YACHTSENSE LINK

MARINE 4G ROUTER

Software version: **v4.3**

INSTALLATION & OPERATION INSTRUCTIONS

Raymarine®

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To obtain the latest official documentation for a Raymarine® product, please visit the official Raymarine® website: https://bit.ly/rym-docs

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CHAPTER 1: IMPORTANT INFORMATION

Safety warnings

Warning: Product installation and operation

- This product must be installed and operated in accordance with the instructions provided. Failure to do so could result in personal injury, damage to your vessel and/or poor product performance.
- Raymarine highly recommends certified installation by a Raymarine approved installer. A certified installation qualifies for enhanced product warranty benefits. Register your warranty on the Raymarine website: www.raymarine.com/warranty

Warning: High voltage

This product contains high voltage. Adjustments require specialized service procedures and tools only available to qualified service technicians. There are no user serviceable parts or adjustments. The operator should never remove the cover or attempt to service the product.

Warning: Input and output channels

- The router's input and output channels enable creation of a simple digital monitoring / control system. As device connections are outside of Raymarine's control the company will not be held liable for damage or injury caused due to incorrect connections.
- Input and output device connections should only be carried out by a competent person familiar with vessel digital switching systems.
- The Router's output channels are rated at 200 mA and are only intended to be connected to devices via standard automotive relays.
- If in any doubt or for further advice please contact Raymarine Technical Support.

Warning: Potential ignition source

This product is NOT approved for use in hazardous/flammable atmospheres. Do NOT install in a hazardous/flammable atmosphere (such as in an engine room or near fuel tanks).

Product warnings

Warning: Positive ground systems

Do not connect this unit to a system which has positive grounding.

Warning: Product grounding

Before applying power to this product, it MUST be correctly grounded, in accordance with the instructions provided.

Caution: Cable connections

Ensure that the product is powered off before connecting or disconnecting any cables.

⚠️ **Warning: Power supply voltage**

Connecting this product to a voltage supply greater than the specified maximum rating may cause permanent damage to the unit. Refer to the product's information label for the correct voltage.

Caution: Power supply protection

When installing this product ensure the power source is adequately protected by means of a suitably-rated fuse or thermal circuit breaker.

Caution: Service and maintenance

This product contains no user serviceable components. Please refer all maintenance and repair to authorized Raymarine dealers. Unauthorized repair may affect your warranty.

Product returns

If you need to return your YachtSense Link router for service or repair, you must first remove it from your boat system, using the Raymarine app. This process is also known as "offboarding".

Regulatory notices

Non-Controlled information

Important:

This document does not contain export-controlled information.

Disclaimer

Raymarine does not warrant that this product is error-free or that it is compatible with products manufactured by any person or entity other than Raymarine.

Raymarine is not responsible for damages or injuries caused by your use or inability to use the product, by the interaction of the product with products manufactured by others, or by errors in information utilized by the product supplied by third parties.

Third-party hardware, such as converters, adapters, routers, switches, Access Points etc., provided by third parties, may be made available directly to you by other companies or individuals under separate terms and conditions, including separate fees and charges. Raymarine UK Ltd or its affiliates have not tested or screened the third-party hardware.

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• (b) the privacy or other practices of such third-party hardware.

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Product modifications

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF exposure

To be protected against all verified adverse effects, the separation distance of at least 0.5 m (1.64 ft) must be maintained between the antenna of the radio having maximum 5.84 dBi antenna gain and all persons.

5 GHz Wi-Fi band

The band 5150 MHz to 5350 MHz for this device is restricted to indoor use only within all European Union countries.

Compliance Statement (Part 15.19)

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.

FCC Interference Statement (Part 15.105 (b))

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. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

1. Reorient or relocate the receiving antenna.

2. Increase the separation between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

4. Consult the dealer or an experienced radio / TV technician for help.

Innovation, Science and Economic Development Canada (ISED)

This device complies with License-exempt RSS standard(s).

Operation is subject to the following two conditions:

1. This device may not cause interference; and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

This Class B digital apparatus complies with Canadian ICES-003.

Innovation, Sciences et Développement économique Canada (Français)

Cet appareil est conforme aux normes d'exemption de licence RSS.

Son fonctionnement est soumis aux deux conditions suivantes:

1. cet appareil ne doit pas causer d'interférence, et

2. cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Declaration of Conformity

FLIR Belgium BVBA declares that the following radio equipment type product is in compliance with the Radio Equipment Directive 2014/53/EU:

• **YachtSense™ Link Marine Cloud Router** — E70640

The original Declaration of Conformity certificate may be viewed on the relevant product page at www.raymarine.com/manuals.

End-User License Agreements (EULAs)

Use of the YachtSense Link router, Raymarine app and Raymarine cloud account is subject to an End-User License Agreement (EULA).

EULAs can be viewed at any time from the Raymarine app by opening the side menu and selecting: *[Settings > About > End User License Agreement]* and from the router's web interface by selecting: *[Help > Licenses]*.

Open source license agreements

The YachtSense Link router, Raymarine app and Raymarine cloud account are subject to certain open source license agreements.

Copies of the license agreements can be viewed at any time from the Raymarine app by opening the side menu and selecting: *[Settings > About > Open source licenses]* and from the router's web interface by selecting: *[Help > Licenses]*.

IMO and SOLAS

The equipment described within this document is intended for use on leisure marine boats and workboats NOT covered by International Maritime Organization (IMO) and Safety of Life at Sea (SOLAS) Carriage Regulations.

Product disposal

Dispose of this product in accordance with the WEEE Directive.

The Waste Electrical and Electronic Equipment (WEEE) Directive requires the recycling of waste electrical and electronic equipment which contains materials, components and substances that may be hazardous and present a risk to human health and the environment when WEEE is not handled correctly.

Equipment marked with the crossed-out wheeled bin symbol indicates that the equipment should not be disposed of in unsorted household waste.
Local authorities in many regions have established collection schemes under which residents can dispose of waste electrical and electronic equipment at a recycling center or other collection point.
For more information about suitable collection points for waste electrical and electronic equipment in your region, refer to the Raymarine website: https://bit.ly/rym-recycling

Warranty registration

To register your Raymarine product ownership, please visit https://bit.ly/rym-warranty and register online.

It is important that you register your product to receive full warranty benefits. Your unit package includes a bar code label indicating the serial number of the unit. You will need this serial number when registering your product online. You should retain the label for future reference.

Technical accuracy

To the best of our knowledge, the information in this document was correct at the time it was produced. However, Raymarine cannot accept liability for any inaccuracies or omissions it may contain. In addition, our policy of continuous product improvement may change specifications without notice. As a result, Raymarine cannot accept liability for any differences between the product and this document. Please check the Raymarine website (https://bit.ly/raymarine-home) to ensure you have the most up-to-date version(s) of the documentation for your product.

Publication copyright

CHAPTER 2: DOCUMENT INFORMATION

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2.1 Document information

This document contains important information related to the installation of your Raymarine® product.

The document includes information to help you:

- Plan your installation and ensure you have all the necessary equipment.

- Install and connect your product as part of a wider system of connected marine electronics.

- Troubleshoot problems and obtain technical support if required.

This and other Raymarine® product documents are available to download in PDF format from www.raymarine.com/manuals

2.2 Product documentation

The following documentation is applicable to your product:

This and other Raymarine product documents are available to download in PDF format from www.raymarine.com.

- **81397** — *YachtSense ™ Link Marine Cloud Router Installation and Operation Instructions* (This document)

- **87408** — *YachtSense ™ Link Marine Cloud Router Mounting Template*

Document illustrations

Your product and if applicable, its user interface may differ slightly from that shown in the illustrations in this document, depending on product variant and date of manufacture.

All images are provided for illustration purposes only.

CHAPTER 3: SOFTWARE DETAILS

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3.1 Applicable software version

Product software is updated regularly to add new features and improve existing functionality.

This document has been updated to reflect the following YachtSense Link software version:

Applicable software version:
v4.3

Check the website for the latest software:

YachtSense Link **software download link**
www.bit.ly/yachtsense-link-download

3.2 LightHouse software compatibility

The software version installed on Raymarine products must be compatible with the version of the LightHouse operating system installed on your MFDs/chartplotters.

Note:

- Where possible you should always update you networked products and MFDs/chartplotters to the latest available versions.
- MFDs/chartplotters on the same network should always have the same software version installed.

If you cannot upgrade your MFDs/chartplotters to the latest available version then you must ensure that the version of software installed on your Raymarine products is compatible with the version of LightHouse installed on your MFDs/chartplotters.

3.3 New software features

The following new features have been added to v4.3 of the YachtSense Link router software.

- Added support for WAN wired internet connection. This allows the router to connect to the internet via a wired connection to a

third-party device, such as a broadband satellite internet system, or a marina's wired internet connection. For details, refer to: **p.75 — Configuring a wired internet connection**

- Added support for Pulse type signals to the output channels. For details, refer to: **p.62 — Pulse output connection**

To download the latest software, visit: www.raymarine.com/software

3.4 YachtSense Link-Series YachtSense Link network connection

For optimum internet performance, Raymarine MFDs/chartplotters should be connected to the router via a wired RayNet Ethernet connection.

