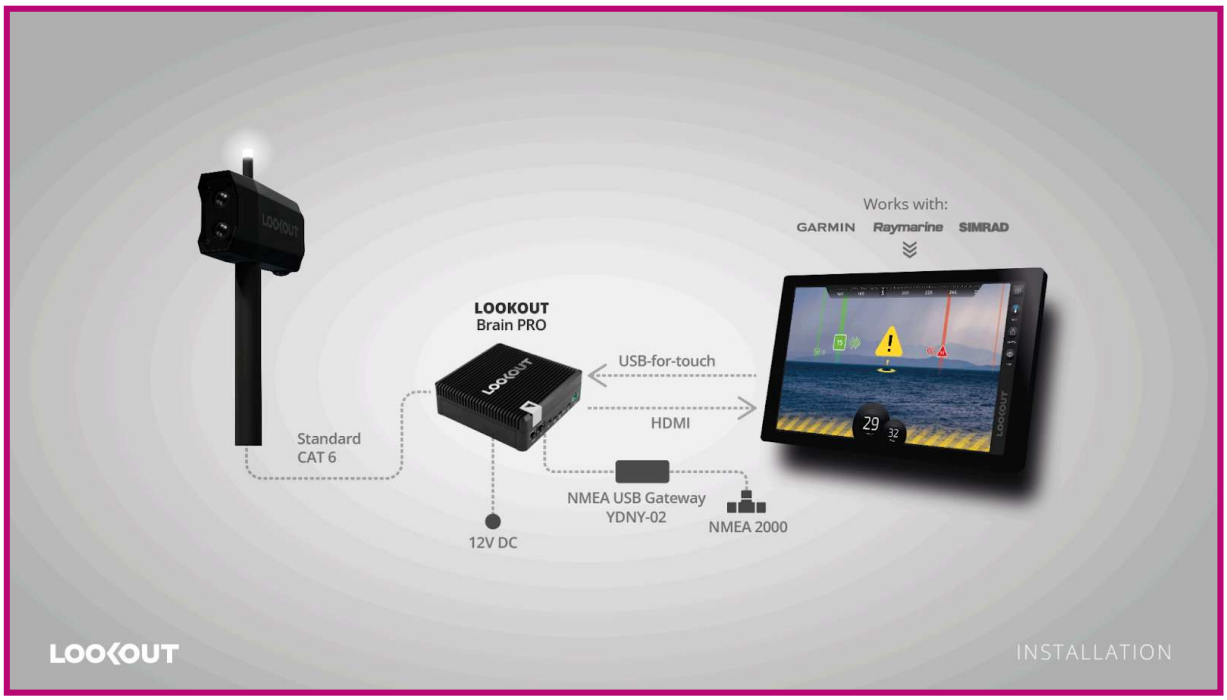
LOOKOUT

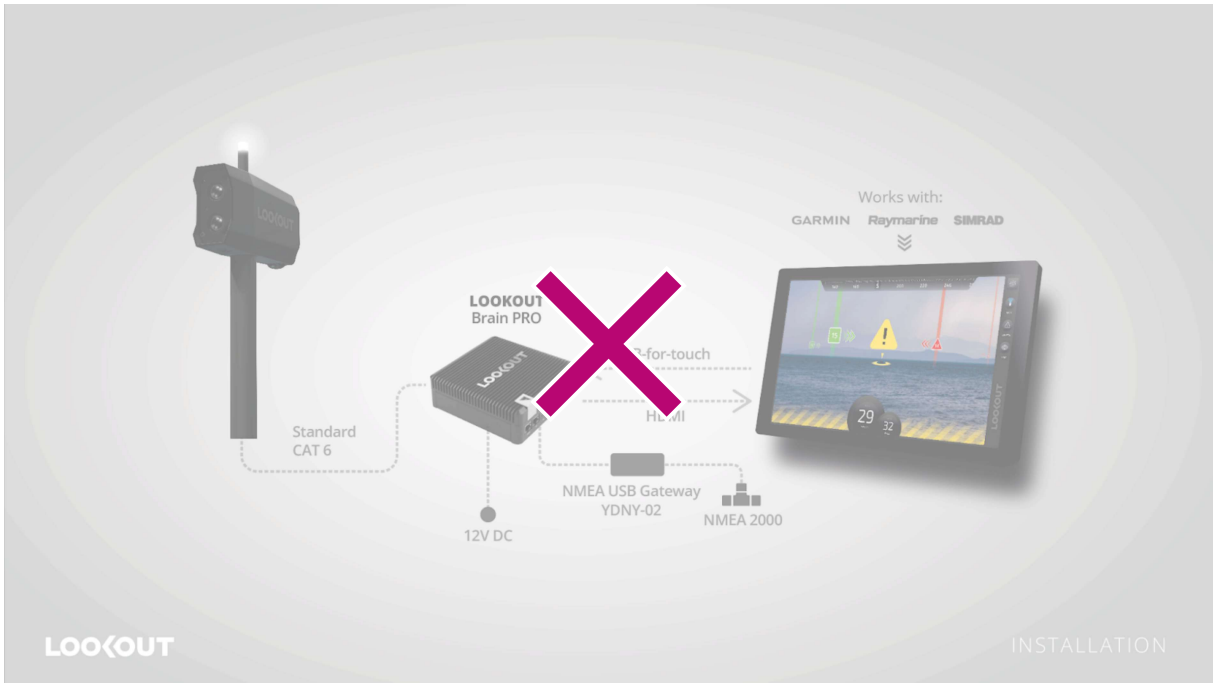
www.getalookout.com/install

Installation Guide

Congratulations on your purchase of one of the most advanced pieces of marine



electronics available to modern boaters.



LOOKOUT

LOOKOUT recommends using a professional marine installer.

Pre-installation checklist

- [ ] **MFD compatibility (HDMI in, Touch out)**
  For the best image quality, the LOOKOUT Brain connects to the MFD with an HDMI input and USB output for touch control. Note: you can use a smartphone or tablet to view and interact with LOOKOUT as well.



- [ ] **Camera placement: Choose a location and height.**
  - [ ] The LOOKOUT camera includes a white nav light, CoastGuard rated to 2nm. A good choice for placement is to replace to current nav light.
  - [ ] Choose a mounting location that gives the cameras a clear view forward, the 360 camera the best view to the aft, and a view of the back of the boat for docking.
  - [ ] We recommend the SeaView 2-foot or 3-foot pole with an interior diameter of 1 inch. If you are concerned about vertical clearance or trailering, pivoting poles are available from **e-Riggers** and **Taco Marine**.

- [ ] **NMEA 2000 Gateway**
  - [ ] LOOKOUT uses the **Actisense NGX-1-USB Gateway** to stream NMEA data into the Brain. These data include GPS, Heading, AIS targets, Sonar depth, COG, SOG, rudder, fuel efficiency, and more. LOOKOUT synthesizes all of this data with computer vision targets and internet data to reconstruct the scene around the boat.

