

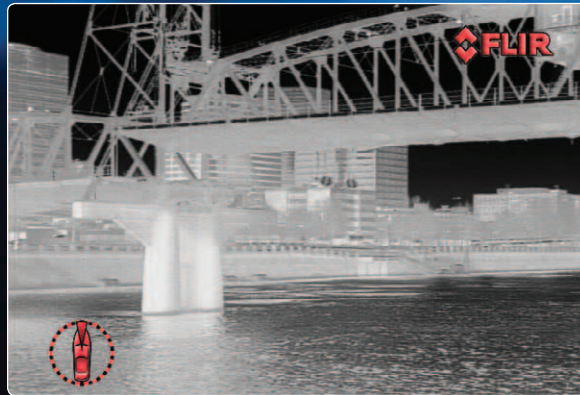


Maritime Thermal Night Vision Systems





Your Vision: Video camera frame-grab



FLIR Vision: White-hot thermal image

Nighttime On The Water Is Safer With FLIR®

Boating gives you a sense of freedom and independence you can't find anywhere else. Time on the water is time liberated from the stresses and cares of everyday life, and nothing should stand in the way of that, even after dark.

Professional mariners have known this for years: you don't need to stay in the harbor at night, especially when you can have the latest cutting-edge thermal night vision technology from FLIR to help you stay safe any time of day.

No matter what kind of boating you enjoy, or what kind of boat you have, FLIR has a maritime thermal imager for you:

First Mate & First Mate MS – Affordable, handheld thermal imaging for every boater.

Navigator II – Rugged, flexible, and economical, the Navigator II static is the world's most popular maritime thermal imager.

M-Series – FLIR's family of premier single and multi-sensor maritime thermal imaging systems.

Voyager – Quad-sensor performance and full gyro-stabilization make Voyager the best around.

Whether you enjoy fishing, cruising, sailing, or just exploring your world, at the end of the day all boaters have the same basic goals in mind: to enjoy life on the water to the fullest, and bring their loved ones home safe and sound.

Thermal night vision cameras from FLIR can help you do just that.

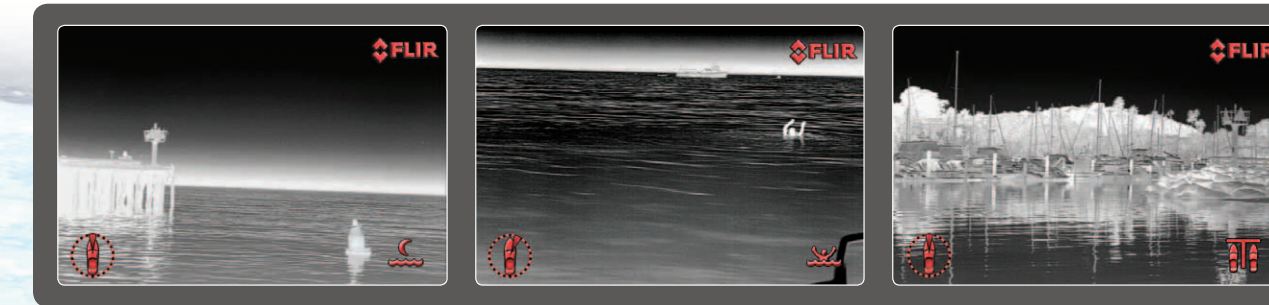
Don't be afraid of the dark. See clearly with FLIR.

How Maritime Thermal Night Vision Cameras Help You Stay Safe

Navigation & Collision Avoidance – Thermal night vision cameras help make navigation safer with crystal-clear video that helps you to see natural and man-made hazards like buoys, floating debris, rocks, land, bridge abutments, and other vessels night and day.

Finding People In The Water – Thermal night vision cameras can help you to find a person in the water faster than any other night vision technology. That's why more Coast Guards, Police Agencies, and Militaries around the world put their trust in FLIR for search and rescue than everyone else combined.

Easy To Use – FLIR thermal night vision cameras are easy to use. Unlike radars, GPS systems, and digital chart plotters – which require training, practice, and skill to master – the images you get from thermal cameras are intuitive and easy to understand. If you can watch TV, you can use a FLIR.



Complements Other On-Board Electronics – FLIR's maritime thermal cameras round out your electronics suite like nothing you could imagine: GPS and chart plotters tell you where you are and where you going; radars alert you to nearby vessels; but nothing lets you actually see what's out there like a FLIR.



What Are Maritime Thermal Night Vision Cameras, Anyway?

Thermal cameras are similar to home video cameras except that they make pictures by detecting and displaying tiny differences in heat, not light. Even the heat from a person's hand on the wall leaves enough thermal energy behind to show up clearly to a FLIR camera.

So, does that mean that thermal imagers only let you see things that are hot? Not hardly. Everything generates thermal energy, even ice! And even though thermal energy is invisible to the naked eye, FLIR cameras detect it and turn it into video that is easy to understand, allowing you to see more, and see farther, than you ever could with your eyes.

Any Camera For Any Vessel

You can do lots of different things with FLIR's thermal night vision cameras. They all let you see clearly in total darkness, but you can also get color or lowlight cameras, gyro-stabilization, radar interfacing, and other helpful features. This variety often leads people to ask: which FLIR camera is right for me?

Well, it's not just about big cameras going on big boats; any of FLIR's cameras can go on any vessel. It's more a matter of what you need it to do. How far away do you need to see things? Do you need to install it on an on-board network? Are you going to interface it with your other on-board systems?

FLIR's Maritime Thermal Night Vision Cameras Come With These Standard Features:

- Rugged, fully marinized construction to withstand harsh operating environments
- Window de-ice heaters for clear vision even in ice and snow*
- Proprietary, patent-pending image enhancement algorithms called Digital Detail Enhancement (DDE) that bring out faint image details that you might otherwise miss
- Standard NTSC or PAL video outputs that can be viewed on any monitor with an auxiliary video input*
- Pre-set gain adjustments for optimal picture quality in a variety of conditions
- FLIR's exclusive color on-screen symbology tells you instantly what's going on with the camera and where it's pointing*

* Compare product specifications for details.

This overview can help you decide which camera is right for you.



