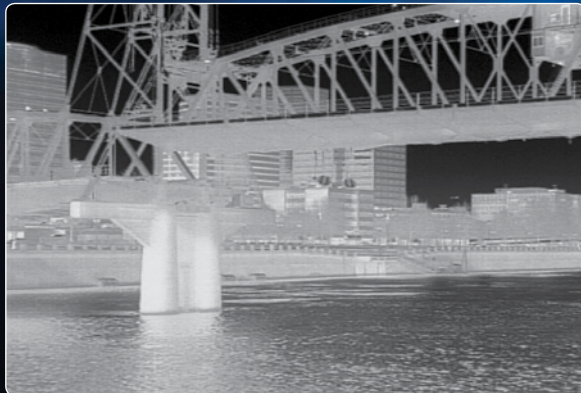


Maritime Fixed Mounted Night Vision Systems





Your Vision: Video camera frame-grab



FLIR Vision: White Hot thermal image

Nighttime On The Water Is Safer With FLIR

Boating imparts 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 freedom, 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:

- Navigator II** - Rugged, flexible, and economical, Navigator II is the world's most popular maritime thermal imager.
- M-Series** - FLIR's family of premium single and multi-sensor maritime thermal imaging systems.
- Voyager II** - Quad-sensor performance and full gyro-stabilization.
- Voyager III** - Quad sensor performance and full gyro stabilization with video tracking and temperature indication make Voyager III the best camera system available.

Regardless of whether you enjoy fishing, cruising, sailing, or 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 and come home safe with FLIR.

How Maritime Thermal Night Vision Cameras Keep You Safe

Navigation & Collision Avoidance – Thermal night vision cameras 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 all other brands combined.

Easy To Use – Thermal night vision systems from FLIR are easy to use, and require no training. Unlike radars, GPS systems, and digital chart plotters – which require training, practice, and skill to master – the images thermal cameras produce are intuitive and instantly 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 see what's out there like a FLIR thermal night vision camera. Once you pilot a boat with a FLIR installed, you'll never want to be without one again.



Thermal imaging cameras are an asset on board of every yacht and commercial vessel.

Any Camera For Any Vessel

You can do lots of different things with FLIR's line of maritime 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 a matter of 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?

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



Navigator II

- Short range
- Easy to install and use
- Fixed viewing angle





M-Series

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



Voyager II / Voyager III

- Long range
- Gyro-stabilized Pan/Tilt platform
- Two thermal cameras
- Daylight/lowlight color camera
- Network ready
- NMEA interfaces
- Radar slew-to-cue
- Automatic tracking system (Voyager III only)
- Temperature indication* (Voyager III only)

FLIR's maritime thermal night vision cameras come with these standard features:

- Rugged, fully maritized 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 Accu-Point on-screen symbology so you can instantly tell what's going on with the camera and where it's pointing

* Important: A number of factors can affect the accuracy of the Voyager's temperature reading such as the distance to the target, humidity, and other atmospheric conditions. While the Firefighter Mode features of your Voyager III system provide an important reference point in understanding temperatures in a target environment, you should never rely on camera data as your primary source of information. The Voyager system should always be used in conjunction with other appropriate tools.

Navigator II

Affordable 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.

The Navigator II is a fixed-forward looking thermal imaging camera. It is easy to use – if you can watch TV, you can use the Navigator II.

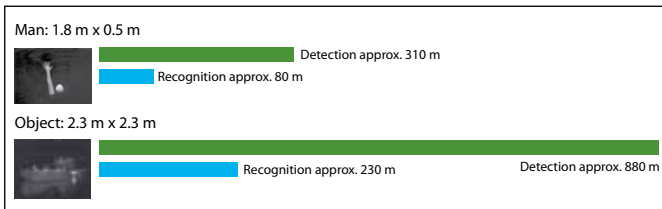
Don't let darkness and poor visibility keep you from enjoying your time on the water. Bring everyone home safe and sound with Navigator II.