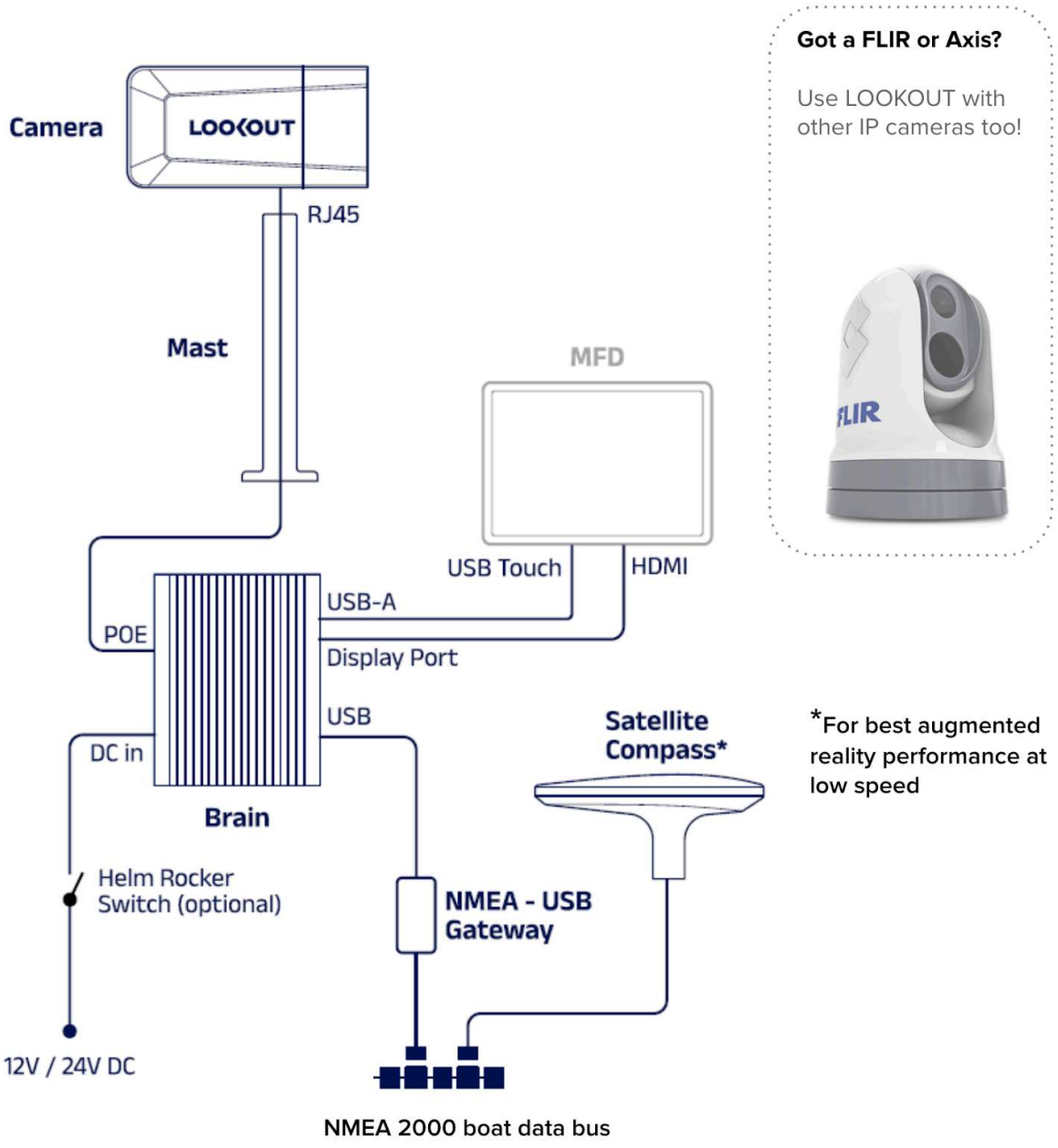
- [ ] **We recommend a Satellite Heading Sensor**
  - [ ] The Garmin MSC-10, Furuno SXC-20, and Simrad HS 75 GPS are all precise and low-latency options. LOOKOUT reads this data from the NMEA bus.

LOOKOUT

LOOKOUT needs precise location and heading data to accurately position points of interest and channel buoy annotations over the video feed. While the augmented reality features will work with only course over ground heading data provided by an MFD, its position won't be as accurate while turning or at very low speeds.

- [ ] **Cables required**
  - [ ] HDMI (from Brain to Display)
  - [ ] USB Touch (from Display to Brain). Note: must be a USB Data Cable, not "power-only"
  - [ ] NMEA 2000 T Connector
  - [ ] NMEA 2000 Backbone drop cable
  - [ ] Long Cat6 Ethernet Cable (from Camera to Brain)
  - [ ] Wire and inline 10A fuse to power the Brain

LOOKOUT



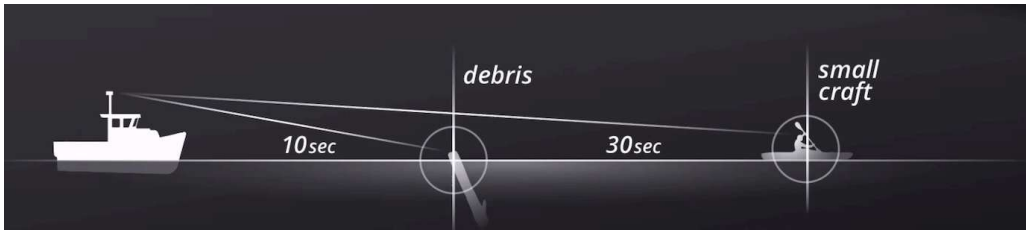
Step-by-Step Installation

LOOKOUT strongly recommends using a professional marine installer.

- **Choose a mounting location for the LOOKOUT Camera + integrated Nav Light**
    - Choose a location and height with a clear view forward and an unobstructed aft view for the 360 camera. Most customers mount the LOOKOUT towards the back

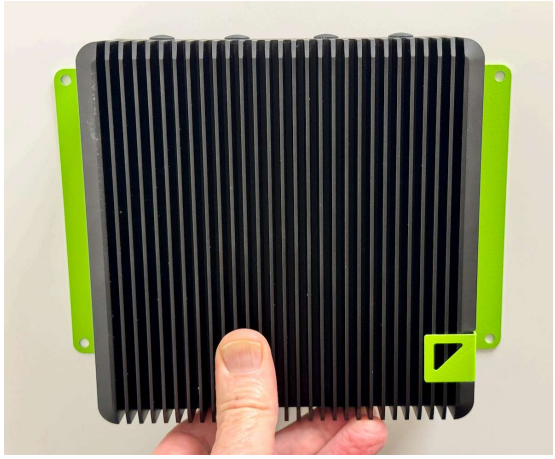
of the hardtop so the 360 camera can view the back of the boat for docking.





NOTE: Since most customers prefer the highest vantage possible for the camera, we have integrated a white 360 nav light to replace your existing nav light. The Coast Guard regulation stipulates this should be the highest point of the boat.

- **Choose a mounting location for the Brain**
    - Find a vertical surface below the helm near the MFD(s) to mount the Brain.



NOTE: The Brain is an industrial-rated NVIDIA computer built for edge AI. It has a powerful GPU (graphical processing unit) to perform at 100 Tops (trillions of operations per second). It is designed to shed heat through a fanless heat-sink design. Mount the system with fins oriented vertically, as shown here.

- Install the mounting brackets so the Brain stands off the mounting surface.



- **Connect the camera to the Brain with a CAT6 cable**
  - The ethernet port on the Brain powers the camera (PoE) and delivers data from all three sensors (night, day, and 360). It is labeled CAMERA.

