Installation Guide

TracNet™ Coastal Pro

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This guide explains how to install the TracNet Coastal Pro hybrid 5G cellular and Wi-Fi communications system. Operation instructions are provided in the Quick Start Guide.

Table of Contents

Who Should Install the System?

To ensure a safe and effective installation, KVH recommends that a KVH-authorized marine technician install the TracNet antenna. KVH-authorized technicians have the tools and electronics expertise necessary to install the system. To find a technician near you, visit www.kvh.com/wheretogetservice.

Technical Support

Within Continental U.S.A.: 1 866 701-7103
Worldwide: +1 401 851-3806
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 54-1523 Rev. D

Trademark Information

Disclaimer

Every effort has been made to ensure the correctness and completeness of the material in this document. No company shall be liable for errors contained herein. The information in this document is subject to change without notice. No warranty of any kind is made with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Feedback

If you have any comments regarding this manual, please email them to manuals@kvh.com. Your input is greatly appreciated!

Important Safety Information

This icon indicates a danger, warning, or caution notice. Be sure to read these carefully to avoid injury.

WARNING Risk of Electric Shock

If any component of the TracNet Coastal Pro system becomes damaged and/or no longer functions normally, disconnect it from vessel power, secure it from unintended operation, and contact KVH Technical Support (see “Technical Support” on page 1). All repairs or modifications must be performed by a trained, KVH-certified technician. If you are a KVH-certified technician, you still must contact KVH Technical Support prior to conducting any repairs or modifications to the equipment.

WARNING Risk of Explosion

Do not operate the Hub (or any other electrical device) in an environment where flammable gases, vapors, or dusts are present. In addition, do not operate the unit in an environment with a temperature outside its 5° F to 131° F (-15° C to 55° C) temperature range.

CAUTION Risk of Electric Shock

Failure to ground the TracNet Coastal Pro system properly to ship’s ground will cause an unsafe floating ground condition, risking potentially lethal electric shock. See “Connect Power” on page 13 for details on the proper grounding of the equipment.

CAUTION RF Radiation Hazard

The antenna transmits up to 0.5 watts of radio frequency (RF) energy that is potentially harmful. Whenever the system is powered on, make sure everyone stays more than 10 inches (25 cm) away from the antenna. Additionally, the antenna must not be co-located or operate in conjunction with any other antennas or transmitters except in accordance with FCC multi-transmitter procedures.

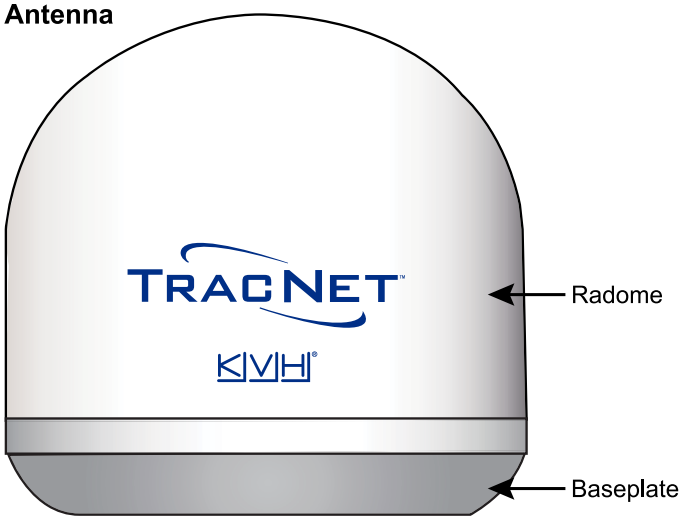
Inspect Parts and Get Tools

Before you begin, follow these steps to ensure you have everything needed to complete the installation.

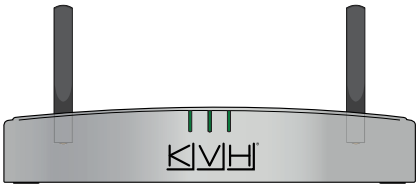
1. Unpack the box and ensure it contains everything shown in Figure 1 and on the Kitpack Contents List. Save the packaging for future use.

Figure 1: TracNet Coastal Pro System Components

Antenna



Hub



Note: *This manual refers to the BDU (Below Deck Unit) as the Hub.*

IMPORTANT!
Always lift the antenna by the baseplate and never by the radome or any portion of the internal antenna assembly.

2. Carefully examine all of the supplied parts to ensure nothing was damaged in shipment.
3. Gather the following tools and materials:
   - Flat-head and Phillips-head screwdrivers
   - 5/16" socket or wrench
   - Electric drill with 1/8" (3 mm) and 1/4" (6 mm) bits
   - 1" (25 mm) hole saw
   - Light hammer and center punch
   - Adhesive tape
   - Silicone sealant or equivalent
   - Eye protection
   - Shop towels
   - Multimeter
   - Utility knife
   - File
   - Laptop PC with the latest Coastal antenna software downloaded from the KVH Partner Portal (www.kvh.com/partners), or a smartphone/tablet with the KVH Connect app installed and loaded with the latest antenna software

IMPORTANT!
Be sure to download the correct version of the software for your system's BDU type:
Hub filename: Coastal-Pro_-<version no.>.bin

Plan the Antenna Installation

Before you begin, consider the following installation guidelines below.

IMPORTANT!
Be sure to follow the guidelines below. Damage caused by an improper installation is not covered under KVH warranty.

Choose a Suitable Location

- Temperature must be within the operating range (-25°C to 55°C (-13°F to 131°F)).
- Be sure to mount the antenna near enough to the Hub to allow you to connect the KVH-supplied 50 ft (15 m) Ethernet cable between them.

Note: *If you need to use a longer cable, optional 75 ft (22 m) (part no. 32-1516-0075) and 100 ft (30 m) (part no. 32-1516-0100) Ethernet cables are available from KVH.*

IMPORTANT!
Never place the antenna in the beam path of the radar, regardless of distance. The radar's energy may damage the antenna or impair its performance.

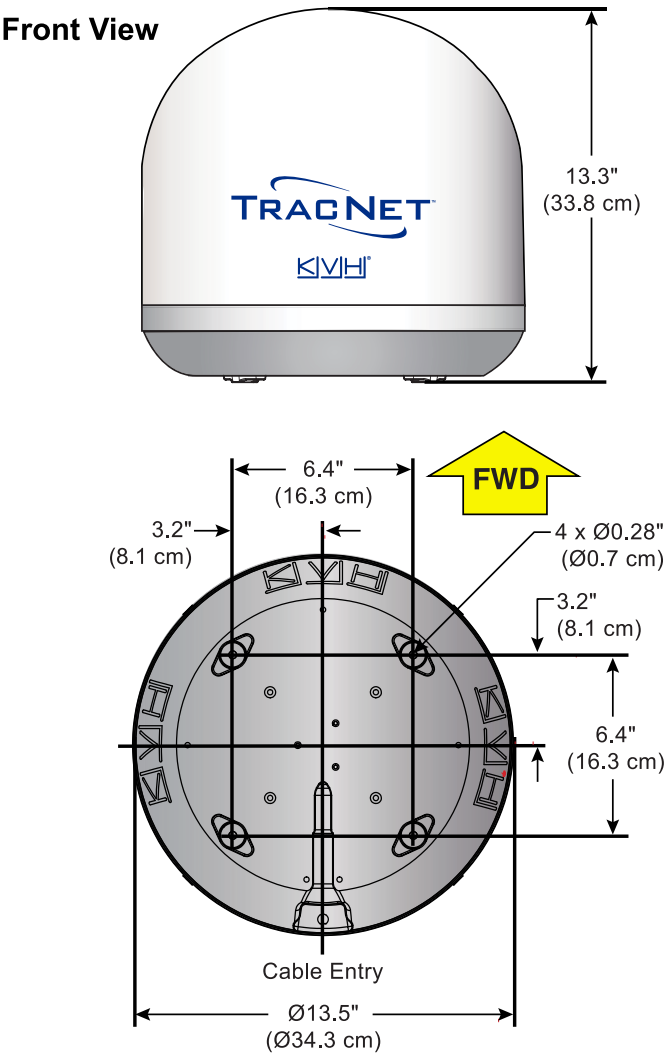
Mounting Surface Requirements

Make sure the mounting surface is flat, level (within ±2°), and wide enough to accommodate the antenna's base. Also make sure that the structure is strong enough to withstand the weight of the antenna (8 lbs, 3.6 kg), as well as other cumulative forces related to expected operating conditions, such as ice, snow, wash down, and maximum expected values of pitch, roll, and wind pressure (including gusts).

Recommendation: Random vibration of the mounting surface should measure less than 1.05 gRMS in each of three mutually perpendicular axes.

Note: *Ship's crew should consult with the shipyard to ensure that the antenna mounting surface vibration never exceeds the above stated conditions at any time during its life.*

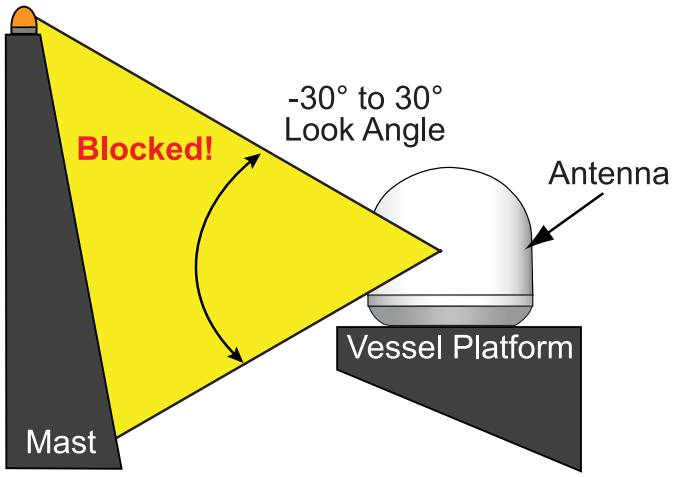
Figure 2: Antenna Dimensions



Minimize Cellular Blockage

Minimize blockage. Optimal performance requires a 360° clear view of the horizon at the highest possible vantage point to receive cellular signals. The fewer obstructions, the better the system will perform.