36° Field of View for excellent situational awareness

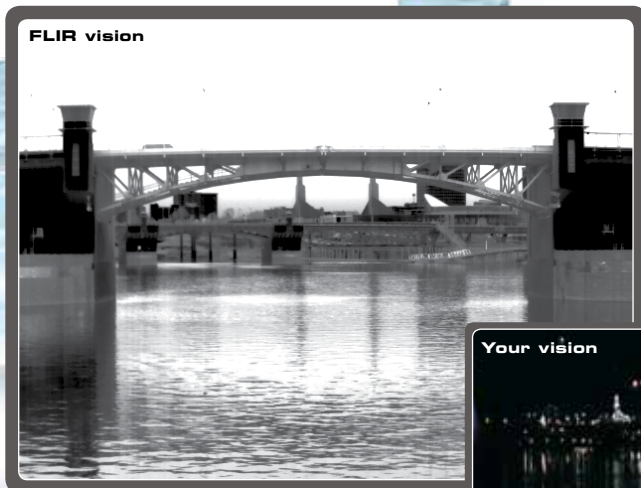


Navigator II: range performance 19 mm lens



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





Just like all FLIR Systems thermal imaging cameras like the Navigator II can be used for a wide variety of applications:

- Night time navigation - See in total darkness
- Increase safety and security on board
- Short range threat detection
- Man overboard searches
- Day time navigation

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 cutting-edge 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.

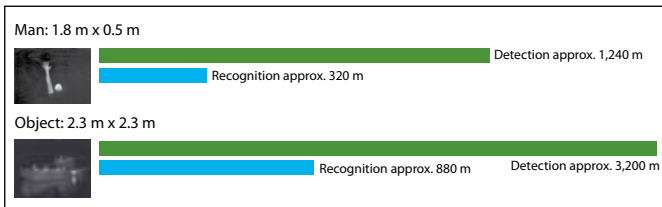


Dual payload M-Series with thermal and low-light cameras

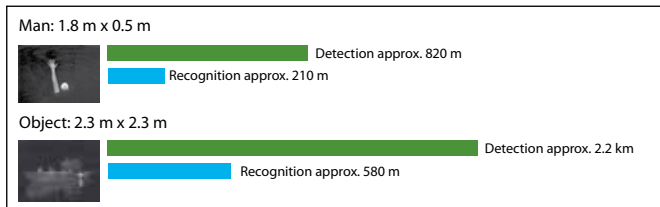
M-Series thermal night vision systems are available with a variety of resolution and performance options:

- 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 incorporates an **extreme lowlight micro-lux TV camera** for improved visibility during twilight hours, and when operating in areas with some ambient light like intracoastal waterways and harbor entrances.

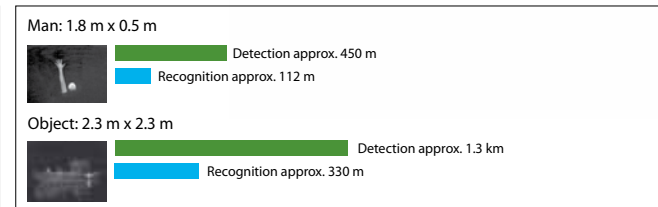
M-612L: range performance



M-625L/M-625XP: range performance



M-324L/M-324XP: range performance



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



Black hot



Red hot

Fusion

Rainbow



Low-light Video

Joystick Control Unit

The ergonomic M-Series 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” – Lets operators have instant access to commonly-used functions.

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

Color – Different display settings let the operator 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 that operators can get the best image quality possible throughout a wide range of conditions.

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

Ethernet connectivity – Lets you install multiple control stations around your vessel so you can control M-Series from anywhere you want 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.

Voyager II / Voyager III

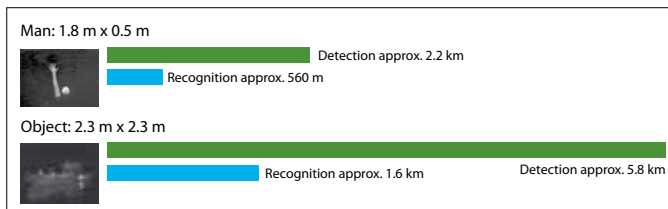
Long-range multi-sensor thermal night vision system

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 II / Voyager III provides 24-hour imaging capability that lets you see to the horizon.

