



Maritime Thermal Night Vision Systems



*HM-224 /
HM-324 XP+*

*HM-224 /
HM-324 XP+ with 2X extender*

*HM-307 /
HM-307 XP+*

**Portable thermal imaging cameras
for commercial maritime applications**

HM-Series

Portable thermal imaging cameras for maritime applications

HM-Series: use the power of thermal imaging for night-time navigation and to increase shipboard security

The HM-Series are handheld shock-resistant thermal imaging cameras. They produce a crisp image in the darkest of nights. The HM-Series will dramatically increase your situational awareness. The HM-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 HM-Series thermal imaging cameras are excellent tools for night-time navigation, securing any shipboard environment, anti-piracy and many other 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 HM-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 HM-224 produces thermal images of 240 x 180 pixels. The HM-324 and HM-307 produce thermal images of 320 x 240 pixels on which the smallest of details can be seen. All cameras are equipped with advanced internal camera software that delivers a crisp image without the need for user adjustments.

Choice of lenses

The HM-224 and HM-324 provide a 24° field of view. This offers an excellent combination of range performance and situational awareness. For longer range performance, they can be equipped with a 2X extender which offers a 12° field of view. Users that want to see even farther can choose the HM-307. It offers a 7° field of view.

Extremely portable and rugged

The 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. Conveniently placed the backlit buttons are all right underneath your fingertips.



Hot shoe

The HM-Series come standard with a "hot shoe" which can easily be mounted on the cameras. Not only does it allow for tripod mounting, the "hot shoe" also has a power-in and video-out connection. This means 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 that come with the camera. The HM-Series can also run on standard non-rechargeable Alkaline or Lithium Ion AA batteries.

Different versions available

The HM-Series are available in 6 different versions:

The user can choose a version with a 240 x 180 pixel detector. For more detailed thermal imagery, versions with 320 x 240 pixels detector are also available.

The XP+ versions contain a number of useful features such as:

- **Image storage :**

Allows storing thermal images in JPEG format on a removable SD-card by the touch of a button. A 1 GB SD-card holds up to 20,000 images.

- **Video storage:**

By holding a button, the HM-324 XP+ has the ability to record full frame rate MPEG-4 video. The HM-324 XP+ can record more than 2 hours of video on a 1 GB SD-card.

- **USB2 connection:**

Can be used to transfer the saved images to a PC.

- **Digital zoom**

A 2X digital zoom allows you to have a closer look at objects when necessary.





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HM-Series: The power of thermal imaging in the palm of your hand



1 POWER button

Initial powering takes 60 seconds. Once on, the system is set to stand-by with a single quick press on the power button. The battery lifetime in this standby mode is more than 120 hours. Another quick press on the power button returns to ON mode. To preserve battery power in the "ON Status", auto stand-by is initiated if no buttons are pressed for 3 minutes.

2 RECORD button

On the HM-324, this button will freeze the image for up to 2 minutes. The camera will return to live imaging upon any press of the button.

Depending on the HM-Series camera model, a single fast push of the RECORD button records a single frame of data to the SD card. During this operation the image is frozen for approximately 1 second. If the operator presses and holds the RECORD button for more than 2 seconds, video recording is started and continued until the operator releases the button. During video recording a "record" icon is visible in the viewfinder.

3 ZOOM button (Not on HM-224)

Each press on the ZOOM button cycles between 2X zoom and normal view. A zoom icon is presented in the viewfinder during zoom.

4 Black hot / White hot button

Each press on the BLACK HOT / WHITE HOT button cycles between Black Hot and White Hot modes.

5 BRIGHTNESS button

Each press on the BRIGHTNESS button increments to the next of 5 display brightness levels. When the maximum display brightness is reached, subsequent button presses decrement the display brightness until the minimum brightness level is reached. Thanks to this adjustable brightness, you will be able to keep your night sight capabilities.

6 Eye-piece

Provides excellent user comfort when looking through the viewfinder.

7 Rugged design

Ready for go-anywhere operation, in the harshest maritime conditions.

8 Lens

The HM-224 and HM-324 are equipped with lenses providing a 24° field of view. A 2X extender providing a 12° field of view is optionally available for the HM-224 and HM-324 models. Users that want to see even farther can choose the HM-307. It offers a 7° field of view.