Figure 3: Blockage from Obstruction



Avoid RF Interference

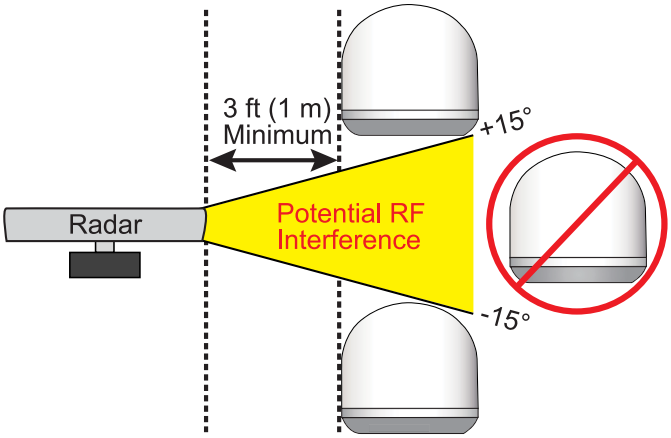
Although many variables determine the exact distance required between the antenna and radar/high-power radio transmitters, including transmit frequency/power, transmitter beam properties, and the reflective properties of nearby surfaces, consider the following general guidelines:

IMPORTANT!
RF emissions from radars and high-power radio transmitters may damage the antenna or impair its performance if it's improperly positioned within the beam path.

- Mount the KVH antenna as far away as possible from the radar and high-power radio transmitters.
- Do not mount the antenna at the same level as the radar. Most radar transmitters emit RF energy within an elevation range of -15° to +15°. Therefore, mount the antenna outside this elevation range and at least 3 ft (1.5 m) away from the transmitter.

IMPORTANT!
Never place the antenna in the beam path of the radar regardless of distance. Radar energy may damage the antenna or impair its performance.

Figure 4: Avoiding RF Interference

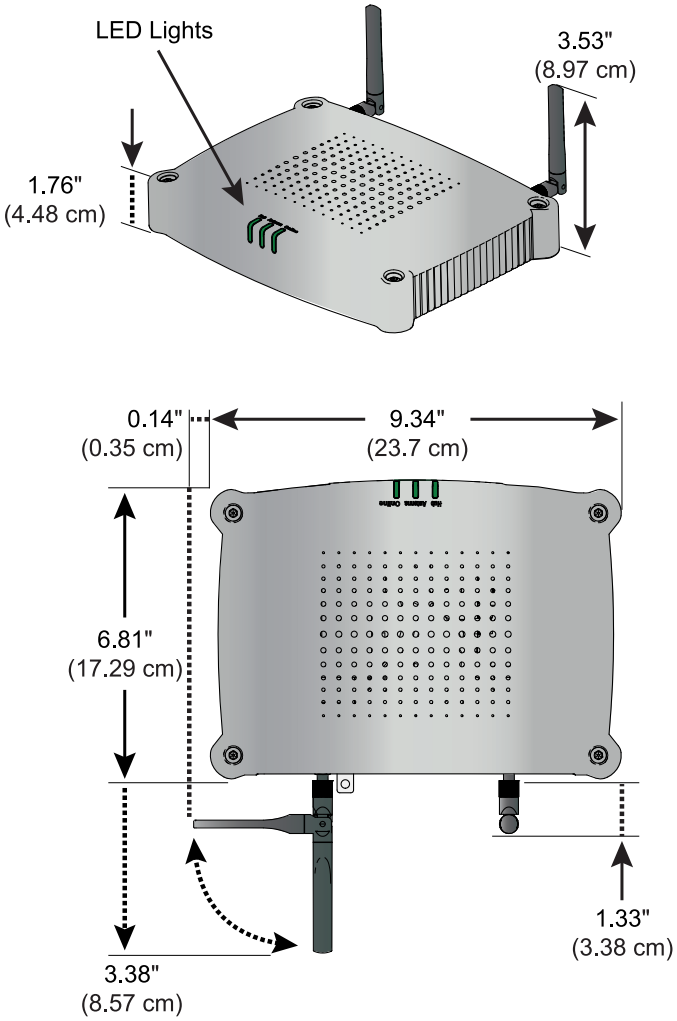


Plan the Hub Installation

Before you install the Hub, be sure the designated install location meets the following guidelines:

- Select a mounting location in a dry, well-ventilated area belowdecks away from any heat sources or salt spray.
- Be sure the location provides adequate Wi-Fi reception. Do not install it in an area surrounded by metal or near any electrical devices that emit RF noise.
- Be sure the front panel will be easily accessible to the user.
- Leave enough room behind the rear panel to accommodate the connecting cables with service loops, at least 14" (36 cm) in diameter.
- Leave enough room behind the rear panel to provide access to the SIM card slots.
- If you plan to connect the Hub to the vessel's onboard local area network (LAN), choose a location near an available Ethernet port.
- To use the supplied antenna cable, the Hub must be located within 50 ft (15 m) of the antenna. However, you can order a longer cable if necessary.
- The Hub can be mounted horizontally or vertically to a flat surface. Installation details are provided in "Mount the Hub" on page 11.

Figure 5: Mount the Hub

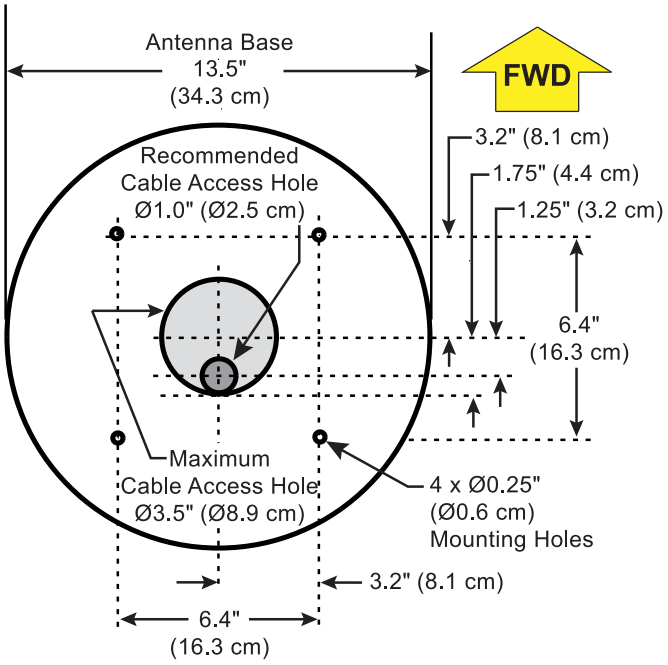


Prepare the Antenna Site

Once you have identified a suitable antenna mounting site, follow these steps to prepare the mounting site for installation.

1. Unfold the antenna mounting template (supplied in the Welcome Kit) and place it on the mounting surface. Make sure the “FWD” (forward) arrow points toward the bow and is parallel to the vessel’s centerline as shown in Figure 6. Tape in place.
2. Using a light hammer and center punch, mark the locations for the four mounting holes and cable access hole on the mounting surface in the locations indicated on the template.
3. Drill a 1/4" (6 mm) hole at the four mounting hole locations you marked in step 2. Later, you will insert four #10-32 screws through these holes to secure the antenna to the mounting surface.

Figure 6: Antenna Mounting Holes Layout



4. Using a hole saw, drill the cable access hole in the location you marked in step 2. Be sure to size the hole appropriately to maintain a cable bend radius of at least 2.6" (6.6 cm). If the hole location is in the center of the antenna mounting hole pattern, the diameter of the cable access hole must not exceed 3.5" (89 mm). Smooth the edges of the hole to protect the cable. Later, you will route the antenna’s Ethernet cable through this hole and into the vessel.
5. Clean and dry the antenna mounting surface.
6. Peel off the paper backing from the supplied foam seal to expose the adhesive. Then press the foam seal down firmly onto the mounting surface, ensuring the hole in the foam seal aligns with the cable access hole in the mounting surface.

Figure 7: Foam Seal

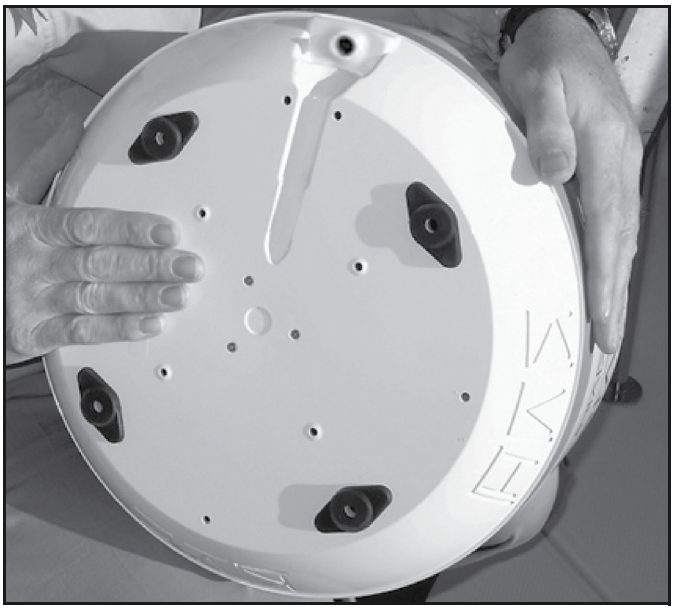
Prepare the Antenna

Follow these steps to prepare the TracNet Coastal Pro antenna for installation.