LOOKOUT

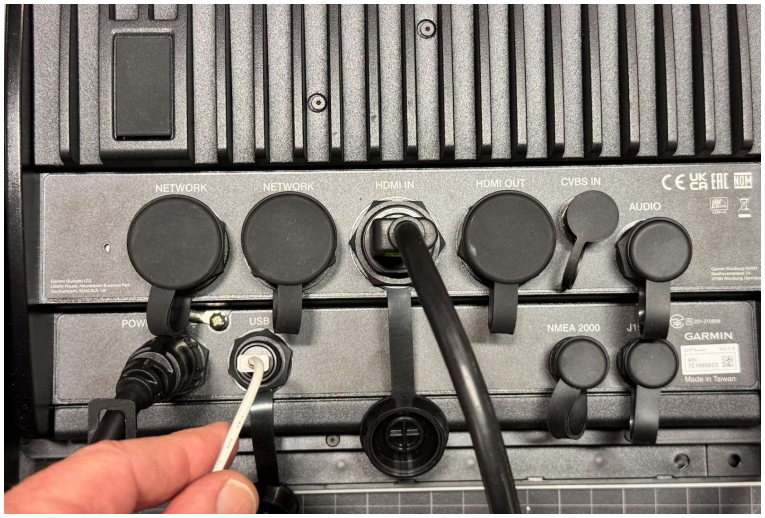
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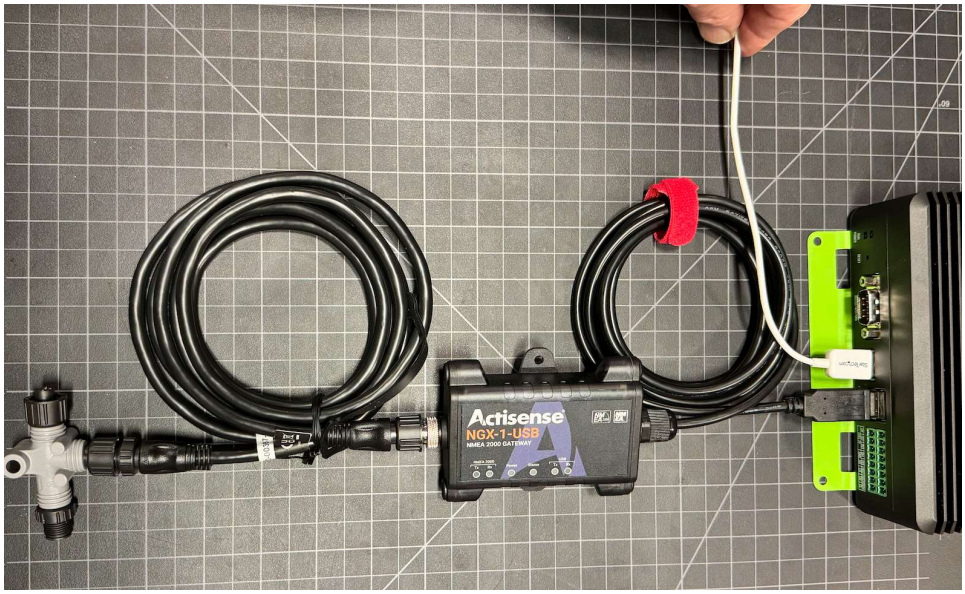
- **For VIDEO, connect the Brain to the MFD with an HDMI cable.**
  - Use the VIDEO IN HDMI port on the MFD, and connect to the HDMI port on the Brain.

- **For TOUCH, connect a USB cable from the MFD to the Brain.**
  - The USB-A port is labeled TOUCH on the Brain.
    Connections on the back of a GARMIN MFD are shown here. I'm holding the white USB touch cable.

LOOKOUT



- **Connect the Brain to the NMEA network using the Actisense gateway**
  - Use a NMEA T and drop cable to connect the Actisense NGX-1-USB gateway, then plug this into the USB-A port on the Brain, labeled NEMA.

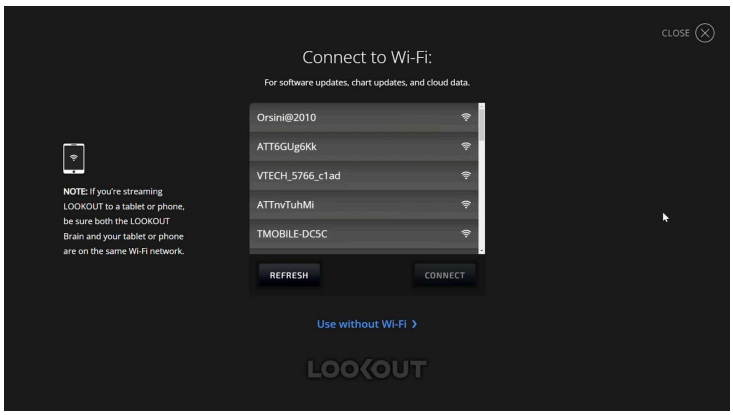


- **Supply DC 12-24V power to the Brain**
  - When power is supplied, the Brain automatically starts. The Brain draws a maximum of 6.6 amps. An inline 10A fuse is good practice.

- **Internet connection**
  - Connect to WIFI by selecting the “gear” setup icon in the upper right of the LOOKOUT screen. Then, select “System Settings”, and then “Settings” to select a

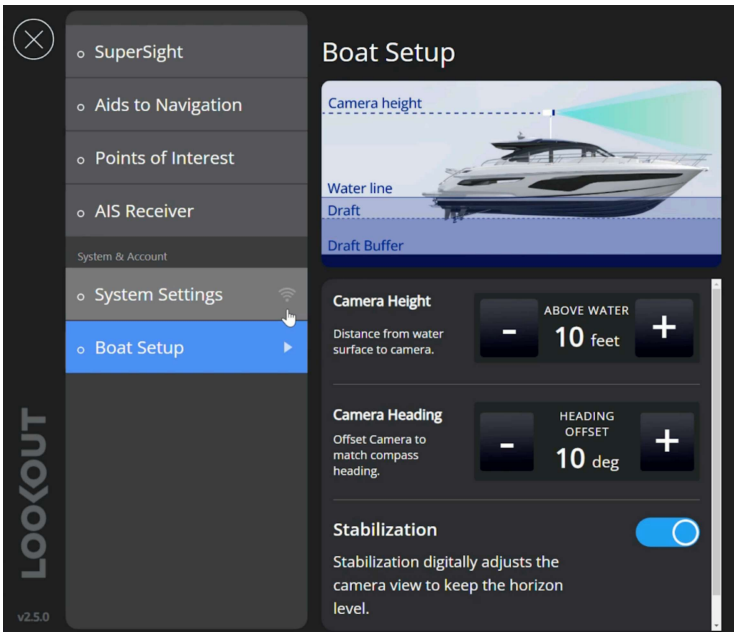
WIFI network. Select the network you want to connect to, and press “Connect” to enter the WIFI password. You may configure multiple networks (marina or club wifi, Starlink, hotspot, etc.) and LOOKOUT will remember them.

- If your boat or dock has WIFI, Starlink, or similar, select its network and enter the password. This connection is used for system updates. The computer vision is constantly learning, so your boat will receive AI improvements; you will also get chart updates on buoy locations and shallows, and as boats around you spot hazards, your system will incorporate this data.



- Note: you may also hardwire the Brain into an existing boat network by plugging an ethernet cable into LAN2.

- **Boat Settings**
  - The last step is to set the camera height and align the forward camera heading so it points straight ahead.



LOOKOUT

- **Configure your MFD with an icon for quick access to LOOKOUT!**
  - **On Compatible Garmin Models:**
    - Tap the Home icon on the menu across the bottom of the screen.
    - The Home icon will turn into 3 white squares indicating “Combo” - tap that new button.
    - Tap “+ Add Combo”
    - On the left side, in the combo box you prefer, click “Tap to Add”, then tap “Video”, and the HDMI port to which your LOOKOUT is connected.
    - Give the Combo a name – we suggest “LOOKOUT!”
    - Select the Layout you prefer – we suggest full screen!
    - Tap “Done”

- **Get out on the water with LOOKOUT!**
  - Once you start using LOOKOUT, you’ll learn the icons of hazards, buoys, POIs, and more. Practice switching between the zoom and wide view, adjust sensitivity, and understand the range of the hazard recognition in each mode: Harbor, Coastal, and Offshore. For low-light situations, you need to choose “night mode manually”. You can also change the range at which POIs and buoy overlays appear. All of these preferences are covered in the owner's manual below.

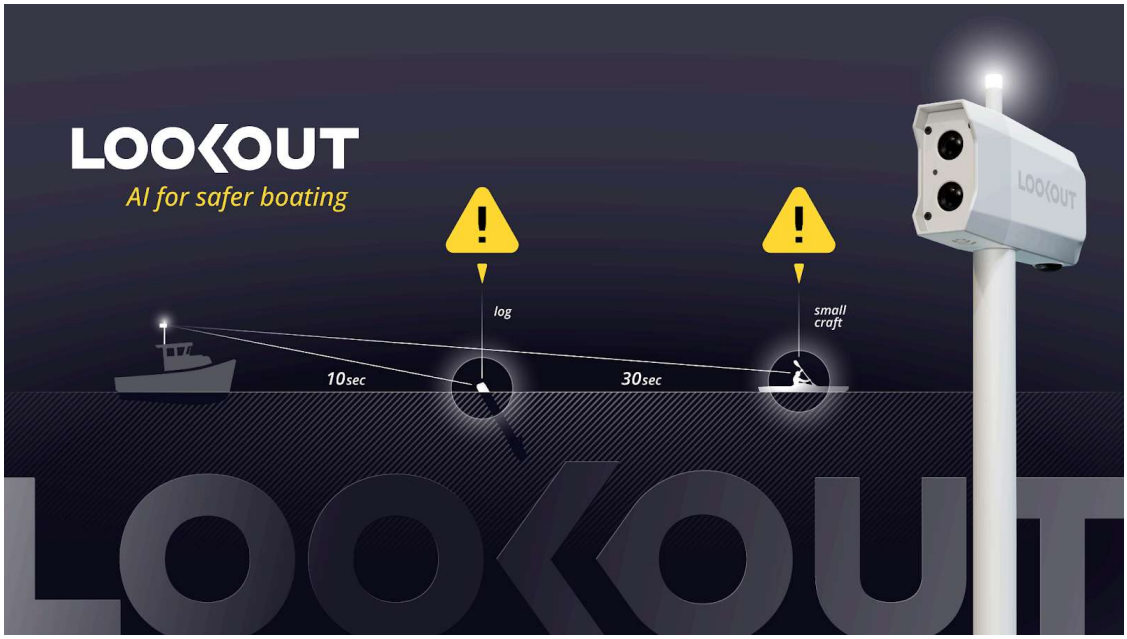
    LOOKOUT team wants your feedback! Please send us an email, text us, or use WhatsApp to tell us what you like or suggestions for improvements.

