixed - with 2x extender: manual	Fixed - with 2x extender: manual	Manual
Zoom	NA	2X	2X	2X
IMAGE PRESENTATION				
Freeze frame	Yes	NA	NA	NA
Image polarity	White hot / black hot / InstAlert™; selectable	White hot / black hot / InstAlert™; selectable	White hot / black hot / InstAlert™; selectable	White hot / black hot / InstAlert™; selectable
IMAGE STORAGE				
Format	NA	Standard JPEG - SD-Card	Standard JPEG - SD-Card	Standard JPEG - SD-Card
Storage functions	NA	Single Image + video capture	Single Image + video capture	Single Image + video capture
VIDEO STORAGE				
Format	NA	AVI - SD-card	AVI - SD-card	AVI - SD-card
Storage functions	NA	9 Hz, Full frame up to limit of SD-card, approx. 8 seconds / MB	9 Hz, Full frame up to limit of SD-card, approx. 8 seconds / MB	9 Hz, Full frame up to limit of SD-card, approx. 8 seconds / MB
INTERFACES				
SD Cards	1 slot	1 slot	1 slot	1 slot
USB2	–	Image transfer to PC	Image transfer to PC	Image transfer to PC
ENVIRONMENTAL SPECIFICATIONS				
Operating temp.	0°C to +50°C	0°C to +50°C	-20°C to +50°C	-20°C to +50°C
Storage temp.	-20°C to +70°C	-20°C to +70°C	-40°C to +75°C	-40°C to +75°C
PHYSICAL CHARACTERISTICS				
Weight (incl. lens)	653 g with batteries 1000 g with 2X extender	653 g with batteries 1000 g with 2X extender	653 g with batteries 1000 g with 2X extender	Approx. 1000 g with batteries
Size (L x W x H)	238 x 84.5 x 66.5 mm without extender 265 x 85 x 75 mm with 2x extender	238 x 84.5 x 66.5 mm without extender 265 x 85 x 75 mm with 2x extender	238 x 84.5 x 66.5 mm without extender 265 x 85 x 75 mm with 2x extender	278.4 x 84.5 x 68.3 mm
Shipping size (camera + packaging)	450 x 280 x 180 mm	450 x 280 x 180 mm	450 x 280 x 180 mm	450 x 280 x 180 mm
Shipping weight (camera + packaging)	2.8 kg	2.8 kg	2.8 kg	2.8 kg
Shipping weight 2x extender (camera + packaging)	The 2x extender is being shipped in a separate box of approx. 1 kg	The 2x extender is being shipped in a separate box of approx. 1 kg	The 2x extender is being shipped in a separate box of approx. 1 kg	NA
OPTIONALLY AVAILABLE	Extender lens (not for HM-307 XP+), rigid camera case, soft carrying bag			

General specifications

IMAGING PERFORMANCE	
Detector type	Uncooled Focal plane array Vanadium Oxide (VOx) microbolometer
Spectral range	7.5 to 13.5 μm
Thermal sensitivity	<50 mK at f/1.0 at +25°C
Image frequency	8.3 Hz Pal / 7.5 Hz
Image processing	Digital Detail Enhancement (DDE)
IMAGE PRESENTATION	
Viewfinder	LCD screen
Video output	NTSC or PAL composite video; RCA jack
On-screen symbology	Standard
POWER	
Requirements	4 AA Batteries; rechargeable NiMH (included), non-rechargeable Alkaline
Battery life	> 5 hours on NiMH batteries - 120 hours in stand-by with NiMH batteries
ENVIRONMENTAL SPECIFICATIONS	
Humidity non condensing	5% to 95%
Encapsulation	IP67
Drop	Operational after 1 m drop onto concrete
STANDARD PACKAGE	
	Camera, Hot Shoe, 4 Rechargeable AA Batteries, AC Power Adapter/Charger, Neck Lanyard, Operator's Manual, USB Cable, Video Output Cable, SD Card.