First Mate & First Mate MS

- Short-range thermal imagers
- Handheld, lightweight
- Complements other thermal cameras
- Take it anywhere: perfect for docking assistance, vessel inspection, search and rescue, and finding your way through smoke from on-board fires

Navigator II

- Short-range thermal imager
- Easy to install and use
- Fixed-forward static configuration

M-Series

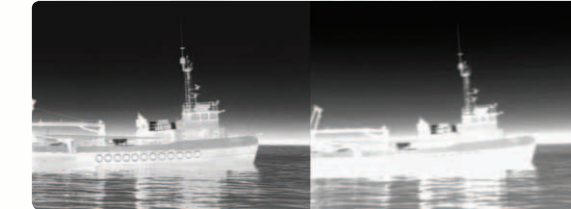
- Short- to medium-range thermal imager
- Full Pan/Tilt capability
- Thermal only or thermal/lowlight multi-sensor configurations
- Standard- and high-resolution thermal camera options
- Network-ready
- Auto-scan feature

Voyager

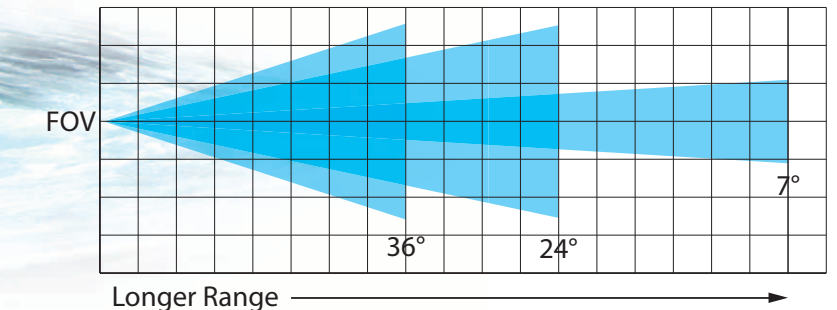
- Long-range thermal imager
- Gyro-stabilized Pan/Tilt platform
- Two thermal cameras
- Daylight/lowlight color camera
- Network-ready
- NMEA interfaces
- Radar slew-to-cue
- Video Tracker
- IP Addressability
- Temperature indication

Resolution Matters

When people talk about a thermal camera's resolution, they're talking about the number of pixels used to capture thermal energy. The bigger the number, the higher the camera's resolution. The higher the resolution, the more pixels you have gathering energy. This means that a higher resolution camera will typically let you see more detail, see smaller objects, and see them from farther away.



What's a Field of View, and Why Do I Care?



A camera's field of view (FOV) is the angular measurement of the area the lens can see. The wider the FOV the more you can see from side to side; the narrower the FOV the farther away you can see things. So, a 24° FOV is good for general viewing, collision avoidance, and hazard or man overboard detection, while a 7° FOV is better for seeing other vessels, hazards, and obstructions from farther away. While narrower fields of view help you see farther, they need to be steady to be most effective, so they can be more difficult to use as seas get heavier.

First Mate & First Mate MS

Portable, Handheld Thermal Night Vision

Perfect for use on vessels of any size, First Mate and First Mate MS (Marine Scope) are handheld thermal night vision cameras that run off batteries and display their video on a built-in screen. First Mate can also be run from vessel power and its video sent to most multi-function monitors.

First Mate and First Mate MS provide go-anywhere thermal imaging for clear vision in total darkness, and through smoke and light fog. Because it's not permanently mounted to your vessel, you can take it anywhere.



HM-Series

MS-Series

Rugged, all-weather design keeps First Mate going day in and day out. It's even submersible!

First Mate cameras come in two resolutions and are available with a variety of features:*

- Available with **240 x 180** or full **320 x 240 thermal resolution**; the higher resolution option provides improved image detail and range performance.
- All configurations are **easy to use** and let you see clearly in total darkness.
- **2x e-zoom** and freeze frame functions are available for greater image utility.
- **Capture still images and video**, and store the files on an onboard SD card.

* See comparison chart for full details.

Detection Range Performance†

MS-224 & HM-224 Pro (24° Lens)

Man ~1,050 ft

Small Vessel ~2,940 ft

HM-224 Pro with 2x Extender (12° Lens)

Man ~1,815 ft

Small Vessel ~4,940 ft

MS-324, HM-324 XP and HM-324 XP+ (24° Lens)

Man ~1,500 ft

Small Vessel ~4,200 ft

With 2x Extender (12° Lens)

Man ~2,590 ft

Small Vessel ~1.3 mi

HM-307 XP and HM-307 XP+ (7° Lens)

Man ~4,800 ft

Small Vessel ~2.4 mi

† = Actual object detection range performance may vary depending on camera set-up, environmental conditions, and user experience. All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.



First Mate MS Control Panel



First Mate MS is a marine scope with no image capture or video output functions.



First Mate Control Panel

First Mate's control panel provides direct, push-button access to all camera functions, making it easy to use and comfortable to operate.

Brightness – Adjusts the brightness of the internal viewfinder so that there will be minimal impact to the operator's night vision.

Polarity – Toggles the image display between White Hot, Black Hot, and Marine Red.

Zoom – Toggles the 2x E-zoom function on and off. (Pro version only)

Picture – Activates the Freeze Frame function, or captures still images and video to the on-board SD card. See the specification table in the back for more details. (Not available on First Mate MS.)

Power – Turns the First Mate camera On and Off, and puts it into the power-saving Standby mode.

First Mate Goes Anywhere You Need to See at Night

Because First Mate isn't mounted permanently to the vessel, you can take it anywhere you need to see clearly after dark.



Home Security

Use First Mate to investigate that sound in the back yard, or to make sure no one is approaching uninvited.



Watch Wildlife

Take First Mate camping or hiking to watch wildlife you would miss without it.



M-Series

Premium Maritime Thermal Night Vision Systems

Powerful, flexible, and built to last, the award-winning M-Series is FLIR's premium line of maritime thermal night vision systems.

Available with a variety of sensors and resolutions to meet a wide range of maritime navigation, collision avoidance, security, and search and rescue needs, M-Series is easy to install, integrate, and operate.

M-Series systems use Ethernet connectivity for easy installation, control, and interface with other on-board electronics. The rugged, waterproof gimbal enclosure provides a continuous 360° pan and +/-90° tilt field of regard for horizon-to-horizon visibility.