- **Questions? We are here to support you!**
  - email: *mayday@getalookout.com*

LOOKOUT

LOOKOUT

Owner's Manual



AI for boating safety

At LOOKOUT, we are a team of boaters, AI engineers, and 3D game designers committed to inventing the future of marine navigation and situational awareness with the latest technology.

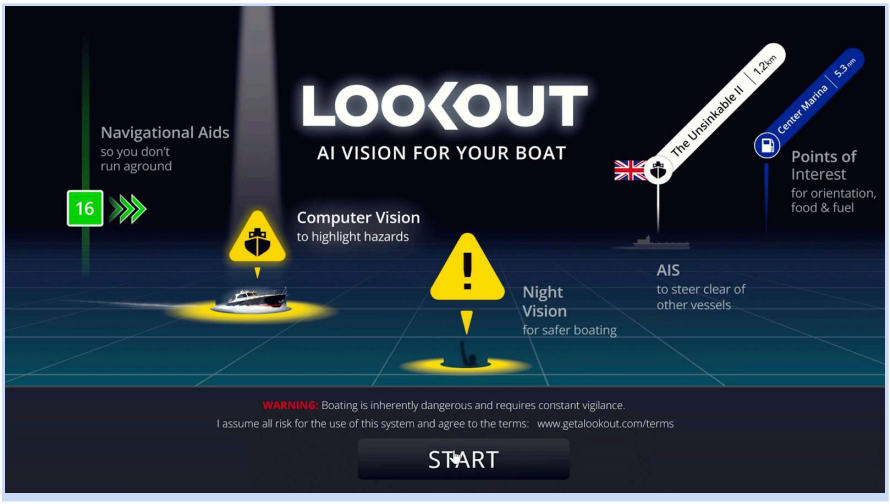
We created LOOKOUT because boating is dangerous. You are often out in weather, heavy seas, low light, and then the fog roles in. Buoys and ATONs are hard to see, and many boaters don't obey the col-regs. We believe boaters need a better tool for situational awareness, especially in crowded harbors and unfamiliar waters.

The team is working hard to continuously improve LOOKOUT with your feedback and suggestions. Expect regular over-the-air updates.

Tap START

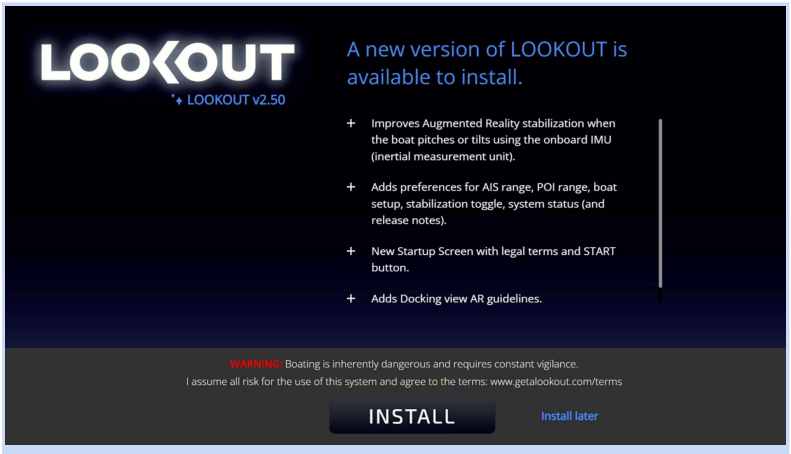
Congratulations on owning a LOOKOUT, your extra set of eyes on the water. Let's take a look at its capabilities before casting off from the dock. The system automatically powers on when you switch on your electronics. You'll see a welcome screen like this:

LOOKOUT



Software updates bring new features and AI performance

- Updates download automatically. When a new version is available, you can read a summary and select INSTALL or Install later. Like your phone, update times vary based on your bandwidth and the size of the latest AI model, chart data changes, or feature improvements.



Get familiar with the LOOKOUT interface

- Our goal was to keep the augmented reality interface clean and easy to read at a glance. Speed and depth data feature prominently on two large dials. Compass is along the top bar with heading indicator is an arrow with white centerline. Other camera and mode control buttons appear to your right. Tap the gear icon at the top to slide out the preferences.

LOOKOUT



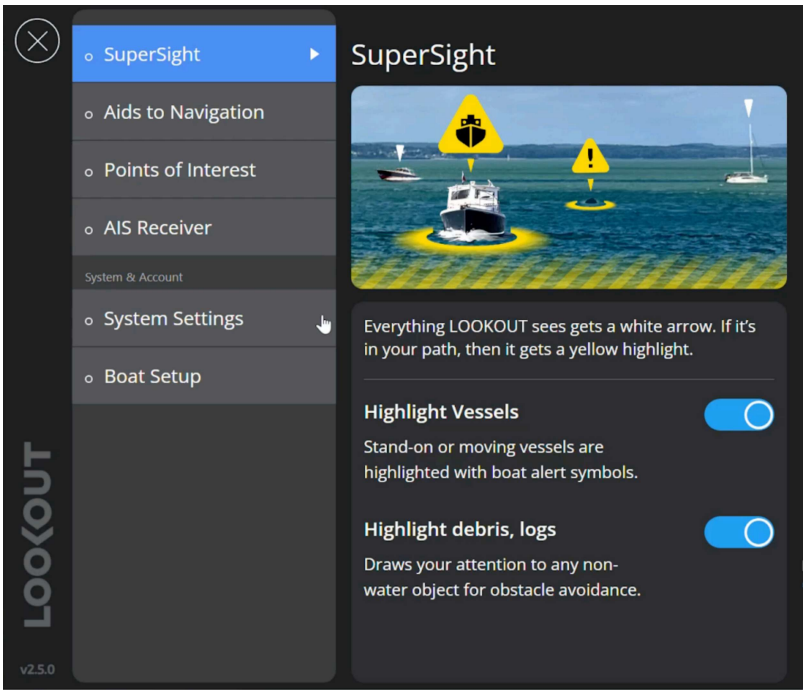
Key features

- **Infrared Night Vision**
  Lookout uses an infrared low-light sensor called SONY STARVIS to give you better-than-human perception in low light. Its resolution is higher than a full thermal camera, and it provides a full-color display. Most boaters prefer this camera at twilight and in situations with some shore light or moon/starlight. But, on an ink-black night offshore, we recommend attaching your FLIR for a full thermal image.



- **SuperSight**
  The feature that captains value most with LOOKOUT is its ability to spot potential hazards in the water. Our engineering team trained an AI model to automatically recognize and track hundreds of potential hazards: people, debris, buoys, small craft, a variety of boats, rocks, and mammals. Any dangers are highlighted to give captains more time to make informed routing and speed decisions. Activate this feature in the settings.

There is an escalation scheme for hazards. First, the system highlights vessels or debris with a white mark. If the vessel is on your path, the mark will turn yellow. As you get closer to the danger, a hazard triangle appears above it, and the bottom of your screen glows to get your attention.