9 Hand strap

The HM-Series have a hand strap on both sides of the camera for both left- or right handed use.

10 SD-card slot

The HM-series allow images to be stored on a removable SD-card. It can also be used to upgrade the HM-Series from HM-224 to HM-224 Pro and from XP to XP+.

11 USB2 connection

Allows for fast transfer of images from the HM-Series to a PC. (Not on HM-224)

12 Battery compartment

Contains 4 AA batteries.





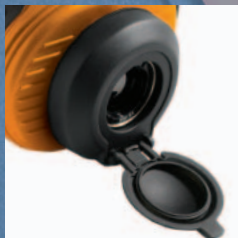
Eye-piece

Provides excellent user comfort when looking through the viewfinder.



Lens protection

A lens cap assures that the lens is protected when the HM-Series is not in use. It does not hinder the operator when the HM-Series is in operation.



Hot shoe

The HM-Series come standard with a "hot shoe" which can easily be attached to the camera. Not only does it allow for tripod mounting, the "hot shoe" also has a power-in and video-out connection. The "hot shoe" is not waterproof and not intended for permanent installation on boats.



Extender lens

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



Car power adaptor

All versions of the HM-Series come standard with a car power adaptor to charge the batteries.



Carrying case / bag

Optionally a soft carrying bag or a rigid camera case is available. It protects the HM-Series when they are not being used.



Rigid carrying case



Soft carrying bag

A large number of applications

Thanks to the extremely affordable FLIR Systems HM-Series, more and more users can now benefit from the power of thermal imaging cameras.



Finding someone in the water after dark with a search light is more a matter of luck than skill.



The HM-Series lets you search large areas quickly.



Industrial shipping

The HM-Series are excellent tools for night-time navigation, shipboard security and anti-piracy applications.



Coastguard

Coastguard and rescue workers use the HM-Series as a valuable tool: man overboard searches, ship detection through light fog and darkness, security, anti-piracy, ...



Police and law enforcement

Police, customs and other law enforcement agencies need to see, ashore and on the water, what is happening in the dark.



Yachting

Also private yachts can benefit from the power of thermal imaging: night-time navigation, man overboard searches, shipboard security, anti-piracy, ...

Thermal imaging versus image intensification (I²)

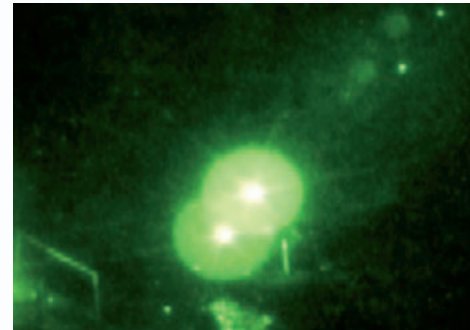


Image intensification: image is saturated by looking directly to a light source.



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

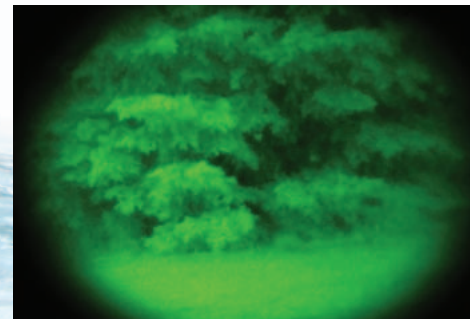


Image intensification: person hiding in bushes is practically invisible.



Thermal imaging: person hiding in bushes is clearly visible since thermal contrast is practically impossible to mask.

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 like the HM-Series 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.