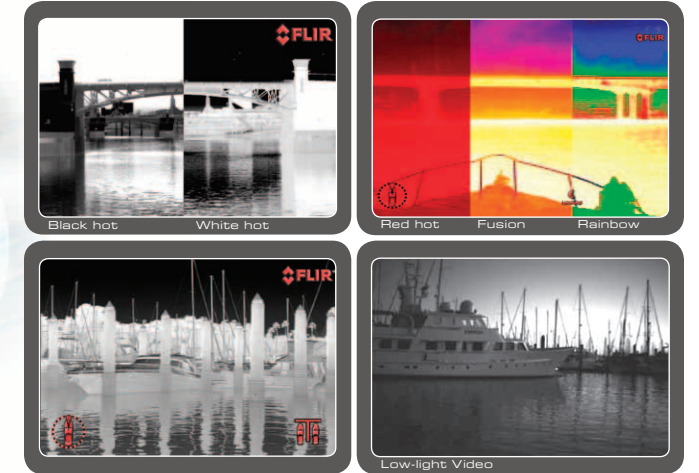
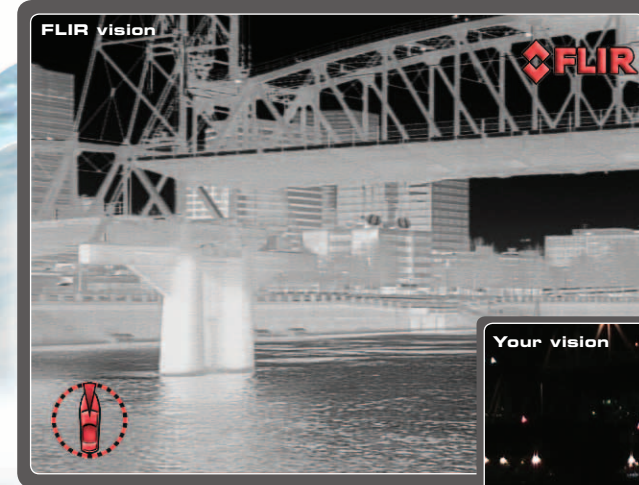


Single payload M-Series with thermal camera.

Dual payload M-Series with thermal and low-light cameras

M-Series thermal night vision systems are available with a variety of resolution and performance options:

- Their thermal night vision cameras come in either **320 x 240 standard resolution**, or **640 x 480 high-resolution format**; higher resolution provides improved image detail and range performance.
- All M-Series thermal cameras come with a **2x e-zoom** function that lets you see farther at night; the high-resolution option provides an additional **4x e-zoom** for even greater reach.
- Installers can mount all M-Series gimbals in either **ball-up or ball-down orientation**.
- The dual-payload M-Series has an **extreme lowlight micro-lux TV camera** for improved visibility during twilight hours, and when operating in areas with some ambient light like in intracoastal waterways and around harbor entrances.



Joystick Control Unit

The ergonomic M-Series controller gives you ready access to all critical system functions and smooth, effortless control, even in rough seas.

Heated LCD Screen – Provides instant display of system status.

User-Programmable "Hot Key" – Lets you have instant access to commonly-used functions.

Home – A programmable feature that lets you define a Home position as a reference you can use when navigating for long periods.

Color – Different display settings let you choose between two black and white or three color display schemes that are easy on the eyes and help you see better.

Scene – Provides a variety of pre-set gain and level adjustments to get the best image quality possible throughout a wide range of conditions.

Joystick – The custom, sealed, 8-way control knob provides precise control in rough seas.

Autoscan Controls – Automatically scans an arc 20° to 80° to the left and right of a user-defined pointing angle. You can also select the speed at which the camera scans through the arc.

Ethernet Connectivity – Lets you install multiple control stations around your vessel so you can control M-Series from anywhere on board.



On-Screen Icons

M-Series uses FLIR's color on-screen symbology to let you see where the system is pointing, and to give you instantaneous updates regarding the camera's configuration and status.

Detection Range Performance†

M-612L††

Man ~3,900 ft

Small Vessel ~2.0 mi

M-625L & M-625XP

Man ~2,700 ft

Small Vessel ~1.4 mi

M-324L & M-324XP

Man ~1,500 ft

Small Vessel ~4,200 ft

† = Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display used.

†† = The M-612L provides extremely long-range imaging and should only be used on stable platforms for best performance.

All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.

Voyager

Long-Range Multi-Sensor Thermal Night Vision Systems

With two best-in-class thermal night vision cameras, and a dual-function daylight/lowlight color TV camera that lets you see harbor entrances and other vessels clearly in the half-light of dawn and dusk, the Voyager family provides 24-hour imaging capability that lets you see to the horizon.

Voyager's wide-angle thermal camera lets you detect other boats or hazards more easily, while its long-range 140 mm thermal camera lets you zoom in on them to get the valuable information you need to react in time.

The only commercial maritime thermal night vision camera with continuous thermal zoom, the best image quality in the industry, and the longest thermal lens on the market, it's no surprise that Voyager is the proven anti-piracy system of choice for yachts, police boats, and cargo vessels around the world.



Anti-Piracy

Detection Range Performance†

Man Detection: ~1.4 mi

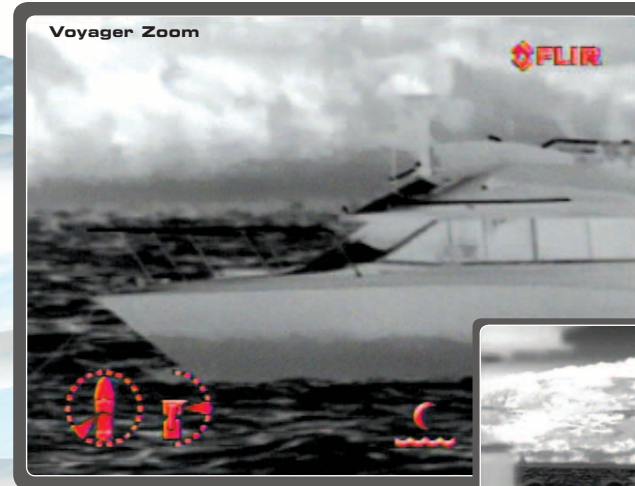
Small Vessel Detection: ~4 mi

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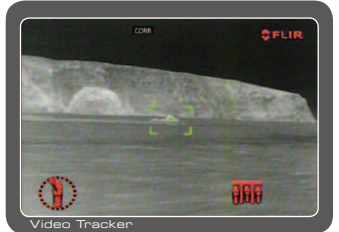
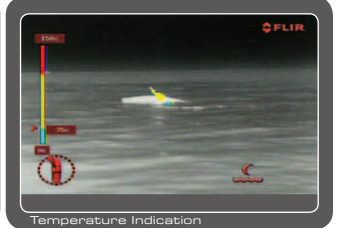
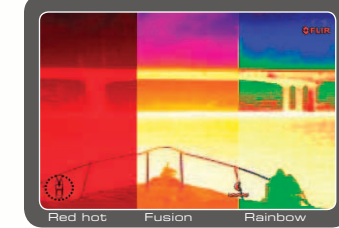
Wide angle and long range thermal night vision cameras give you the ultimate combination of imaging performance.