1. Attach the four rubber mounting feet (*supplied in kit*) to the bottom of the antenna at locations shown in Figure 8.

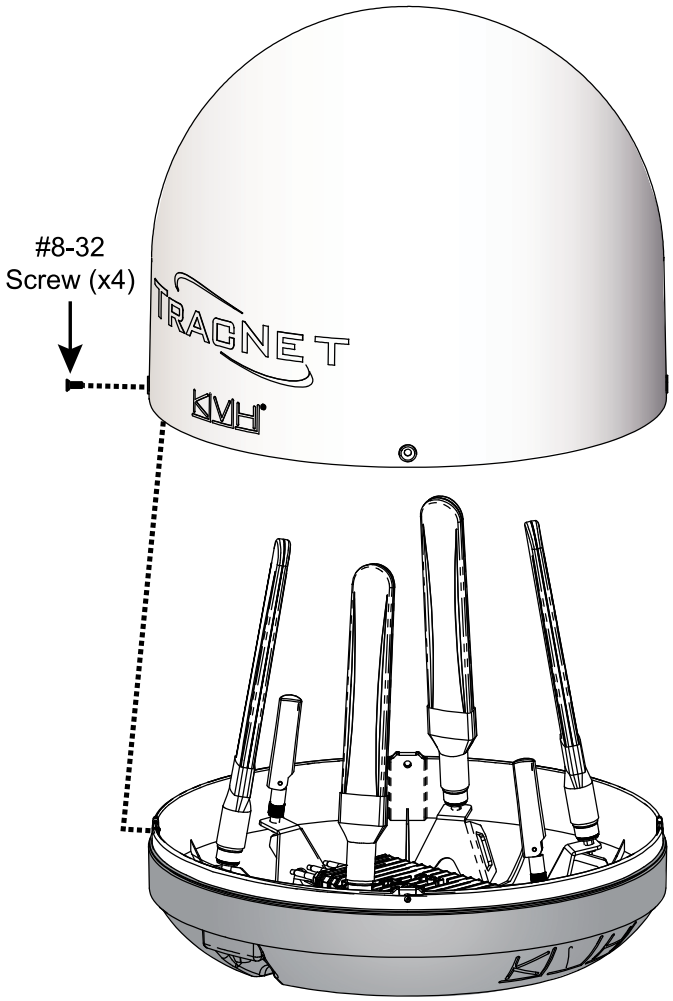
IMPORTANT!
Be sure to install the rubber feet. They are required to isolate the antenna from vibration.

Figure 8: Attaching the Rubber Feet



2. Remove the four #8-32 screws securing the radome to the antenna.

Figure 9: Removing the Radome

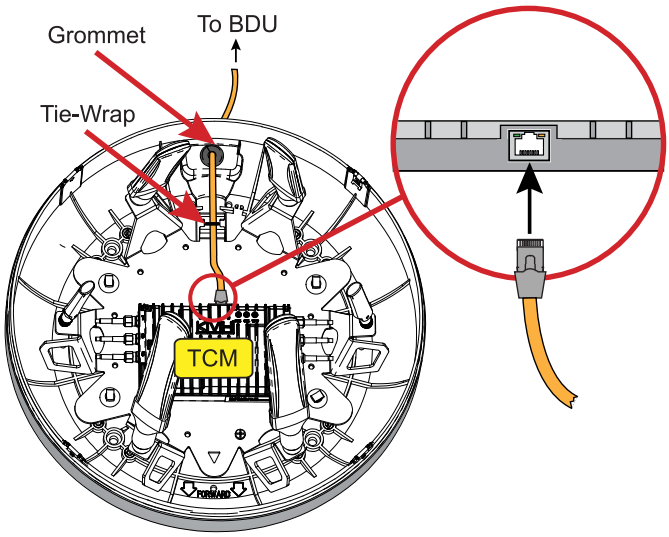


3. Carefully lift the radome straight up until clear of the antenna assembly and set it aside in a safe place.

   If you keep the radome topside, secure it with a lanyard to prevent it from falling overboard. Also, do not place the radome on a hot steel deck – the heat may warp the radome.

4. Remove but do not discard the push-in grommet from the cable entry hole in the baseplate.
5. Feed the Ethernet cable (*supplied in kit*) through the cable entry hole.
6. Connect the Ethernet cable to the TCM's (Terrestrial Communications Module) Ethernet port.
7. Secure the Ethernet cable to the antenna frame using a tie-wrap (*supplied in kit)*.

Figure 10: Connecting the Ethernet Cable



8. Attach the push-in grommet that you removed in step 4 to the cable near the cable entry hole. Then reinstall the grommet in the cable entry hole.
9. Route the other end of the cable along the cable channel underneath the baseplate and belowdecks through the cable access hole. Leave an adequate service loop, 14" (36 cm) in diameter, at the antenna location for serviceability.
10. Weatherproof and seal the cable access hole as required.

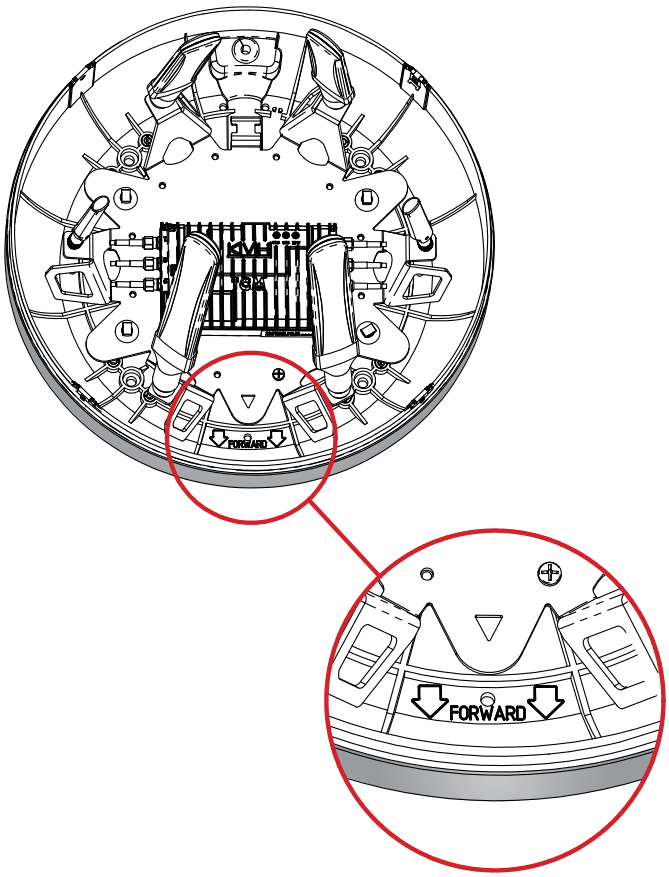
Mount the Antenna

Follow these steps to mount the antenna to the mounting surface.

1. Place the antenna baseplate over the holes drilled in the mounting surface. Ensure the “Forward” arrow inside the baseplate points toward the bow and is parallel to the vessel’s centerline.

IMPORTANT!
Be sure to insert the mounting bolts from above and use the supplied hardware for a secure installation.

Figure 11: Forward Arrow in Antenna Baseplate



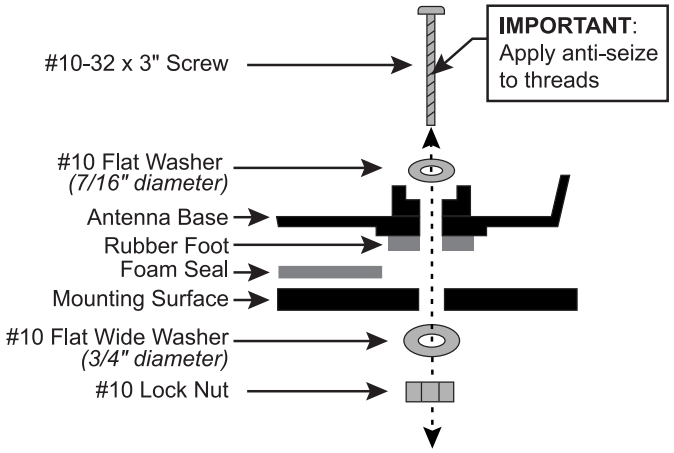
2. Apply a thin layer of the supplied anti-seize lubricant to the threads of the four #10-32 Phillips screws.

CAUTION

Be sure to observe the safe handling instructions in the Material Safety Data Sheet (MSDS) provided with the anti-seize lubricant.

3. At each of the four baseplate mounting holes, place a 7/16"-diameter #10 flat washer on a #10-32 Phillips screw and insert the screw into the hole from above.

Figure 12: Mounting Hardware



4. Secure each mounting bolt to the mounting surface using a 3/4"-diameter flat washer and a #10 lock nut from below. Using hand tools, tighten all four screws until the four rubber feet on the baseplate are bottomed against the mounting surface and the foam seal is fully compressed.

IMPORTANT!
Use only manual hand tools to tighten the mounting screws. The torque from a power tool might distort the antenna baseplate.

5. Reinstall the radome onto the antenna. The radome’s “TracNet” labels should face fore and aft. Secure in place with the four #8-32 screws you removed earlier and tighten to 5 in-lbs of torque. Hide and protect the screws with the plastic screw caps (*supplied in kit*).

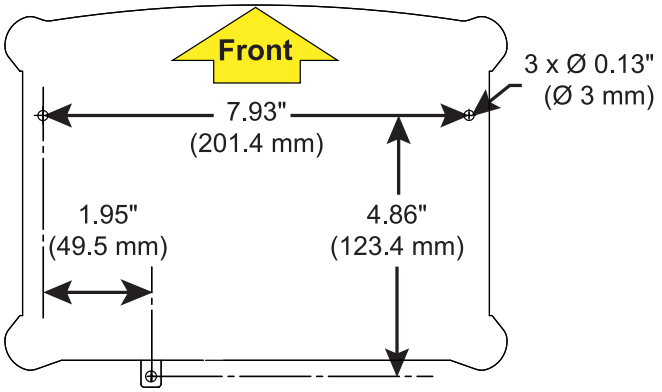
Mount the Hub

Follow these steps to install the Hub inside the vessel.

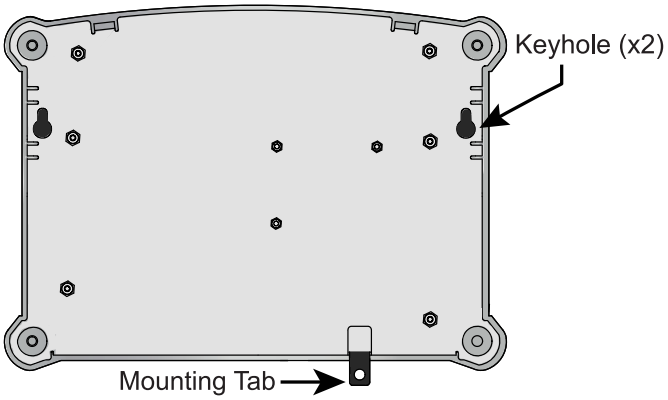
1. Before you begin, note the Hub's serial number provided on a label on the bottom of the unit. You might need this number later, as it is the default password for the built-in LAN Wi-Fi.
2. Tape the mounting template in the location selected for the Hub. Punch holes at each of the two keyhole locations and at the mounting tab location.

