

*THERMAL VISION
FOR FIRST RESPONDERS &
COMMERCIAL VESSELS*



The World's Sixth Sense[®]

THE POWER OF THERMAL IMAGING

FLIR Maritime thermal imaging systems give you the power to see clearly in total darkness, and through light fog and smoke. FLIR's thermal technology is used by thousands of military, first responder, and commercial professionals every day for navigation, collision avoidance, threat detection, surveillance, and search and rescue missions.

Thermal cameras sense heat, not light. All objects in our world emit thermal radiation at wavelengths beyond our visible limitations. Even ice cubes emit energy. Thermal cameras reveal subtle temperature differences in a video display that anyone can understand, with no training required.



Our eyes rely on light and color contrast to see and resolve objects. Other vessels and obstructions are hard to see in the dark.



Vessels, human activity, and stationary objects show up clearly in the dark, and through smoke and light fog in thermal.

CONTENTS

- 4 Navigation: Obstacle Avoidance
- 5 Surveillance and Search & Rescue
- 6 Security: Short and Long-Range
- 9 Thermal vs. Low-Cost Night Vision
- 10 Daylight and Low Light Visible Cameras for Surveillance and Threat Detection Applications
- 26 M132/M232 Low Cost Pan/Tilt Thermal for Close-Range Applications
- 27 MD324/MD325 Stationary Thermal for Navigation and Onboard Surveillance
- 28 M324 & M625 Close- and Medium-Range Stabilized Thermal
- 30 M400/M400XR Long-Range High-Performance Multi-Sensor System
- 32 M500 Maximum-Performance Multi-Sensor System
- 34 FLIR Handheld Thermal Scopes



From the smallest patrol boats to the largest ocean-going vessels, FLIR offers maritime camera solutions that are rugged, reliable, and simple to use.

NAVIGATION: OBSTACLE AVOIDANCE

Every object in the world emits or reflects thermal radiation (heat) at wavelengths the human eye can't perceive. It's this thermal radiation—rather than visible light—that FLIR cameras detect and display on screen. Different temperatures appear as contrasting shades, often displaying white as warm and black as cool. As a result, vessels, buoys, floating debris—even icebergs—become clearly identifiable against cooler surroundings.



TRAFFIC

FLIR cameras allow you to see traffic in total darkness even if they are running without lights. This helps you to avoid collisions, identify suspect vessels, and see onboard activity.



MARKERS

Thermal imaging helps you to see navigation markers, fishing buoys, logs, and other floating objects.



STRUCTURES

Poorly lit structures and outcroppings of land show up clearly in thermal imaging, regardless of temperature.

SURVEILLANCE SEARCH & RESCUE

Decision-making at night is a challenge for all first responders. A long-range, stabilized FLIR thermal camera system can help you observe suspicious activity or react quickly to emergency situations.



COVERT SURVEILLANCE

Airborne and land-based law enforcement agencies use thermal cameras as force multipliers. FLIR maritime thermal cameras offer the same covert advantage on the water.



ENFORCEMENT OPERATIONS

FLIR cameras give you situational information that can't be captured with other low light technologies. Activity can be recorded onboard for evidentiary reasons, and agencies can leverage command centers with networked systems.

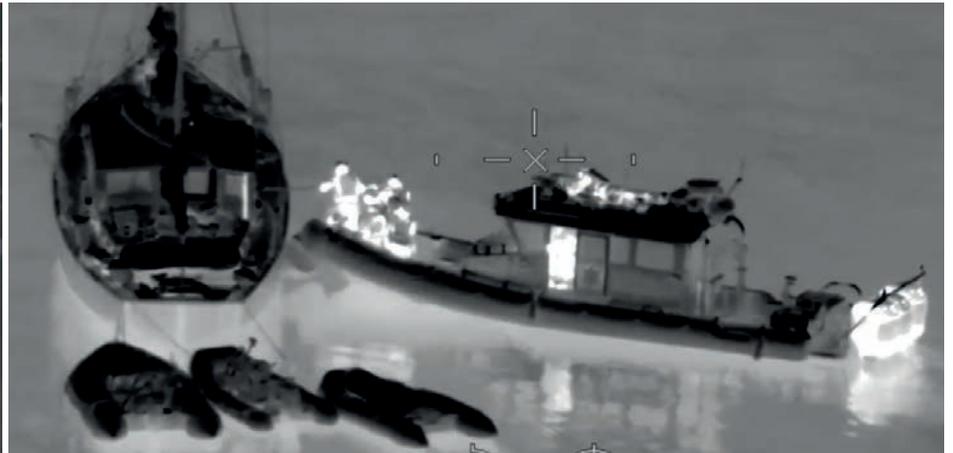


SEARCH & RESCUE, MAN OVERBOARD

FLIR thermal cameras are powerful tools for SAR and excel in the maritime environment. Cool, uniform scene dynamics make warm objects—like a person—stand out in the scene.

SECURITY: SHORT AND LONG-RANGE

Thermal cameras allow professional mariners and first responders to monitor the safety of their crews in total darkness, as well as evaluate security threats around them. It's virtually impossible to hide from a thermal imager.



THREAT DETECTION

Long-range thermal cameras can give you more time to react by helping identify suspicious or threatening behavior. Conduct surveillance from a safe standoff distance, then move in when the time is right.

OPERATIONS & ONBOARD SECURITY

FLIR cameras allow you to observe activity on deck, regardless of lighting conditions.

PATROL AND PORT SECURITY

Thermal cameras allow you to covertly observe activity at long ranges. This is extremely useful for law enforcement and security applications. Network-enabled systems can also be managed remotely, allowing you to view activity from a remote monitoring station.

SPECIAL THERMAL IMAGING APPLICATIONS

Because thermal imaging cameras display differences in temperature within a scene, they are powerful tools for evaluating environmental conditions, seeing through smoke, and even detecting icebergs.



OIL SPILL MANAGEMENT

Thermal cameras can reveal oil slicks on water. Water reflects more thermal energy than oil, so the cold night sky reflects off the water while oil reflects less and appears warmer.

FIREFIGHTING

Smoke blocks visible light, but thermal energy passes through. Thermal imaging allows you to see the location of a fire and any onboard activity in low-visibility smoke conditions.

ICEBERG AVOIDANCE

All objects give off varying amounts of thermal energy, even ice. By assigning color to objects below a specified temperature, FLIR cameras can help reveal icebergs.

ENHANCED VISIBILITY IN CHALLENGING ENVIRONMENTS

SUN GLARE

Sun glare can pose many challenges for pilots, especially when responding to busy areas at high speeds. Thermal cameras are not affected by light, so the image from a thermal imager will be consistent regardless of glare conditions



FOG

Thermal cameras will offer some level of improved visibility through fog. While environmental conditions will affect the visible distance and thermal image quality, cooled mid-wave thermal cameras deliver improved performance for imaging through fog.



VISIBLE THROUGH FOG



LONG-WAVE



MID-WAVE

THERMAL VS. LOW-COST NIGHT VISION

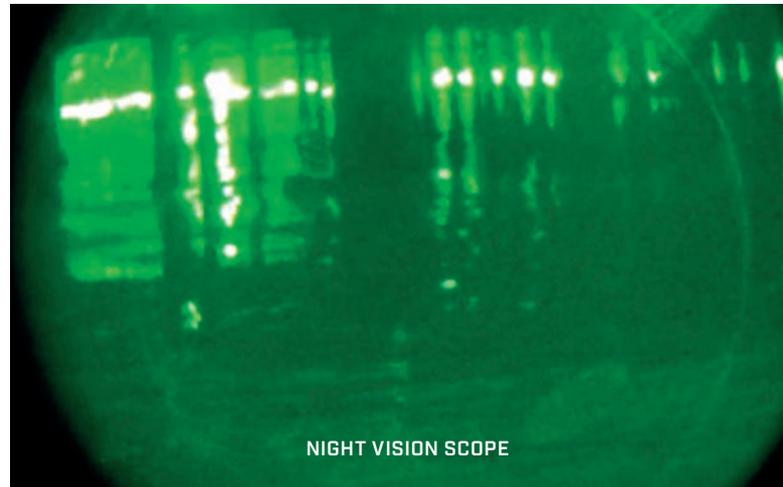
The maritime environment presents some of the most difficult imaging conditions possible. Conventional low-light or image intensified cameras (green night vision scopes) rely on small amounts of light to produce an image. In many cases, the maritime environment is cluttered with bright lights on the shoreline, which presents a challenging scene for image intensifiers.

Bright lights in the distance can cause a conventional night vision scope to bloom, making it hard to see targets of interest. Conversely, the maritime environment is complimentary to thermal imaging, since you are looking for a warm target against a cool, uniform scene.

Humans and engines can't hide their heat. Because of this, FLIR thermal cameras outperform low-cost night vision systems for long-range detection and search and rescue.

CAN YOU SPOT THE INTRUDER?

1. Your eyes can't adjust fast enough to deal with a dark foreground and bright lights on the horizon.
2. Night Vision Scopes struggle when even the smallest amounts of bright light enter the scene. Notice how the distant lights bloom, destroying the contrast in the foreground.
3. FLIR thermal cameras do not rely on visible light. The intruder's body heat gives away his position.

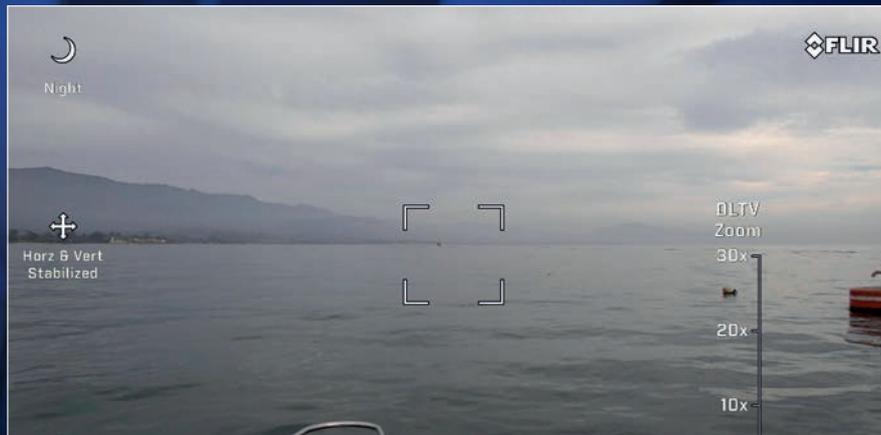


DAYLIGHT AND LOW-LIGHT VISIBLE CAMERAS FOR SURVEILLANCE AND THREAT DETECTION APPLICATIONS

FLIR's stabilized maritime systems configured with high-performance daylight cameras provide incredible standoff range that will extend your threat detection, security and surveillance abilities with up to 360x combined optical and digital zoom.