For YachtSense Link-Series YachtSense Link router software versions from **v4.20** onwards, it is no longer possible for a display to connect to the router's Wi-FI Access Point.

Software version	Description
Earlier than **v4.20**	Display may be connected to the YachtSense Link-Series YachtSense Link router's Wi-FI Access Point. However, functionality will be limited to providing an internet connection for third-party apps which require internet access, such as *Netflix*.
v4.20 *or later*	Display cannot connect to the YachtSense Link-Series YachtSense Link router's Wi-FI Access Point. **Note:** For YachtSense Link-Series YachtSense Link routers which previously had a Wi-FI connection to a display and have since been upgraded to **v4.20** from an earlier software version, the display will receive an IP address conflict notification. To correct the conflict, select *[Forget network]* in the displayed notification popup.

3.5 Performing a router software upgrade

Raymarine® regularly issues software updates for its products which provide new and enhanced features and improved performance and usability. It is important to ensure that you have the latest software for your products by regularly checking the Raymarine® website for new software releases.

Note:

The upgrade should be performed from a wired network device such as a PC/laptop or Raymarine® MFD. It is not recommended to perform the upgrade process from a device connected using Wi-Fi.

To upgrade the software on your router, follow the steps below:

1. Check your router's current software version. You can check your router's current software version by checking the *Info* page located under *Basic settings* in the router's web interface.

2. If available, download updated software from the Raymarine® website: www.raymarine.com/software

3. Access the router's web interface:

   • From a Raymarine® MFD, refer to:
     p.69 — Accessing the web interface from a Raymarine display

   • From a PC/laptop, refer to:
     p.70 — Accessing the web interface using a wired connection

4. Open the router's *[Software upgrade]* page located under *[Advanced settings]*.

5. If requested, enter the router's admin password and select *[OK]*.

6. Click *[Browse file to upload]*.

7. Locate and select the downloaded file.

   The file will upload to the router.

8. Click *[Upgrade]*.

   The router will now be upgraded. The upgrade process can take some time. Do NOT disconnect the router, PC/laptop, or Raymarine® MFD until the process is complete.

Once the process is complete, the router will restart.

CHAPTER 4: PRODUCT AND SYSTEM OVERVIEW

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4.1 Product overview

The YachtSense™ Link router (part number E70640) is a 4G smart router that provides an internet connection to connected devices. The router can be connected to the internet using Cellular, external Wi-Fi and a wired Wide Area Network (WAN) connection. The internet connection is routed to all devices connected to the router's Wi-Fi or Ethernet connections. The YachtSense™ Link router is part of Raymarine's YachtSense™ ecosystem and enables onboard and remote monitoring and control of compatible onboard systems via the Raymarine app.
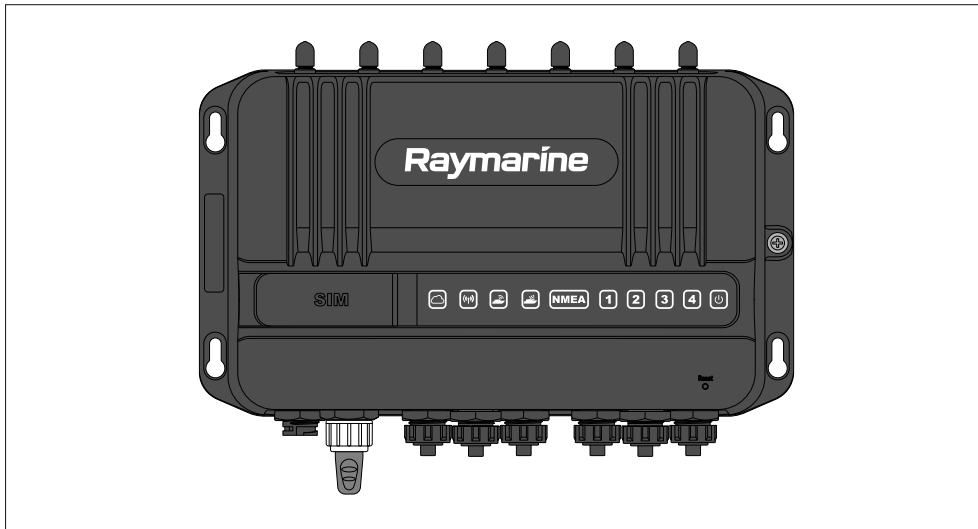
The YachtSense™ Link router includes the following features:

- Dual Micro-SIM card slots.
- Cellular antenna connections.
- Diversity antenna connections.
- Dual Wi-Fi network (DOCK WLAN) for off boat wireless connections.
- Dual Wi-Fi network (BOAT Wi-Fi) for onboard wireless connections.
- Configurable WAN port.
- Built in GNSS (GPS) receiver (GLONASS and Beidou compatible).
- 4 x digital input channels, for device monitoring.
- 4 x digital output channels (rated at 200 mA), for device control.

- 4 x RayNet network ports.
- SeaTalkng ® / NMEA 2000 connection.
- Web browser user interface for configuration.
- NAT (Network Address Translation) firewall.
- Compatible with Raymarine displays running LightHouse™ 4, version 4.0 or later.
- Low power mode.
- Supports remote wake via the Raymarine app over a cellular network.
- Supports wake via alert notification or input channel connection.

5-in-1 antenna improvements

The supplied 5-in-1 antenna was modified in May 2023. The improvements were as follows:

- Thread length (*dimension C*) was increased from 16.00 mm (0.63 in) to 24.00 mm (0.94 in).
- Thread pitch (*dimension D*) was changed from 7/8"-9 UNC to 1"-14 UNS
- 2 x M4 inserts were added to the antenna base, which allows surface mounting using M4 fixings such as thumb nuts and threaded studs (not supplied).

If you wish to mount the antenna using thumb nuts and studs, order the following additional parts:

- Q119 — 2 x M4 thumb nuts.
- Q120 — 2 x M4X0.7 x 40 mm threaded studs.

Note:

When sourcing your own fixings, to help prevent corrosion, it is recommended that the fixings should be A4 stainless steel or brass.

4.2 YachtSense Link system diagram

The following diagram provides an overview of a **typical** system, including the available connections and the types of devices that can be connected to your router.

1. Mobile phone / tablet.
2. 5-in-1 antenna providing GNSS / Wi-Fi / Cellular / Diversity connections (supplied).
3. Optional 5-in-1 antenna extension (A80701).
4. Boat Wi-Fi (antennas supplied).
5. Compatible MFD (e.g.: Axiom XL).
6. YachtSense™ Link Marine Cloud Router
7. Grounding connection (**mandatory**).
8. 12 V / 24 V dc power supply for the router.
9. RayNet connection to display (direct, or via Raymarine network switch).
10. Router output channel connections (rated at 200 mA; for controlling devices via standard automotive relays).
11. Router input channel connections (detect switch states and monitor voltage).
12. DeviceNet to SeaTalkng ® connection to MFD (via an adaptor cable, e.g.: A06075).
13. Other Raymarine products connected via RayNet (direct, or via a Raymarine network switch).
14. 12 V dc SeaTalkng ® power supply (with 5 A fuse).
15. SeaTalkng ® backbone (requires its own 12 V power supply).

CHAPTER 5: PARTS SUPPLIED

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5.1 Parts supplied

The following parts are supplied in the box.

Unpack your product carefully to prevent damage or loss of parts. Check the box contents against the list below. Retain the packaging and documentation for future reference.
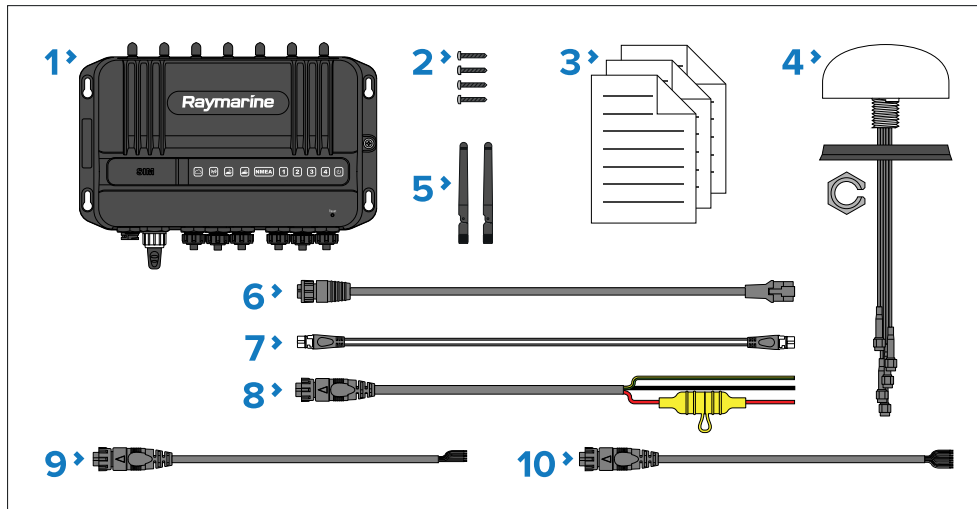
1. YachtSense™ Link Marine Cloud Router (supplied with grounding point fixings and protective caps fitted).