- With **4x optical zoom and 15x total zoom** Voyager lets you see even farther at night.
- **Powerful, long-range daylight/lowlight color TV camera** with 26x optical zoom, and 312x digital zoom, allows you to identify other boats and monitor activity onshore from farther away.
- **Active gyro-stabilization** provides steady imagery, even in rough seas; this is critical for getting the most out of Voyager's long-range imaging capability.
- **Optional Radar Tracking** feature allows operators to use the Voyager to identify and track specified radar returns, enhancing vessel safety in low visibility conditions.
- **Optional internet remote control** feature lets you operate your Voyager from any location in the world with a suitable internet connection, so you can check on your boat even when you're away.
- **Expanded interface capability** lets Voyager work hand-in-hand with your other marine electronics.
- **Video Tracker** automatically follows designated vessels with no operator inputs. Hands-off control is a great labor-saving feature usually only seen on more expensive cameras.
- **Optional Temperature Indication Scale** allows you to determine temperature of objects in image.
- **Optional Surveillance Mode** provides automatic pan left and right for hands-free surveillance while in port or underway.



On-Screen Icons

Voyager uses FLIR's color on-screen symbology to let you see where the system is pointing, and to give you instantaneous updates regarding the camera's configuration and status.



Joystick Control Unit*

The ergonomic Voyager controller provides ready access to all critical system functions and smooth, effortless control, even in rough seas.

Heated LCD Screen – Provides instant display of system status.

User-Programmable "Hot Key" – Gives you have instant access to commonly-used functions.

Home – A programmable feature that lets you define a Home position as a reference you can use when navigating for long periods.

Color – Different display settings let you choose between two black and white or three color display schemes that are easy on the eyes and help operators see better.

Scene – Provides a variety of pre-set gain and level adjustments so you can get the best image quality possible throughout a wide range of conditions.

Joystick – The custom, sealed, 8-way control knob gives you precise system control in rough seas.

Autoscan Controls – Automatically scans an arc 20° to 80° to the left and right of a user-defined pointing angle. You can also select the speed at which the camera scans through the arc.

Ethernet Connectivity – Lets you install multiple control stations around your vessel so you can control Voyager from anywhere on board.

*Some models of Voyager feature alternate joystick control units.

Navigator II

Affordable Static Thermal Night Vision System

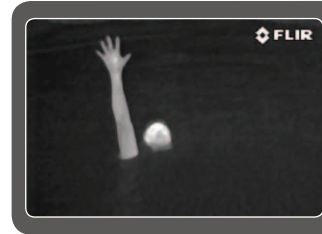
The award-winning Navigator II delivers crisp, clear thermal video in total darkness. Its wide-angle field of view is perfect for navigation, collision avoidance, and finding people in the water.

Navigator II is simple to use – if you can watch TV, you can use the Navigator II.

Don't let darkness and poor visibility keep you from enjoying your time on the water. Bring everyone home safe and sound with Navigator II.



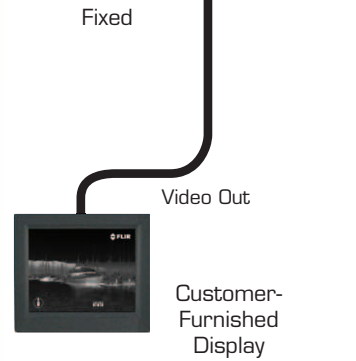
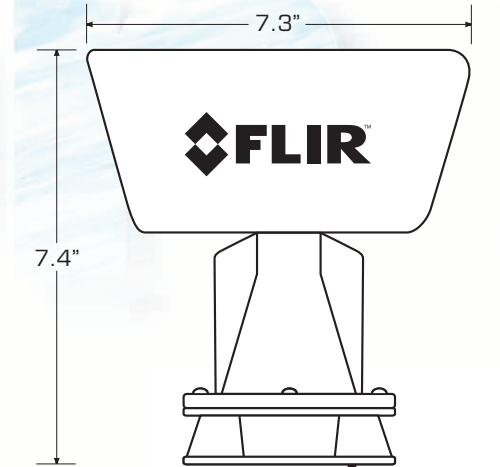
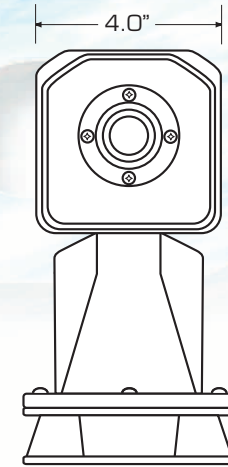
- 36° Field of View for excellent situational awareness.



Specs

Navigator II®

Thermal Imaging Specifications	Fixed
Sensor Type	320 x 240 VOx Microbolometer
FOV	36° x 27°
Focal Length	19 mm
E-zoom	N/A
Image Processing	FLIR DDE
Daylight Imaging Specifications	
Detector Type	N/A
System Specifications	
Size	7.3" x 4.0" x 7.4"
Weight	6 lb
Pan/Tilt Coverage	N/A
Video Output	NTSC or PAL
Connector Types	BNC with BNC-to-RCA adapter included for video out
Power Requirements	12 VDC
Power Consumption	3 W nominal, 30 W peak
Environmental	
Operating Temperature Range	-10°C to 55°C
Storage Temperature Range	-50°C to 80°C
Automatic Window Defrost	Standard
Sand/Dust	Mil-Std-810E
Water Ingress	IP-x6
Shock	Mil-Std-810
Vibration	Mil-Std-810E
Lightening Protection	Standard
Standard Package	
	Camera Head with 25' Power and Video Cables; Power Switch; Operator Manual
Warranty	
	2 Year
Optional Accessories	
	Mounting Accessories
Range Performance†	
Detect Man (1.8 m x 0.5 m)	~1,020 ft (310 m)
Detect Small Vessel (4.0 m x 1.5 m)	~2,900 ft (880 m)



Detection Range Performance†

Man Detection: ~1,020 ft

Small Vessel Detection: ~2,900 ft

† = Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display used. All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.