These powerful HD visible cameras can outperform stabilized binoculars, and video can be recorded for evidentiary purposes. With 0.35 lux sensitivity these HD visible cameras greatly enhance your ability to positively identify vessels or suspects in low light conditions.





WIDE ANGLE VIEW FROM M400/M500 HD DAYLIGHT CAMERA



ZOOM VIEW FROM M400/M500 HD DAYLIGHT CAMERA



STANDARD PERFORMANCE LOWLIGHT VISIBLE CAMERA



HIGH PERFORMANCE M400/M500 LOWLIGHT MODE

FEATURES, INTEGRATIONS, AND OPERATIONAL REQUIREMENTS TO CONSIDER

STABILIZATION

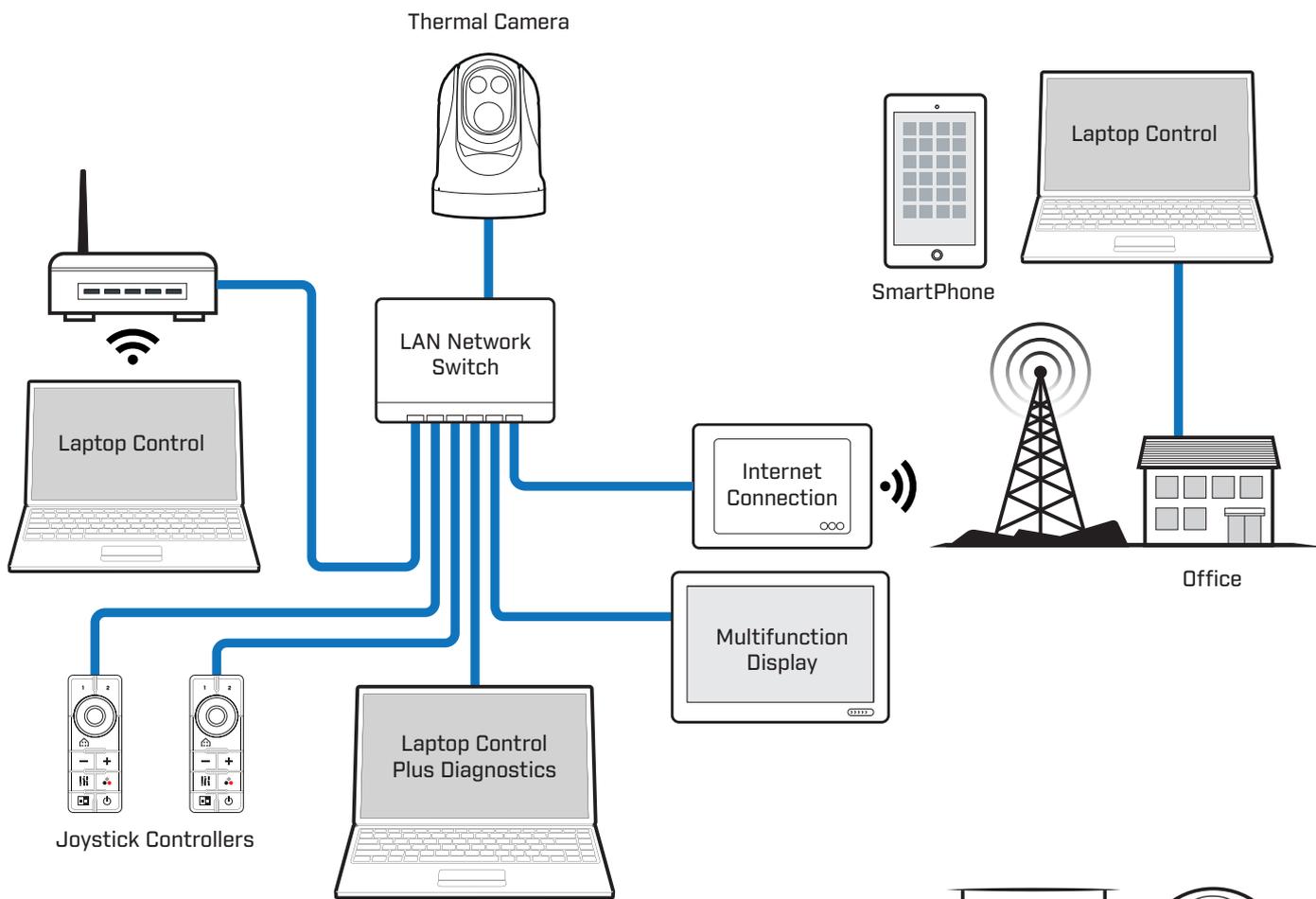
FLIR offers both fixed and stabilized pan/tilt camera systems. Stabilization compensates for vessel pitch movement and is an important requirement in most commercial and first responder applications. There are some applications, however, where a fixed, short-range camera pointed at an operations area of a deck won't require stabilization.

REMOTE CONTROL AND MFD INTEGRATION

FLIR maritime thermal cameras can be controlled through a joystick control unit (JCU), along with a dedicated marine monitor display. Additional joystick controls units and monitors can be used for viewing at remote locations. FLIR maritime cameras also integrate with Furuno, Garmin, Simrad, and Raymarine multifunction displays (MFDs).

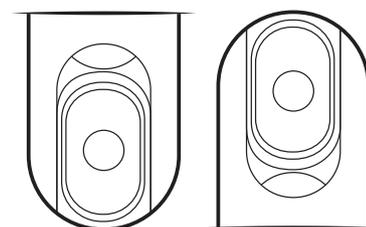


Integration with popular multi-function displays from Raymarine, Simrad, Garmin, and Furuno



NETWORKING AND VIDEO CONTROL

Most older multifunction displays accept analog video, and the new systems are migrating towards IP video with network-enabled control. FLIR offers future-proof solutions to ensure your system will support your marine electronics suite for years to come.



Ball up or ball down installation options



Dedicated joystick controls are available

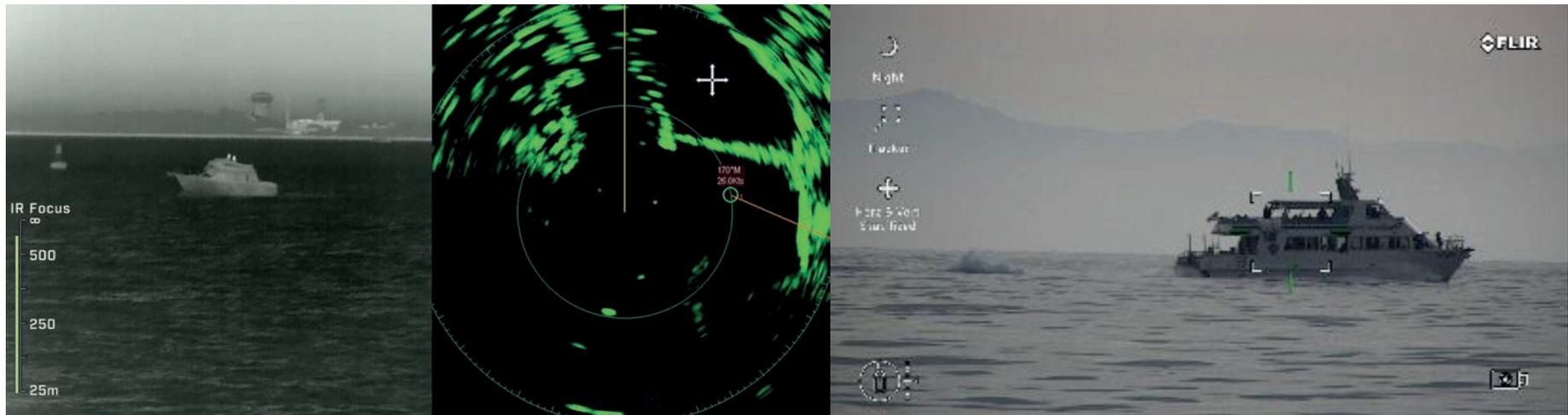
ADVANCED FEATURES FOR COMMERCIAL MARINERS AND FIRST RESPONDERS

RADAR INTEGRATION

Integrating a FLIR maritime camera to a compatible radar system can significantly reduce operator workload. Depending on the level of system integration, captains can select an AIS or MARPA target of interest on a touchscreen MFD and slew the FLIR camera to the target's location. This process, called slew-to-cue, enables the cameras to automatically track a target. Slew-to-cue can greatly benefit man overboard efforts, and help captains locate markers or targets in the distance. Once only available for sophisticated military systems, slew-to-cue target tracking can work seamlessly between visible and thermal cameras for systems with dual payloads. The capabilities and level of slew-to-cue integration vary by marine electronics manufacturer.