2. 4 x mounting fixings (PA 4 x 25 mm self tapping screws).

3. Documentation pack

4. 5-in-1 antenna (GNSS, Cellular, Diversity, DOCK WLAN) with 5 m (16.4 ft) cables and M20 nut and mounting gasket.

5. 2 x Dipole antenna (BOAT Wi-Fi).

6. RayNet to RJ45 cable, 1 m (3.3 ft).

7. SeaTalkng ® spur cable, 1 m (3.3 ft).

8. Power cable, 1.5 m (4.9 ft), with 8 A fitted fuse.

9. Input cable (5-wire), 0.5 m (1.64 ft).

10. Output cable (8-wire), 0.5 m (1.64 ft).

CHAPTER 6: PRODUCT DIMENSIONS

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6.1 YachtSense Link product dimensions
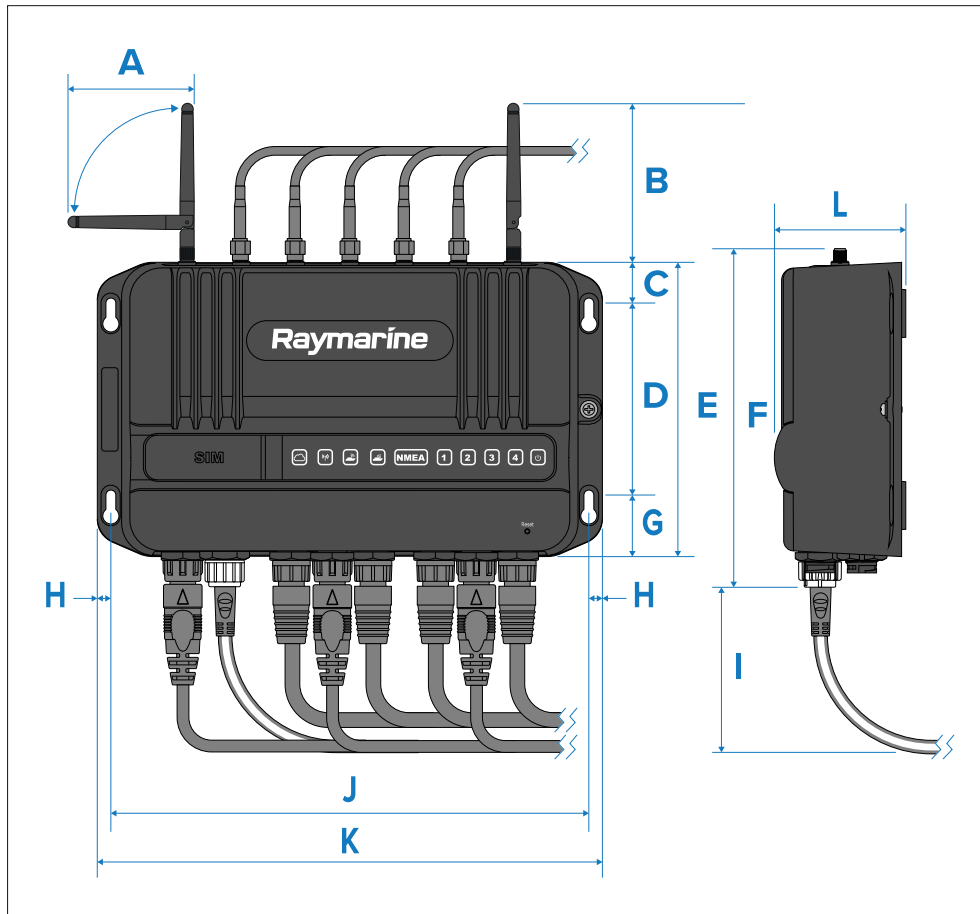
	Description
A	87.80 mm (3.46 in)
B	108.40 mm (4.27 in)
C	19.50 mm (0.78 in)
D	108.20 mm (4.26 in)
E	141.00 mm (5.55 in)
F	162.20 mm (6.39 in)

	Description
G	29.50 mm (1.16 in)
H	6.50 mm (0.26 in)
I	80.00 mm (3.15 in)
J	229.00 mm (9.02 in)
K	242.00 mm (9.53 in)
L	63.00 mm (2.48 in)

6.2 5-in-1 antenna dimensions
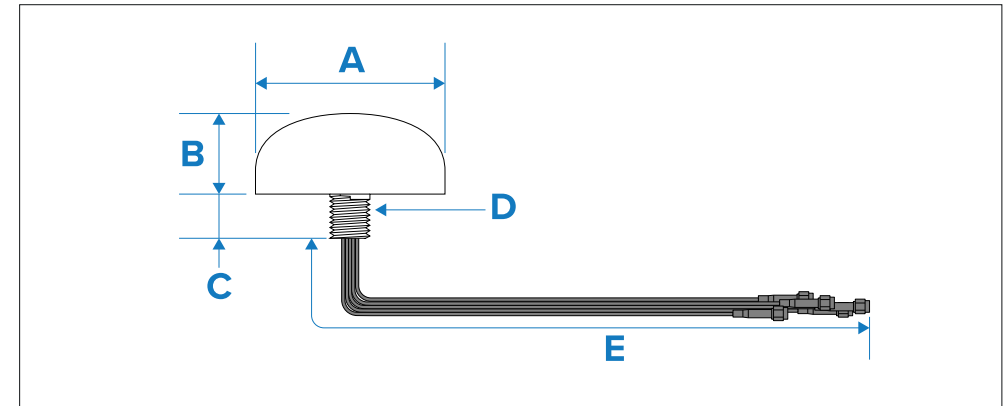
	Description
A	Ø 102.90 mm (4.05 in)
B	43.50 mm (1.71 in)
C	24.00 mm (0.94 in)
D	1" -14 UNS thread
E	5 m (16.4 ft)

Important:

The 5-in-1 antenna was modified in May 2023 to increase the thread length and thread pitch as follows:

- Thread length (*dimension C*) was increased from 16.00 mm (0.63 in) to 24.00 mm (0.94 in).

- Thread pitch (*dimension D*) was changed from 7/8"-9 UNC to 1"-14 UNS

- 2 x M4 inserts were added to the antenna base, which allows surface mounting using M4 fixings such as thumb nuts and threaded studs (not supplied).

Before installation, please check the thread length of your antenna, as it may impact your installation.

When sourcing your own fixings, to help prevent corrosion, it is recommended that the fixings should be A4 stainless steel or brass.

CHAPTER 7: YACHTSENSE ECOSYSTEM

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7.1 YachtSense ecosystem

YachtSense is Raymarine's digital vessel monitoring and control solution. The YachtSense ecosystem enables on and off-boat monitoring and control of connected vessel systems and data.

On-boat monitoring and control can be achieved using Raymarine Axiom-Series and Axiom 2-Series chartplotters (MFDs) or the Raymarine app installed on a mobile phone or tablet.

Off-boat (remote) monitoring and control can be achieved using the Raymarine app running on a compatible mobile phone or tablet. Off-boat monitoring and control also requires:

- A Premium subscription to the Raymarine app.
- Your system to have an active Internet connection.
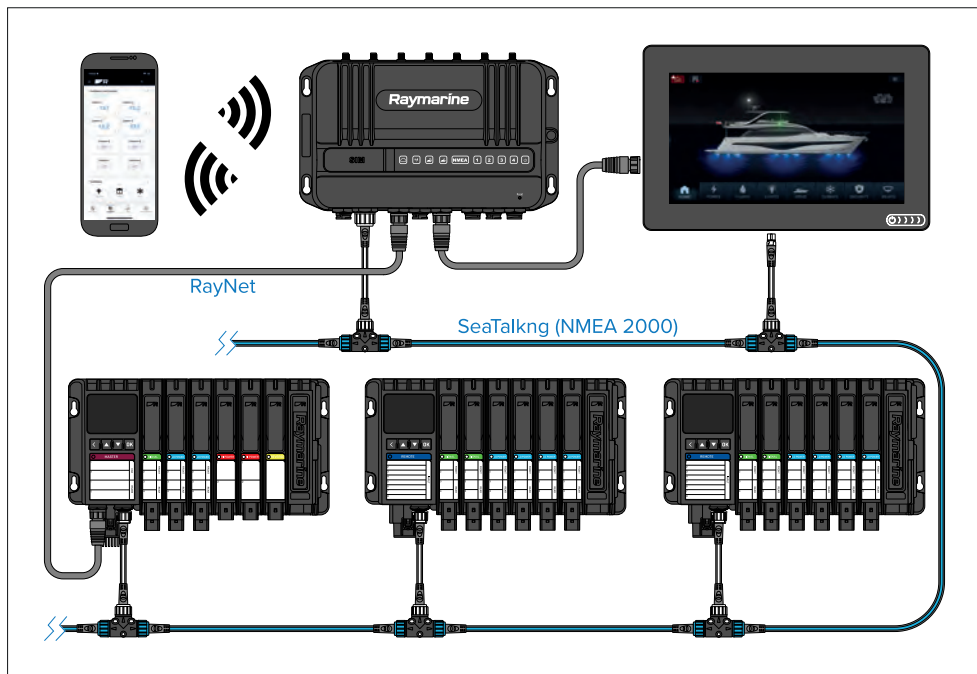
The full YachtSense ecosystem consists of:

- YachtSense Link-Series YachtSense Link router
- YachtSense DCS-Series Digital Control System, running Release 2 software (or later)
- Raymarine app.