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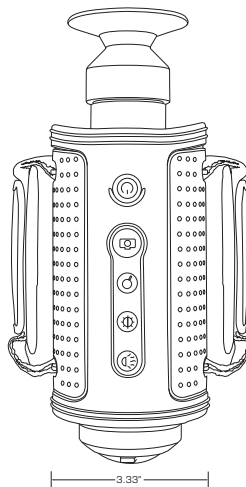
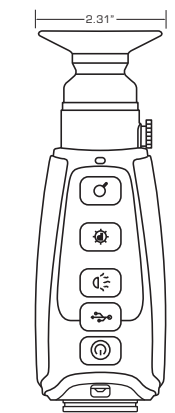
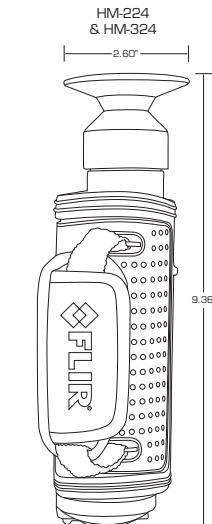
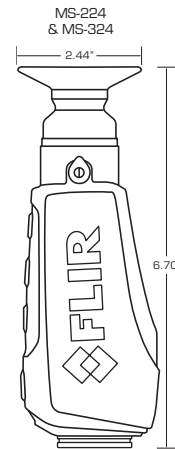
Specs

First Mate MS

(Marine Scope)



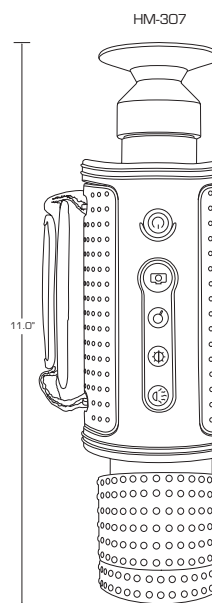
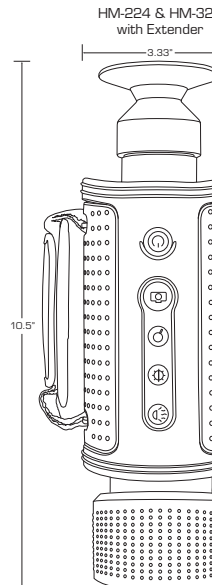
Thermal Imaging Specifications	MS-224	MS-324
Detector Type	240 x 180 VOx Microbolometer	320 x 240 VOx Microbolometer
FOV	24° x 18°	
Focal Length	19 mm	
Waveband	7.5 - 13.5 μm	
Start-up Time	< 5 seconds	
Focus	Fixed	
Image Processing	FLIR Proprietary Digital Detail Enhancement	
User Interface		
Power Button	On/Off	
Picture Button	N/A	N/A
Zoom Button	Freeze Frame	2x E-Zoom
Polarity	Toggles White Hot, Black Hot, Marine Red Display	
Brightness	Adjusts Display Brightness	
Image Presentation		
Built-In Display	Color LCD Display	
Video Output	N/A	N/A
Video Refresh Rate	<9 Hz	
Image Polarity	White Hot; Black Hot; Marine Red	
Other		
SD Card	N/A	N/A
Upgradeability	N/A	N/A
Power		
Battery Type	Internal Camera Battery / Li-Ion	
Battery Life (Operating)	5 Hours + (typical)	
Battery Life (Stand-By)	N/A	
Environmental		
Rating	IP-67	
Operating Temp.	-4°F to 122°F (-20°C to 50°C)	
Physical		
Weight (incl. lens)	12 oz (340 g)	
Size (L x W x H)	6.70" x 2.31" x 2.44" (172 x 58.7 x 62 mm)	
Packages Include	First Mate MS Handheld Maritime Thermal Night Vision Camera, Wrist Strap, USB Cable, Product CD; Charging Cradle (optional), Soft Carrying Pouch (optional)	
Warranty		
2 Year		
Range Performance¹		
Detect Man (1.8 m x 0.5 m)	~1,050 ft (320 m)	~1,500 ft (450 m)
Detect Small Vessel (4.0 m x 1.5 m)	~2,940 ft (895 m)	~4,200 ft (1.3 km)



First Mate



Thermal Imaging Specifications	HM-224 Pro	HM-324 XP	HM-324 XP+	HM-307 XP	HM-307 XP+
Detector Type	240 x 180 VOx Microbolometer	320 x 240 VOx Microbolometer		320 x 240 VOx Microbolometer	
FOV	24° x 18° NTSC		7° x 5° NTSC		
Focal Length	19 mm		65 mm		
Waveband	7.5 - 13.5 μm				
Start-up Time (From Stand-By)	< 5 seconds				
Focus	Fixed				
Image Processing	FLIR Proprietary Digital Detail Enhancement				
User Interface					
Power Button	On/Off/Stand-By				
Picture Button	Still image capture to SD card	Freeze Frame	Still image capture and video capture to SD card	Freeze Frame	Still image capture and video capture to SD card
Zoom Button	2x E-Zoom				
Polarity	Toggles White Hot, Black Hot, Marine Red Display				
Brightness	Adjusts Display Brightness				
Image Presentation					
Built-In Display	Color LCD Display				
Video Output	NTSC or PAL composite video; RCA jack				
Video Refresh Rate	<9 Hz (NTSC and PAL)				
Image Polarity	White Hot; Black Hot; Marine Red				
Other					
SD Card	Stores still images	—	Stores still images and video	—	Stores still images and video
Upgradeability	N/A	Upgrade to HM-324 XP+ via software update through SD card slot	N/A	Upgrade to HM-307 XP+ via software update through SD card slot	N/A
Power					
Battery Type	4 AA Batteries; NiMH, Li-Ion, or Alkaline				
Battery Life (Operating)	>5 Hours On NiMH batteries				
Battery Life (Stand-By)	120 Hours on NiMH batteries				
Environmental					
Rating	IP-67				
Operating Temp.	32°F to 122°F (0°C to 50°C)	-4°F to 140°F (-20°C to 60°C)			
Physical					
Weight (incl. lens)	1.45 lb (653 g) with batteries		2.2 lb (984 g) with batteries		
Size (L x W x H)	9.36" x 3.3" x 2.6" (10.5" x 3.3" x 2.6" w/ Extender)		11" x 3.33" x 2.62" (279.4 x 84.5 x 66.5 mm)		
Packages Include	HM-Series Handheld Thermal Camera, Hot Shoe Charging & Video Output Accessory, 4 Rechargeable AA Batteries, AC Power Adapter/Charger, Neck Lanyard, Operator's Manual, USB Cable, Video Output Cable.				
	Same as HM-224 Plus, plus SD card				
Warranty					
2 Year					
Range Performance¹					
Detect Man (1.8 m x 0.5 m)	24° Lens /12° Lens (2x Extender)	24° Lens /12° Lens (2x Extender)		7° Lens	
Detect Man (1.8 m x 0.5 m)	~1,050 ft (320 m)/~1,800 ft (550 m)	~1,500 ft (450 m)/~2,600 ft (790 m)		~4,800 ft (1.5 km)	
Detect Small Vessel (4.0 m x 1.5 m)	~2,940 ft (895 m)/~4,940 ft (1.5 km)	~4,200 ft (1.3 km)/~1.3 mi (2.2 km)		~2.4 mi (3.9 km)	



¹ = Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display used. Models meet or exceed these specifications. All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.