Figure 13: Hub Mounting Template

Mounting Template



Bottom View of Hub



3. Remove the template.
4. Drill a 1/8" (3 mm) hole at the three hole locations you marked in step 2.
5. Install a #8 Phillips thread-forming screw partway into one of the keyhole holes leaving a small gap for hooking the Hub onto it. Use the thickness (2.5 mm) of the M10 washer (*supplied in kit*) as a gauge for the size gap to leave.
6. Repeat step 5 for the other keyhole.
7. Peel off the backing on the adhesive-backed washer (*supplied in kit*) and place it over the mounting tab hole.
8. Align the wide part of the Hub's keyholes, over the screws, then slide downward to secure the screws into the narrow part of the keyholes.
9. Press the rear mounting tab of the Hub onto the adhesive washer and install the third #8 Phillips thread-forming screw in the mounting tab hole.

IMPORTANT!

Make sure the Hub is securely mounted. Any movement of the Hub may put a strain on the antenna cable's connection.

Wire the Hub

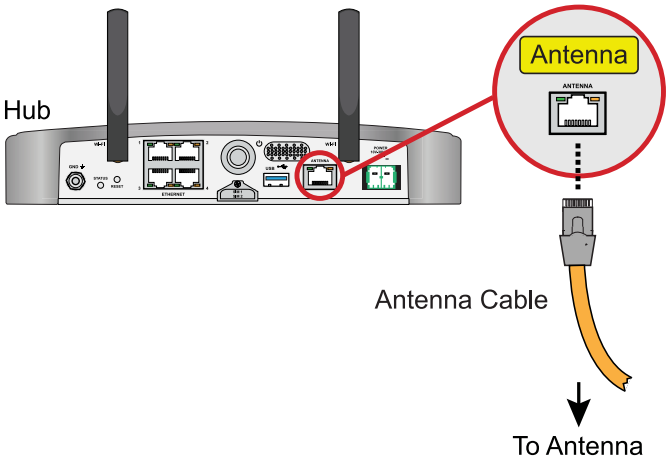
Follow these steps to connect the antenna cable to the Hub.

1. Connect the Ethernet cable from the antenna to the Hub's Antenna connector.

IMPORTANT!
Do not connect anything other than the antenna cable to the "Antenna" connector. The Hub supplies voltage that will damage other devices.

2. Make sure the antenna cable will not get bent or twisted near the Hub's connection, which can put additional stress on the connector.

Figure 14: Antenna Cable Connection



Connect Power

Grounding Requirements

Proper grounding of the TracNet system to ship's ground is mandatory for electromagnetic compatibility (EMC) and safety regulatory compliance. It protects the equipment from electrostatic discharges (ESD) and prevents interference with other electronic equipment. Follow these steps to ground the system.

1. Connect the hoop of the grounding wire (*supplied in kit*) to the "GND" screw on the rear panel of the Hub.
2. Connect the other end of the grounding wire to ship's common ground.

WARNING

Failure to ground the TracNet system properly to the vessel's ground will cause an unsafe floating ground condition, risking damage to the antenna and electric shock, potentially resulting in DEATH. In a floating ground condition, the difference between the equipment's chassis ground and the vessel's ground can measure well over 100 volts, when it normally should not exceed 2 volts. Therefore, always measure the difference in potential between chassis ground and the vessel's ground to make certain that there is no dangerous floating ground condition.

Connect DC Power to the Hub

IMPORTANT!
All power connections must be hard-wired.

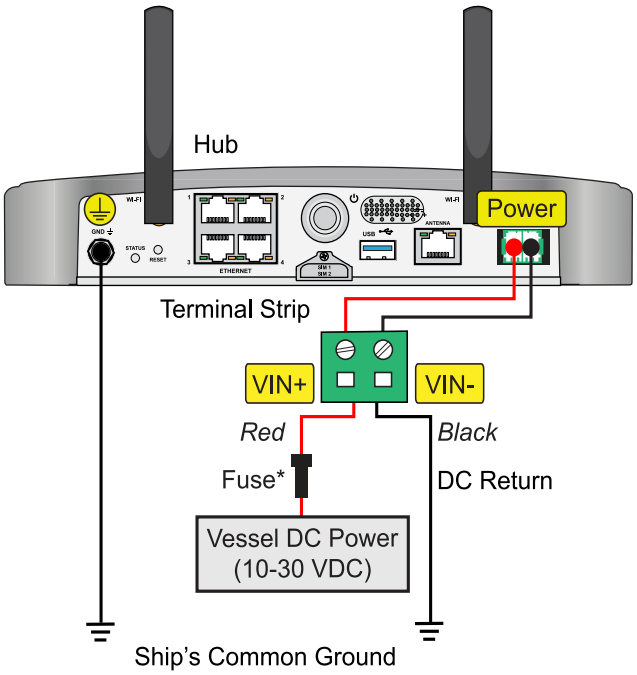
Note: *An optional 24 VDC AC-DC power supply (2.5A, 60 W) is available from KVH (part no. 72-1072).*

1. Before you begin, disconnect vessel power and be sure the vessel is properly grounded in accordance with marine standards.
2. Connect the supplied power cable wires to the supplied 2-position terminal strip connector:
   - Connect the black wire from "Vin-" on the terminal strip connector to DC Return.
   - Connect the red wire from "Vin+" on the terminal strip connector to the vessel's 10-30 VDC power source (the system draws 22 W max (16 W nominal)).
3. Insert a fuse (*supplied in kit*) into the in-line fuse holder. If vessel power supplies 12 volts, use the light brown 5A fuse. If it supplies 24 volts, use the purple 3A fuse.
4. Connect the terminal strip connector to the Hub's Power connector.
5. Check for proper grounding by using a multimeter to measure the AC and DC voltages between the ground stud on the rear of the Hub and ship's ground. The measured voltage should be less than 2 VAC and 2 VDC.
   - Repeat step 5 with the Hub powered on, looking for the same measured result.

WARNING

If you measure 2 volts or greater between the ground stud on the rear of the Hub and ship's ground, notify the ship's electrician or authorized vessel representative immediately. This is a dangerous condition. Do not touch the Hub rear panel or connect anything to it until the problem is fixed.

Figure 15: Hub DC Power Wiring



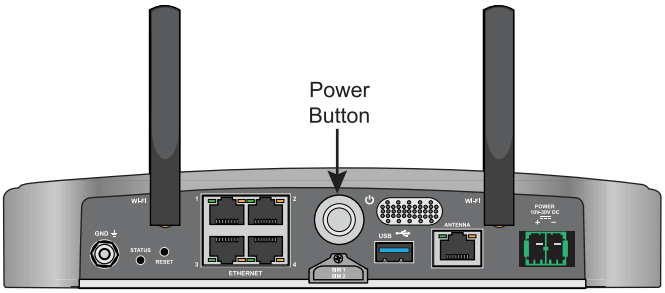
**if vessel power supplies 12 volts, use light brown 5A fuse; if vessel power supplies 24 volts, use purple 3A fuse*

Turn On the System

Follow these steps to turn on the system.

1. Apply vessel power to the TracNet system.
2. Press the power button on the back of the Hub. The Hub's "Hub" light should illuminate green.

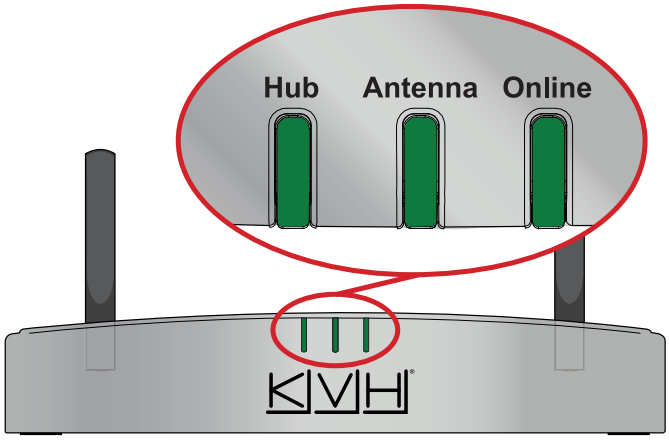
Figure 16: Hub Power Button



IMPORTANT!
During startup, the Hub checks the software installed in the antenna and updates it if necessary to match its currently installed version. Do not turn off the system for at least 15 minutes to allow any updates to complete.

3. A few minutes after initialization, make sure the "Hub" and "Antenna" lights on the Hub are lit green, indicating normal operation.

Figure 17: Hub Status Lights



Configure the System

Follow the steps on the next few pages to access the setup wizard and configure the system for use.

Access the Setup Wizard

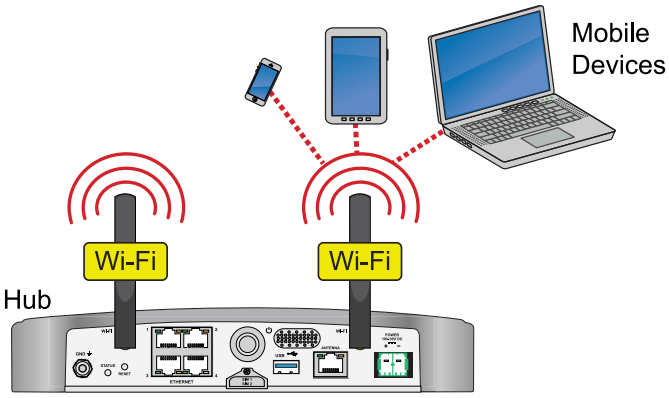
Follow the steps for either option below to access the setup wizard.