- Premium app subscription (required for off-boat connectivity).
- Axiom-Series/Axiom 2-Series chartplotter (MFD).

Note:

- The YachtSense Link-Series YachtSense Link router **must** be connected to the same SeaTalk NG backbone as the YachtSense DCS-Series Digital Control System, and any chartplotters (MFDs).
- The router **must** also have a RayNet connection to the YachtSense DCS-Series Digital Control System's Master module, and any chartplotters (MFDs).

7.2 On-boat features

The YachtSense ecosystem provides a number of "on-boat" features that can be used whilst onboard your vessel.

Raymarine app connected directly to a chartplotter (MFD)

The following features are available when using the Raymarine app on a mobile device that is connected directly to an Axiom-Series/Axiom 2-Series chartplotter's (MFD's) Wi-FI Access Point:

- Stream and control the display.
- Download and transfer LightHouse Charts charts to a memory card, or the chartplotter's (MFD's) internal storage.
- Transfer files such as backups of waypoints and settings, images or videos between your mobile device and the chartplotter (MFD).
- View NMEA 2000 data.

Raymarine app connected to a YachtSense Link-Series YachtSense Link router
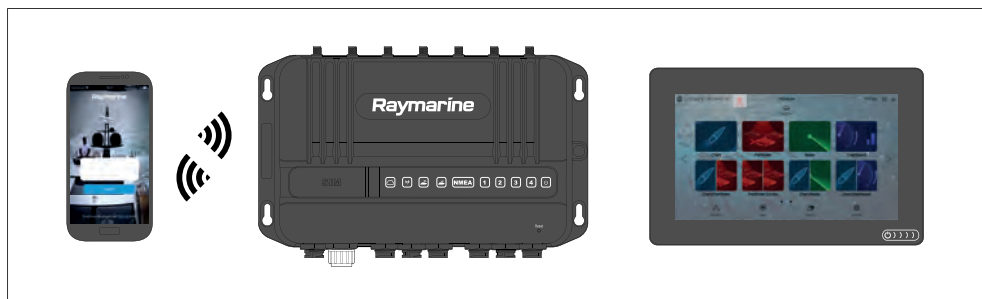
The following features are available when using the Raymarine app on a mobile device that is connected to the YachtSense Link-Series YachtSense Link router's Wi-FI Access Point:

- Stream and control any chartplotter (MFD) on the network.

- Download and transfer LightHouse Charts charts to a memory card or the chartplotter's (MFD's) internal storage.

- Transfer files such as backups of waypoints and settings, images or videos between your mobile device and the chartplotter (MFD).

- View NMEA 2000 data.

- Voltage monitoring of devices connected to the router's input channels. The router's web interface can also be used to monitor input channels.

- Control of devices connected to the router's output channels. The router's web interface can also be used to control output channels.

Raymarine app connected to a YachtSense Link-Series YachtSense Link router with a YachtSense DCS-Series Digital Control System
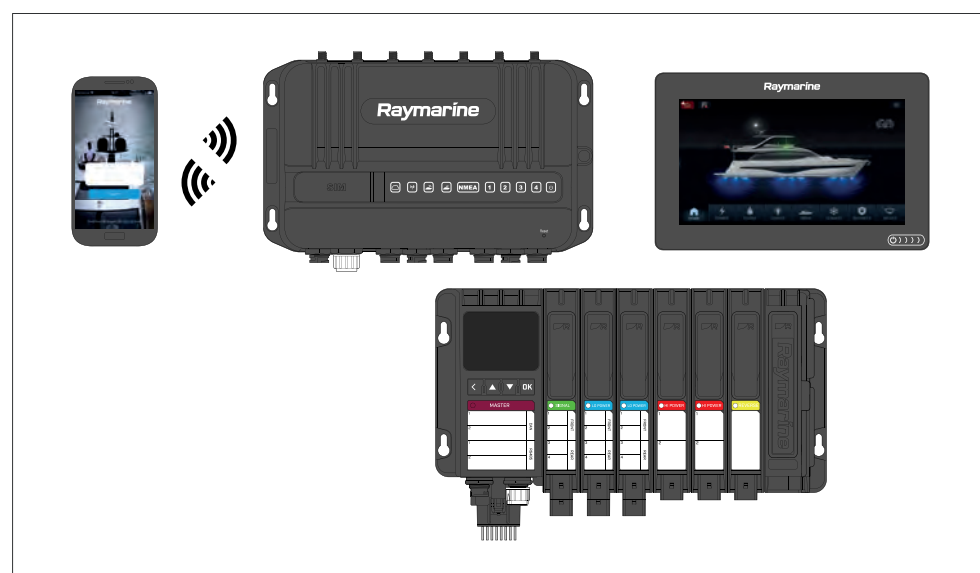
The following features are available when using the Raymarine app on a mobile device that is connected to the YachtSense Link-Series YachtSense Link router's Wi-FI Access Point on systems that include a YachtSense DCS-Series Digital Control System:

- Stream and control any chartplotter (MFD) on the network.

- Download and transfer LightHouse Charts charts to a memory card or to the chartplotter's (MFD's) internal storage.

- Transfer files such as waypoint and settings backups, images or videos between your mobile device and the chartplotter (MFD).

- View NMEA 2000 data. (The range of data that can be viewed is dependent on the specific configuration and design of your YachtSense ecosystem and the associated Raymarine app.)

- Voltage monitoring of devices connected to the router's input channels. The router's web interface can also be used to monitor input channels.

- Control of devices connected to the router's output channels. The router's web interface can also be used to control output channels.

- Monitoring and control of vessel systems and devices connected to the YachtSense DCS-Series Digital Control System input and output channels

(input and output channels can also be monitored and controlled using a chartplotter (MFD), or directly from the Master or Remote module).

> **Note:**
>
> The YachtSense DCS-Series Digital Control System requires a specific configuration and app page design for the Raymarine app. Contact an authorized Raymarine dealer or the organization that configured your system for advice.

7.3 Off-boat premium features

The YachtSense ecosystem provides a number of premium "off-boat" features, which can be used whilst away from your vessel.

> **Note:**
>
> - Off-boat features require a YachtSense Link-Series YachtSense Link router and a valid premium subscription to the Raymarine app.
>
> - Off-boat features require the system to have an active Internet connection.
>
> - YachtSense DCS-Series Digital Control System requires a specific configuration and app page design for the Raymarine app. App software Release 2 (or later) is required.
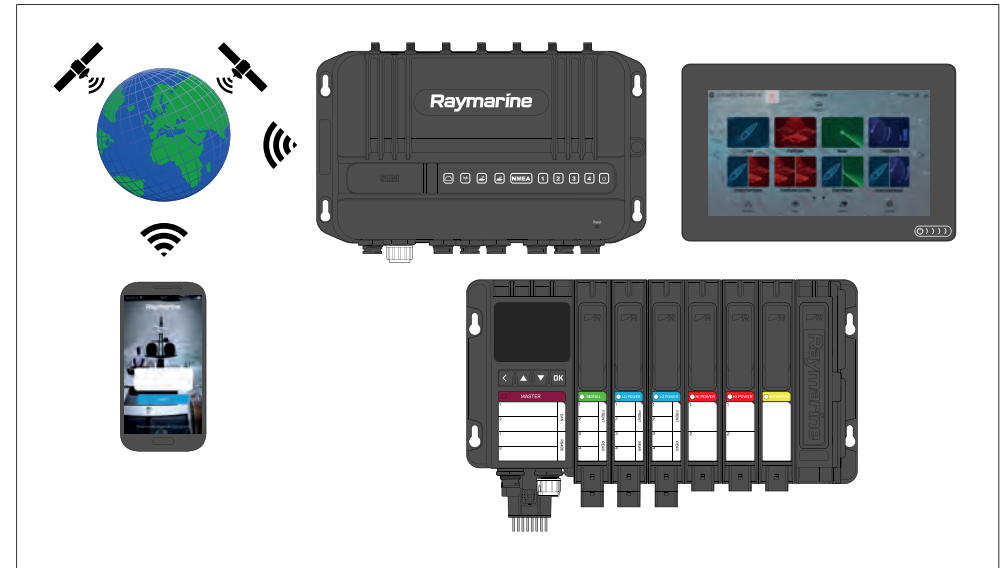
Whilst off-boat you can:

- Monitor your vessel's location using the app's geofence features.

- View NMEA 2000 data. (The range of data that can be viewed is dependent on the specific configuration and design of your YachtSense ecosystem and the associated Raymarine app.)