Specs

M-Series®



Thermal Imaging Specificatio	M-324XP	M-625XP	M-324L	M-625L	M-612L
Sensor Type	320 x 240 VOx Microbolometer	640 x 480 VOx Microbolometer	320 x 240 VOx Microbolometer	640 x 480 VOx Microbolometer	640 x 480 VOx Microbolometer
FOV	24° x 18° (NTSC)	25° x 20° (NTSC)	24° x 18° (NTSC)	25° x 20° (NTSC)	12° x 10° (NTSC)
Focal Length	19 mm	25 mm	19 mm	25 mm	50 mm
E-zoom	2x	2x & 4x	2x	2x & 4x	2x & 4x
Image Processing	FLIR DDE				

Daylight Imaging Specifications		
Detector Type	N/A	1/2" Interline Transfer Lowlight CCD
Lines of Resolution		768 (H) x 494 (V)
Minimum Illumination		100 µlx (@ f/1.4)
FOV		Matched to IR

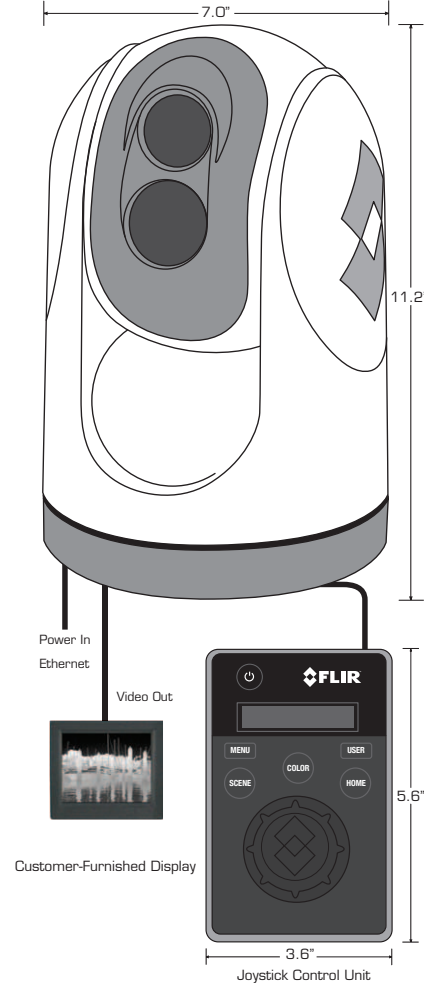
System Specifications	
Size	7" dia. x 11.2" ht.
Weight	~ 9 lb
Pan/Tilt Coverage	360° Continuous Pan, +/-90° Tilt
Video Output	NTSC or PAL
Connector Types	BNC with BNC-to-RCA adapter included for video out
Power Requirements	12 VDC to 24 VDC (-10%/+30%)
Power Consumption	25 W nominal; 50 W max

Environmental	
Operating Temperature Range	-25°C to +55°C
Storage Temperature Range	-40°C to +85°C
Automatic Window Defrost	Standard
Sand/Dust	Mil-Std-810E
Water Ingress	IPx6
Shock	15 g vertical, 9 g horizontal
Vibration	IEC 60945; MIL-STD-810E
Lightening Protection	Standard
Salt Mist	IEC60945
Wind	100 knot (115.2 mph)
EMI	IEC 60945

Standard Package	Camera Head with 18-inch Pigtails for Power, Analog Video, and Ethernet; Joystick Control Unit; Operator Manual				
Warranty	3 Year (With product registration)				
Optional Accessories	Dual Station JCU; Low Smoke, Zero Halogen Ethernet Cables; Standard Cat 5e Ethernet Cables; Top-Down Mounting Riser				

Range Performance†					
Detect Man (1.8 m x 0.5 m)	~1,500 ft (450 m)	~2,700 ft (820 m)	~1,500 ft (450 m)	~2,700 ft (820 m)	~4,000 ft (1.2 km)
Detect Small Vessel (4.0 m x 1.5 m)	~4,200 ft (1.3 km)	~1.4 mi (2.25 km)	~4,200 ft (1.3 km)	~1.4 mi (2.25 km)	~2.0 mi (3.2 km)

† = Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display used. All specifications are subject to change without notice. Visit www.flir.com/maritime for the most up-to-date specifications.



Voyager™



Thermal Imaging Specifications	
Sensor Type	Two 320 x 240 VOx Microbolometers
FOV	20° x 15° (Wide FOV); 5° x 3.75° (Narrow FOV)
Focal Length	35 mm (Wide FOV); 140 mm (Narrow FOV)
E-zoom	4x (15x Total Magnification)
Image Processing	FLIR DDE

Daylight Imaging Specifications	
Detector Type	1/4" Super HAD Daylight/Lowlight Color CCD
Lines of Resolution	768 (H) x 494 (V)
Minimum Illumination	2 lux (@ f/1.6)
FOV	42° (h) to 1.7° (h) plus 12x E-zoom for 312x Total Magnification

System Specifications	
Camera Head Size	15.18" x 18.68"; 15.5" x 22" Swept Volume Cylinder
Bulkhead Box	10.42"(w) x 14.25"(l) x 6.26"(d)
Weight	45 lb
Pan/Tilt Coverage	360° Continuous Pan, +/-90° Tilt
Video Output	NTSC or PAL
Connector Types	BNC
Power Requirements	24 VDC
Power Consumption	<50 W nominal; 130 W peak, 270 W w/heaters