Option 1: Using the Wireless Connection

1. Select the **KVH<last 3 digits of Hub serial no.>** network from your mobile device's Wi-Fi settings to connect to the Hub.
2. Enter the default password: **<full 9-digit Hub serial no.>**.
3. Start the web browser and enter **https://kvhonboard.com**.

Note: *If the setup wizard is not displayed, try entering https://192.168.5.1, which is the default IP address. You might need to bypass a warning from your browser to proceed to the site.*

Figure 18: Wi-Fi Connection

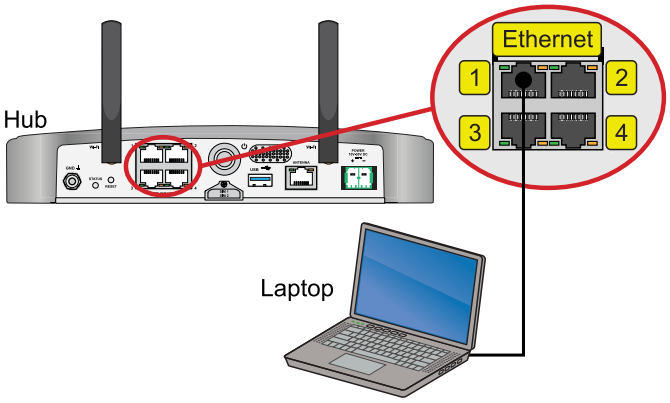


Option 2: Using the Ethernet Connection

1. Connect a laptop PC configured for DHCP directly to Ethernet port 1 on the Hub.
2. Start the web browser and enter **https://kvhonboard.com**.

Note: *If the setup wizard is not displayed, try entering https://192.168.5.1, which is the default IP address. You might need to bypass a warning from your browser to proceed to the site.*

Figure 19: Wired Ethernet Connection



Run the Setup Wizard

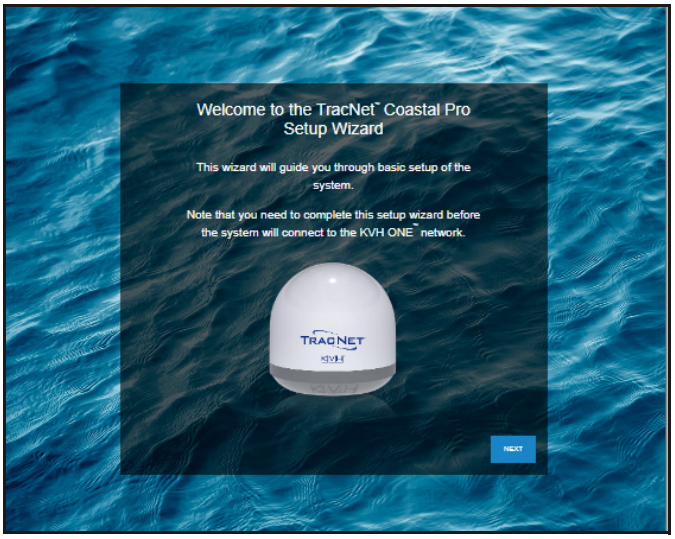
The Setup Wizard appears upon initial startup to step you through system configuration. Through the setup wizard, you will:

- Enter administrator and guest account passwords
- Enter the vessel name
- Configure LAN settings (optional)
- Set the network configuration of the Hub's Ethernet ports
- Configure WAN settings (optional)

Follow the steps in the following sections to set up the system.

Note: *After setup is complete, you must log into the web interface as an administrator to make further changes to the system settings.*

Figure 20: Wizard Welcome Screen



Assign an Administrator Password

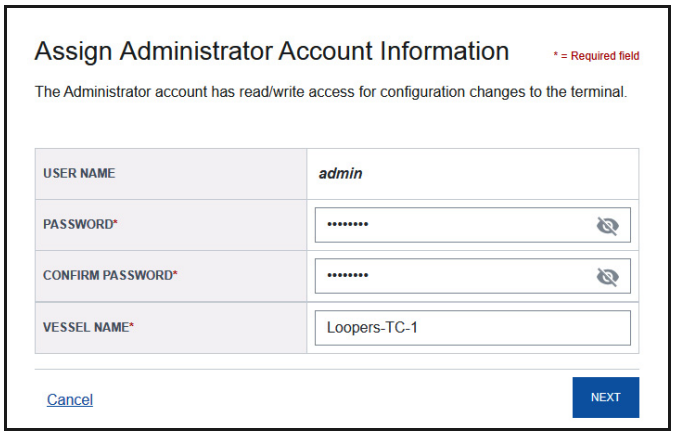
At the first page of the wizard, you must set the following:

- **PASSWORD**: Enter and then re-enter an administrator password of the customer's choice
- **VESSEL NAME**: Enter the vessel name

Note: *The case-sensitive password must be between 8 and 64 characters in length, with at least one uppercase letter, one lowercase letter, one number, and a special character.*

When you are done, select **Next**.

Figure 21: Assigning the Administrator Password



Assign a Guest Account Password (Optional)

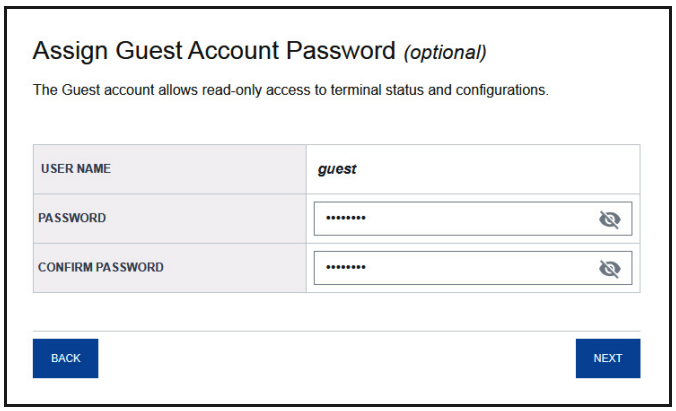
At the second page of the wizard, you can set the following:

- **PASSWORD**: Enter and then re-enter a guest account password of the customer's choice

Note: *The case-sensitive password must be between 8 and 64 characters in length, with at least one uppercase letter, one lowercase letter, one number, and a special character.*

When you are done, select **Next**.

Figure 22: Assigning the Guest Password



Configure Ethernet Settings (Optional)

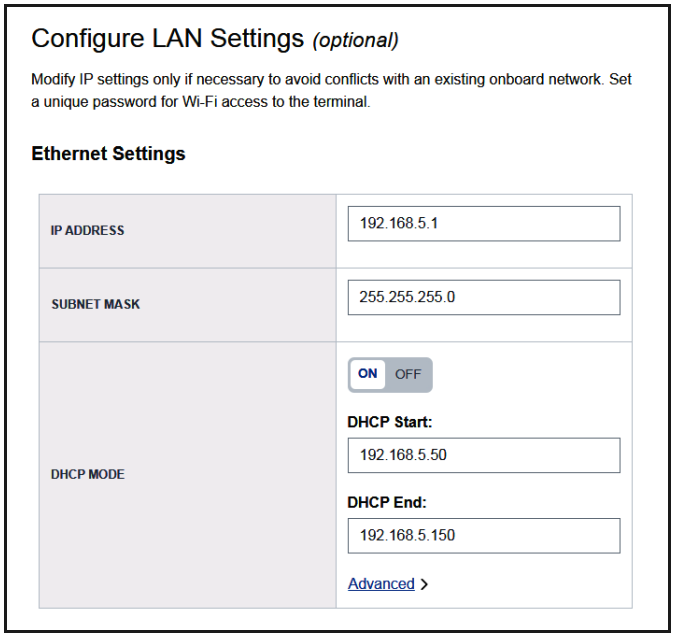
At the third page of the wizard, you can make any necessary changes to the following Ethernet settings:

IMPORTANT!
The default LAN settings work well for most installations. Do not change these settings unless absolutely necessary, such as to avoid conflicts with an existing onboard network.

- **IP ADDRESS**: Change the default IP address
- **SUBNET MASK**: Change the default subnet mask
- **DHCP MODE**: Set to "ON" or "OFF" (If DHCP is on, select a **DHCP START** and **DHCP END** range)

Note: *By default, the LAN has a gateway of 192.168.5.1 and assigns IP addresses in the 192.168.5.50-150 range.*

Figure 23: Configuring Ethernet Settings



Configure LAN Wi-Fi Settings

With Wi-Fi enabled, vessel devices can connect to the Hub via its built-in LAN wireless access point (WAP). You can make changes to the following built-in LAN Wi-Fi settings:

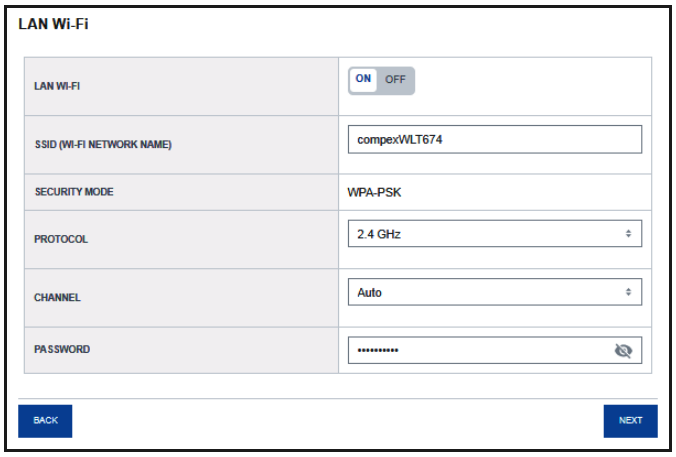
IMPORTANT!
Establishing a wireless connection onboard a steel vessel might require a special external WAP and advanced networking expertise.

- **LAN WI-FI**: Set to "ON" or "OFF"

IMPORTANT!
For the customer's protection, an open Wi-Fi without security protocols is not permitted. Setting LAN Wi-Fi to "On" will simultaneously activate WPA-PSK security and require creating a Wi-Fi password.

- **SSID (WI-FI NETWORK NAME)**: Enter a unique name for the Wi-Fi network
- **BAND**: Select either 2.4 GHz or 5 GHz
- **CHANNEL**: Select either Auto or 1-11 channels
- **PASSWORD**: Change the password (at least 8 characters)

Figure 24: Configuring LAN Wi-Fi Settings



When you are done, select **Next**.