3 YEAR FULL PRODUCT WARRANTY*

10 YEAR DETECTOR WARRANTY*

* After product registration on www.flir.com

BHM-Series

Model specific specifications

IMAGING PERFORMANCE	BHM-3X+	BHM-6XR+
Detector size	320 x 240	640 x 480
E-Zoom	2x	2x, 4x
FILE STORAGE/DATA TRANSFER		
Still image format	JPEG	JPEG
Video format	AVI	AVI

General specifications

IMAGING PERFORMANCE	
Detector type	Uncooled Microbolometer
Spectral range	7.5 - 13.5 µm
Thermal sensitivity	<50 mK @ f/1.0
Start up from stand-by	< 1.5 seconds
Image processing	FLIR Proprietary Digital Detail Enhancement
SD Card slot	Supports up to 32 Gb SDHC Card
Focus	Manual
IMAGE PRESENTATION	
Built-In display	Color VGA LCD Display
Video output	NTSC or PAL composite video; RCA jack
FILE STORAGE/DATA TRANSFER	
Still image storage	SD or SDHC Card
Video storage	AVI Format; Approx. 8 seconds/Mb on SD Card
Real-Time clock	Yes
USB2 port	Yes
POWER	
Battery type	4 AA Batteries; NiMH or Alkaline
Battery life (operating)	4-6 Hours On NiMH batteries
Battery life (stand-by)	120 hours on NiMH batteries

ENVIRONMENTAL	
Rating	IP-66, Submersible
Operating temp.	-4°F – 140°F (-20°C – 60°C)
Storage temp.	-40°F – 167°F (-40°C – 75°C)
Drop	1 m drop
PHYSICAL CHARACTERISTICS	
Weight (w/o lens)	998 gramms
Size (L x W x H)	280 mm x 165 mm x 67 mm
Camera package includes:	Either the BHM-X or BHM-XR Series handheld thermal camera (without lens - lens must be chosen/purchased separately for desired performance) with Hot Shoe Charging & Video output attachment, 4 rechargeable AA NiMH Batteries, AC Power adapter/charger, neck lanyard, USB cable, Video output cable, hard carrying case, Product CD with ops manual, FLIR Video Player and End User Graphical User Interface (GUI)
Lens package includes:	Either the 35 mm, 65 mm or 100 mm Lens (as selected at purchase), lens cap, lens cover, lens cloth

Lenses

LENS OPTIONS		35 MM	65 MM	100 MM
BHM-3X+: 320 x 240 pixels				
Size		Ht. - 65 mm, Dia - 79 mm Ø	Ht. - 84 mm, Dia - 79 mm Ø	Ht. - 117 mm, Dia - 79 mm Ø
FOV		13° × 10°	7° × 5°	5° × 3°
FOV with Digital e-Zoom:	2x	6.5° × 5°	3.5° × 2.5°	2.5° × 1.5°
	4x	NA	NA	NA

LENS OPTIONS		35 MM	65 MM	100 MM
BHM-6XR+: 640 x 480 pixels				
Size		Ht. - 65 mm, Dia - 79 mm Ø	Ht. - 84 mm, Dia - 79 mm Ø	Ht. - 117 mm, Dia - 79 mm Ø
FOV		18° × 13°	10° × 8°	6° × 4°
FOV with Digital e-Zoom:	2x	9° × 6.5°	5° × 4°	3° × 2°
	4x	4.25° × 3.25°	2.5° × 2°	1.5° × 1°

Accessories

MS / MLS-series

Part number	Description
4126884	Camera carrying pouch, black
4127499	Camera case, rigid, black
4127305	Floating lanyard, orange
4132304	Belt holster, black

HM-series

Part number	Description
4116650	Camera case, rigid, yellow for HM-Series
4115397	Camera case, soft HM-Series
322-0152-00	2x Extender for HM224 and HM324
433-0000-00-50	Software upgrade HM-224b> HM-224b Pro

BHM-series

Part number	Description
322-0181-12	Lens, QD35
322-0195-12	Lens, QD65
322-0196-12	Lens, QD100

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