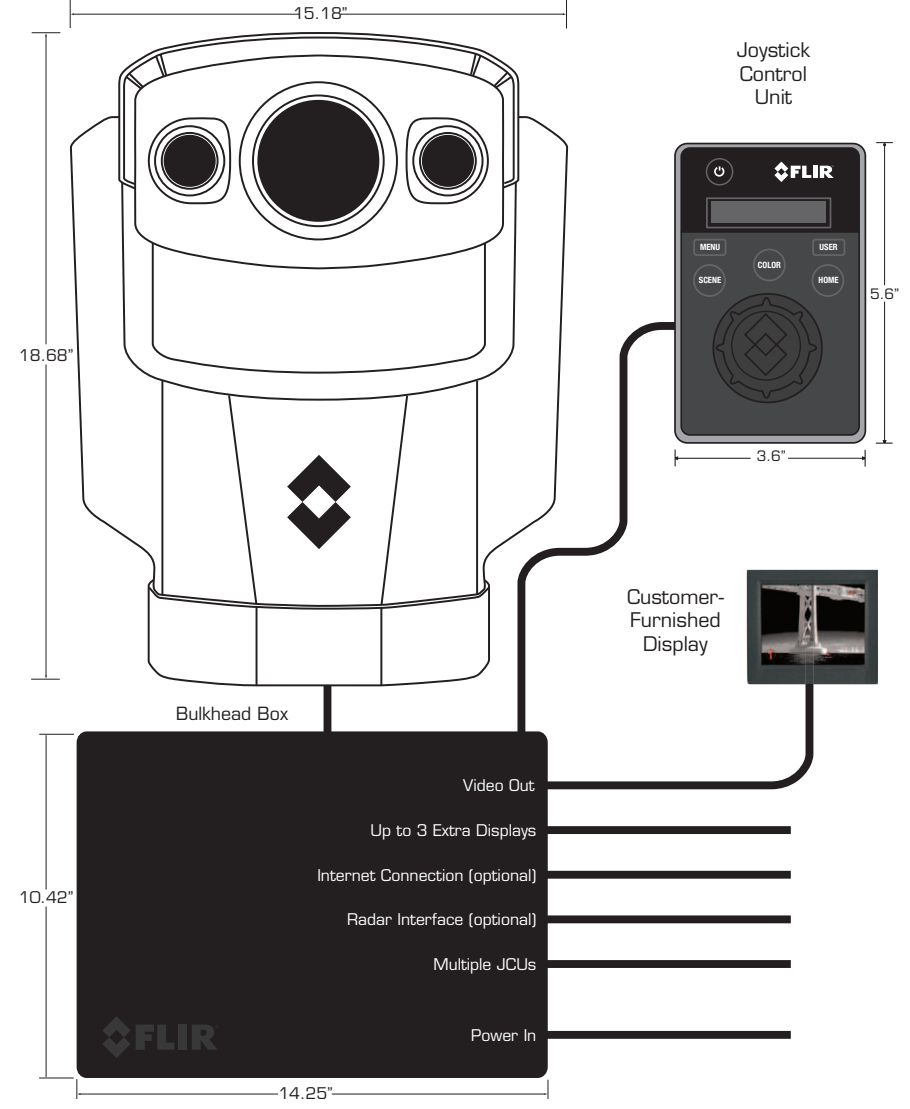
Environmental	
Operating Temperature Range	-20°C to 55°C
Storage Temperature Range	-50°C to 80°C
Automatic Window Defrost	Standard

Typical Configuration	Camera Head; Breakout Box; Joystick Control Unit; Cables; Operator Manual	
Warranty	2 Year	

Range Performance†		
Detect Man (1.8 m x 0.5 m)		~ 1.4 mi (2.25 km)
Detect Small Vessel (4.0 m x 1.5 m)		~ 4 mi (6.4 km)

New Features	Voyager II	Voyager III
EtherNet	N/A	•
Video Tracking	N/A	•
Temperature Indication††	N/A	•
Picture-in-Picture	N/A	•
Surveillance Mode	N/A	•

† = Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display used. †† = Temperature accuracy dependent upon object size, environmental conditions, and other factors. All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.



About FLIR

As the world's largest commercial infrared company, FLIR Systems has fielded more high quality maritime thermal night vision systems than anyone in the world. Our rugged, stabilized imagers are on thousands of civil and maritime platforms in the US and around the world. That's more than every other manufacturer combined.



FLIR's powerful, rugged, all-weather thermal imagers allow you to navigate safely and confidently – seeing obstructions, buoys, and other vessels in total darkness. From the low-cost Navigator II to the revolutionary M-Series; from the long-range Voyager to the hand-held First Mate, FLIR's family of maritime thermal imagers will help you see at night and keep you and your loved ones safe.