VIDEO AUTO TRACKING

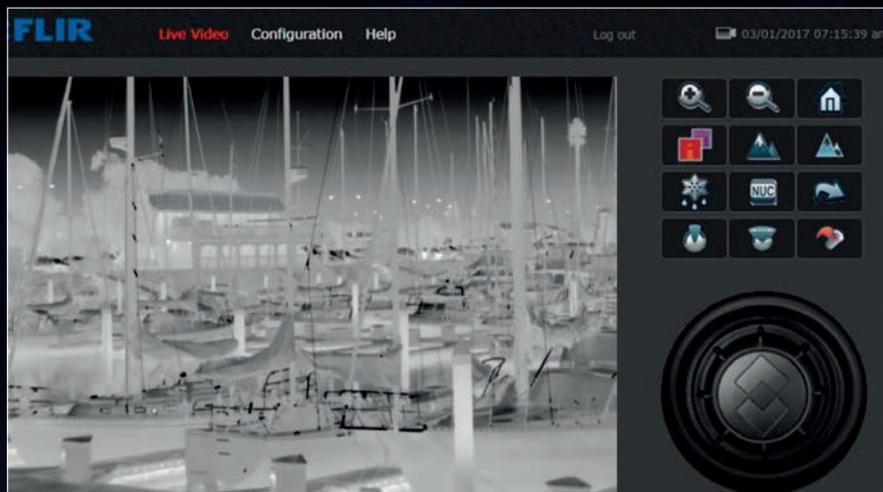
FLIR's M400XR and M500 models are equipped with a video tracker feature. Video tracking allows the camera to follow a target of interest automatically without continuous input from the operator. The camera will automatically track the target if the target remains in an unobstructed line of sight. The video tracker works seamlessly between the visible and thermal cameras, allowing you to switch between systems and adjust zoom settings.



Enable your camera to track radar targets automatically

Autotracking is useful for reducing workload, as it allows operators to concentrate on other duties while the camera stays on target

ADVANCED FEATURES FOR COMMERCIAL MARINERS AND FIRST RESPONDERS CONTINUED...



INTERNET NETWORK REMOTE CONTROL

The advanced M400 and M500 can be accessed and controlled remotely, enabling remote security monitoring, interagency command and control, remote surveillance and video gathering, and system diagnostics.



Network enabled systems allow you to remotely control your FLIR from anywhere, allowing a wide range of security and surveillance benefits.

Command and control, information sharing, remote video recording, extended surveillance, and agency interoperability all benefit from a network connected FLIR system.

FLIR MARITIME THERMAL CAMERAS AND MISSION PROFILES

FLIR offers a wide range of thermal camera systems for many different missions and tasks.

When choosing a thermal camera for your application, there are three questions to ask.

1. How far away will you need to be able to detect a vessel or other targets?
2. Will you need a visible camera for daytime and lowlight operations?
3. Will you need stabilization or will the system simply be used for forward navigation?



CLOSE-RANGE



MD324 & MD625

Fixed

CLOSE-RANGE



M232

Compact Pan/Tilt
MFD Slew-to-Cue

CLOSE-RANGE



M324

Stabilized Pan/Tilt
Single or Dual Payload
MFD Slew-to-Cue

MEDIUM-RANGE



M625

Stabilized Pan/Tilt
Single or Dual Payload
MFD Slew-to-Cue

MEDIUM TO LONG-RANGE



M617

Stabilized Pan/Tilt
Single or Dual Payload
MFD Slew-to-Cue

LONG-RANGE



M400/XR

Stabilized Pan/Tilt
Multi-sensor
4x Optical Thermal Zoom
HD Visible with 360x Zoom
Radar Slaving
Video Tracking (XR)
Firefighting Model (XR)

MAXIMUM-RANGE



M500

Stabilized Pan/Tilt
Multi-sensor
14x Optical Thermal Zoom
HD Visible with 360x Zoom
Radar Slaving
Video Tracking
Mid-Wave Sensor for Fog Penetration

For detailed product specifications, see pages 30 to 36



RANGE AND RESOLUTION

UNDERSTANDING RANGE PERFORMANCE AND OPERATIONAL REQUIREMENTS

One of the first questions to answer while comparing camera systems is how far you will need to see to identify vessels, objects, or activity of interest. Low-cost FLIR cameras are fixed field of view systems optimized for navigation and close-range operations. High-performance systems offer optical zoom lenses that can detect a small 30' vessel at beyond 5nm.



	800'
	M324
	320 X 240 RESOLUTION AT 800' IN 4X DIGITAL ZOOM



	800'
	M625
	640 X 480 RESOLUTION AT 800' IN 4X DIGITAL ZOOM

Thermal camera sensors are low resolution compared to the megapixel visible cameras in smartphones. The commercially available systems commonly have between 320 x 240 or 640 x 480 thermal resolution. While this seems low, a 640 x 480 FLIR camera with a powerful optical zoom lens can satisfy most commercial and first responder missions.



	800'
	M617
	640 X 480 RESOLUTION AT 800' IN 4X DIGITAL ZOOM

	0.15_{NM}
	M400
	AT A DISTANCE OF 0.15NM

	0.25_{NM}
	M500
	AT A DISTANCE OF 0.25NM

For detailed product specifications, see pages 35 to 41



DISTANCE, RECOGNITION, AND CLASSIFICATION

The distance that you will be able to detect and recognize a target depends on various camera and atmospheric factors. Most manufacturers use a mathematical model to establish range performance claims. As the leaders in maritime imaging, we provide actual test results and validate range performance in real life conditions. Video of these results are available online at flir.com/marine.

There are three industry-standard measurements used to present the range performance of a thermal imaging system: detection, recognition, and identification. Detecting a target simply means you can see a hot spot on the monitor, even if it's just one pixel. Recognizing a target means you can verify it as another vessel, as opposed to an island. Recognition can be possible with as few as five or six pixels.

Since the identity of a human cannot be reliably determined with thermal cameras, FLIR uses "classification of human activity," rather than "identification".

Classifying human activity is a more meaningful benchmark, given that in most first responder missions, officers are primarily interested in confirming that people are onboard, determining how many there are, and understanding what the people are up to.

The graphic on the opposite page illustrates the ranges at which the following FLIR cameras can realistically provide detection, recognition, and classification of a 30ft. vessel under ideal and poor conditions.



Detection means you can see something on the monitor. It might only represent one or two pixels on the camera, but it shows up just the same.



Recognizing a target means you can verify it as another vessel, as opposed to an island. FLIR uses a 30' outboard boat as a benchmark.



Instead of recognition, FLIR uses “classification of human activity”. In most maritime first responder and commercial applications, we are primarily concerned with gaining insight into the presence and actions of humans onboard.

SYSTEM FEATURES AND RANGE PERFORMANCE

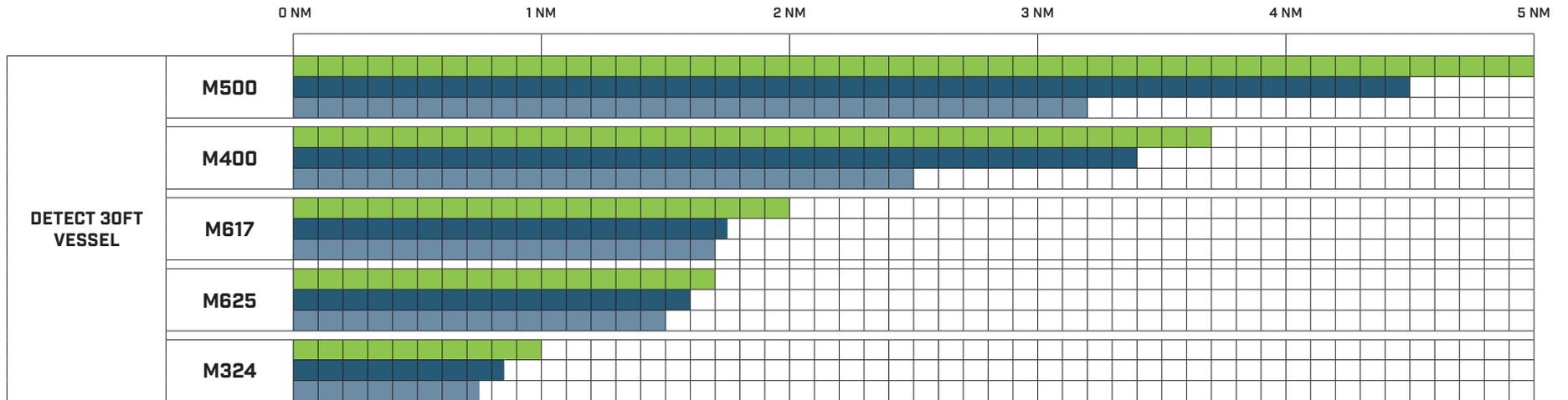
FEATURE
Digital Thermal Zoom (enlarge thermal image)
Multifunction Display Integration (compatible with Raymarine, Garmin, Furuno, and Simrad)
Network Control Enabled (control FLIR marine thermal cameras remotely)
Analog Video Output (connect to existing monitors with standard composite NTSC or PAL input)
Video Over IP (stream video over Ethernet networks to compatible computers, DVRs, and select MFDs)
Pan/Tilt Control ($\pm 360^\circ$ horizontal and $\pm 90^\circ$ vertical camera slew)
Radar Integration and Tracking (connect and slave camera to GPS or radar targets)
Stabilization (maintains steady image by compensating for vessel movement)
Color Low Light Video Camera (augments thermal image with optical/digital zoom low light camera)
High Power LED Searchlight (spot light for target illumination)
HD Color Low Light Video Camera (high definition visible and low light camera with digital/optical zoom)
Firefighting Mode (see hotspots and measure temperatures with expanded dynamic range and added radiometry)
Ice Alert Mode (highlights dangerous sea ice with special colorization)
Optical Thermal Zoom (further leverages thermal resolution for increased mission range and standoff distances)
Video Autotracker (automatically track moving targets)
High Sensitivity Mid-Wave Sensor (enhanced fog penetration)
Best Range Detection and Sensitivity Commercially Available