- Voltage monitoring of devices connected to the router's input channels.

- Control of devices connected to the router's output channels.

- Monitoring and control of vessel systems and devices connected to the YachtSense DCS-Series Digital Control System input and output channels.

> **Note:**
>
> If the router is in *[Low power mode]* only a Cellular connection can be used to wake the router remotely.

CHAPTER 8: LOCATION REQUIREMENTS

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8.1 Warnings and cautions

Important:

Before proceeding, ensure that you have read and understood the warnings and cautions provided in the following section of this document: **p.10 — Important information**

⚠️ **Warning: Potential ignition source**

This product is NOT approved for use in hazardous/flammable atmospheres. Do NOT install in a hazardous/flammable atmosphere (such as in an engine room or near fuel tanks).

8.2 5-in-1 antenna location requirements

The supplied 5-in-1 antenna must be mounted in a location that provides a clear unobstructed view of the sky.

Ensure that the selected mounting location is:

- Open and clear of any obstructions (such as masts, search lights, or other structures) that could block line-of-sight to the sky.
- As low as possible, to keep the antenna as stable as possible. The more stable the antenna, the more effectively it will track satellites and provide stable data.
- As far as possible (at least 1 m (3 ft)) from other antennas and electronic equipment.

Do NOT mount the antenna:

- In any area where it could be stepped on or tripped over.
- Up a mast. This will cause the antenna to swing and give significant errors in position data.
- In the direct path of a Radar beam.

8.3 YachtSense™ Link location requirements

This product is not suitable for installation in above decks locations, unless installed in a suitable protective enclosure. In this scenario, it's important to avoid using enclosure materials that will have a significant impact on the wireless signals, such as conductive materials like steel or carbon fibre, for example.

8.4 Wireless location requirements for optimum performance

All wireless devices in your system must be located in such a way that they can reliably receive and/or transmit wireless signals.

A number of factors can influence wireless performance. For example, physical obstacles and certain vessel structures and materials can all negatively impact wireless performance. Therefore, **it's important to check a product's wireless performance at the desired installation location before drilling any mounting holes**.

Vessel construction and materials

Wherever possible, mount products on surfaces constructed from GRP (e.g. fiberglass resin, or foam), or on dry wooden bulkheads.

Conductive materials in the signal path can have a significant impact on wireless signal performance. Reflective surfaces such as metal surfaces, some types of glass and even mirrors can drastically affect performance or even block the wireless signal. Installation locations that are in close proximity to these materials should be avoided. **Do NOT mount wireless products directly to conductive materials.** This includes any mounting surface or enclosure/pod.

Examples of conductive materials include, but are not limited to:

- carbon fibre, kevlar, or aramid (including sails made from these materials)
- aluminium
- steel

In installations with conductive materials, if available, mount the wireless product using an accessory pole mount or deck mounting kit. A clearance of at least 10 cm (3.9 in) is required to minimize the ground effect from conductive materials. This applies to transmitters as well as displays. If

moving the product fixes the problem, consider cutting an antenna clearance hole behind the unit (once the product position and mounting have been finalized).

Wireless performance can also be degraded in locations where the wireless signal passes through a bulkhead containing power cables.

Crew members (especially when wet) can also be obstructive to wireless signals, if their bodies pass through the signal area between wireless sensor and any associated displays.

Checking and optimizing signal strength

It may be necessary to experiment with the location of your wireless products to achieve optimal wireless performance and a clear signal path.

The distance between wireless products should always be kept to a minimum. Do not exceed the maximum stated range of your wireless product (maximum range will vary for each device).

Wireless performance degrades over distance, so products farther away will receive less network bandwidth. Products installed close to their maximum wireless range may experience slow connection speeds, signal dropouts, or not being able to connect at all.

For best results, the wireless product should have a clear, direct line-of-sight to the product it will be connected to. Any physical obstructions can degrade or even block the wireless signal.

Some wireless products feature a signal strength indicator to assist in the process of determining the location with the best wireless performance. Choose the location with the highest and most consistently strong direct signal reading, during a 5 minute monitoring period. Try alternative locations for the transmitter to maximise the signal strength to the displays; e.g. try locations below a hatch or skylight or near to a window. A small change in product position can result in a significant change in the signal strength.

Note:

Some wireless products (e.g. a Hull Transmitter) will not transmit data unless a transducer is connected. Also consider that an NMEA or SeaTalk NG product (e.g. an interface) will not transmit data unless an appropriate data source is connected.

Interference and other equipment

Interference from other people's wireless devices can cause interference with your products. You can use a third-party wireless analyzer tool / smartphone app to assess the best wireless channel to use (e.g. a channel not in use or one used by the least number of devices).

Wireless products should be installed at least 1 m (3 ft) away from:

- Other wireless-enabled products
- Transmitting products that send wireless signals in the same frequency range
- Other electrical, electronic or electromagnetic equipment that may generate interference.

Software updates

It's also important to ensure all your wireless products are running the latest software versions, as improvements are made over time to wireless performance.

8.5 Mounting surface requirements

When selecting a mounting surface, ensure that:

- The product will be adequately supported on a secure, flat surface. Do NOT mount units or cut holes in places which may damage the structure of the vessel.
- Sufficient space is available around the product.
- There is nothing behind the mounting surface that may be damaged when drilling.

8.6 Cable routing requirements

Ensure you have identified the route that all required cables will take and that sufficient space is available to allow connection of cables:

- Unless otherwise stated, a minimum cable bend radius of 100 mm (3.94 in) is required.
- Where necessary, cable supports should be used to prevent stress on connectors.

8.7 Electrical interference

Select a location that is far enough away from equipment that may cause interference, such as motors, generators and radio transmitters/receivers.

8.8 Power supply

Select a location that is as close as possible to the vessel's DC power supply. This will help to keep cable runs to a minimum.

8.9 RF interference

Certain third-party external electrical equipment can cause Radio Frequency (RF) interference with GNSS (GPS), AIS or VHF devices, if the external equipment is not adequately insulated and emits excessive levels of electromagnetic interference (EMI).

Some common examples of such external equipment include LED lighting (e.g.: navigation lights, searchlights and floodlights, interior and exterior lights) and terrestrial TV tuners.

To minimize interference from such equipment:

- Keep it as far away from GNSS (GPS), AIS or VHF products and their antennas as possible.
- Ensure that any power cables for external equipment are not entangled with the power or data cables for these devices.
- Consider fitting one or more high frequency suppression ferrites to the EMI-emitting device. The ferrite(s) should be rated to be effective in the range 100 MHz to 2.5 GHz, and should be fitted to the power cable and any other cables exiting the EMI-emitting device, as close as possible to the position where the cable exits the device.

8.10 Compass safe distance

When choosing a suitable location for your product you should aim to maintain the maximum possible distance between the product and any installed compass. This distance should be at least 1 m (3.3 ft) in all directions.

For smaller vessels it may not be possible to achieve this distance. In this situation ensure that the compass is not affected by the product when it is powered on.

8.11 EMC installation guidelines

Raymarine equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) regulations, to minimize electromagnetic interference between equipment and minimize the effect such interference could have on the performance of your system.

Correct installation is required to ensure that EMC performance is not compromised.

Note:

In areas of extreme EMC interference, some slight interference may be noticed on the product. Where this occurs the product and the source of the interference should be separated by a greater distance.

For **optimum** EMC performance we recommend that wherever possible:

- Raymarine equipment and cables connected to it are:
  - At least 1 m (3.28 ft) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 2 m (6.6 ft).
  - More than 2 m (6.56 ft) from the path of a Radar beam. A Radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The product is supplied from a separate battery from that used for engine start. This is important to prevent erratic behavior and data loss which can occur if the engine start does not have a separate battery.
- Raymarine specified cables are used.
- Cables are not cut or extended, unless doing so is detailed in the installation manual.

> **Note:**
>
> **Where constraints on the installation prevent any of the above recommendations**, always ensure the maximum possible separation between different items of electrical equipment, to provide the best conditions for EMC performance throughout the installation.

8.12 Suppression ferrites

- Raymarine cables may be pre-fitted or supplied with suppression ferrites. These are important for correct EMC performance. If ferrites are supplied separately to the cables (i.e. not pre-fitted), you must fit the supplied ferrites, using the supplied instructions.

- If a ferrite has to be removed for any purpose (e.g. installation or maintenance), it must be replaced in the original position before the product is used.

- Use only ferrites of the correct type, supplied by Raymarine or its authorized dealers.

- Where an installation requires multiple ferrites to be added to a cable, additional cable clips should be used to prevent stress on the connectors due to the extra weight of the cable.

8.13 Connections to other equipment

Requirement for ferrites on non-Raymarine cables.

If your product is to be connected to other equipment using a cable not supplied by Raymarine®, a suppression ferrite MUST always be attached to the end of the cable nearest to the Raymarine® product.