Voyager II / Voyager III's wide-angle thermal camera lets you detect other boats or hazards 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 II / Voyager III is the proven anti-piracy system of choice for yachts, police boats, and cargo vessels around the world.

Voyager II / Voyager III: range performance 140 mm lens



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



Voyager II / Voyager III

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 II / Voyager III lets you see even farther at night.
- **Powerful, long-range daylight/lowlight color TV camera** with 26x optical zoom, and 312x total 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 II / Voyager III's long-range imaging capability.
- **Radar Tracking** feature allows operators to use the Voyager II / Voyager III to identify and track specified radar returns, enhancing vessel safety in low visibility conditions.
- **Internet remote control** feature lets you operate your Voyager II / Voyager III 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 II / Voyager III work hand-in-hand with your other marine electronics.

Voyager III only

Automatic video tracking system

The Voyager III comes with a FLIR developed video tracking system. The user can select a given target. Selecting and engaging in tracking mode is easily done by the touch of a button. Once the tracker is engaged, the Voyager III will follow the object as long as it can be seen. The tracking systems works with both the thermal and visual camera.

Temperature indication

The Voyager III provides information on hot areas in the thermal images. Pixels that exceed the user programmed threshold will appear colored on the screen. A user can for example decide to have all parts of the image that are above 100 °C appear in a different color. When the thermal camera is completely zoomed out, when it is in the wide field of view, it will display the temperature of the center of the image on the left of the thermal image.





Voyager II: Joystick Control Unit

The ergonomic Voyager II joystick control unit provides push-button access to all critical system functions, an on-screen menus system for camera configuration, and smooth, effortless control, even in rough seas.

Joystick – Provides smooth, ergonomic control of where the Voyager II is looking, even in rough seas.

Night – Switches the Voyager II's thermal imagery between black-and-white display, and black-and-red display setting which is not as bright, making it easier to watch at night and safeguarding your night vision.

Scene – Provides a variety of pre-set gain and level adjustments (Night Running, Day Running, Man Overboard, or Night Docking) so that operators can get the best image quality possible throughout a wide range of conditions.

AF – Automatically focuses the long-range thermal imager's telephoto lens on your area of interest, making it easier to hold Voyager II on distant objects.

Zoom – Activates the continuous zoom function on thermal and daylight/lowlight imagers so that you can easily shift from wide angle to telephoto view.

Home – Automatically returns the camera to the user programmed position, making it easier to navigate safely in total darkness.

Stab – Turns the internal gyro-stabilization on and off.



On-Screen Icons

Voyager II 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.

Voyager III: Joystick Control Unit

The Voyager III uses the same joystick control unit as the M-Series. For more details see page 9

FLIR Infrared Training Center (ITC)

The Infrared Training Center (ITC) offers the world's leading infrared training and thermographer certification programs.

Although all our cameras are designed for easy installation and operation, there is a lot more to thermal imaging than just knowing how to handle the camera. As the leading company for thermal imaging technology, we like to share our knowledge with our customers and other interested parties.

We therefore organize regular courses and seminars for both maritime professionals.

The mission of the ITC is to make our customers and partners successful by enhancing their knowledge of IR technology, thermal imaging products, and relevant maritime applications. The ITC offers a portfolio of courses that presents the right mix of theoretical and practical content to help professionals quickly apply infrared technology to real life security applications

All our instructors are experienced thermal imaging specialists. Not only do they have a profound theoretical knowledge but they also have practical experience with numerous maritime projects. For our customers, this means that attending one of the ITC's courses will give them a real hands-on learning experience.



Follow one of our courses and become a thermal imaging expert



After sales

At FLIR Systems, building a relationship with a customer takes more than just selling a thermal imaging camera. After the camera has been delivered, FLIR Systems is there to help meet your needs.