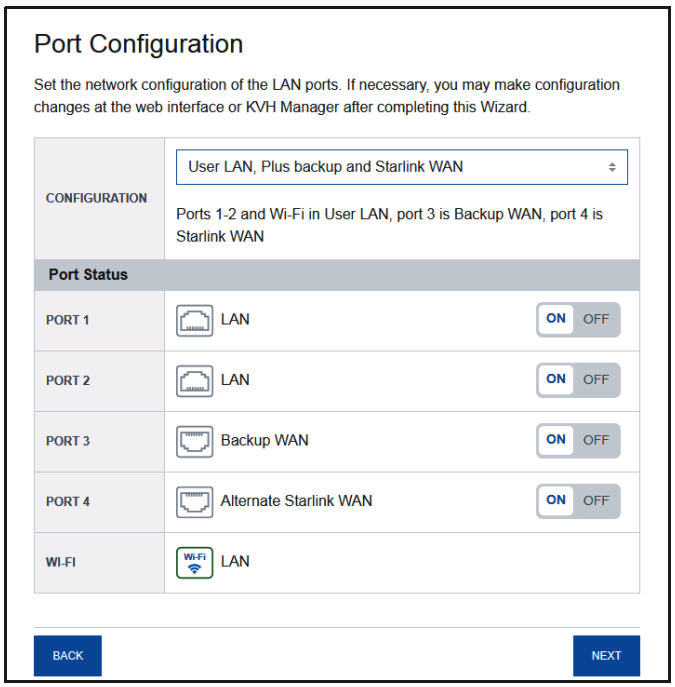
Set the Port Configuration

At the fourth page, you can change the configuration of the Hub's Ethernet ports, if necessary.

Option	Configuration
All LAN (default)	Ports 1-4, Wi-Fi: LAN
User LAN + Backup + Alternate	Ports 1-2, Wi-Fi: LAN Port 3: Backup WAN Port 4: Alternate WAN
User LAN + Backup + Starlink	Ports 1-2, Wi-Fi: LAN Port 3: Backup WAN Port 4: Starlink WAN

If you would like to connect an external gateway to the TracNet system to serve as either an alternate or backup connection (see "Add Backup or Alternate WAN Connection (Optional)" on page 26), select "User LAN, Plus Backup and Alternate WAN" or "User LAN, Plus Backup and Starlink WAN." Otherwise, keep the default "All LAN" setting.

Figure 25: Setting the Port Configuration



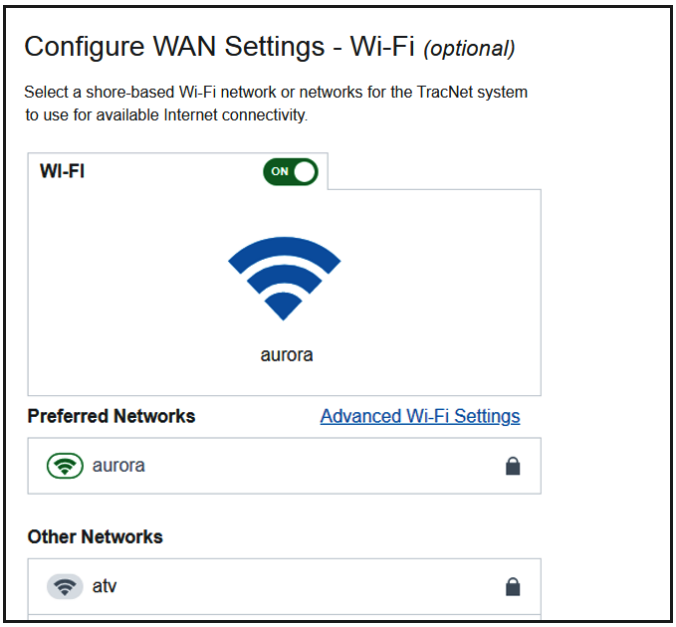
Configure WAN Settings

With its hybrid network capability, the TracNet system can automatically switch to an available shore-based Wi-Fi network for Internet connectivity. At the fifth page of the wizard, select the shore Wi-Fi network or networks that the TracNet system should use.

The wizard lists any Wi-Fi networks it has detected broadcasting in the area. You may select one or more networks from this list and enter associated password(s).

To add a network not shown in the list, select **Advanced Wi-Fi Settings**. Select "**+**". Then enter the network name, security protocol, and password.

Figure 26: Configuring WAN Settings



When you are done, select **Next**. At the final screen, select **Exit Wizard**. Then wait a few minutes for the system to apply the new settings. When the login page appears, enter the admin credentials to access the web interface.

Note: *If you changed the Ethernet settings and the login page does not appear after a few minutes, try entering in your browser the correct IP address for the port or Wi-Fi that you are using to connect. You can also try renewing the DHCP lease on your device.*

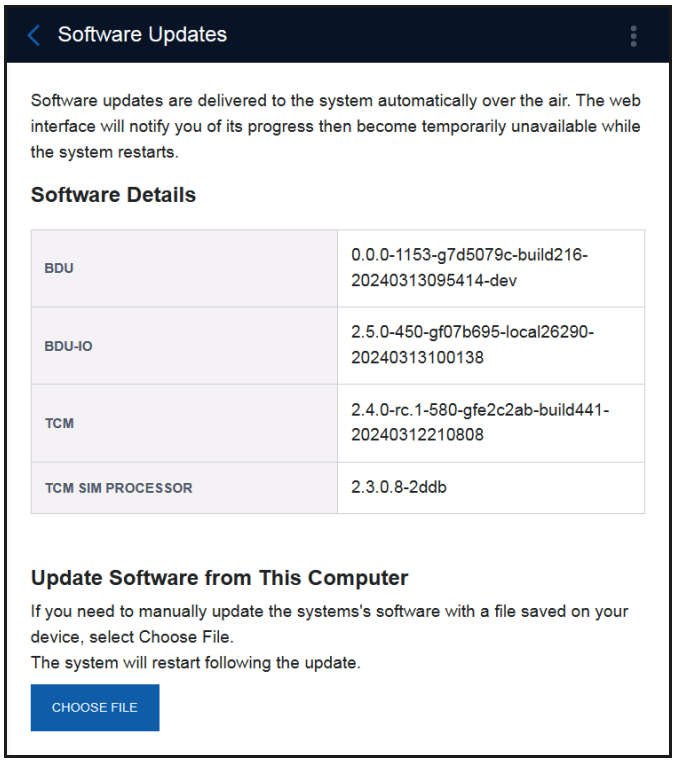
Update the System Software

Follow these steps to check the currently installed software versions and install new software, if necessary.

Note: *This procedure explains how to update the software using the web interface and your laptop computer. However, you can also update the software using the KVH Connect mobile app. Details are available in the Help.*

1. At the web interface, go to the **Software Updates** page. Note the displayed software versions for TCM (antenna) and BDU (Hub).

Figure 27: Software Updates Page



2. If the reported software version is earlier than the latest version you downloaded from either the KVH Partner Portal or KVH Technical Support, select **CHOOSE FILE**.

Note: *This single software update file applies to both the TCM and BDU.*

3. Select the software update file you saved on your laptop. Be sure it is the correct version of Coastal software for your version of Coastal: **Coastal_Pro** for Hub.

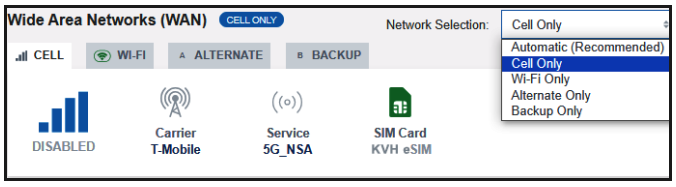
IMPORTANT!
Once the file is uploaded, the web interface will notify you of the update's progress then become temporarily unavailable while the system restarts.

4. Wait for the software update to complete. **Do not turn off power to the system during this update.**
5. Reconnect to the web interface and verify that the Software Updates page is now displaying the latest version.

Test the System

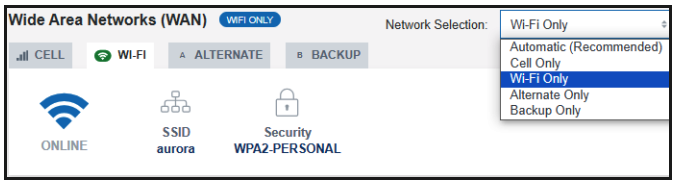
1. Turn on all other electronic equipment above deck within the proximity of the antenna, if possible. Verify that both the KVH system and the electronic equipment continues to operate without any degradation in performance.
2. At the web interface, go to the Home page and select the Cell tab. If there is cellular service in your area, select the **Cell Only** network mode. Then open a new browser tab and try to access the Internet (such as google.com) over the cellular connection.

Figure 28: Cell WAN Status



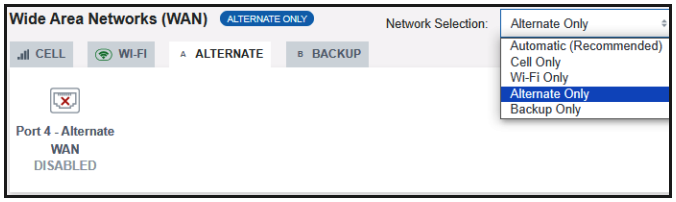
3. If you set up the system for a shore Wi-Fi network, select the Wi-Fi tab. If there is adequate Wi-Fi service in your area, select the **Wi-Fi Only** network mode. Then open a new browser tab and try to access the Internet (such as google.com) over shore Wi-Fi.

Figure 29: Wi-Fi WAN Status



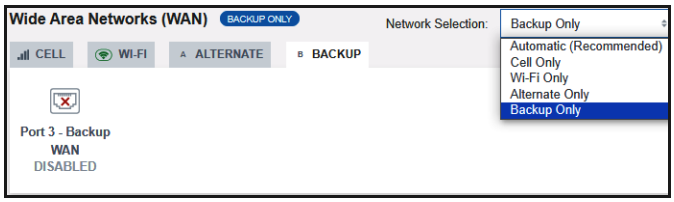
4. If you set up an alternate system, select the Alternate tab, then select the **Alternate Only** network mode. Then open a new browser tab and try to access the Internet (such as google.com) over the alternate connection.