For detailed product specifications, see pages 35 to 41

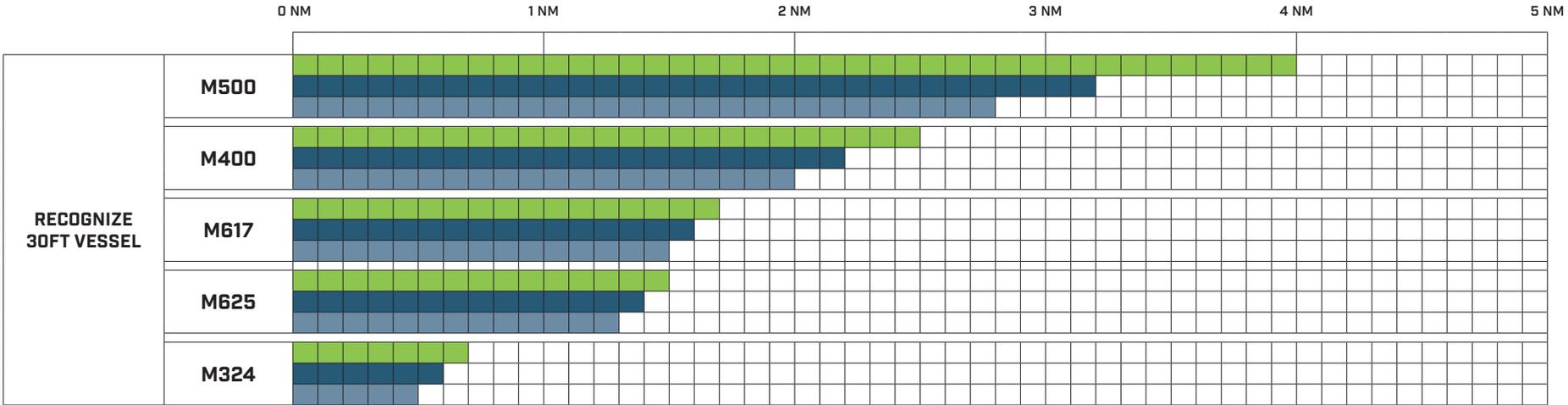


THERMAL CAMERA RANGE PERFORMANCE

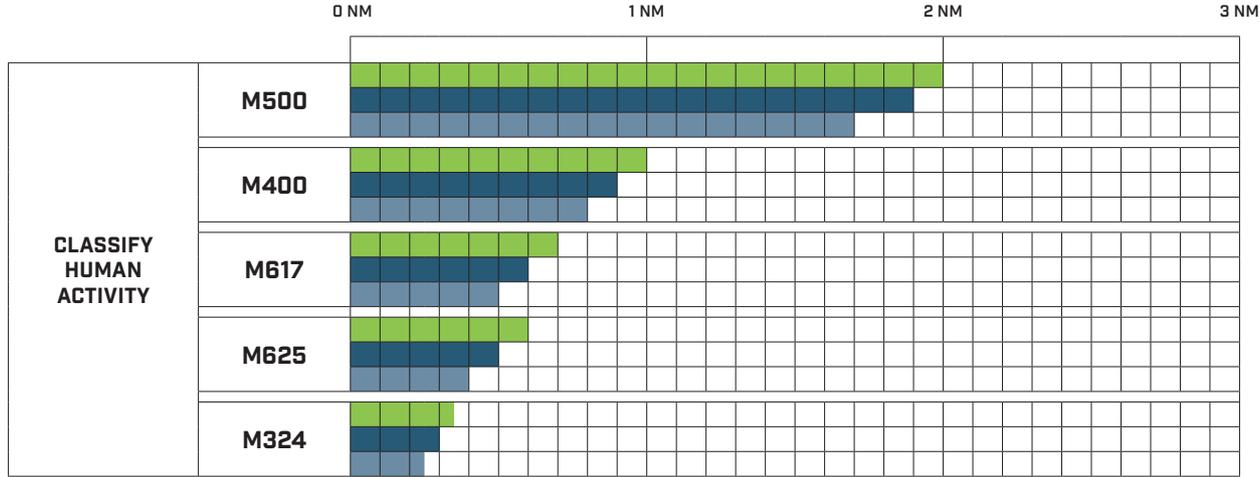
DETECT 30FT VESSEL



RECOGNIZE 30FT VESSEL



CLASSIFY HUMAN ACTIVITY



- GOOD CONDITIONS
- TYPICAL CONDITIONS
- POOR CONDITIONS



M132/M232 LOW COST PAN/TILT THERMAL FOR CLOSE-RANGE APPLICATIONS

The M232 is FLIR's most affordable pan/tilt maritime thermal imaging system. The 320x240 resolution thermal sensor, combined with a 24-degree field of view lens is well suited for navigation and close-range detection of small vessels, markers, or obstructions. There are several options for controlling the camera, including select Raymarine and Garmin multifunction displays, joystick control units, connecting to existing FLIR JCU's, or via web application on supported devices. The system is future-ready with IP connectivity and control but can be adapted to support existing monitors with an analog video converter and a joystick control unit kit.

When the system is controlled using the Raymarine Axiom MFD, FLIR's ClearCruise™ intelligent thermal analytics are enabled. ClearCruise technology automatically sends audible and visual alerts when objects appear on-screen. This is a powerful navigational aid for busy pilots and is only available on FLIR M232 and M132 models connected to a Raymarine Axiom display.

The M132 offers the same features as the M232 in a tilt-only body and is a strong entry-level option for applications focusing on forward navigation.

M132/M232 FEATURES

- Tilt-only (M132)
- Pan and Tilt (M232)
- 320 x 240 thermal resolution
- Digital zoom
- Small, lightweight design
- IP video or optional analog connectivity
- Intelligent ClearCruise™ analytics with Axiom display
- Supports ball up or down mounting



ClearCruise™ analytics provide visible and audible alerts when connected to an Axiom display

MD324/MD325 STATIONARY THERMAL FOR NAVIGATION AND ONBOARD SURVEILLANCE



The MD-Series is an affordable, compact, fixed thermal-only night vision system that aids in navigation, collision avoidance, and onboard surveillance at night. It is simple to mount and easy to integrate into existing electronics. Standard analog video can be easily displayed on almost any monitor on the vessel.

The MD is available in 640x480 or 320x240 resolution and can be mounted ball up or ball down. You can change color palettes, change the digital zoom, or adjust contrast settings from supported network-enabled multifunction displays, a PC, or the FLIR mobile app.

FEATURES

- 320x240 or 640x480 resolution
- Digital zoom
- Small, lightweight design
- Analog video integrates into most multifunction displays
- Supports ball up or down mounting
- Multiple control options

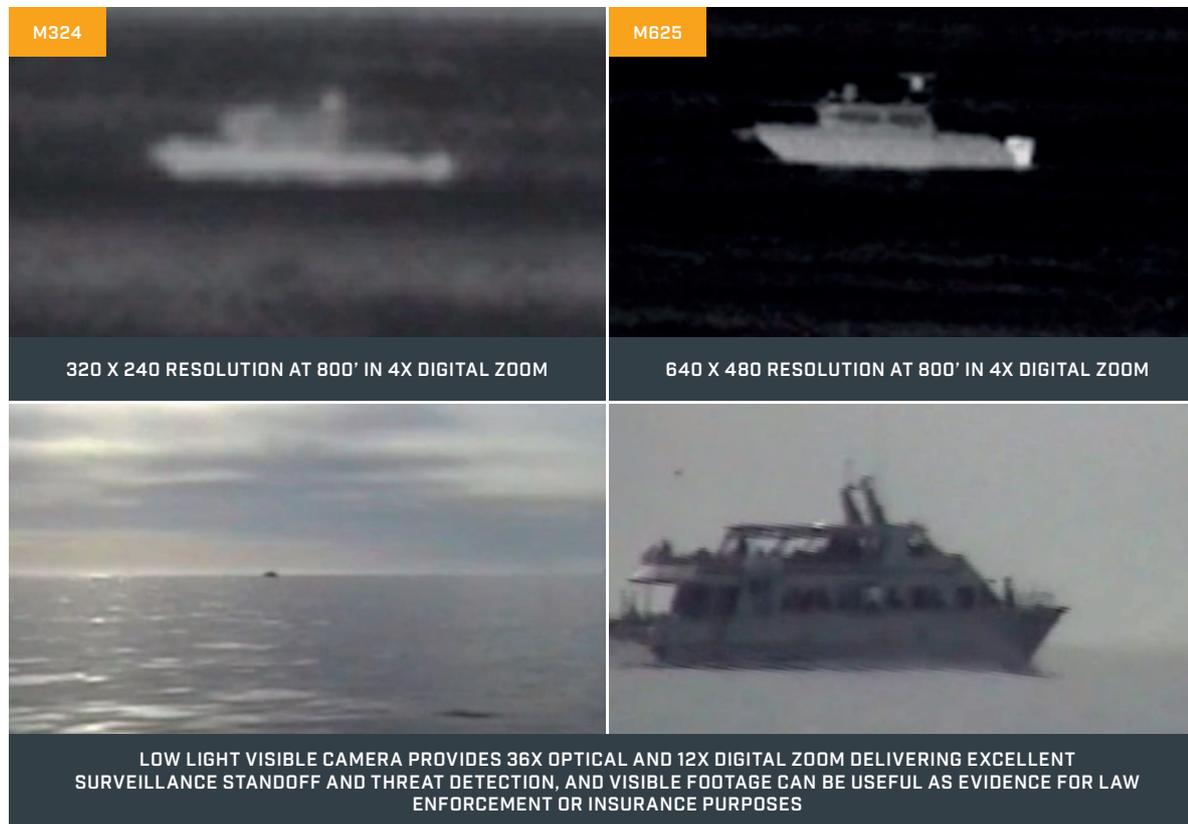


M324 & M625 CLOSE AND MEDIUM-RANGE STABILIZED THERMAL

Built on FLIR's decades of experience building mission-proven thermal imagers, M-Series systems are gyro-stabilized with full pan/tilt control. They are well suited for most close-to-medium-range commercial and first responder missions.

The M324 provides solid performance in close-range navigation and mission profiles, while the M625/617 are better suited for medium- to long-range applications. These are full-featured systems that offer connectivity to multifunction displays from Raymarine, Furuno, Garmin, and Simrad.

The on-screen symbology displays system status, position, and configuration, while gyro-stabilization keeps the camera steady regardless of vessel movement. The systems can be slaved to a range of radar commands to enable slew-to-cue and target tracking commands.



