SOLUTIONS FOR MARITIME LAW ENFORCEMENT AND FIRST RESPONDERS
Solutions for Mission Success

Marine electronic systems from FLIR and Raymarine are far more than just night vision and navigation. Our solutions are force-multipliers that let you see more and do more on every patrol.

Rugged, powerful and simple to use, your electronics provide enhanced safety, security, awareness and interconnectivity to make every mission a success.

Trusted Partners You Can Rely On

Every day, thousands of professionals execute missions with electronics from FLIR and Raymarine. Today, Raymarine is the trusted supplier to the United States Coast Guard. In addition, Raymarine and FLIR products are used by official law enforcement agencies and rescue organizations around the globe.

No matter whether your mission is security, search and rescue (SAR), environmental protection, resource management, safety, defence or interdiction, FLIR and Raymarine have solutions to make your job safer, easier and more effective.

Standardisation & Interoperability

Standardisation of equipment within departments and fellow agencies ensures crew members from other agencies can step aboard during joint operations and be productive members of your crew.

Chart data, routes and waypoints can all be easily shared between vessels and agencies ensuring all partners are operating from the same information.
Trusted Supplier to the US Coast Guard

In 2018 FLIR Maritime was awarded contracts to supply the United States Coast Guard with their next-generation Scalable Integrated Navigation System (SINS-2) and second generation Automatic Identification System (AIS-2) hardware and software. These programs will replace legacy navigation and AIS systems with state-of-the-art Raymarine electronics onboard thousands of US Coast Guard cutters, patrol boats, tenders and more.

More than just a supplier, FLIR has forged a true partnership with the USCG. Raymarine’s multifunction displays, AIS transceiver and LightHouse operating system have all been enhanced with advanced features and capabilities developed specifically to support complex missions and operations including:

- Instant SAR pattern generation with over-the-air data exchange
- Encrypted wireless data exchange for intelligence, tasking, targeting and more
- Advanced radar tracking algorithms for high-speed and evading targets
- Advanced graphical target intercept tools
- Safety tools for enhanced situational awareness and crew resource management

Raymarine’s LightHouse MFD solutions are truly designed by and for maritime first responders. Best of all, you’ll find many of these features in every Raymarine LightHouse system.
Multifunction Display Systems

At the heart of every Raymarine system is a powerful multifunction navigation display (MFD) powered by our simple and intuitive LightHouse operating system. The marine MFD is your link to our wide array of sensors and cameras that bring you total awareness in the maritime domain.

Raymarine offers MFDs in sizes ranging from 7 to 24-inches to fit onboard any vessel, in any location. MFD systems are modular and expandable. A single MFD display can view and control multiple sensors and cameras. Onboard larger vessels, multiple displays can be networked together for simultaneous independent viewing and control of system options.

Every Raymarine MFD features super-bright LED backlighting and high-resolution screens for superior visibility in all conditions. The backlighting can also be reduced to a minimum so the MFD will not disrupt night vision goggles during night-time operations.

Axiom Pro for First Responders

Axiom Pro MFDs are the ideal nucleus for every agency boat. These first-responder-focused navigation displays offer HybridTouch™ controls with reliable keypad and simple touchscreen operation. HybridTouch gives full access to the system, gloved or ungloved and offers superior user control while running at high speeds and in rough seas.

Axiom Pro MFDs also offer FLIR’s ClearCruise™ Augmented Reality technology. Using HD video and image stabilization, augmented reality provides enhanced awareness of charted navigation aids, AIS traffic, and the vessel’s plotted route by enhancing a live, motion stabilized video feed with dynamic object identification tags.

LightHouse OS for First Responders

Raymarine’s LightHouse Operating System is the powerful, but simple user interface that runs on every MFD. Smartphone-simple, LightHouse OS uses an intuitive app-based interface similar to popular mobile devices. Simply touch the app from the MFD’s home screen and get instant access to your information.

LightHouse OS supports independently customizable user profiles, letting individual operators save their preferred layouts and settings for instant recall whenever they’re on duty. System administrators can also choose to lock all users into a standard profile to ensure consistency.
Certified Data Encryption

Raymarine’s LightHouse 3 system is also the only commercial navigation system available that meets the United States Government’s Federal Information Processing Standards (FIPS 140-2). This keeps your agency compliant with the latest information security requirements, and prevents your data from being accessed by unauthorized parties.
Ready for Duty

Raymarine’s LightHouse MFDs are equipped with all the essential navigation features you need to safely navigate your patrol area. Built-in GPS receivers and detailed electronic charts show your precise location and help steer you clear of danger.

Electronic Charts and Maps

Raymarine has you covered with the widest selection of marine charts anywhere. Our chart partners include:

- Navionics / C-MAP / LightHouse NC2

Raymarine systems even allow you to make your own sonar maps in real-time should your mission take you to an uncharted or poorly mapped body of water.