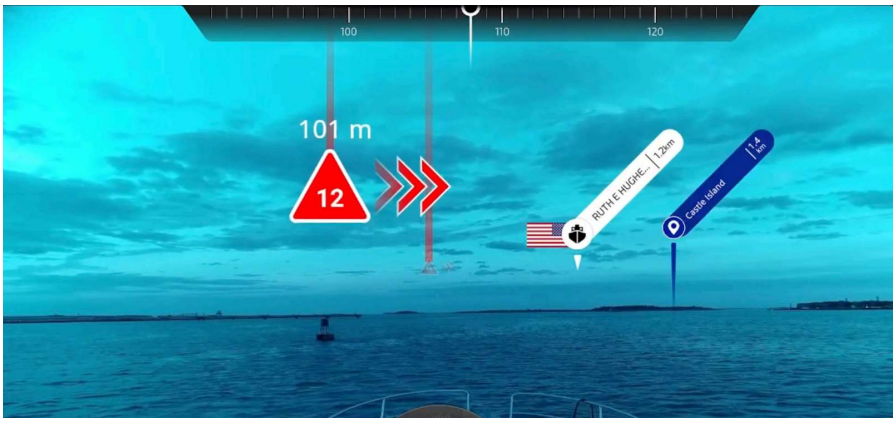


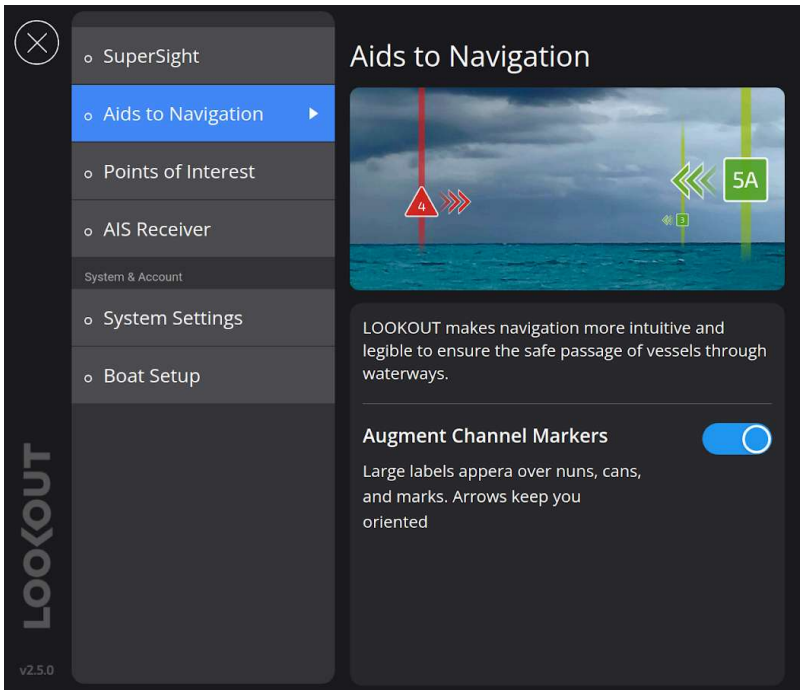
A sensitivity setting, similar to the gain in a radar system, allows you to control the size and range of targets it identifies. We created three modes, harbor, coastal, and offshore, to customize how the system behaves in each of these situations. More on this below.

- **Aids to Navigation**
  LOOKOUT displays critical chart information superimposed directly on the world. The system stores over 22,000 marks directly from NOAA's ENC, and updates these every 15 days. These graphics augment the scene for easier orientation and to help avoid running aground. A chevron >> indicates on which side of the buoy to pass. You'll notice they grow larger, more opaque, and higher in the sky as you approach to help you judge the distance away.

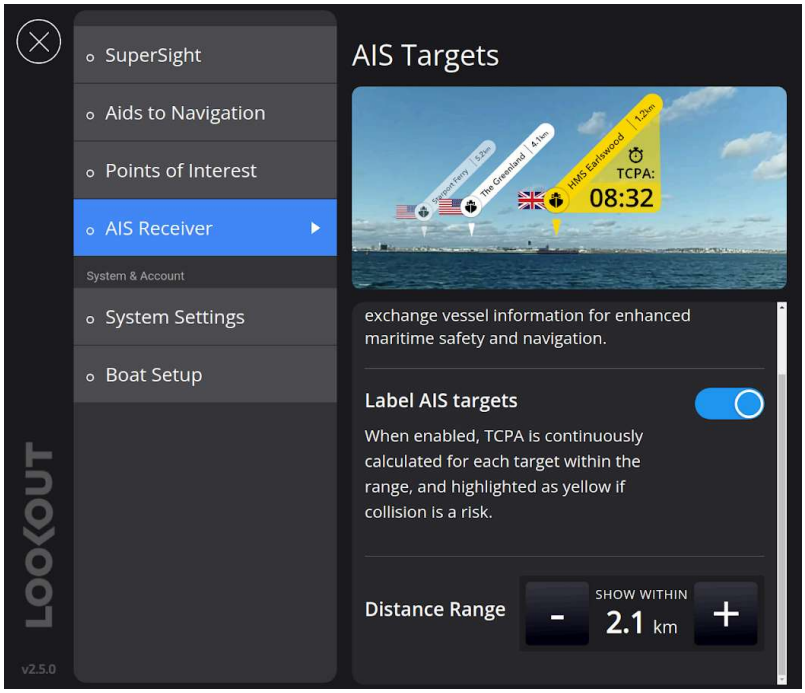
  Below, notice the red triangle helps you spot Nun #12 coming out of Boston Harbor. The

red chevrons indicate that you should pass on the right to stay in the channel.

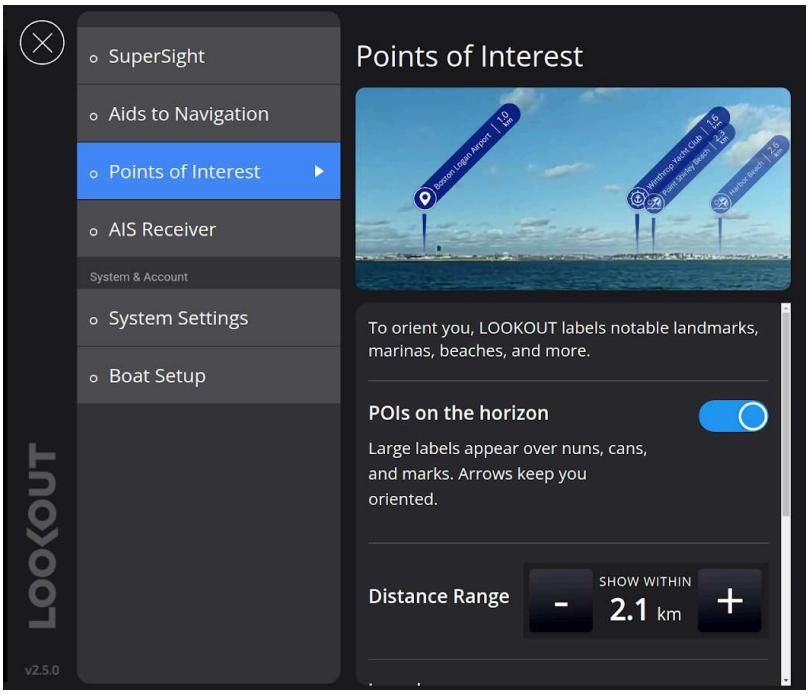




- **AIS targets**
  Large vessels are legally required to broadcast their name, size, country of origin, heading, speed, and position. If you have an AIS receiver, LOOKOUT imports this data via the NMEA network then renders this information in your view. If there is a risk that you will come close to the target, its label turns yellow and estimates the time to the closest point of approach (TCPA).



- **Points of Interest (POIs)**
  Look for the blue pins. LOOKOUT labels notable landmarks, marinas, waterfront restaurants, beaches, lighthouses, and more to help orient you. You can change the range of what will appear and the type of POIs in preferences. Note this is not a complete set of landmarks; the goal is to keep you oriented.