CHAPTER 9: MOUNTING

CHAPTER CONTENTS

9.1 Tools required

The following tools are required for installation.
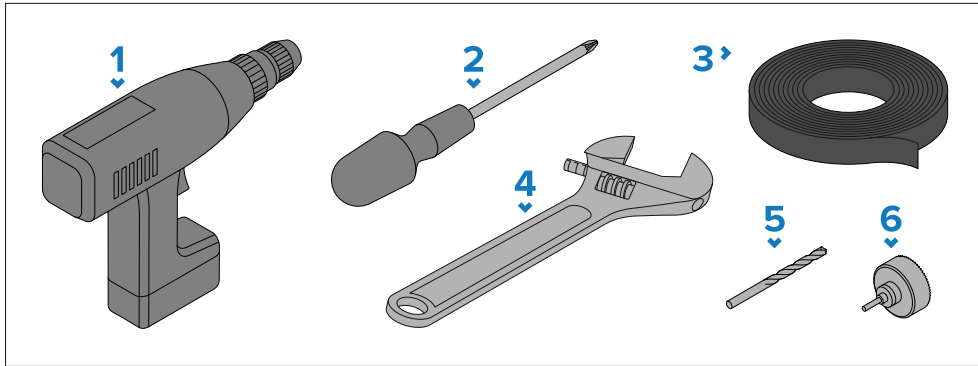
1. Power drill
2. Pozi-drive screw driver
3. Masking / adhesive tape
4. Adjustable wrench / 30 mm wrench (Required for 5-in-1 antenna installation.)
5. Drill bit (suitable for pilot holes)
6. 23 mm (0.91 in) hole cutter (Required for 5-in-1 antenna installation.)

9.2 Mounting the YachtSense™ Link router

Follow the instructions below to mount the router.

Before mounting the product ensure that you have:

- selected a suitable location, based on the location requirements found in this document.
- identified the relevant cable connections and the route that the cables will take.
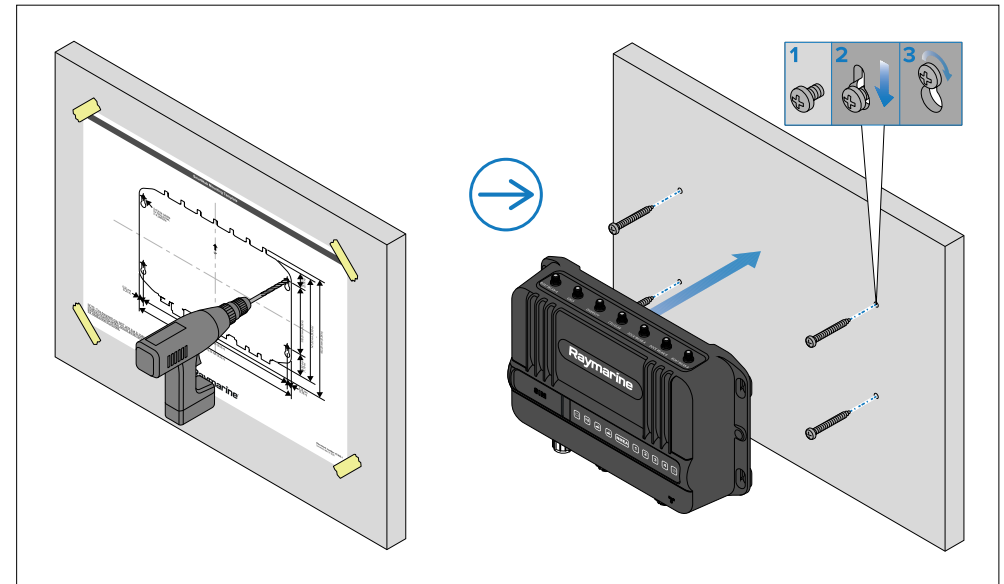
1. Fix the supplied mounting template to the chosen location using masking or self-adhesive tape.
2. Drill 4 holes as indicated on the template to accept the fixings.
3. Remove the mounting template.
4. Screw the fixings approximately half way into the holes in the mounting surface.
5. Place the unit over the fixing screws and push down to engage the keyhole slots.
6. Fully tighten the screws.

9.3 Mounting the 5-in-1 antenna

The supplied 5-in-1 antenna must be installed in a location which has a clear line of sight to the sky, and where it will be away from structure and devices that could cause interference.

Important:

5-in-1 antennas manufactured *prior to* **May 2023** had a shorter (16.00 mm (0.63 in)) and thinner diameter (23 mm (0.91 in)) thread. For these antennas, a **thread extender kit** is available as an optional accessory (part number: A80718). The thread extender kit enables the antenna to be mounted on a thicker mounting surface. It's important to refer to the antenna mounting instructions supplied in the thread extender kit (document number 82425), as the kit requires a larger mounting hole size and a wrench for tightening the nut.
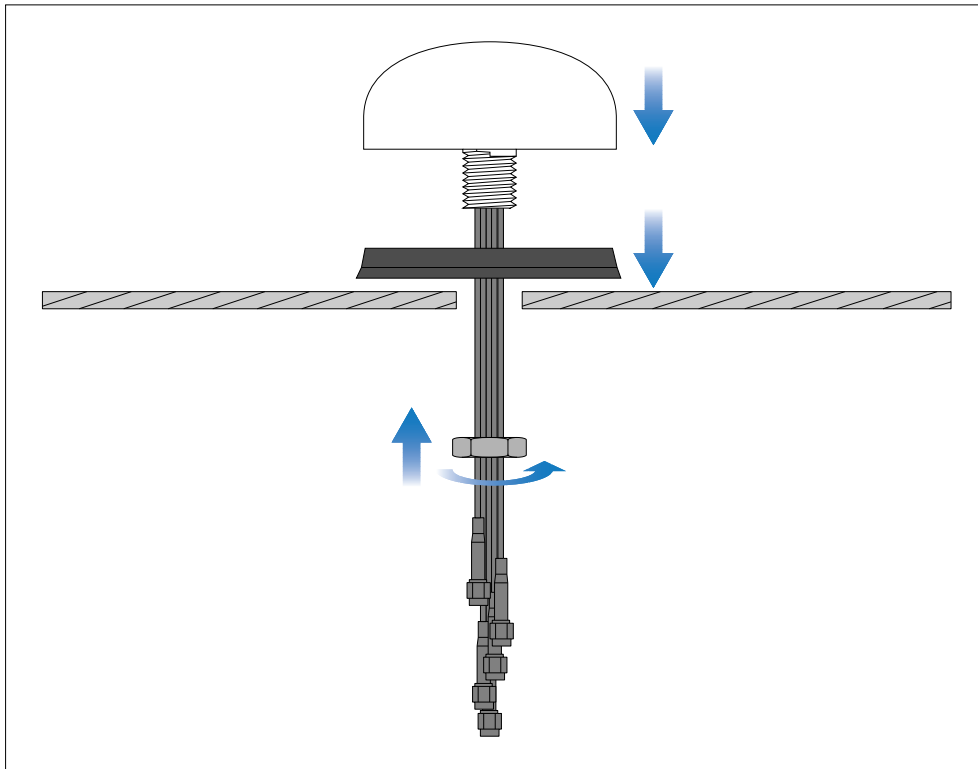
1. Drill a 25.4 mm (1.0 in) hole at the center of the desired mounting location to accept the antenna's thread and cables.

Important:

If your antenna does not have the brass inserts then the hole diameter for the thread is 23 mm (0.91 in). See important note above.

2. Feed the cables through the gasket and place on the underside of the antenna.
3. Feed the cables and thread through the hole in the mounting surface so that the gasket and antenna sit flush on the mounting surface.
4. Feed the cables through the split in the nut and secure the antenna by tightening the nut on the exposed thread.

   Tighten the split nut using a large adjustable wrench or a 30 mm wrench. **The tightening torque should not exceed 1.47 N·m (1.08 lbf·ft)**.

9.4 Mounting the 5-in-1 antenna using M4 fixings

5-in-1 antennas manufactured **after** May 2023 include 2 x M4 inserts in the antenna base, which allows an alternate method for surface mounting, using M4 fixings such as thumb nuts and threaded studs (not supplied).

The supplied 5-in-1 antenna must be installed in a location which has a clear line of sight to the sky and where it will be away from structure and devices that could cause interference.

Note:

- The below example mounting method uses 2 x M4 thumb nuts (part number: Q119) and 2 x M4X0.7 x 40 mm threaded studs (part number: Q120) for the fixings. These fixings must be ordered separately.

- You may also source your own M4X0.7 fixings. When sourcing your own fixings, to help prevent corrosion the fixings should be A4 stainless steel or brass.

- The thread extender kit part number: A80718 is NOT compatible with 5-in-1 antennas manufactured **after** May 20023 that have a 24.00 mm (0.94 in) thread length.

1. Drill a 25.4 mm (1.0 in) hole at the center of the desired mounting location to accept the antenna's thread and cables.

2. Drill 2 x 4 mm ($^5/_{32}$ in) holes for the fixing holes.

3. Screw the threaded studs into the inserts in the antenna base.

4. Feed the cables through the gasket and place on the underside of the antenna.

5. Feed the cables, thread and threaded studs through the holes in the mounting surface so that the gasket and antenna sit flush on the mounting surface.