Once purchased, thermal imaging camera are vital pieces of equipment. The safety and security of assets and people depends on it. To keep them running at all times, we operate a worldwide service network with subsidiaries in Belgium, China, France, Germany, Hong Kong, Italy, the Netherlands, Sweden, United Arab Emirates, the United Kingdom and the USA.

If there should be a problem with one of our camera systems, these local service centers have all the know-how and equipment to solve it within the shortest possible time. Local camera service gives you the assurance that your system will be ready for use again within an extremely short timeframe.

Buying a thermal imaging camera is a long-term investment. You need a reliable supplier who can provide you with support over a long period of time. Even if things change rapidly in the world of thermal imaging, we guarantee to support each camera with service and spare parts for a minimum of five years after final sale.

Our service personnel regularly follow training programs at our production facilities in Sweden or the USA. Not only to learn about the technical aspects of the products, but also to familiarize themselves with your individual customer requirements and the latest applications.

Different types of maintenance contracts can be offered to make sure that, whatever happens, your IR camera is always available for use.

CUSTOMER CARE is not just a slogan. We write it in capital letters at FLIR Systems.



FLIR Application examples

FLIR Systems thermal imaging cameras find their way to Sunseeker yachts



The Sunseeker yard in Poole, UK

Ferretti install thermal imaging cameras on board of its yachts



Ferretti is one of the leading yacht builders in the world.

Avoiding collisions in port and open water – Cement ship New Zealand



The FLIR Systems Navigator was installed just above the bridge of the M.V. Golden Bay. It helps the crew to avoid deadly accidents.



A FLIR Voyager installed on a 34 Metre Yacht



The LCD is aesthetically integrated in the bridge. It shows clear thermal images. Day and night.

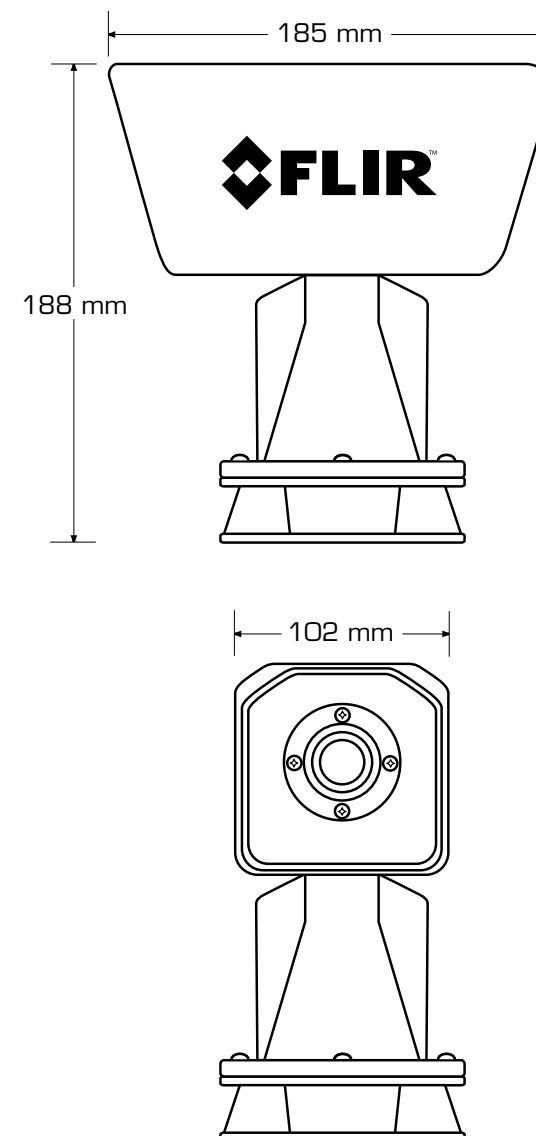


The FLIR Systems Navigator produces a crisp image which is projected on a 20" LCD screen installed on the bridge