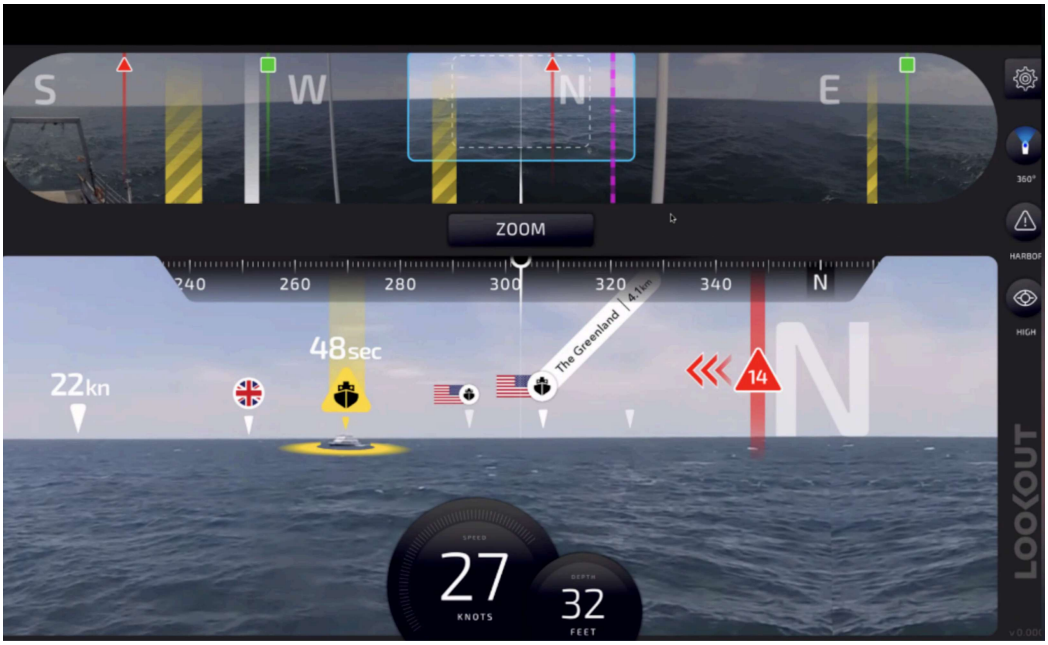


LOOKOUT

- **Panorama Mode**
  The top of the screen features a broad panorama of the full 360-degree video all around your boat. You'll notice compass ordinals on the horizon to help you understand that you're looking at a full 360 panorama video.

  The bottom of the screen shows whatever you decide to zoom in on. Just drag the window across the top panorama to pan left or right, or swipe the bottom image. Use a two-finger pinch on the bottom view to zoom in and out.

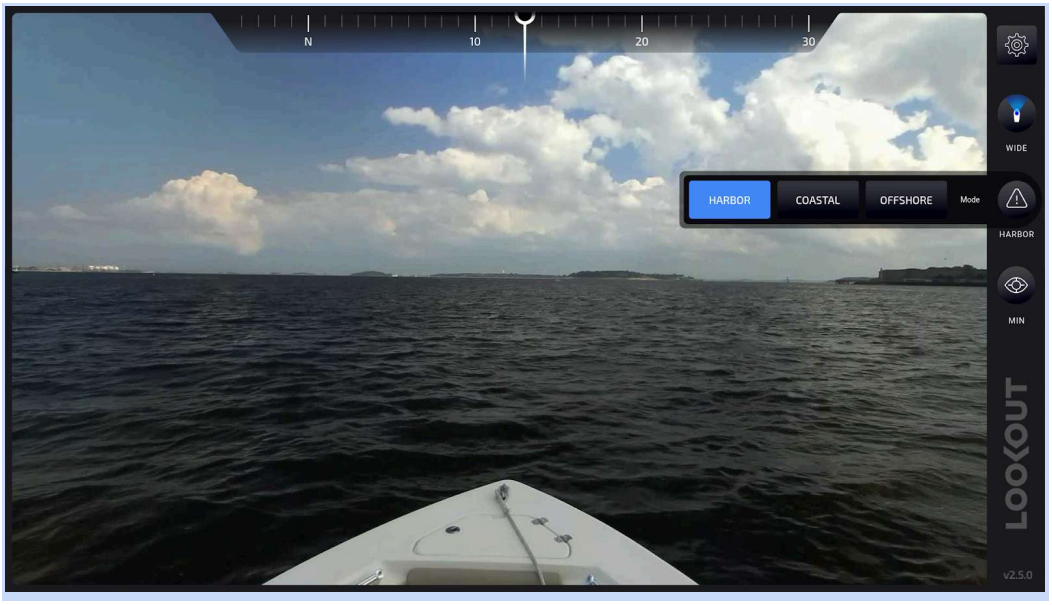
  If LOOKOUT identifies potential danger anywhere around the boat you'll see a yellow crosshatch pattern in that heading. We call this the risk-compass™.



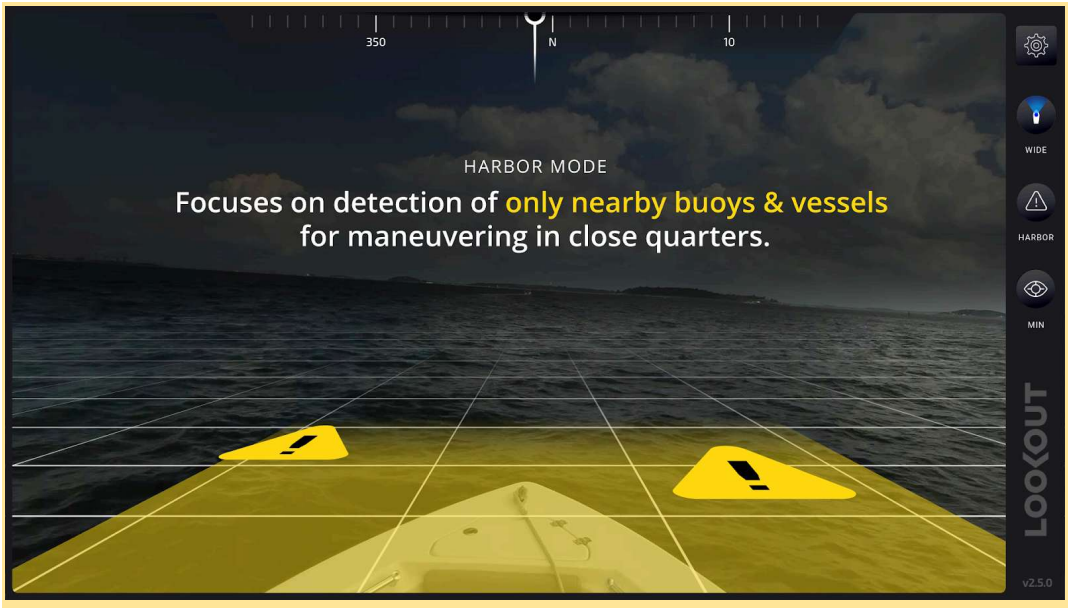
- **Docking Mode**
  A distance ruler is shown on the water behind the boat. This provides a better view to help you gauge distances while backing into a slip. After installing your camera, drag this graphic to align with the stern of your boat. Position the first rung in this ruler as shown below:

Modes and sensitivity settings

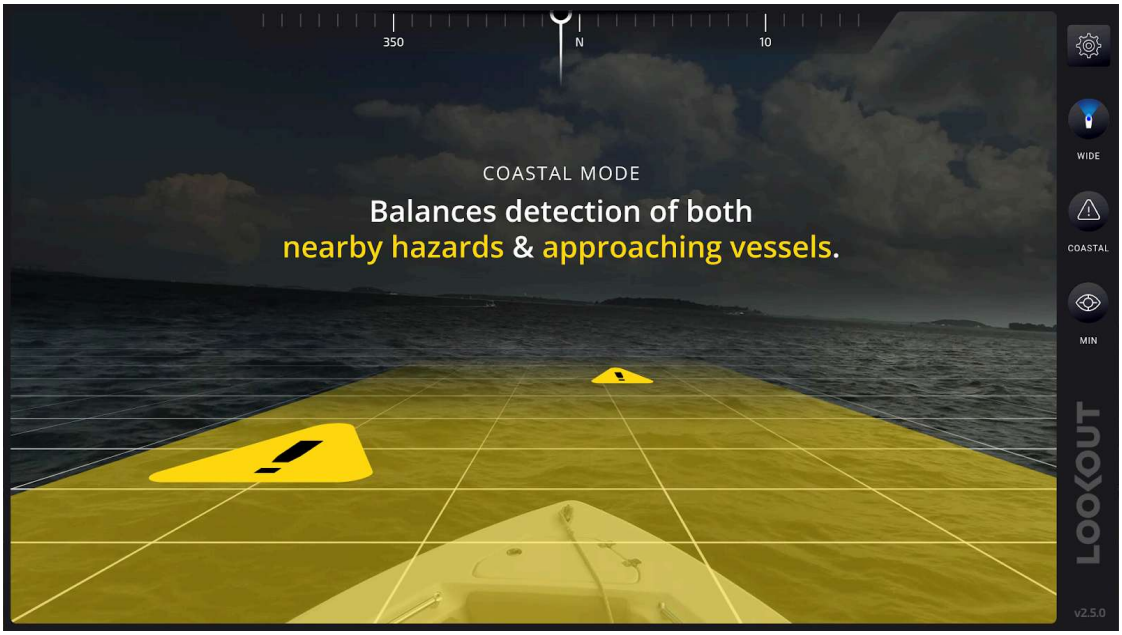
- Let's set up your system to match your situation. Tap the "Alert icon" to choose different alert modes. **Harbor** – leaving the marine or anchorage. **Coastal**, cruising inshore with traffic moving around you. **Offshore** – when you're at sea and need an extra set of eyes scanning constantly for any threats ahead.



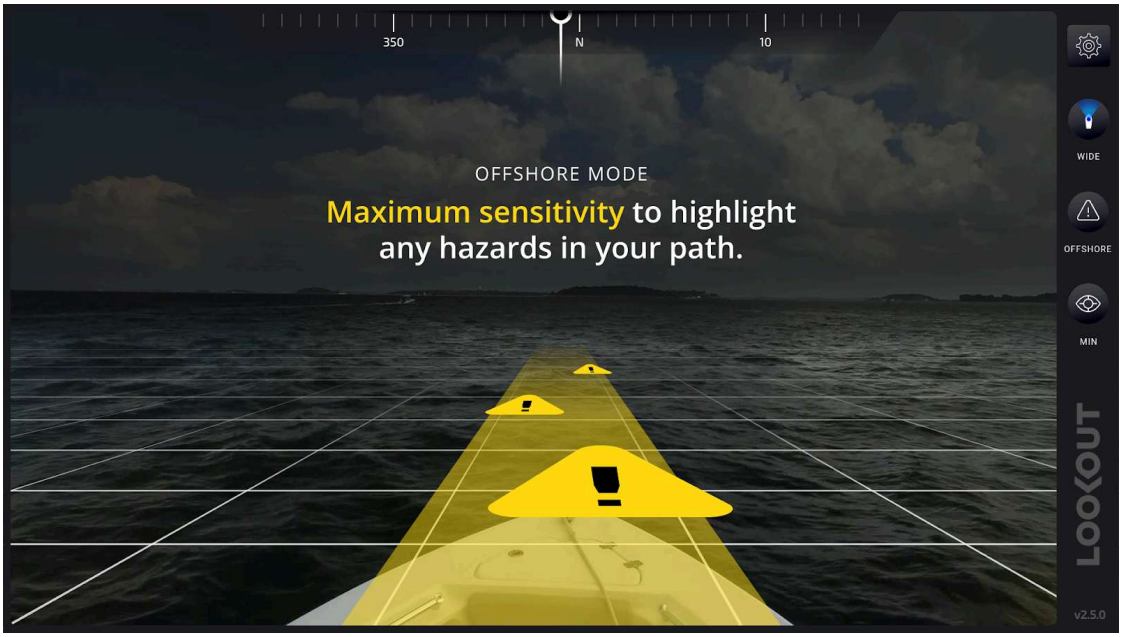
- **Harbor mode**
  - When Harbor mode is selected you see a summary of its functionality. This mode turns off distracting targets in the distance for maneuvering in close quarters.



- **Coastal mode**
  - This mode adds highlights to the few nearest dangers with a wider field of view.

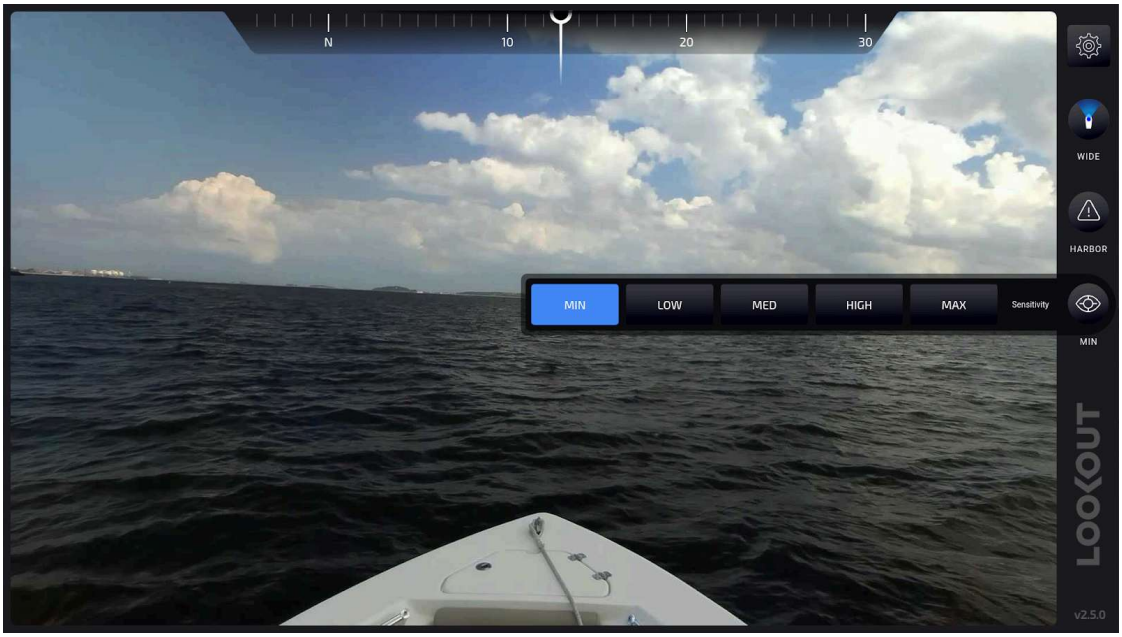


- **Offshore mode**
  - Highlights all hazards in your path all the way to the horizon with a narrower alert field of view.



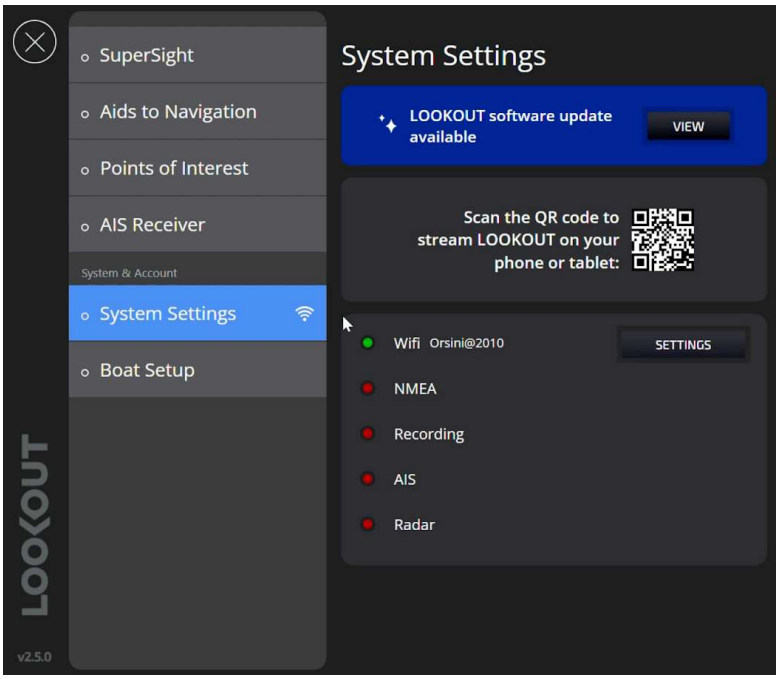
- **Setting sensitivity**
  - Like the gain on a radar system, choose if you want the system to identify everything, only high-confidence targets, or a balance between the extremes.