Figure 30: Alternate WAN Status



5. If you set up a backup system, select the Backup tab, then select the **Backup Only** network mode. Then open a new browser tab and try to access the Internet (such as google.com) over the backup connection.

Figure 31: Backup WAN Status



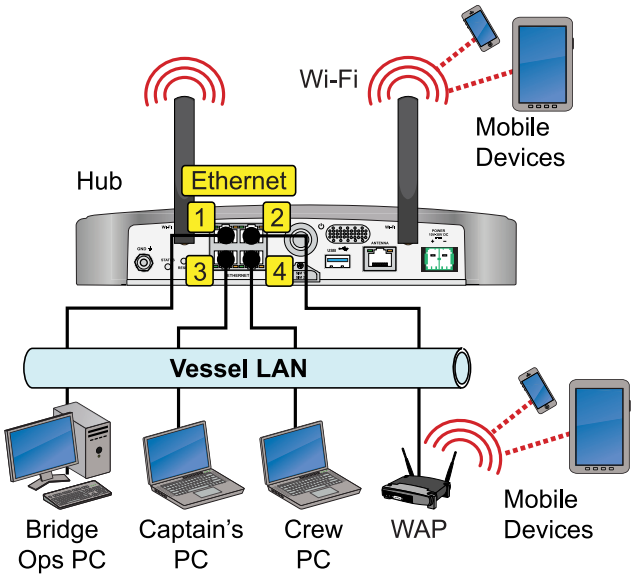
6. Return the system to **Automatic** network mode.

Connect Vessel Network Devices

The Hub includes four Ethernet ports and a built-in wireless access point (WAP). Unless you changed the port configuration at the Setup Wizard, Ethernet ports 1 through 4 and the built-in WAP provide high-speed Internet access. Follow these additional steps to set up the network.

1. Connect the computers and/or other network devices to the Hub. You might wish to add an external WAP (or Wi-Fi router configured for bridge mode) to supplement the built-in Wi-Fi access.

Figure 32: Vessel Network Example



2. Devices connected to the Hub (via Ethernet cables or Wi-Fi) will receive IP addresses from the Hub via DHCP. The Hub serves as a router.

Note: *Unless you changed the LAN settings at the Setup Wizard, the LAN has a gateway of 192.168.5.1 and assigns IP addresses in the 192.168.5.50-150 range.*

Set Up Wi-Fi Calling

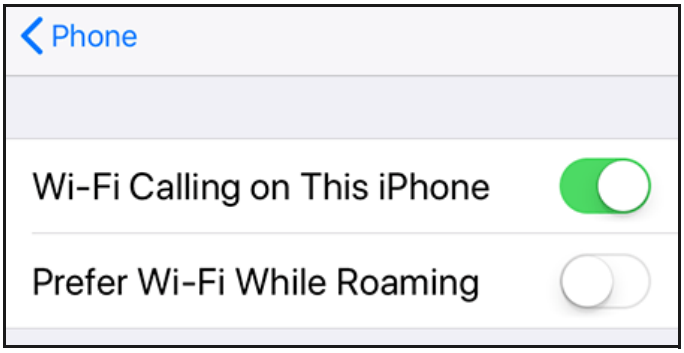
You can make voice calls using your smartphone via the TracNet Coastal Pro system if Wi-Fi Calling is supported by your phone's cellular service provider. Simply enable the Wi-Fi Calling feature on your phone. Follow the basic steps below or refer to your device's user documentation.

Note: *You might need to enter an emergency address when you enable Wi-Fi Calling.*

Enabling Wi-Fi Calling on an iPhone

1. Navigate to **Settings > Phone > Wi-Fi Calling**.
2. Using the slider, turn on "Wi-Fi Calling on This iPhone."

Figure 33: Wi-Fi Calling Enabled on an iPhone

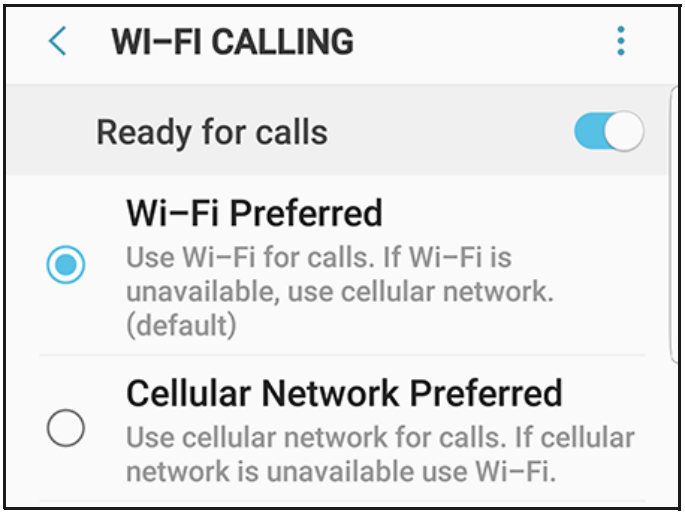


Enabling Wi-Fi Calling on an Android Phone

1. Tap the Phone app.
2. Navigate to **Settings > WI-FI Calling**.
3. Using the slider, enable Wi-Fi calling (changes from "Disabled" to "Ready for calls").

Note: *Phone settings screens may vary.*

Figure 34: Wi-Fi Calling Enabled on an Android Phone



Add Third-party SIM (Optional)

As an alternative to the built-in KVH eSIM, the TracNet system supports the use of a customer-supplied SIM for cellular WAN connectivity. Follow these steps to activate the SIM card and the SIM card slot in the Hub and install the third-party SIM card *(micro size only: 15 mm x 12 mm)*.

IMPORTANT!
The Hub cannot accept a locked SIM card. Be sure the SIM card is unlocked.

Activate SIM Card for TracNet Use

The customer-supplied third-party SIM card must be activated by its cell carrier to pair it with the TracNet antenna's Terrestrial Communications Module (TCM). The customer may need to provide the TCM's unique IMEI number to the cell carrier to complete the activation process. You can find the TCM's cell IMEI number on the Support page of the web interface.

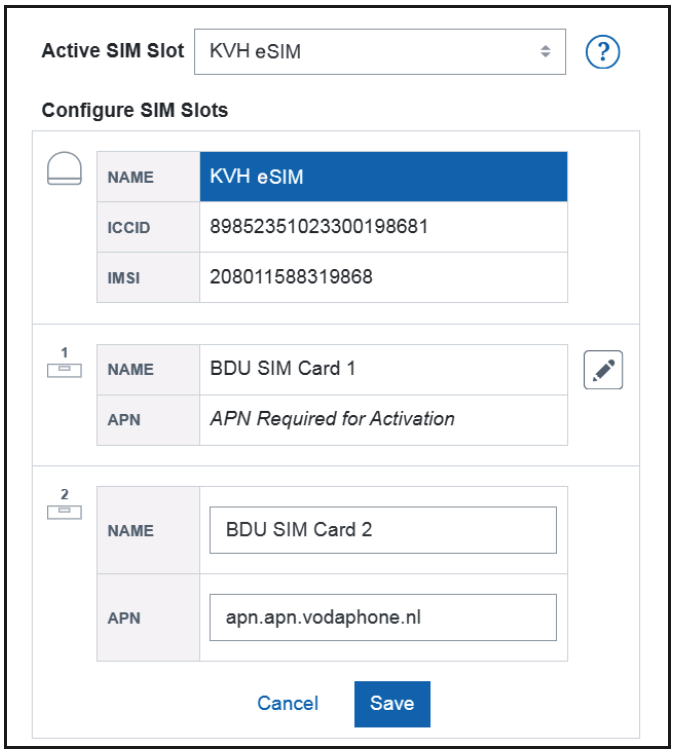
IMPORTANT!
Give the TCM cell IMEI number to the customer and make sure they understand that they need to activate the SIM card for this device. Note that not all cell carriers currently support the TCM on their network.

Note: *The TCM integrates both a cellular modem and a Wi-Fi modem and connects to multiple cellular and Wi-Fi antennas inside the antenna dome.*

Activate the Hub SIM Card Slot

1. At the web interface, go to the WAN Settings page and select the Cell tab.
2. Click the edit (pencil) button next to the desired Hub SIM card slot (1 or 2), where you will be inserting the third-party SIM card. Enter a friendly name for this cellular service and enter its APN (Access Point Name). *The APN is available from the cell carrier.* The SIM card cannot be used without a valid APN.

Figure 35: BDU SIM Slot Configuration

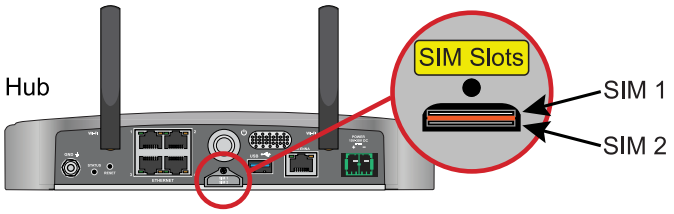


3. Select **Save**.
4. Select the new SIM that you just configured from the Active SIM drop-down menu.
5. At the pop-up window, select **Activate SIM & Power Off**.

Install the SIM Card

1. Power off the Hub — press the power button on the Hub's rear panel and verify that its status light goes out.
2. Using a #1 Phillips screwdriver, remove the #2-56 Phillips screw securing the SIM card access cover from the back panel of the Hub. Set the screw and cover aside.

Figure 36: Hub SIM Card Slots



3. Identify the SIM card slot that you configured in the previous section. Then perform the following steps for that slot.
4. If inserting a third-party SIM card into **SIM card slot 1**, press the card into the slot with its metallic contacts facing down to mate with the spring contacts in the tray.

   If inserting a third-party SIM card into **SIM card slot 2**, press the card into the slot with its metallic contacts facing up to mate with the spring contacts in the tray.
5. Press the SIM card into the desired slot. Be sure you hear a click, indicating it is locked.
6. Reattach the cover to the back panel of the Hub.
7. Power on the Hub. Wait a few minutes for initialization.