Navigator II®



Thermal Imaging Specifications	
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	185 mm x 102 mm x 188 mm
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	-25°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
Accessories	Mounting Accessories
Range Performance†	
Detect Man (1.8 m x 0.5 m)	310 m
Detect Small Vessel (2.3 m x 2.3 m)	880 m



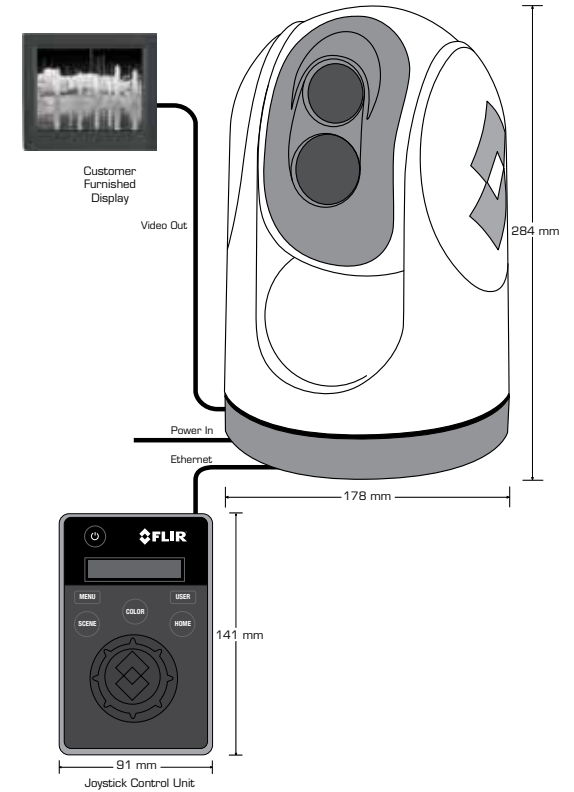
† = Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display use. All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.

Specifications

M-Series



Thermal Imaging Specifications	M-612L	M-625L	M-625XP	M-324L	M-324XP
Sensor Type	640 x 480 VOx Microbolometer	640 x 480 VOx Microbolometer	640 x 480 VOx Microbolometer	320 x 240 VOx Microbolometer	320 x 240 VOx Microbolometer
FOV	12° x 10°	25° x 20°	25° x 20°	24° x 19°	24° x 19°
Focal Length	50 mm	25 mm	25 mm	19 mm	19 mm
E-Zoom	2x & 4x	2x & 4x	2x & 4x	2x	2x
Image Processing	FLIR DDE	FLIR DDE	FLIR DDE	FLIR DDE	FLIR DDE
Daylight Imaging Specifications					
Detector Type	1/2" Interline Transfer Lowlight CCD	1/2" Interline Transfer Lowlight CCD	N/A	1/2" Interline Transfer Lowlight CCD	N/A
Lines of Resolution	768 (H) x 494 (V)	768 (H) x 494 (V)	N/A	768 (H) x 494 (V)	N/A
Minimum Illumination	100 µlx (@ f/1.4)	100 µlx (@ f/1.4)	N/A	100 µlx (@ f/1.4)	N/A
FOV	Matched to IR	Matched to IR	N/A	Matched to IR	N/A
System Specifications					
Size	178 mm dia. x 284 mm ht.				
Weight	4 kg				
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 50 cm pigtailed for power, analog video, and Ethernet; Joystick Control Unit; Operator Manual				
Warranty	2 Year				
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)	1,240 m	820 m	820 m	450 m	450 m
Detect Small Vessel (2.3 m x 2.3 m)	3,200 m	2,200 m	2,200 m	1,300 m	1,300 m



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

Voyager II™ / Voyager III™



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	386 mm x 474 mm; 394 mm x 559 mm Swept Volume Cylinder
Bulkhead Box	265 mm(w) x 362 mm(l) x 159(d)
Joystick Control Unit	156 mm(w) x 222 mm(l) x 68 mm(d)
Weight	45 lb
Pan/Tilt Coverage	360° Continuous Pan, +/-90° Tilt
Automatic Video Tracker including e-stab	Yes - Voyager III only
Temperature indication*	Yes - Voyager III only
Video Output	NTSC or PAL
Stabilization	2-Axis, gyro-stabilized
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