6. Screw the thumb nuts onto the threaded studs until hand tight.

CHAPTER 10: CABLES AND CONNECTIONS — GENERAL INFORMATION

CHAPTER CONTENTS

10.1 Cable types and length

It is important to use cables of the appropriate type and length.

- Unless otherwise stated only use cables supplied by Raymarine.

- Where it is necessary to use non-Raymarine cables, ensure that they are of correct quality and gauge for their intended purpose. (e.g.: longer power cable runs may require larger wire gauges to minimize voltage drop along the run).

10.2 Strain relief

Use adequate strain relief for cabling to ensure that connectors are protected from strain and will not pull out under extreme sea conditions.

10.3 Cable shielding

Ensure that cable shielding is not damaged during installation and that all cables are properly shielded.

Important:

Be aware that some **third-party** cables and adaptors (for example, certain Ethernet cables using RJ45 connectors) are not always shielded. To prevent breaks in cable shielding continuity and potential grounding issues, special attention is required to ensure that any cables, extension cables, adaptors, or other signal-coupling devices (such as multi-way connectors, junction boxes, terminal blocks etc.) used in cable runs **maintain all shield connections throughout the cable run**.

10.4 Connecting cables

Follow the steps below to connect the cable(s) to your product.

1. Ensure that the vessel's power supply is switched off.

2. Ensure that the device being connected has been installed in accordance with the installation instructions supplied with that device.

3. Ensuring correct orientation, push cable connectors fully onto the corresponding connectors.

4. Engage any locking mechanism to ensure a secure connection (e.g.: turn locking collars clockwise until tight, or in the locked position).

5. Ensure any bare ended wire connections are suitably insulated to prevent shorting and corrosion due to water ingress.

10.5 Connections overview

The YachtSense™ Link includes the following connections:

Note:

- The router is supplied with protective caps fitted to the antenna connections, RayNet connections, Input and Output connections, and the SeaTalkng ® connection.

- The protective caps should remain in place until connections are made. If a connection is not required then the protective cap should not be removed.
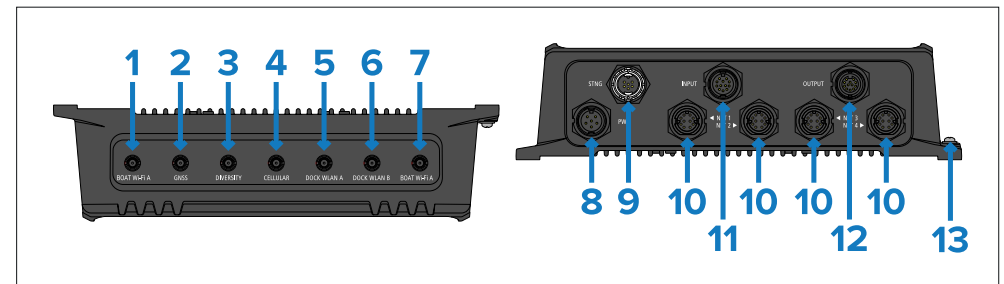
1. Boat Wi-Fi A (Internal boat Wi-Fi antenna connection)

2. GNSS (GPS/GLONASS antenna connection)

3. Diversity (Secondary cellular antenna connection)

4. Cellular (Primary cellular antenna connection)

5. Dock WLAN A (External dock Wi-Fi antenna connection)

6. Dock WLAN B (External dock Wi-Fi antenna connection)

7. Boat Wi-Fi B (Internal boat Wi-Fi antenna connection)

8. Power connection

9. SeaTalkng ® connection

10. RayNet connections

11. Input connections

12. Output connections

13. Dedicated grounding connection — this MUST be connected to a suitable grounding point; refer to: **p.49 —** Ground connection

---

Caution: Cable connections

Ensure that the product is powered off before connecting or disconnecting any cables.

10.6 YachtSense Link system diagram

The following diagram provides an overview of a **typical** system, including the available connections and the types of devices that can be connected to your router.

1. Mobile phone / tablet.

2. 5-in-1 antenna providing GNSS / Wi-Fi / Cellular / Diversity connections (supplied).

3. Optional 5-in-1 antenna extension (A80701).

4. Boat Wi-Fi (antennas supplied).

5. Compatible MFD (e.g.: Axiom XL).

6. YachtSense™ Link Marine Cloud Router

7. Grounding connection (**mandatory**).

8. 12 V / 24 V dc power supply for the router.

9. RayNet connection to display (direct, or via Raymarine network switch).

10. Router output channel connections (rated at 200 mA; for controlling devices via standard automotive relays).

11. Router input channel connections (detect switch states and monitor voltage).

12. DeviceNet to SeaTalkng ® connection to MFD (via an adaptor cable, e.g.: A06075).

13. Other Raymarine products connected via RayNet (direct, or via a Raymarine network switch).

14. 12 V dc SeaTalkng ® power supply (with 5 A fuse).

15. SeaTalkng ® backbone (requires its own 12 V power supply).

CHAPTER 11: POWER CONNECTION

CHAPTER CONTENTS

11.1 Power connection

The supplied power cable must be connected to a 12 V dc or 24 V dc power supply, either via a power distribution panel, or direct connection to a battery.

1. YachtSense™ Link
2. Power cable (supplied)
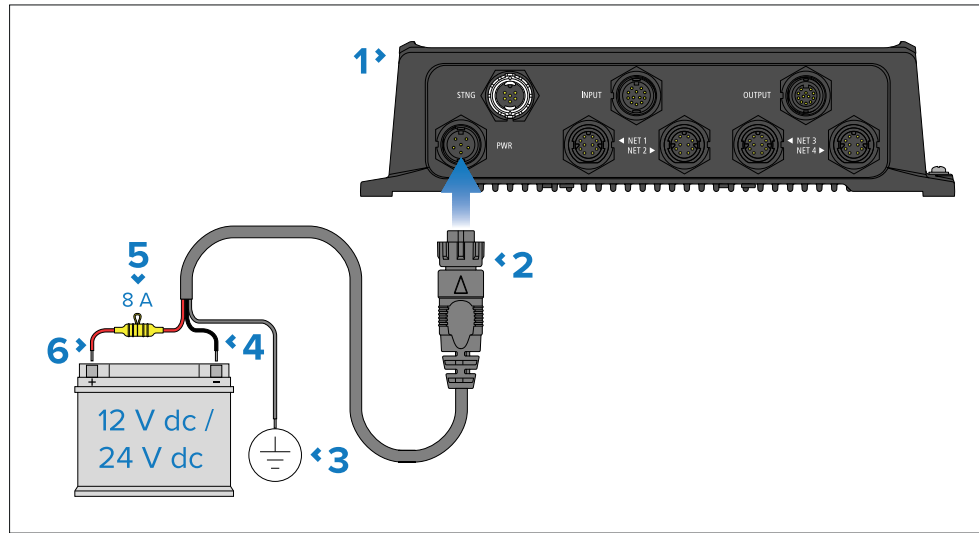3. Ground wire connects to vessel's RF ground point; if no ground point is available, connect to the battery negative (-) terminal.
4. Negative wire connects to power supply negative (-) terminal.
5. Waterproof fuse holder with 8 A fuse must be fitted
6. Positive (Red) wire connects to power supply positive (+) terminal.

> ⚠️ **Warning: Product grounding**
>
> Before applying power to this product, it MUST be correctly grounded, in accordance with the instructions provided.

> ⚡ **Warning: Positive ground systems**
>
> Do not connect this unit to a system which has positive grounding.

> **Caution: Power supply protection**
>
> When installing this product ensure the power source is adequately protected by means of a suitably-rated fuse or thermal circuit breaker.

11.2 In-line fuse and thermal breaker ratings

The following in-line fuse and thermal breaker ratings apply to your product:

Inline fuse rating	Thermal breaker rating
8 A	8 A

> **Note:**
>
> - The suitable fuse rating for the thermal breaker is dependent on the number of devices you are connecting. If in doubt, consult an authorized Raymarine dealer.
>
> - Your product's power cable may have an inline fuse fitted; if not, you must add an inline fuse / breaker to the positive wire of your product's power connection.

11.3 Power distribution

Recommendations and best practice for the power connection of products supplied with a ground wire as part of the supplied power cable.

- The product is supplied with a power cable, either as a separate item or a captive cable permanently attached to the product. Only use the power cable supplied with the product. Do NOT use a power cable designed for, or supplied with, a different product.

- Refer to the *Power connection* section for more information on how to identify the wires in your product's power cable, and where to connect them.

- See below for more information on implementation for some common power distribution scenarios:

Implementation — connection to distribution panel (Recommended)

	Description
1	If not supplied already fitted to the power cable, a waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: *Inline fuse and thermal breaker ratings*.
2	Product power cable.
3	Ground wire connection point.

- It is recommended that the supplied power cable is connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point.

- The distribution point should be fed from the vessel's primary power source by 8 AWG (8.36 mm^2) cable.

- Ideally, all equipment should be wired to individual suitably-rated thermal breakers or fuses, with appropriate circuit protection. Where this is

not possible and more than 1 item of equipment shares a breaker, use individual inline fuses for each power circuit to provide the necessary protection.