FEATURES

- Gyro stabilization for steady images in rough seas
- Visible/ low light cameras with powerful zoom (multi-sensor equipped)
- Radar tracking integration
- 360° pan and +/- 90° tilt control
- Rugged sealed enclosures with IP6 and Mil-Std 810-E certification
- Automatic window heaters for clearing ice
- Ethernet control for linking joysticks or MFDs
- Clear color on-screen symbology that provides system status, position and configuration data
- Analog video output that can be displayed on popular MFDs, marine monitors and bridge displays

The M324 and M625 systems are available in a single thermal payload configuration, or as a multi-sensor system with a daylight/low light camera that offers 36x optical and 12x digital zoom, respectfully. This allows you to observe activity from long ranges and record stabilized video to your existing evidence-gathering systems, or for insurance claim purposes.

The M617 provides the longest-range performance in this class of fixed field of view systems, with a 17° field of view and a high resolution 640x480 thermal sensor. The system is only available as a multi-sensor and is ideally suited for medium- to long-range commercial or first responder applications. These fixed field of view thermal systems offer digital zoom, and high resolution 640x480 sensors in the M625 and M617 offer superior range performance than the 320x240 M324 variants.



M400/M400XR LONG-RANGE HIGH-PERFORMANCE MULTI- SENSOR SYSTEM

The M400 is a powerful long-range, stabilized multi-sensor maritime imaging system. With a 640 x 480 sensor and optical zoom lens the M400 can detect a 30' outboard vessel at more than 3.5nm in total darkness, and is packed with features for the most demanding first responder and commercial applications.

The M400 offers a continuous 4x optical and 4x digital zoom, enabling the system to detect vessels at nearly twice the range of the M617. Active gyro-stabilization provides stable imagery and radar tracking can keep important targets in view at all times, reducing operator workload. The HD color and low light visible camera with 30x optical and 12x digital zoom provides maximum standoff for long-range surveillance operations. The M400 also features a powerful LED spotlight for target illumination and crew coordination.

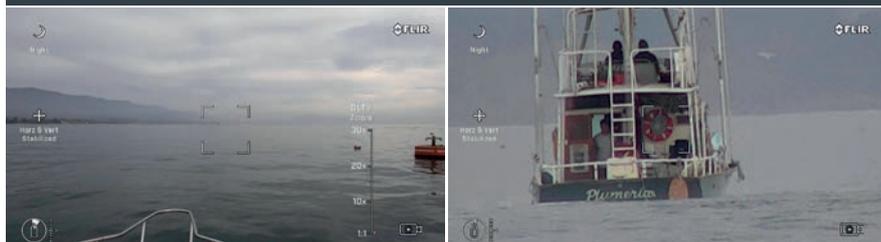




M400XR'S FIREFIGHTING MODE IDENTIFIES HOT SPOTS THROUGH DENSE SMOKE



4X OPTICAL ZOOM AND GYRO STABILIZATION ENABLE LONG-RANGE VIEWING OF ONBOARD ACTIVITIES



HD color and low-light camera with 30x optical and 12x E-Zoom, respectively

When integrated with popular radar systems, the M400 supports camera slew-to-cue and radar target tracking. Three video streams allow you to integrate with legacy analog monitors, network video-enabled systems, or HD-SDI interfaces. The networking connection also supports remote command center sharing, recording and control.

The M400XR model includes video target tracking, critical for extended surveillance operations. Also included in the XR option is FLIR's exclusive firefighting mode, which draws on FLIR's extensive experience in designing thermal systems for firefighting. FLIR cameras see through smoke, and the M400XR includes high temperature calibration, on screen temperature measurements, and a radiometric isotherm that displays the hottest area of the image in red.

FEATURES

- Long-range imaging performance
- High intensity LED spotlight illuminates targets of interest
- HD color and low light camera with 30x optical and 12x digital zoom, respectively
- Gyro-stabilization keeps image steady in rough water
- Rugged, proven, waterproof FLIR gimbal with automatic window heaters for ice management
- 360° pan and $\pm 90^\circ$ tilt control for uninterrupted and continuous tracking
- Radar integration enables camera slew-to-cue and tracking capabilities
- Network-enabled for command, control, and information sharing
- Optional video tracker holds the camera on objects in the scene and reduces operator fatigue (XR Option)
- Optional high temperature mode includes special high-temperature calibration, on-screen temperature measurement, and radiometric isotherms optimized for firefighting missions (XR Option)



Integrated high intensity search lamp aids in target identification and crew coordination.



M500 MAXIMUM PERFORMANCE MULTI-SENSOR CAMERA

The M500 is FLIR's most powerful commercial maritime cameras. M500 uses the same high-sensitivity cooled mid-wave infrared sensor used in FLIR's high-performance military systems and is twice as sensitive as the rest of the commercial lineup. When compared to the M400 the M500 mid-wave detector provides 2x the image sensitivity (quality) of our long-wave systems and delivers 35% better range performance.

Cooled Mid-wave sensors perform better through fog and other atmospheric obscurants than long wave systems. The M500 is well suited to agencies or organizations that need the maximum range performance and the best image quality available.

FLIR



14X THERMAL OPTICAL ZOOM AND GYRO STABILIZATION FOR MAXIMUM RANGE OBSERVATION



VIDEO TRACKING AUTOMATICALLY FOLLOWS A SELECTED TARGET WITH THE THERMAL OR VISIBLE CAMERAS



HD color and low light camera with 30x optical and 12x E-Zoom, respectively

FEATURES

- High intensity LED spotlights can illuminate and track targets of interest
- HD color and low light camera offers 30x optical and 12x digital zoom, respectively, and delivers amazing standoff range
- Gyro stabilization provides steady imagery in rough seas
- High-sensitivity mid-wave sensor delivers the maximum range performance and image quality available in a commercial system
- Rugged, proven, waterproof FLIR gimbal features automatic window heaters for ice management
- 360° pan and $\pm 90^\circ$ tilt control provides uninterrupted and continuous tracking
- Video tracker holds the camera on objects in the scene and reduces operator fatigue
- Radar integration enables camera slew-to-cue and tracking capabilities
- Network enabled for command and control and information sharing



High intensity LED spotlight



FLIR HANDHELD THERMAL SCOPES

HANDHELD THERMAL MONOCULARS

A handheld thermal monocular can complement a pan/tilt system on your vessel by allowing a second team member to participate in search and rescue operations. It's also a great way to equip smaller vessels without a dedicated thermal system.

FLIR offers two rugged and submersible thermal monoculars for maritime applications: the Ocean Scout and the LSX. Both are powerful, easy-to-use imagers that provide a tactical advantage when conducting surveillance, searching for evidence, or conducting search and rescue missions. They feature adjustable brightness control, an array of color palettes, and offer a composite video output cable for situations when an external monitor is available or if video recording is necessary.

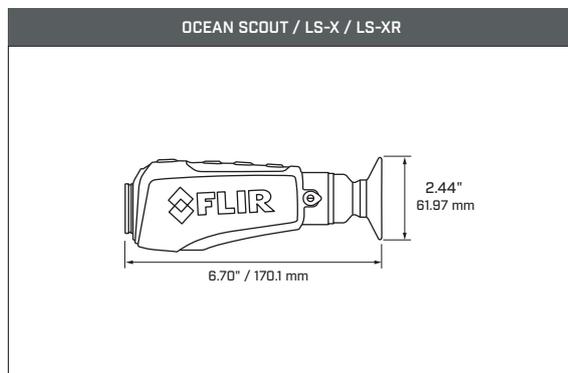
The primary difference between the Scout and LSX models is the video frame rate. The Scout has a 9hz video update rate, while the LSX offers a smoother 30hz update rate. Additionally, the LSX features a laser pointer for tactical coordination.

FEATURES

- 336 x 256 or 640 x 512 thermal resolution
- IP 67 submersible
- 5 hour Internal Li-Ion battery
- Laser Pointer
- Analog Video Output
- 2X, 4X, 8X Digital Zoom (LSXR)
- 2-10 Warranty (10 years on sensor)
- Standard ¼-2- Tripod Mount



HANDHELD SPECIFICATIONS



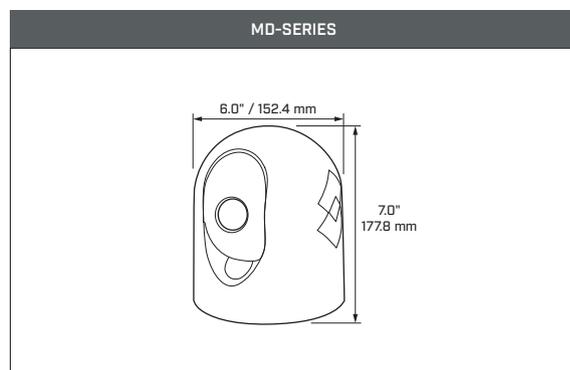
WHAT'S IN THE BOX:

- USB charging cable with 110v adapter
- Custom video-out cable
- Wrist strap
- Molle bag
- Quick start Guide.