Automatic Route Planning

Get a route plotted to your destination with just a few simple touches. Automatic routing knows the dimensions and draft of your boat to plot a safe route to your destination that can be tracked with GPS or autopilot.
Digital System Control

Search lights. Fire pumps and monitors. Rescue doors and access points. All of these devices and more can be digitally monitored and controlled using Raymarine Digital Switching. Intelligent digital power distribution can be tailored to your vessel and your specific needs. Intuitive graphics with touch controls bring fingertip access to all of your critical systems at the helm or wherever else you need it.

Automatic SAR Pattern Generation

Complex search and rescue patterns that once took valuable time to develop and plot on paper can now be rendered in seconds on the Raymarine MFD.

The dynamic SAR interface allows for real-time pattern development right on the screen. Separate tabs keep patterns organized for efficient operation. STEDS over-the-air reception of patterns is also supported when connected to a compatible eAIS receiver.

Raymarine MFDs support IAMSAR-standard search patterns, including sector, parallel line and creeping line searches.

Dynamic Target Intercept Display

Graphically display the optimum course to steer and interception point to designated targets of interest from AIS or radar. The intercept solution even updates in real-time to account for ownship manoeuvres and suspects evading capture.

Anti-Grounding and Collision Alerts

Receive warnings about approaching shallow water, land or charted objects. The system automatically adapts to changes in vessel speed and provides advanced notification of impending danger.

Automatic Navigation Data Logging

Select Raymarine MFDs can be configured to continuously record all onboard navigation network data to an onboard memory card for analysis or incident reconstruction.

Digital System Control

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AIS Predicted Danger Areas

Be alerted to crossing hazards when maneuvering in crowded shipping lanes. Collision warning zones update in real-time and highlight the areas to avoid when crossing paths with AIS-equipped traffic.
Raymarine offers several different VHF bridge-to-bridge radio options for vessels of all sizes. Every Raymarine VHF is built for rugged reliability and simple operation. All models are available with a built-in GPS receiver for easy installation and simple configuration of its Class D Digital Selective Calling (DSC) capabilities. Dual-watch, tri-watch and weather alert options are all present.

The Ray 63 and Ray 73 are full-sized VHF radios with oversized controls and LCD displays for easy operation and viewing. They offer dual or multi station control capability with the addition of optional wired or wireless handset kits.

Ray 90 and Ray 91 models feature a black-box remote transceiver module that mounts anywhere and saves space at the helm. Full-function handsets and remote speakers provide full control and rich audio. These radios can support up to 2 wired and 3 wireless handsets for larger boats needing multi-station access.

Loudhailer output is available on the Ray73 and Ray91 models. Connect an optional hailing horn for public address, electronic horn and fog signalling capabilities. Ray73 and Ray91 also feature a built-in receive-only AIS capability that can feed standard Class A and B contacts to your connected radar, chartplotter or instruments.

Ray 63, 73, 90 and 91 radios are compatible with marine intercom and headset systems from the David Clark Company, ensuring optimal audio quality in windy, noisy environments.
When linked to a Raymarine encrypted LightHouse MFD, the AIS5000 can relay secure messages between connected vessels and shoreside command centres. AIS5000 constantly displays Blue Force Tracking information for other Blue Force units and allows for regional commanders to see and share a common operating picture. The AIS5000 allows for true inter-agency operations in even the busiest ports.

Official vessels can securely send and receive text messages, status reports, intelligence, and more. Seamless integration with the encrypted MFD also lets operators share target-of-interest (TOI) designations and receive SAR patterns over the air. AIS5000 also allows Blue Force vessels to participate openly in the civilian AIS network, or switch into covert mode for surveillance or enforcement actions.

The combined encrypted MFD and AIS solution forms the backbone of the United States Coast Guard’s SBU Type III Tactical Data Exchange System (STEDS.) With approval, this same technology can be made available to partner agencies who operate in conjunction with US Coast Guard units.

AIS5000 also functions like a standard Class A transceiver, sending and receiving navigational status and identification data to and from other participating vessels. AIS target navigation, identification and collision avoidance data can be displayed on the AIS5000’s colour LCD display and also shared with other shipboard navigational systems like radar, chartplotter and ECDIS.

Secure Data Exchange over AIS

The AIS5000 is a full-featured, SOLAS-approved Class A Automatic Identification System (AIS) transceiver designed specifically for agencies involved with maritime law enforcement, SAR operations and other official duties.
Make Darkness Your Ally

Raymarine multifunction navigation displays integrate seamlessly with FLIR thermal night vision cameras, giving you the power to operate 24/7. FLIR thermal night vision camera systems turn darkness into day, and allow you to see well beyond visible range both night and day.

The FLIR thermal image can be fed into the Raymarine MFD and also distributed to additional Raymarine displays around the vessel. Still images and video can be captured from any network displays. Select FLIR maritime thermal cameras support external digital video recorders and ONVIF compatible security systems.

The MFD and thermal camera work hand-in-hand in many situations to ease workload and keep you focused on the scene. Slew-to-cue allows the MFD to guide the camera’s pan and tilt drive to keep radar, AIS, targets-off-interest, or charted positions on-screen. View the camera full-screen, or on a split window alongside other data like radar and chart.

FLIR thermal cameras can be controlled via the LightHouse touchscreen interface and menu system. Dedicated camera joysticks can also be added wherever they are needed.