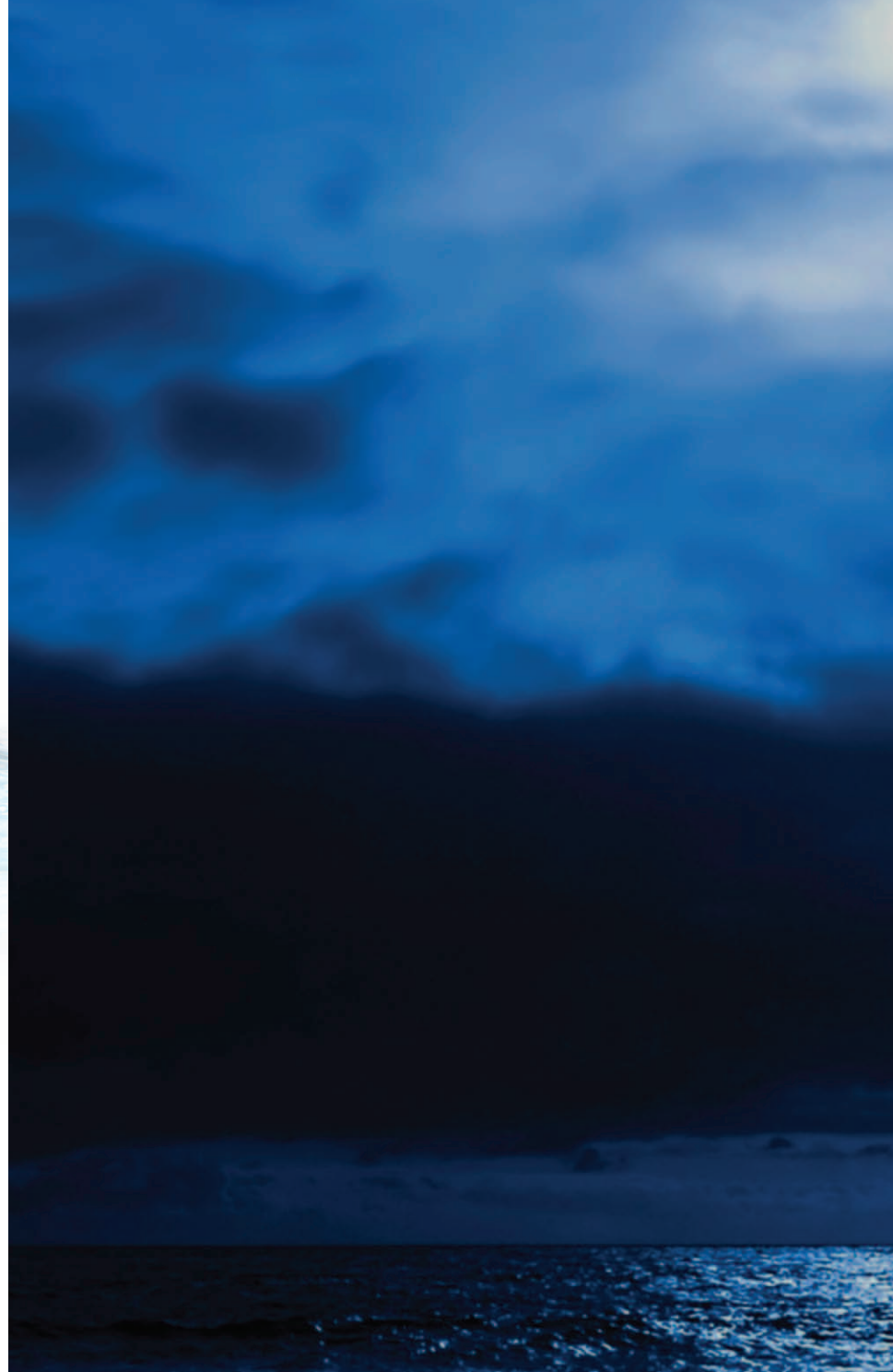
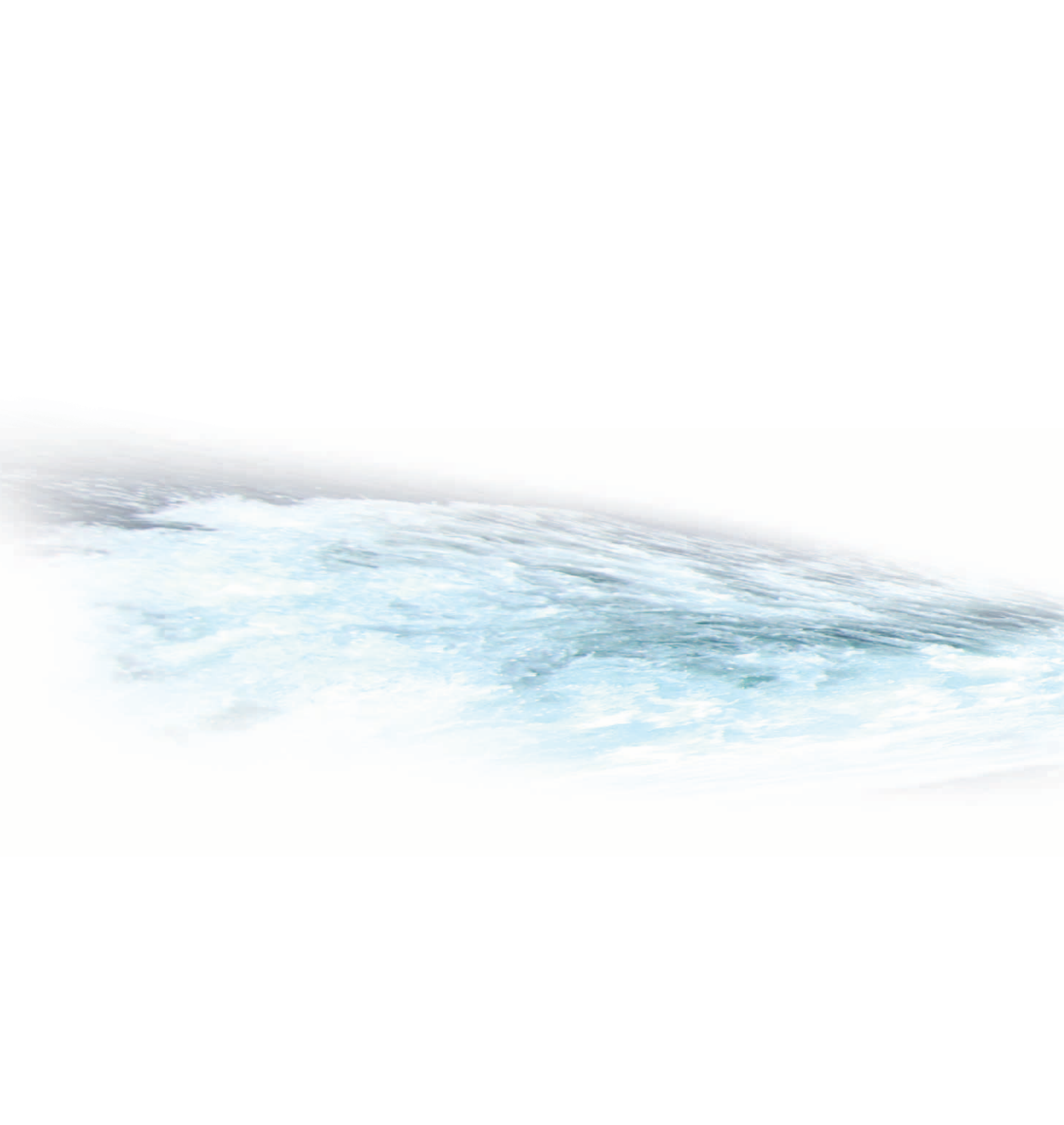
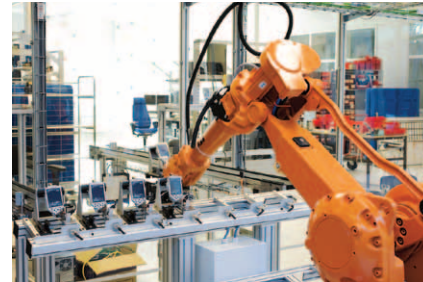
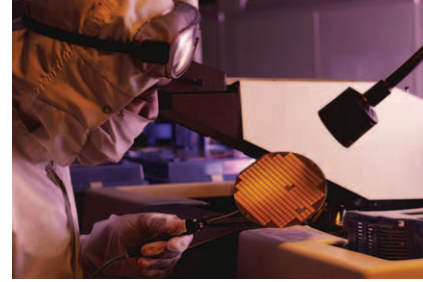


Whether you're heading out early, coming home late, or cruising around the clock, FLIR has a thermal night vision system to meet your needs.

With thousands of our thermal cameras on the job in military, scientific, law enforcement, and security applications, FLIR brings an unmatched level of experience and dedication to the creation of cutting edge thermal night vision systems.

We design and manufacture all of the critical technologies inside our products, including detectors, electronics, and special lenses, and we assemble it all right here in the US.

For additional technical information, or to see a demonstration of these revolutionary thermal night vision systems, contact a FLIR representative today. You can also visit www.FLIR.com to watch product videos and see how thermal imaging can keep you safe on the water, night and day.





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