	OCEAN SCOUT 240	OCEAN SCOUT 320	OCEAN SCOUT 640
GENERAL			
Detector Resolution	240 x 180	336 x 256	640 x 512
Refresh Rate	9 Hz		
Field of View	24° x 18°	17° x 13°	18° x 14°
Zoom	NA	2x E-Zoom	2x and 4x E-Zoom
Colour Palettes	White Hot / Black Hot / InstAlert™		
Battery	Internal Lithium Ion rechargeable (5-hour typical life)		
Waterproofing	IP-67 Submersible to 1 Meter		
Weight	0.75lb (0.34 kg)		
RANGE PERFORMANCE			
Man	1,150 ft (350 m)	1,800 ft (550 m)	3,705ft (1.14 km)
Vehicle/vessel	0.48 nm (0.90 km)	0.84 nm (1.5 km)	1.73 nm (3.2 km)

	LSX	LSXR
GENERAL		
Detector Resolution	336 x 256	640 x 512
Refresh Rate	9 or 30 Hz	
Field of View	17° x 13°	18° x 14°
Zoom	2x, 4x and E Zoom	2x, 4x, 8x and E Zoom
Colour Palettes	White Hot / Black Hot / InstAlert™	
Battery	Internal Lithium Ion rechargeable (5-hour typical life)	
Waterproofing	IP-67 Submersible to 1 Meter	
Weight	0.75lb (0.34 kg)	
RANGE PERFORMANCE		
Man	1,870 ft (570 m)	0.62 nm (1.14 km)
Vehicle/vessel	0.84 nm (1.55 km)	1.62 nm (3 km)

MD-SERIES SPECIFICATIONS



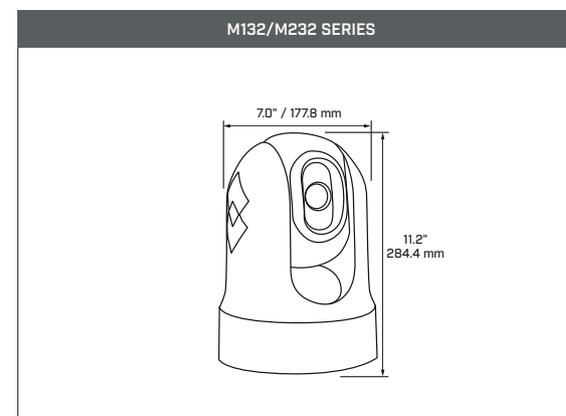
WHAT'S IN THE BOX:

EVERY MD-SERIES THERMAL CAMERA SYSTEM INCLUDES:

- Camera unit
- Camera base O-ring
- RJ-45 Ethernet cable, double shielded, low smoke zero halogen (LSZH) rated, 25 feet (7.7 meters)
- Coaxial video output cable, 25 feet (7.7 meters)
- 12V DC Power Over Ethernet (PoE) injector
- RJ45 weatherproof coupler
- Female-to-female F-type video connectors
- Stainless steel mounting hardware kit

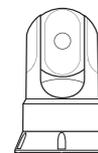
	MD-324	MD-625
MAIN THERMAL CAMERA		
Field of View	24° × 18° (NTSC)	25° × 20° (NTSC)
Video Refresh Rate	<9 Hz or 30 Hz (NTSC and PAL)	<9 Hz or 30 Hz (NTSC and PAL)
Focal Length	19 mm	25 mm
Focus	Fixed 12ft (3.6m) to infinity	Fixed 12ft (3.6m) to infinity
Optical Zoom	N/A	N/A
Digital Zoom	2×	2×, 4×
Detector Type	320 × 240 VOx Microbolometer	640 × 480 VOx Microbolometer
MAIN VISIBLE CAMERA		
Detector Type	N/A	N/A
Lines of Resolution	N/A	N/A
Minimum Illumination	N/A	N/A
Zoom	N/A	N/A
E-Zoom	N/A	N/A
Focal Length	N/A	N/A
Field of View	N/A	N/A
SPOTLIGHT SPECIFICATIONS		
Type, Lumens, Beam°	N/A	N/A
SYSTEM SPECIFICATIONS		
Gyro Stabilized		
ClearCruise IR Analytics	N/A	N/A
Video Tracking	No	No
Firefighter Mode	No	No
Pan/Tilt Adjustment Range	Pan: ±30° per key, Tilt: +34°, -27° (Locked in at Installation)	Pan: ±30° per key, Tilt: +34°, -27° (Locked in at Installation)
Analog Video Output	NTSC or PAL, 30 Hz or <9 Hz	NTSC or PAL, 30 Hz or <9 Hz
Analog Video Connector Types	F-type BNC with BNC-to-RCA adapter included for video out	F-type BNC with BNC-to-RCA adapter included for video out
Network Video Output	No	No
HD-SDI Lossless Video Output	No	No
Power Requirements	PoE injector required per IEEE 802.3af, 12-24 V DC	PoE injector required per IEEE 802.3af, 12-24 V DC
Power Consumption	4.8 W nominal; 12.5 W max	4.8 W nominal; 12.5 W max
ENVIRONMENTAL		
Operating Temperature Range	-13°F to +131°F (-25°C to +55°C)	-13°F to +131°F (-25°C to +55°C)
Storage Temperature Range	-40°F to +185°F (-40°C to +85°C)	-40°F to +185°F (-40°C to +85°C)
Automatic Window Defrost	Standard at Power-Up	Standard at Power-Up
Sand/Dust Ingress	Mil-Std-810E	Mil-Std-810E
Water Ingress	IPX 6 (heavy seas, powerful jets of water)	IPX 6 (heavy seas, powerful jets of water)
Shock	15 g vertical, 9 g horizontal	15 g vertical, 9 g horizontal
Vibration	IEC 60945; MIL-STD-810E	IEC 60945; MIL-STD-810E
Lightning Protection	Standard	Standard
Salt Mist	IEC60945	IEC60945
Wind	100 knot (115.2 mph)	100 knot (115.2 mph)
EMI	IEC 60945	IEC 60945
PHYSICAL		
Weight	~ 3 lbs (1.36 kg)	~ 3 lbs (1.36 kg)
Size	6" (152.4 mm) dia. × 7" (177.8 mm) ht.	6" (152.4 mm) dia. × 7" (177.8 mm) ht.
CLEAR WEATHER RANGE PERFORMANCE		
Detect a 30 outboard vessel	1,850m (1nm)	3,150m (1.7nm)
NATO Target 2.3m x 2.3m @ 50%	1,285m	1,691m
Man Sized Target	559m	735m

M132/M232 SPECIFICATIONS



WHAT'S IN THE BOX: EVERY M132 AND M232 THERMAL CAMERA INCLUDES:

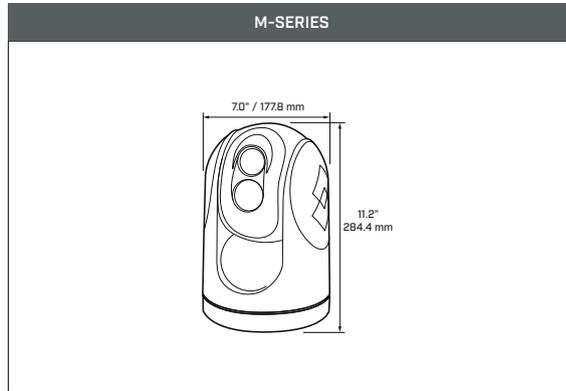
- Camera unit
- Top down riser kit
- Thermal camera base-seal
- Right-angled RayNet to RayNet cable, 32 feet (10 meters)
- RayNet to RJ45 adapter cable, 4-inches (100mm)
- Right-angled 3-pin power cable, 32 feet (10 meters)
- Stainless steel mounting hardware kit



Thermal camera shown with optional riser

	M132	M232
MAIN THERMAL CAMERA		
Field of View	24° × 18°	24° × 18°
Video Refresh Rate	9 Hz	9 Hz
Focal Length	19mm	19mm
Focus	Fixed 12ft (3.6m) to infinity	Fixed 12ft (3.6m) to infinity
Optical Zoom	N/A	N/A
Digital Zoom	4x Continuous	4x Continuous
Detector Type	320 × 240 VOx Microbolometer	320 × 240 VOx Microbolometer
MAIN VISIBLE CAMERA		
Detector Type	N/A	N/A
Lines of Resolution	N/A	N/A
Minimum Illumination	N/A	N/A
Zoom	N/A	N/A
E-Zoom	N/A	N/A
Focal Length	N/A	N/A
Field of View	N/A	N/A
SPOTLIGHT SPECIFICATIONS		
Type, Lumens, Beam°	N/A	N/A
SYSTEM SPECIFICATIONS		
Gyro Stabilized	No	No
ClearCruise IR Analytics	Yes, with Raymarine Axiom	Yes, with Raymarine Axiom
Video Tracking	No	No
Firefighter Mode	No	No
Pan/Tilt Adjustment Range	Tilt: +110°, -90°	Pan: 360° (continuous), Tilt: +110°, -90°
Analog Video Output	No	No
Analog Video Connector Types	N/A	N/A
Network Video Output	Yes	Yes
HD-SDI Lossless Video Output	No	No
Power Requirements	12 or 24 VDC	12 or 24 VDC
Power Consumption	15 W (typical) 18 W (max)	15 W (typical) 18 W (max)
ENVIRONMENTAL		
Operating Temperature Range	-13°F to +131°F (-25°C to +55°C)	-13°F to +131°F (-25°C to +55°C)
Storage Temperature Range	-30°F to +158°F (-30°C to +70°C)	-30°F to +158°F (-30°C to +70°C)
Automatic Window Defrost	Standard at Power-Up	Standard at Power-Up
Sand/Dust Ingress	Mil-Std-810E	Mil-Std-810E
Water Ingress	IPX 6 (heavy seas, powerful jets of water)	IPX 6 (heavy seas, powerful jets of water)
Shock	15 g vertical, 9 g horizontal	15 g vertical, 9 g horizontal
Vibration	IEC 60945; MIL-STD-810E	IEC 60945; MIL-STD-810E
Lightning Protection	Standard	Standard
Salt Mist	IEC60945	IEC60945
Wind	100 knot (115.2 mph)	100 knot (115.2 mph)
EMI	IEC 60945	IEC 60945
PHYSICAL		
Weight	6.0 lb (2.7 kg) w/o top-down riser 6.6 lb (3.0 kg) w/ top-down riser	6.0 lb (2.7 kg) w/o top-down riser 6.6 lb (3.0 kg) w/ top-down riser
Size	6.34" (dia. @ base) x 9.03" (ht.) 161.1 (dia.) x 229.3 (ht.) mm	6.34" (dia. @ base) x 9.03" (ht.) 161.1 (dia.) x 229.3 (ht.) mm
CLEAR WEATHER RANGE PERFORMANCE		
Detect a 30 outboard vessel	1,850m (1nm)	1,850m (1nm)
NATO Target 2.3m x 2.3m @ 50%	1,821m	1,821m
Man Sized Target	792m	792m

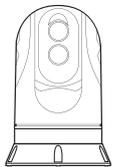
M-SERIES SPECIFICATIONS



WHAT'S IN THE BOX:

EVERY M-SERIES NEXT GENERATION THERMAL CAMERA SYSTEM INCLUDES:

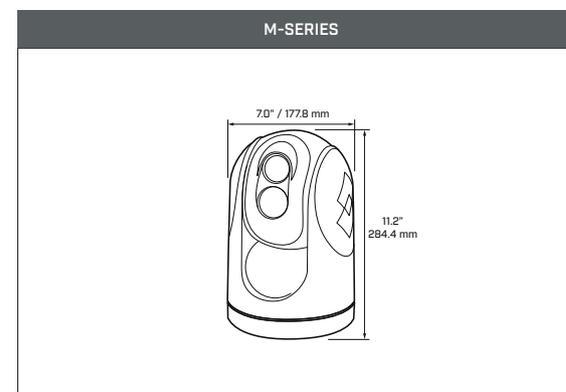
- Camera unit with 18-inch (45 cm) pigtailed for power, analog video and Ethernet
- FLIR Joystick Control Unit (JCU1) kit
- Camera base O-ring
- RJ45 weatherproof coupler
- Female-to-female F-type video connectors
- Stainless steel mounting hardware kit



Thermal camera shown with optional riser

	M324S	M324CS
MAIN THERMAL CAMERA		
Field of View	24° × 18°	24° × 18°
Video Refresh Rate	< 9 Hz or 30 Hz (NTSC)	< 9 Hz or 30 Hz (NTSC)
Focal Length	19mm	19mm
Focus	Fixed 12ft (3.6m) to infinity	Fixed 12ft (3.6m) to infinity
Optical Zoom	N/A	N/A
Digital Zoom	2x Continuous	2x Continuous
Detector Type	336 x 256 VOx Microbolometer	336 x 256 VOx Microbolometer
MAIN VISIBLE CAMERA		
Detector Type	N/A	Color CCD
Lines of Resolution	N/A	530
Minimum Illumination	N/A	1.4 Lux
Zoom	N/A	36x
E-Zoom	N/A	12x
Focal Length	N/A	
Field of View	N/A	
SPOTLIGHT SPECIFICATIONS		
Type, Lumens, Beam°	N/A	N/A
SYSTEM SPECIFICATIONS		
Gyro Stabilized	Yes	Yes
ClearCruise IR Analytics	N/A	N/A
Video Tracking	No	No
Firefighter Mode	No	No
Pan/Tilt Adjustment Range	360° Continuous Pan, ± 90° Tilt	360° Continuous Pan, ± 90° Tilt
Analog Video Output	NTSC or PAL, 30 Hz or <9 Hz	NTSC or PAL, 30 Hz or <9 Hz
Analog Video Connector Types	F-type BNC with BNC-to-RCA adapter included for video out	F-type BNC with BNC-to-RCA adapter included for video out
Network Video Output	No	No
HD-SDI Lossless Video Output	No	No
Power Requirements	12-24 V DC	12-24 V DC
Power Consumption	25 W nominal; 50 W max	25 W nominal; 50 W max
ENVIRONMENTAL		
Operating Temperature Range	-13°F to +131°F (-25°C to +55°C)	-13°F to +131°F (-25°C to +55°C)
Storage Temperature Range	-40°F to +185°F (-40°C to +85°C)	-40°F to +185°F (-40°C to +85°C)
Automatic Window Defrost	Standard at Power-Up	Standard at Power-Up
Sand/Dust Ingress	Mil-Std-810E	Mil-Std-810E
Water Ingress	IPX 6 (heavy seas, powerful jets of water)	IPX 6 (heavy seas, powerful jets of water)
Shock	15 g vertical, 9 g horizontal	15 g vertical, 9 g horizontal
Vibration	IEC 60945; MIL-STD-810E	IEC 60945; MIL-STD-810E
Lightning Protection	Standard	Standard
Salt Mist	IEC60945	IEC60945
Wind	100 knot (115.2 mph)	100 knot (115.2 mph)
EMI	IEC 60945	IEC 60945
PHYSICAL		
Weight	~ 9 lbs (4 kg)	~ 9 lbs (4 kg)
Size	7" (177.8 mm) dia. × 11.2" (284.4 mm) ht.	7" (177.8 mm) dia. × 11.2" (284.4 mm) ht.
CLEAR WEATHER RANGE PERFORMANCE		
Detect a 30 outboard vessel	1,850m (1nm)	1,850m (1nm)
NATO Target 2.3m x 2.3m @ 50%	1,285m	1,285m
Man Sized Target	559m	559m

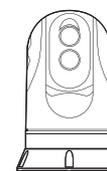
M-SERIES SPECIFICATIONS



WHAT'S IN THE BOX:

EVERY M-SERIES NEXT GENERATION THERMAL CAMERA SYSTEM INCLUDES:

- Camera unit with 18-inch (45 cm) pigtailed for power, analog video and Ethernet
- FLIR Joystick Control Unit (JCU1) kit
- Camera base O-ring
- RJ45 weatherproof coupler
- Female-to-female F-type video connectors
- Stainless steel mounting hardware kit

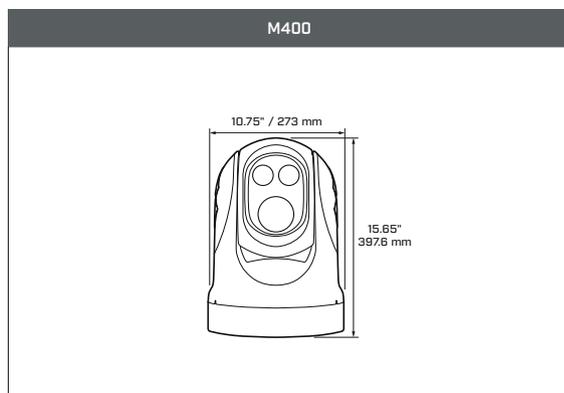


Thermal camera shown with optional riser

	M625S	M625CS	M617CS
MAIN THERMAL CAMERA			
Field of View	25° × 20°	25° × 20°	17° × 14°
Video Refresh Rate	< 9 Hz or 30 Hz (NTSC)	< 9 Hz or 30 Hz (NTSC)	< 9 Hz or 30 Hz (NTSC)
Focal Length	25mm	25mm	35mm
Focus	Fixed 12ft (3.6m) to infinity	Fixed 12ft (3.6m) to infinity	Fixed 12ft (3.6m) to infinity
Optical Zoom	N/A	N/A	N/A
Digital Zoom	4x Continuous	4x Continuous	4x Continuous
Detector Type	640x512 VOx Microbolometer	640x512 VOx Microbolometer	640x512 VOx Microbolometer
MAIN VISIBLE CAMERA			
Detector Type	N/A	Color CCD	Color CCD
Lines of Resolution	N/A	530	530
Minimum Illumination	N/A	1.4 Lux	1.4 Lux
Zoom	N/A	36x	36x
E-Zoom	N/A	12x	12x
Focal Length	N/A		
Field of View	N/A		
SPOTLIGHT SPECIFICATIONS			
Type, Lumens, Beam°	N/A	N/A	N/A
SYSTEM SPECIFICATIONS			
Gyro Stabilized	Yes	Yes	Yes
ClearCruise IR Analytics	N/A	N/A	N/A
Video Tracking	No	No	No
Firefighter Mode	No	No	No
Pan/Tilt Adjustment Range	360° Continuous Pan, ± 90° Tilt	360° Continuous Pan, ± 90° Tilt	360° Continuous Pan, ± 90° Tilt
Analog Video Output	NTSC or PAL, 30 Hz or <9 Hz	NTSC or PAL, 30 Hz or <9 Hz	NTSC or PAL, 30 Hz or <9 Hz
Analog Video Connector Types	F-type BNC with BNC-to-RCA adapter included for video out		
Network Video Output	No	No	No
HD-SDI Lossless Video Output	No	No	No
Power Requirements	12-24 V DC	12-24 V DC	12-24 V DC
Power Consumption	25 W nominal; 50 W max	25 W nominal; 50 W max	25 W nominal; 50 W max
ENVIRONMENTAL			
Operating Temperature Range	-13°F to +131°F (-25°C to +55°C)	-13°F to +131°F (-25°C to +55°C)	-13°F to +131°F (-25°C to +55°C)
Storage Temperature Range	-40°F to +185°F (-40°C to +85°C)	-40°F to +185°F (-40°C to +85°C)	-40°F to +185°F (-40°C to +85°C)
Automatic Window Defrost	Standard at Power-Up	Standard at Power-Up	Standard at Power-Up
Sand/Dust Ingress	Mil-Std-810E	Mil-Std-810E	Mil-Std-810E
Water Ingress	IPX 6 (heavy seas, powerful jets of water)	IPX 6 (heavy seas, powerful jets of water)	IPX 6 (heavy seas, powerful jets of water)
Shock	15 g vertical, 9 g horizontal	15 g vertical, 9 g horizontal	15 g vertical, 9 g horizontal
Vibration	IEC 60945; MIL-STD-810E	IEC 60945; MIL-STD-810E	IEC 60945; MIL-STD-810E
Lightning Protection	Standard	Standard	Standard
Salt Mist	IEC60945	IEC60945	IEC60945
Wind	100 knot (115.2 mph)	100 knot (115.2 mph)	100 knot (115.2 mph)
EMI	IEC 60945	IEC 60945	IEC 60945
PHYSICAL			
Weight	~ 9 lbs (4 kg)	~ 9 lbs (4 kg)	~ 9 lbs (4 kg)
Size	7" (177.8 mm) dia. × 11.2" (284.4 mm) ht.	7" (177.8 mm) dia. × 11.2" (284.4 mm) ht.	7" (177.8 mm) dia. × 11.2" (284.4 mm) ht.
CLEAR WEATHER RANGE PERFORMANCE			
Detect a 30 outboard vessel	3,150m (1.7nm)	3,150m (1.7nm)	3,704m (2nm)
NATO Target 2.3m x 2.3m @ 50%	1,691m	1,691m	2,368m
Man Sized Target	735m	735m	1,029m

M400

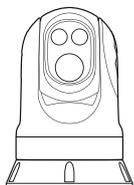
SPECIFICATIONS



WHAT'S IN THE BOX:

EVERY M400 AND M400XR THERMAL CAMERA SYSTEM INCLUDES:

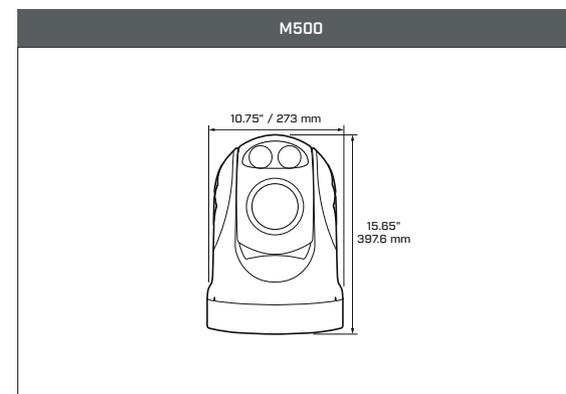
- Camera unit
- FLIR Joystick Control Unit (JCU2) kit
- 5-Port PoE+ Ethernet Switch
- Power cable, right angle, 12 AWG, 3 meters
- Ethernet cable, right angle to RJ45, 1 meter
- RJ45 waterproof Ethernet coupler
- AV and serial cable, right angle, 1 meter
- HD-SDI cable, 1 meter
- HD-SDI Isolation Transformer
- Camera base O-ring and stainless steel mounting hardware kit



Thermal camera shown with optional riser

	M400	M400XR
MAIN THERMAL CAMERA		
Field of View	24° to 6° HFOV / 1.5° HFOV with e-zoom	24° to 6° HFOV / 1.5° HFOV with e-zoom
Video Refresh Rate	<9 Hz or 30 Hz (NTSC and PAL)	<9 Hz or 30 Hz (NTSC and PAL)
Focal Length	26 mm (Wide) to 105 mm (Narrow)	26 mm (Wide) to 105 mm (Narrow)
Focus	Controlled by JCU	Controlled by JCU
Optical Zoom	4x	4x
Digital Zoom	4x Continuous	4x Continuous
Detector Type	640 × 512 VOx Microbolometer	640 × 512 VOx Microbolometer
MAIN VISIBLE CAMERA		
Detector Type	1/2.8" CMOS	1/2.8" CMOS
Lines of Resolution	1920 x 1080	1920 x 1080
Minimum Illumination	0.35 lux at F1.6, AGC On, 1/30s High Sensitivity Mode / 1.4 lux Normal Mode	
Zoom	30x Optical Zoom	30x Optical Zoom
E-Zoom	12x (360x total digital and optical zoom)	12x (360x total digital and optical zoom)
Focal Length	129 mm to 4.3 mm	129 mm to 4.3 mm
Field of View	Optical 63.7° x 35.8° WFOV to 2.3° x 1.29° NFOV	Optical 63.7° x 35.8° WFOV to 2.3° x 1.29° NFOV
SPOTLIGHT SPECIFICATIONS		
Type, Lumens, Beam°	LED, 580 Lumens, 5° Divergence Angle	LED, 580 Lumens, 5° Divergence Angle
SYSTEM SPECIFICATIONS		
Gyro Stabilized	Yes	Yes
ClearCruise IR Analytics	N/A	N/A
Video Tracking	No	Yes
Firefighter Mode	No	Yes
Pan/Tilt Adjustment Range	360° Continuous Pan, ± 90° Tilt	360° Continuous Pan, ± 90° Tilt
Analog Video Output	NTSC or PAL, 30 Hz or <9 Hz	NTSC or PAL, 30 Hz or <9 Hz
Analog Video Connector Types	F-type BNC with BNC-to-RCA adapter included for video out	F-type BNC with BNC-to-RCA adapter included for video out
Network Video Output	Dual, Independent H.264 Network Video Streams	Dual, Independent H.264 Network Video Streams
HD-SDI Lossless Video Output	Yes	Yes
Power Requirements	12-24V DC	12-24V DC
Power Consumption	<50 W nominal; 130 W peak, 270 W 2/heaters	<50 W nominal; 130 W peak, 270 W 2/heaters
ENVIRONMENTAL		
Operating Temperature Range	-13°F to +131°F (-25°C to +55°C)	-13°F to +131°F (-25°C to +55°C)
Storage Temperature Range	-56° F to + 176°F (-50°C to +80°C)	-56° F to + 176°F (-50°C to +80°C)
Automatic Window Defrost	Standard at Power-Up	Standard at Power-Up
Sand/Dust Ingress	Mil-Std-810E	Mil-Std-810E
Water Ingress	IPX 6 (heavy seas, powerful jets of water)	IPX 6 (heavy seas, powerful jets of water)
Shock	15 g vertical, 9 g horizontal	15 g vertical, 9 g horizontal
Vibration	IEC 60945; MIL-STD-810E	IEC 60945; MIL-STD-810E
Lightning Protection	Standard	Standard
Salt Mist	IEC60945	IEC60945
Wind	100 knot (115.2 mph)	100 knot (115.2 mph)
EMI	IEC 60945	IEC 60945
PHYSICAL		
Weight	28 lbs (12.7 kg)	28 lbs (12.7 kg)
Size	10.75" (273.1 mm) x 15.65" (397.6 mm) – 18.05" (458.7mm) high with top down riser	
CLEAR WEATHER RANGE PERFORMANCE		
Detect a 30 outboard vessel	6,853m (3.7nm)	6,853m (3.7nm)
NATO Target 2.3m x 2.3m @ 50%	7,103m	7,103m
Man Sized Target	3,088m	3,088m

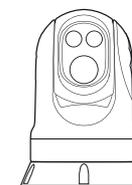
M500 SPECIFICATIONS



WHAT'S IN THE BOX:

EVERY M500 THERMAL CAMERA SYSTEM INCLUDES:

- Camera unit
- FLIR Joystick Control Unit (JCU2) kit
- 5-Port PoE+ Ethernet Switch
- Power cable, right angle, 12 AWG, 3 meters
- Ethernet cable, right angle to RJ45, 1 meter
- RJ45 waterproof Ethernet coupler
- AV and serial cable, right angle, 1 meter
- HD-SDI cable, 1 meter
- HD-SDI Isolation Transformer
- Camera base O-ring and stainless steel mounting hardware kit



Thermal camera shown with optional riser

M500	
MAIN THERMAL CAMERA	
Field of View	Optical 28° x 21° WFOV to 2° x 1.5° NFOV
Video Refresh Rate	25 Hz (PAL) / 30 Hz (NTSC)
Focal Length	19mm (Wide) to 275mm (Narrow)
Focus	Controlled by JCU
Optical Zoom	1x to 14x (continuous)
Digital Zoom	4x Continuous
Detector Type	Cooled MWIR InSb 640x512 Focal Plane Array
MAIN VISIBLE CAMERA	
Detector Type	1/2.8" CMOS
Lines of Resolution	1920 x 1080
Minimum Illumination	0.35 lux at F1.6, AGC On, 1/30s High Sensitivity Mode / 1.4 lux Normal Mode
Zoom	30x Optical Zoom
E-Zoom	12x (360x total digital and optical zoom)
Focal Length	129 mm to 4.3 mm
Field of View	Optical 63.7° x 35.8° WFOV to 2.3° x 1.29° NFOV
SPOTLIGHT SPECIFICATIONS	
Type, Lumens, Beam°	LED, 580 Lumens, 5° Divergence Angle
SYSTEM SPECIFICATIONS	
Gyro Stabilized	Yes
ClearCruise IR Analytics	N/A
Video Tracking	Yes
Firefighter Mode	No
Pan/Tilt Adjustment Range	360° Continuous Pan, ±90° Tilt
Analog Video Output	NTSC or PAL, 30 Hz or <9 Hz
Analog Video Connector Types	F-type BNC with BNC-to-RCA adapter included for video out
Network Video Output	Dual, Independent H.264 Network Video Streams
HD-SDI Lossless Video Output	Yes
Power Requirements	12-24V DC
Power Consumption	250 W (max w/heaters)
ENVIRONMENTAL	
Operating Temperature Range	-13°F to +131°F (-25°C to +55°C)
Storage Temperature Range	-56° F to + 176°F (-50°C to +80°C)
Automatic Window Defrost	Standard at Power-Up
Sand/Dust Ingress	Mil-Std-810E
Water Ingress	IPX 6 (heavy seas, powerful jets of water)
Shock	15 g vertical, 9 g horizontal
Vibration	IEC 60945; MIL-STD-810E
Lightning Protection	Standard
Salt Mist	IEC60945
Wind	100 knot (115.2 mph)
EMI	IEC 60945
PHYSICAL	
Weight	32 lb (14.5 kg)
Size	10.75" (273 mm) dia. x 15.65" (397.5 mm) ht
CLEAR WEATHER RANGE PERFORMANCE	
Detect a 30 outboard vessel	9,260m (5nm)
NATO Target 2.3m x 2.3m @ 50%	37,664m
Man Sized Target	15,535m





ABOUT FLIR

At FLIR we develop technologies that enhance perception and awareness. We bring innovative sensing solutions into daily life through our thermal imaging systems, visible-light imaging systems, locator systems, measurement and diagnostic systems, and advanced threat detection systems. Our products improve the way people interact with the world around them, enhance public safety and well-being, increase energy efficiency, and enable healthy and entertained communities.

We are a world leader in maritime thermal technology and have a long history of building reliable thermal imaging systems for demanding military and first responder missions. At FLIR, we develop and manufacture all the critical core technology inside our maritime cameras and we provide an industry leading warranty.

We understand the needs of our commercial and first responder customers, and our expert team can help you with technical information, grant writing assistance, or any other information you need to help you accomplish your goals. Thermal imaging is a powerful, lifesaving technology, and you can rely FLIR to be a trusted mission partner.

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WARRANTY

FLIR's service commitment of outstanding warranty and technical support now offers you even more; by registering your system with FLIR at www.flir.com/productreg, the 2-Year Standard Limited Warranty is upgraded and replaced by the 3-Year Extended Limited Warranty for FREE.

For complete details on FLIR's industry-leading warranty please visit
www.flir.com/maritime.

PHOTOGRAPHY

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