Most FLIR thermal camera systems support multiple video outputs and streams, enabling them to be connected simultaneously to additional monitors and networked systems.
**FLIR M500**

When extreme standoff range is a necessity, the M500 is the right tool for the job. M500 houses a cryogenically cooled mid-wave thermal camera with a 14X optical zoom, plus an HD visible camera and spotlight.

Cooled, mid-wave thermal allows the M500 to perform at extreme ranges and in challenging atmospheric conditions like fog, haze and smoke. The M500’s enhanced optics allow you to observe activity at long range, collect evidence, and operate with total confidence night or day.

**FLIR M400XR**

M400XR adds a 4X optical zoom capability to its thermal imager, and comes with an upgraded HD colour camera with a 30x optical zoom for long-range observation. M400XR’s third payload is a high-intensity LED spotlight that is precision-aligned to the cameras. Sight a target with thermal or visible camera, then light them up to let them know you can see them.

M400XR also has a video tracker so the camera can lock onto an object of interest and automatically keep it in-frame while the boat manoeuvres. M400XR also has an isothermic firefighting mode to help identify hotspots and trouble areas at marine fire scenes.

**FLIR M617CS**

The M617CS is FLIR’s most popular thermal camera system for first responders. Its dual-payload gimbal houses a high resolution thermal imager as well as a full-colour zoom camera system. The system has standard gyro-stabilisation to provide steady imaging in rough seas.
Magnum Open Array Radar

Magnum open array radar systems are the best solution for high speed patrol boats and interceptors on open water. System options include 4kW or 12kW power output with a 96-mile maximum range. Both four and six foot antenna options are available as well. The larger antenna offers increased sensitivity, target separation, and coastal detail.

Magnum's high-speed target tracking algorithms were specifically engineered for tracking evasive vessels. Dual-speed antenna rotation automatically doubles the antenna rotation rate, as needed, based on your own ship’s speed and range selections. Dual-range mode allows you to see two different radar ranges at the same time. Use one scale to keep an eye on nearby traffic, while using the other to monitor the big picture at long range. Dual range mode works on a single MFD, or across multiple networked MFDs for maximum flexibility.

Magnum delivers better situational awareness with fully automatic MARPA target acquisition and tracking. Magnum also makes use of Raymarine’s Evolution 9-axis heading sensor technology to deliver real-time, accurate target plots.

Radar for All-Weather, Long-Range Ops

Day and night, radar scanners from Raymarine keep you aware of surrounding traffic, hazards, obstacles and approaching weather. Radar also allows responders to operate in fog, rain and other low visibility situations.

Responders can utilize radar to monitor and enforce closures and exclusion zones, or to be alerted to inbound or outbound vessels at long range.
HD Color Radomes
Enclosed radome scanners are perfect for vessels with topside space or weight constraints. Their powerful 4kW transmitters give them a 48-mile maximum range, while still offering target tracking, dual-range scanning and automatic high-speed mode.

Quantum 2 Doppler Radar
Raymarine’s Quantum 2 Doppler radar is an excellent choice for patrol boats in congested waters with heavy vessel traffic. Doppler target tracking colour codes inbound targets (red) and outbound targets (green) for instant identification of developing situations. Quantum 2 also offer MARPA target tracking, a 24-mile maximum range, and an incredible 18-foot minimum target detection range for zero-visibility ops.

An example of a Doppler radar target tracking colour codes: inbound targets (red) and outbound targets (green) for instant identification of developing situations.
Sonar Solutions for Navigation, Search and Recovery

Raymarine offers a full suite of superior sonar solutions that allow for quick identification and marking of sea floor anomalies or potential search objects. This initial identification can help you decide if a second, more detailed analysis by towable side-scan sonar is needed. The ability to mark these objects immediately can save your agency valuable time and resources.
RealVision 3D CHIRP Sonar

Available on Axiom series MFDs, RealVision 3D is a multi-channel sonar system offering high resolution DownVision, SideVision, and 3-dimensional sonar. Traditional high CHIRP conical sonar is also included for real-time depth calculation and bottom density display.

DownVision and SideVision can generate photo-realistic images of the seafloor, bottom structures and man-made objects at depths and distances exceeding 300-feet. RealVision 3D sonar generates a comprehensive 3D model of the underwater environment, including bottom terrain, structure, objects on the bottom, and targets suspended in the water column. RealVision 3D sonar imagery is GPS and motion-stabilized and can be manipulated and viewed from any angle.

Transducers for All Applications

Raymarine offers its sonar transducers in a wide range of transom mount, in-hull, and through-hull configurations. Plastic, bronze and stainless steel housing are offered for maximum compatibility with a wide range of hull materials.

Conventional High CHIRP Sonar for Navigation

Many Raymarine MFDs are available with built-in traditional sonar for general navigation. This system provides real-time depth information to the operator, and can also indicate bottom composition and density.
Export Restrictions
The information contained in this brochure pertains to dual use products controlled for export by the Export Administration Regulations (EAR). Diversion contrary to US law is prohibited. US Department of Commerce authorization is not required prior to export or transfer to foreign persons or parties unless otherwise prohibited.

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