HM-Series

Model specific specifications

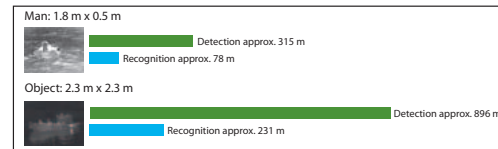


IMAGING PERFORMANCE	HM-224	HM-224 PRO	HM-324 XP	HM-324 XP+	HM-307 XP	HM-307 XP+
Field of view	24° (H) x 18°(V) / 12°(H) x 9° (V) with 2X extender	24° (H) x 18°(V) / 12°(H) x 9° (V) with 2X extender	24° (H) x 18°(V) / 12°(H) x 9° (V) with 2X extender	24° (H) x 18°(V) / 12°(H) x 9° (V) with 2X extender	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	320 x 240 pixels	320 x 240 pixels
Focus	Fixed - with 2x extender: manual	Fixed - with 2x extender: manual	Fixed - with 2x extender: manual	Fixed - with 2x extender: manual	Fixed	Fixed
Zoom	NA	2X	2X	2X	2X	2X
IMAGE STORAGE						
Format	NA	Standard JPEG - 1 GB SD-Card	Standard JPEG - 1 GB SD-Card	Standard JPEG - 1 GB SD-Card	Standard JPEG - 1 GB SD-Card	Standard JPEG - 1 GB SD-Card
Storage functions	NA	Single Image	Single Image	Single Image	Single Image	Single Image
VIDEO STORAGE						
Format	NA	NA	NA	MPEG4 - 1 GB SD-card	NA	MPEG4 - 1 GB SD-card
Storage functions	NA	NA	NA	9 Hz, Full frame up to limit of SD-card, approx. 8 seconds / MB	NA	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	1 slot	1 slot
USB2	/	Image transfer to PC	Image transfer to PC	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 +60°C	-20°C to +60°C	-20°C to +60°C	-20°C to +60°C
Storage Temp.	-20°C to +70°C	-20°C to +70°C	-40°C to +75°C	-40°C to +75°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	653 g with batteries 1000 g with 2X extender	Approx. 1000 g with batteries	Approx. 1000 g with batteries
Size (L x W x H)	240 x 85 x 60 mm without extender 265 x 85 x 75 mm with 2x extender	240 x 85 x 60 mm without extender 265 x 85 x 75 mm with 2x extender	240 x 85 x 60 mm without extender 265 x 85 x 75 mm with 2x extender	240 x 85 x 60 mm without extender 265 x 85 x 75 mm with 2x extender	260 x 84.5 x 66.5 mm	260 x 84.5 x 66.5 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	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	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	The 2x extender is being shipped in a separate box of approx. 1 kg	NA	NA
OPTIONALLY AVAILABLE	Extender lens (not for HM-307 and HM-307 XP+), rigid camera case, soft carrying bag					

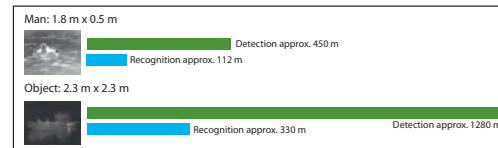
General Specifications

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
Image polarity	White hot / black hot; selectable
On-screen symbology	Standard
POWER	
Requirements	4 AA Batteries; rechargeable NiMH (included), non-rechargeable Li-Ion or 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, Car Adapter/Charger, Neck Lanyard, Operator's Manual, USB Cable, Video Output Cable, SD Card.

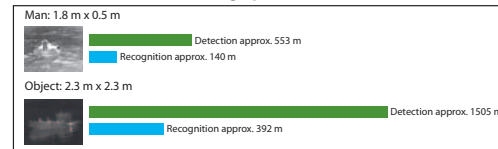
HM-224 / HM-224 PRO : range performance



HM-324 XP / HM-324 XP+ : range performance



HM-224 / HM-224 PRO : range performance + 2X extender lens

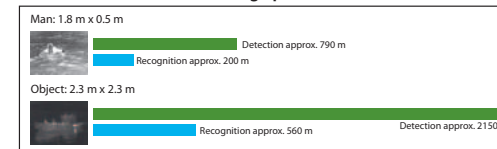


Actual range may vary depending on camera set-up, environmental conditions, user experience and type of monitor or display used.

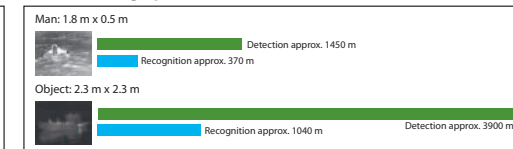
Asptions:

50 % probability of achieving objective at specified distance given 2°C temperature difference and 0.85 / km atmospheric attenuation factor.

HM-324 XP / HM-324 XP+ : range performance + 2X extender lens



HM-307: range performance



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