LOOKOUT



IPhone and iPad integration

- **Make sure your device is on the same WiFi network as the LOOKOUT, then open System Settings and scan the QR code.** You'll see the same augmented reality view as the helm display. This is a great way to show LOOKOUT to others aboard and learn about your surroundings. Some boats stream LOOKOUT to the large screen in a salon.



Using LOOKOUT with a FLIR, Axis or other PTZ camera

LOOKOUT

- Have another camera? LOOKOUT adds a layer of computer vision and augmented navigation to any ethernet-connected camera. LOOKOUT's 360 camera system pairs well with other long-range zoom systems. For example, if the 360 LOOKOUT camera detects an inbound hazard, the system will instruct the PTZ camera to zoom to that bearing for a detailed look and then continue to track the target.

Using LOOKOUT another fixed IP camera from Garmin, Raymarine, Sionyx

- Customers with large boats often have dedicated cameras for docking or security. LOOKOUT can also integrate with these and provide AI processing for target identification and AR highlights for guidance and labeling. Reach out to our team to learn more!

Optional Services *(coming soon)*

- **LOOKOUT Club:** share hazard data with other boaters and import and share your routes. The LOOKOUT Club App helps anyone on the water benefit from hazards that the fleet of LOOKOUT-enabled boats detect, plus reports from NOAA for whales and other mammals, other exclusion zones like regattas, construction sites, offshore wind, and fishery installations.

- **Journey Logs: like a dash-cam for your car,** this voyage data recorder (VDR) service saves videos and all associated boat data as a record of your trips in the Cloud. It's your choice to use as insurance evidence in the event of an incident.

- **Sea-Assist: expert advice at hand when you need it.** When you sign up for this service, an extra button appears on the LOOKOUT to summon help—a zoom call where the remote captain can see through the eyes of your boat. Use this service for assistance whenever you need it: navigating complex channels, docking, answering engine questions, or safety coming in after dusk.

- **Man Overboard alerts.** This patented service uses the 360 camera to monitor people on board and alert the crew if someone disappears over the edge of the boat. It disables at the dock, where you expect people to board and deboard.

FAQs

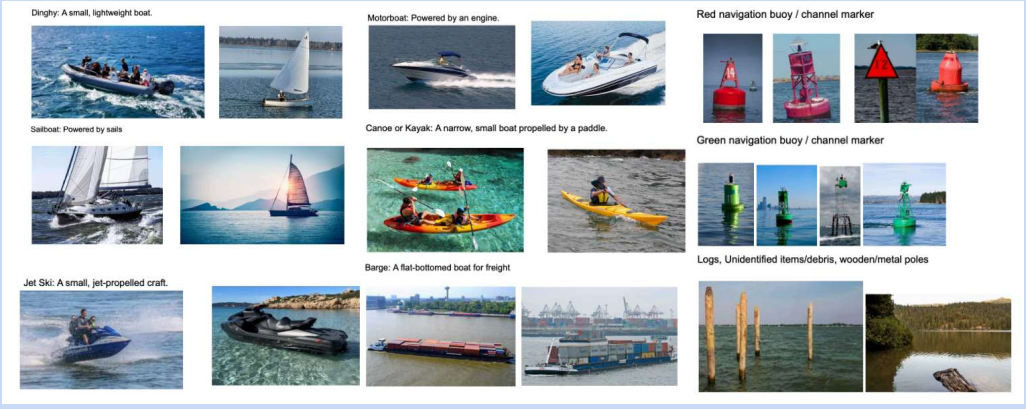
- **At what distance does the LOOKOUT detect hazards?**
    - LOOKOUT was designed to give captains enough time to react to potential hazards. This is usually 20-30 seconds but will vary based on boat speed, target size, and conditions.

    - From a technical perspective, LOOKOUT needs a target size of approx 20 horizontal pixels to identify an object. With an HD resolution image at 20 degree

hFOV on its zoom setting. This means a 10’ jet ski will be detected at approximately 633 meters. Higher camera mounting heights improve this range. Fog, waves, and low target contrast decrease this range. Captains may increase or decrease sensitivity to account for conditions.

We recommend a telephoto camera like the FLIR M364c for the longest-range detection of smaller objects. With a hFOV of 2 degrees, this increases the range by 10x.

- **How is the LOOKOUT AI system trained?**
    - Like most computer vision algorithms, the LOOKOUT was trained on hundreds of thousands of visual examples of vessels, small craft, buoys, floating debris, wildlife, and people in various lighting and weather conditions. We continue to retrain and fine-tune this model with more data and push these improvements to our customers as over-the-air updates



Legal notices

- **Disclaimer**
    - LOOKOUT enhances situational awareness but does not replace a human lookout or proper seamanship. Users must comply with all maritime laws, including COLREGs, and remain fully responsible for safe navigation. LOOKOUT, its affiliates, and distributors assume no liability for accidents, injuries, or damages resulting from reliance on the system.

- **Warnings**
    - LOOKOUT does not detect all hazards and should not be solely relied upon.
    - Users must maintain a proper lookout at all times.
    - Performance may be affected by weather, lighting, and sea conditions.
    - System updates may change features—stay informed via getalookout.com.

- **Intellectual Property**

    - ©2025 LOOKOUT. All rights reserved.

LOOKOUT

- LOOKOUT™, Auto-Dodge™, and associated logos are trademarks of LOOKOUT. Unauthorized use, copying, or distribution is prohibited.
- LOOKOUT technology is protected by multiple U.S. Patents and pending patents.
- Unauthorized use or reverse engineering may result in legal action.

Stay connected to LOOKOUT

- Visit getalookout.com and sign up for the newsletter
- email the team: mayday@getalookout.com

www.getalookout.com/install

LOOKOUT

LOOKOUT

Detailed Specifications

LOOKOUT Brain Pro Specifications

Video Data Recorder	Hours	Up to 1,000 hours (service required)
Industrial	Heat Dissipation	Fanless, passive heatsink
Power	Power Supply	DC 12 - 24V Terminal block 2 pin
	Power Consumption	15 - 25W DC continuous, 60W max
Mechanical	Dimensions (W x D x H)	6” x 6” x 2” 159 x 155 x 57mm
	Weight	3.5lbs 1.57kg
	Installation	Desk, DIN rail, wall-mounting, VESA
Environment	Operating Temperature	-4°F to 140°F -20 to 60°C with 0.7m/s airflow
	Operating Humidity	95% @ 40 °C (non-condensing)
	Vibration Tolerance	3 Grms @ 5 ~ 500 Hz, random, 1 hr/axis
	Shock Robustness	50G peak acceleration (11 msec)
NMEA	NMEA 2000	USB Gateway Required

LOOKOUT Camera V2 Specifications

Navigation Light	360° US Coast Guard Certified - 12/24v wire for helm switching
3-Camera System	• Extended Range Daylight, 4K, Wide 80° HFOV, Zoom 20°-40° HFOV • Full-color, Low Light Infrared, Full HD, 40° HFOV, 0.0001 lux • 360° Surround View, 4K, downward facing and sees to horizon in

LOOKOUT

	all directions
Lens Windows	Sapphire Lens Windows, transparent to visible and infrared light, polarized with hydrophobic coating
Lens Protection	Top and bottom lens hood prevents glare and protects from bird droppings
Housing	Cast durable marine-grade composite sealed with water-proof gaskets
Fog Protection	Two Goretex™ vents prevent fogging
Power	Power Over Ethernet (PoE) via 802.af with 4’ pigtail and male RJ45
Dimensions	8.1" x 5.4" x 2" (205 x 136 x 52mm)
Weight	1.3 lbs (583g)
Colors	Blue and White, or Black. Custom colors available on request