Standard Package	Camera Head; Breakout Box; Joystick Control Unit; Cables; Operator Manual
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Warranty	2 Year
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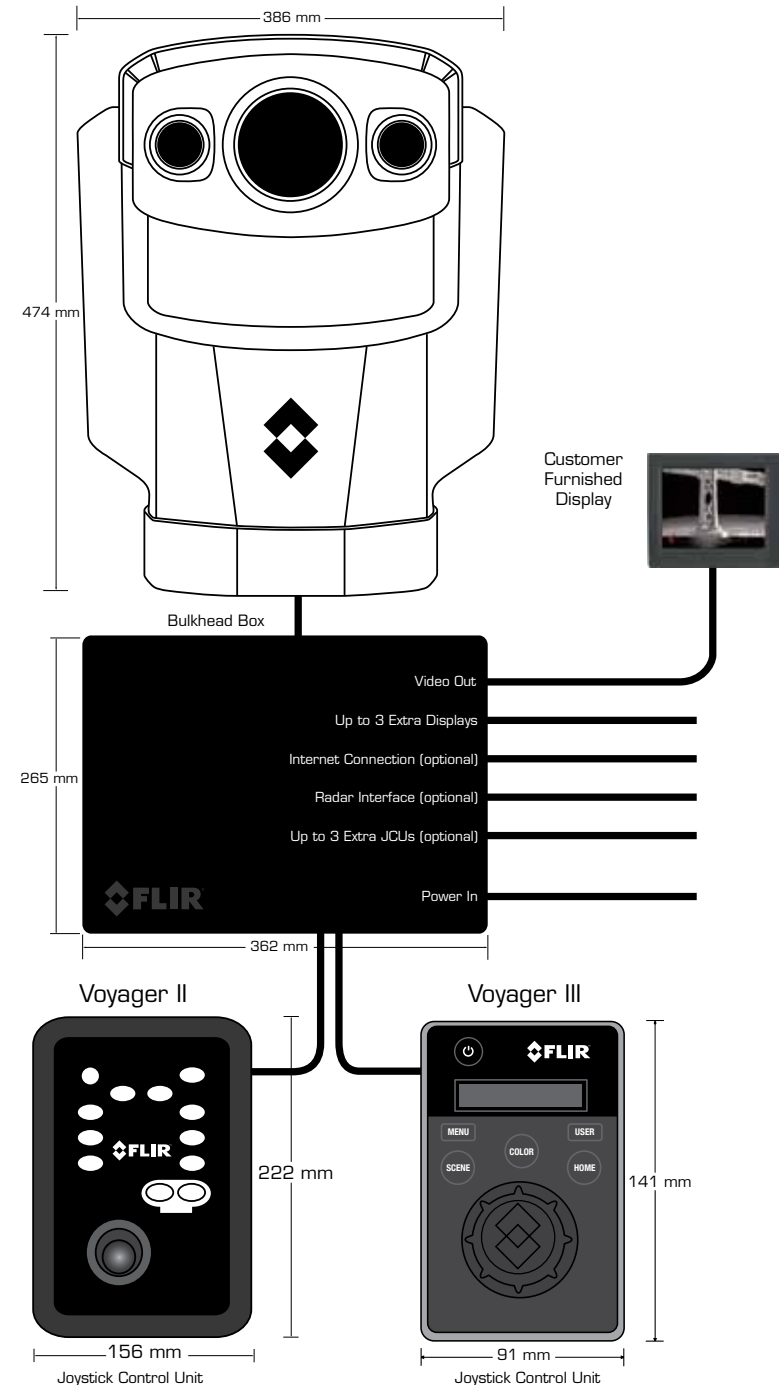
Accessories	Voyager II: 3 additional JCU's, up to 4 total Voyager III: unlimited number of JCU's can be connected
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Range Performance†

Detect Man (1.8 m x 0.5 m)	2250 m
Detect Small Vessel (2.3 m x 2.3 m)	5800 m

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

* Important: A number of factors can affect the accuracy of the Voyager's temperature reading such as the distance to the target, humidity, and other atmospheric conditions. While the Firefighter Mode features of your Voyager III system provide an important reference point in understanding temperatures in a target environment, you should never rely on camera data as your primary source of information. The Voyager system should always be used in conjunction with other appropriate tools.