Note: *If you need to remove an existing SIM card, use the edges of the SIM card access cover to gently press on the SIM card until it pops out.*

Check SIM Card Information

At the web interface, return to the WAN Settings - Cell page. Verify that the SIM card's ICCID, IMSI, and home network are shown in the details for the configured Hub SIM. Also verify that the TracNet system is now connected to the cell service, assuming the SIM is activated and you are located within its cell service coverage area.

Note: *If you want to revert the system to use the KVH eSIM, select it as the active SIM. The user can change the active SIM at any time.*

Add Backup or Alternate WAN Connection (Optional)

You can add an external gateway to the TracNet system to serve as either a backup or alternate data connection.

Backup WAN

In automatic mode, the TracNet system will use the backup connection only when no other gateway is available. A common choice of backup connection is the Iridium Certus service, as it provides pole-to-pole coverage.

Note: *Antenna systems and airtime plans for Iridium Certus service are available for purchase from KVH.*

Alternate WAN

In automatic mode, the TracNet system will use the alternate connection whenever it is available – it will be the preferred connection. An example of an alternate WAN might be an Ethernet connection to the marina's Internet service or the customer's cellular hotspot.

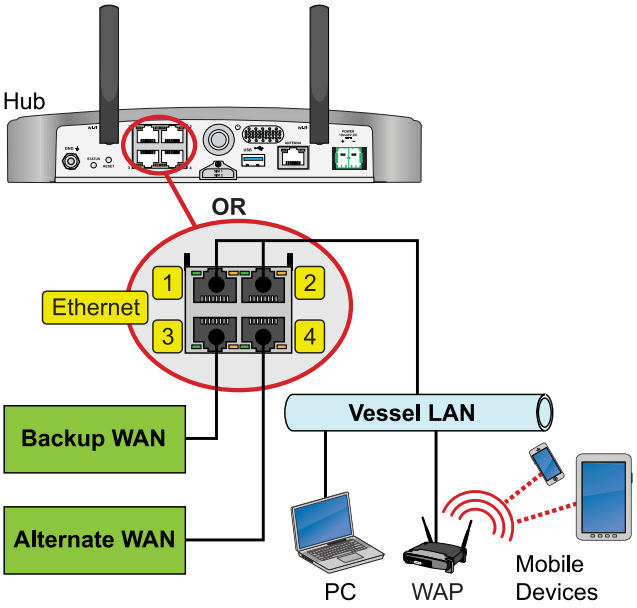
Adding the Backup or Alternate WAN

Follow these steps to set up a Backup or Alternate WAN connection.

1. At the web interface, go to the Port Configurations page and apply the "User LAN, Plus Backup and Alternate WAN" or "User LAN, Plus Backup and Starlink WAN" configuration.
2. Using an Ethernet cable, connect the backup or alternate device's LAN to the designated port on the TracNet system's Hub, as defined by the selected port configuration (see "Set the Port Configuration" on page 18).
3. Change the gateway IP address on the backup or alternate WAN device to the appropriate address below. *Refer to the device's user documentation for details.*

WAN Option	Gateway IP Address
Backup	198.19.56.1
Alternate	198.19.55.1

Figure 37: Alternate and/or Backup WAN Connections



Note: *KVH Manager will not report Backup or Alternate WAN data usage.*

4. At the web interface, go to the Terminal Home page and verify that the Backup or Alternate WAN is connected and available for use.

Starlink WAN

The TracNet system can also be configured to use a Starlink antenna system as the Alternate WAN connection. Refer to the separate Starlink KVH Configuration Instructions available on the KVH website.

Educate the Customer

Give the Welcome Kit to the customer, make sure they know the administrator and Wi-Fi passwords, and show them how to use the system. Be sure they understand the following:

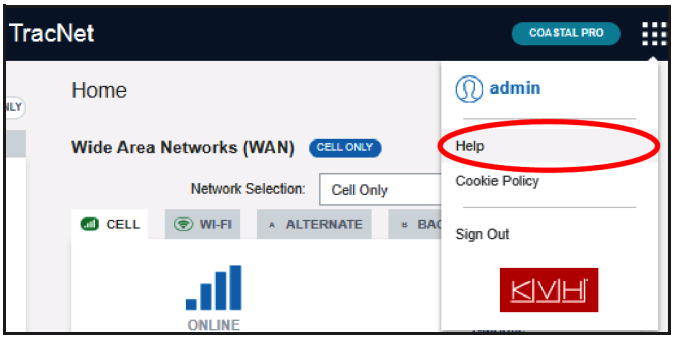
- Read the Master Services Agreement carefully (available at www.kvh.com/airtimeresources).
- Keep the radome installed on the antenna at all times. The radome protects the antenna from wind, rain, and debris.
- Data usage and overage alerts via email and text message can be configured easily over the Internet at the KVH Manager (see www.mykvh.com).

IMPORTANT!
If you are not a KVH Airtime customer, contact your Service Provider for details on accessing KVH Manager.

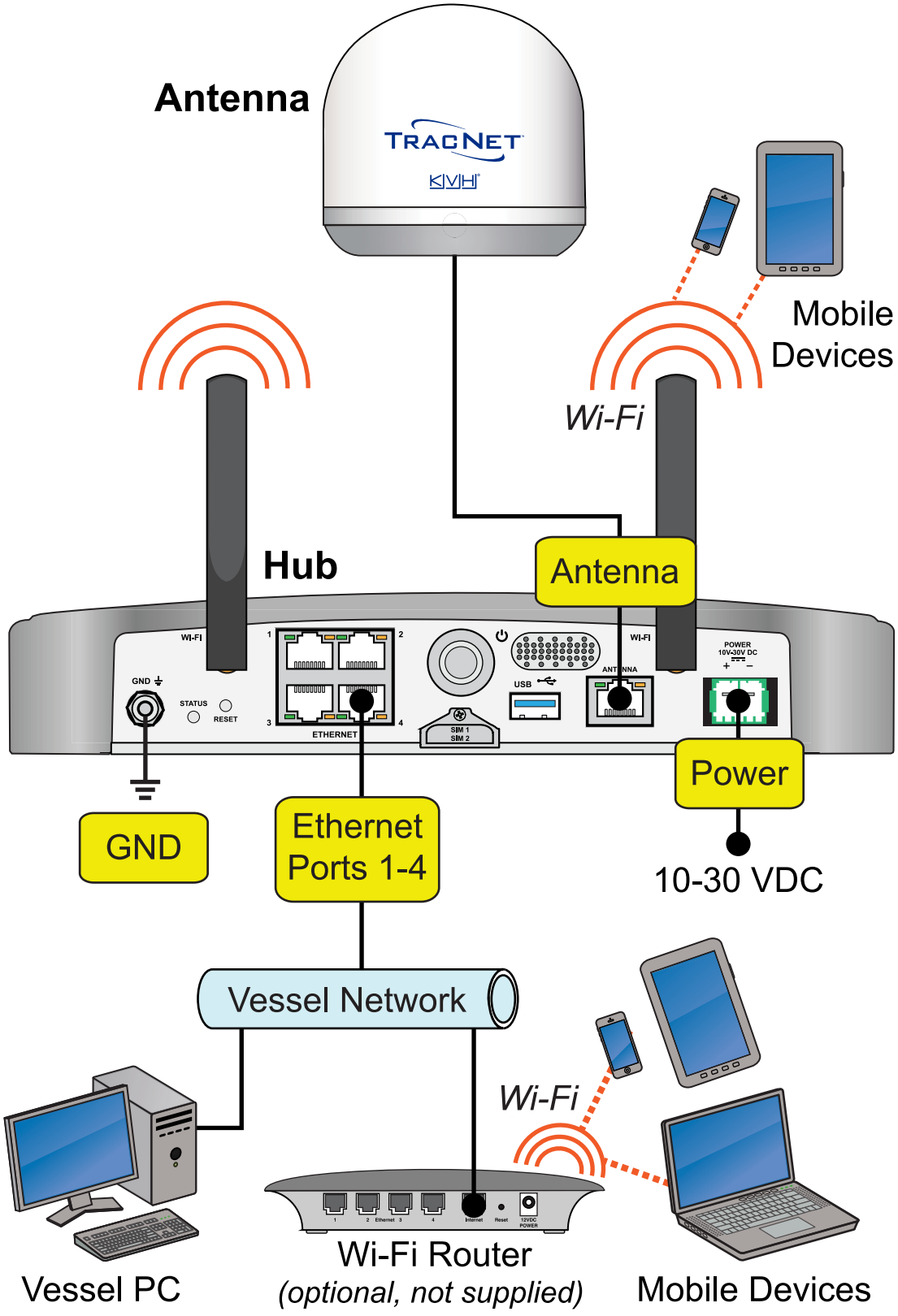
For More Information

Refer to the Help provided from the main menu of the web interface.

Figure 38: Help Option in Main Menu



Appendix A:
Wiring Diagram



Regulatory Compliance

European Union Compliance

Hereby, KVH Industries, Inc. declares that the radio equipment type TracNet Coastal Pro is in compliance with Directive 2014/53/EU. For the full text of the EU Declaration of Conformity, go to www.kvh.com/euconformity.

Federal Communications Commission Compliance

The TracNet system complies with Class B of Part 15 of the FCC (Federal Communications Commission) rules for radiated and conducted emissions.

FCC Identifiers: RYK-WPEQ256ACN (TracNet Hub Wi-Fi)

XMR2020RM502QAE (Cellular Radio)

Use Conditions:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. To determine if the equipment is interfering with radio or television reception, remove or apply power to the equipment and observe if the interference goes away, or returns, when the unit is off or on. The user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult KVH for assistance.

IMPORTANT:

- To meet FCC requirements, shielded Ethernet cables are required to connect the Hub to the ship's network.
- This equipment contains no user serviceable parts. Opening this unit will violate the warranty and may result in this equipment no longer complying with FCC requirements for Class B digital devices.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QUALITY CERTIFIED SYSTEM ISO 9001

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