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.



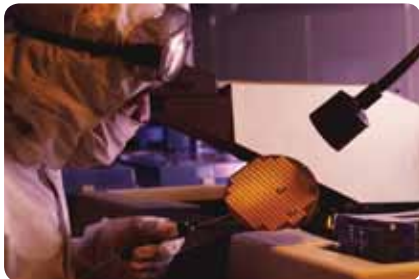
FLIR's powerful, rugged, all-weather thermal imagers allow you to navigate safely and confidently – seeing obstructions, buoys, and other vessels in total darkness. From the low-cost Navigator II over the revolutionary M-Series to the long-range Voyager II, FLIR's family of maritime thermal imagers will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

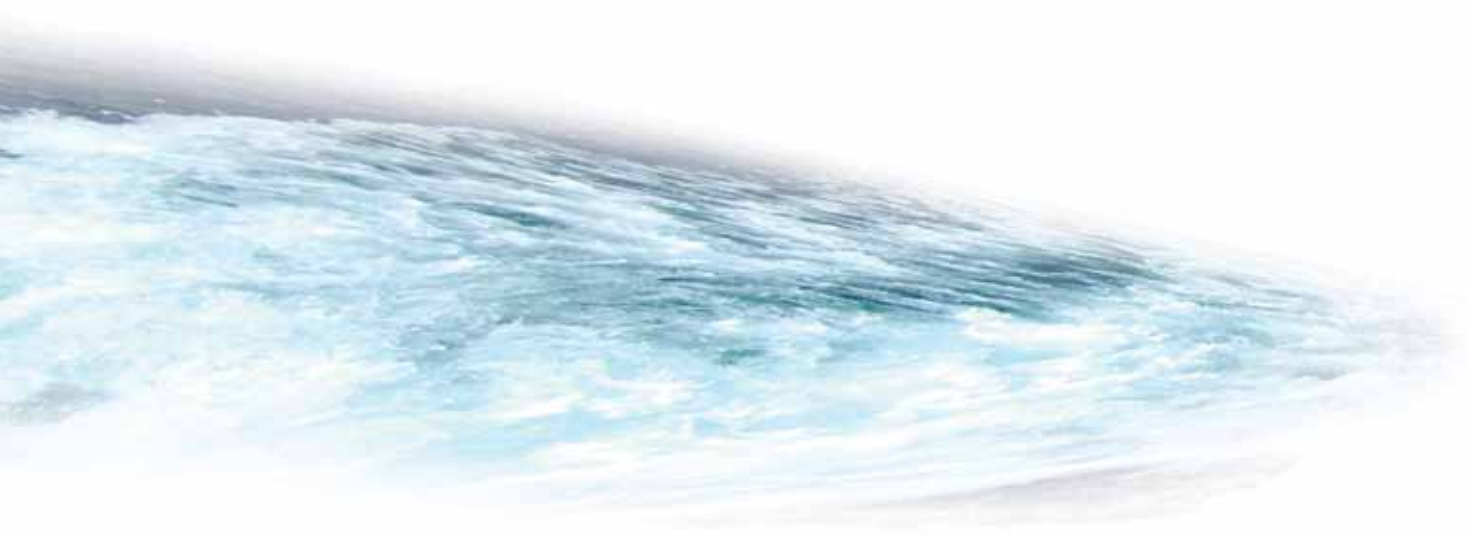
Whether you're heading out early, coming home late, or cruising around the clock, FLIR has a thermal night vision system to meet your needs.

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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NASDAQ: FLIR

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