- **The power cable supplied with your product includes a separate ground wire, which must be connected to the vessel's common RF ground.** For more information, refer to: **p.48 —** Power cable ground wire connection

	Description
1	Positive (+) bar
2	Negative (-) bar
3	Circuit breaker
4	If not supplied already fitted to the power cable, a waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: *Inline fuse and thermal breaker ratings*.

Implementation — direct connection to battery

- Where connection to a power distribution panel is not possible, the power cable supplied with your product may be connected directly to the vessel's battery, via a suitably rated fuse or breaker.

- The power cable supplied with your product includes a separate ground wire, which must be connected to the vessel's common RF ground (if available), or the battery's negative terminal. For more information, refer to: **p.48 —** Power cable ground wire connection

- If the power cable is NOT supplied with a fitted inline fuse, you MUST fit a suitably rated fuse or breaker between the red wire and the battery's positive terminal.

- Refer to the inline fuse ratings provided in the product's documentation.

- If you need to extend the length of the power cable supplied with your product, ensure you observe the dedicated *Power cable extensions* advice provided in the product's documentation.

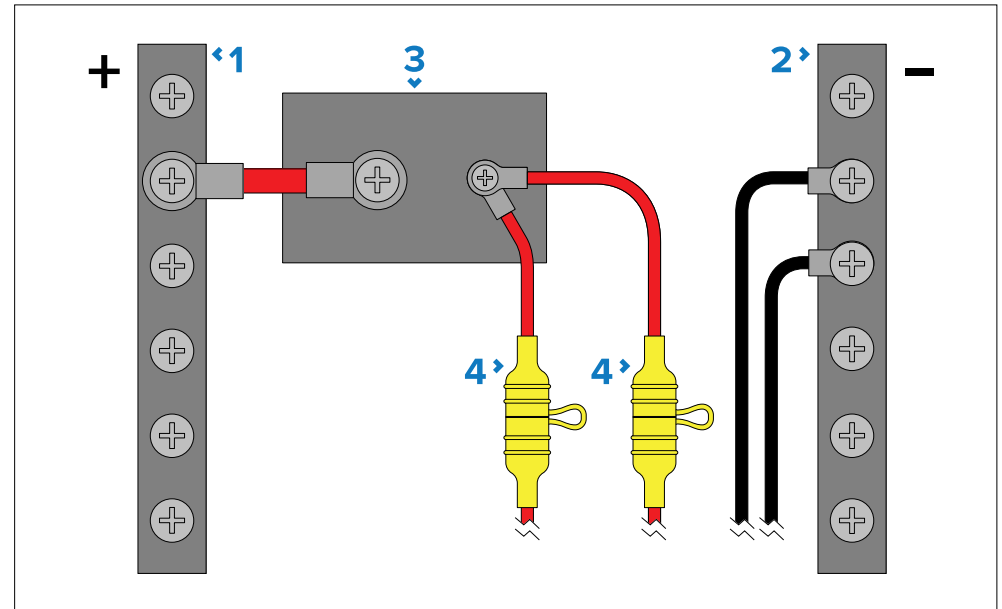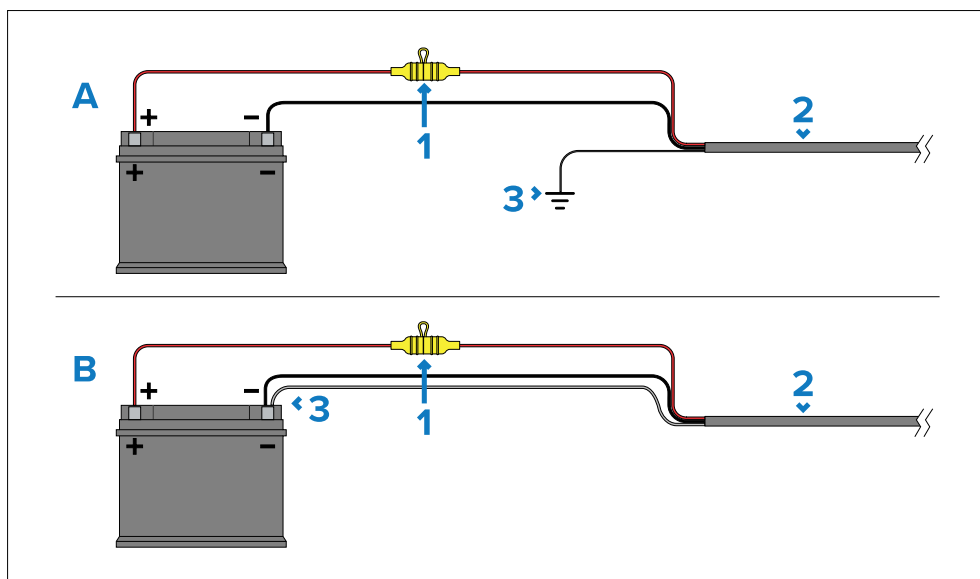|	Description
1	If not supplied already fitted to the power cable, a waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: *Inline fuse and thermal breaker ratings*.
2	Product power cable.
3	Ground wire connection point.

Battery connection scenario A:

Suitable for a vessel with a common RF ground point. In this scenario, the power cable's ground wire should be connected to the vessel's common ground point.

Battery connection scenario B:

Suitable for a vessel without a common grounding point. In this case, the power cable's ground wire should be connected to the battery's negative terminal.

Grounding

The power cable supplied with your product includes a separate ground wire, which must be connected to the vessel's common RF ground (if available), or negative battery terminal. For more information, refer to: **p.48 —** Power cable ground wire connection

Ensure that you also observe any additional grounding advice provided in the product's documentation.

More information

It is recommended that best practice is observed in all vessel electrical installations, as detailed in the following standards:

- BMEA Code of Practice for Electrical and Electronic Installations in Boats

- NMEA 0400 Installation Standard

- ISO 13297: Small craft — Electrical systems — Alternating and direct current installations

- ISO 10133: Small craft — Electrical systems — Extra-low-voltage d.c. installations

- ABYC E-11 AC & DC Electrical Systems on Boats

- ABYC A-31 Battery chargers and Inverters

- ABYC TE-4 Lightning Protection

11.4 Power cable extension (12 / 24 V systems)

If you need to extend the length of the power cable supplied with your product, ensure you observe the following advice:

- The power cable for each unit in your system should be run as a separate, single length of 2-wire cable from the unit to the vessel's battery or distribution panel.
- Ensure that the extension cable is of a sufficient gauge for the supply voltage and the total load of the device and the length of the cable run. Refer to the following table for typical **minimum** power cable wire gauges:

Cable length in meters (feet)	Wire gauge in AWG (mm²) for 12 V supply	Wire gauge in AWG (mm²) for 24 V supply
<8 (<25)	16 (1.31 mm²)	18 (0.82 mm²)
16 (50)	14 (2.08 mm²)	18 (0.82 mm²)
24 (75)	14 (2.08 mm²)	16 (1.31 mm²)
>32 (>100)	14 (2.08 mm²)	16 (1.31 mm²)

Important:

Be aware that some products in your system (such as sonar modules) can create voltage peaks at certain times, which may impact the voltage available to other products during the peaks.

Important:

To ensure power cables (including any extension) are of a sufficient gauge, ensure that there is a continuous **minimum** voltage of **10.8 V dc** at the end of the cable where it enters the product's power connector, even with a fully flat battery at 11 V dc. (Do not assume that a flat battery is at 0 V dc. Due to the discharge profile and internal chemistry of batteries, the current drops much faster than the voltage. A "fully flat" battery still shows a positive voltage, even if it doesn't have enough current to power your device).

11.5 Power cable ground wire connection

The power cable supplied with this product includes a dedicated ground wire for connection to a vessel's RF ground point (if available), or the negative battery terminal.

It is important that an effective RF ground is connected to the system. A single common ground point should be used for all equipment. If several items require grounding, each item of equipment can be grounded by connecting the ground wires first to a single local point (e.g. within a distribution panel), and then this point connected via an appropriately-rated conductor to the vessel's RF common ground point. An RF ground point is typically a circuit with a very low-impedance signal at Radio Frequency, connected to the sea via an electrode immersed in the sea, or bonded to the inner side of the hull in an area that is underwater.

On vessels without an RF ground system, the ground wires of all equipment should be connected directly to the vessel's negative battery terminal.

The dc power system should be either:

- Negative grounded ("bonded"), with the negative battery terminal connected to the vessel's RF ground.
- Floating, with neither battery terminal connected to the vessel's ground.

The preferred minimum requirement for the path to ground (bonded or non-bonded) is via a flat tinned copper braid, with a 30 A rating or greater. If this is not possible, an equivalent stranded wire conductor may be used, rated as follows:

- for runs of <1 m (3 ft), use 6 mm2 (10 AWG) or greater.
- for runs of >1 m (3 ft), use 8 mm2 (8 AWG) or greater.

In any grounding system, always keep the length of connecting braid or wires as short as possible.

11.6 Additional dedicated ground wire required (not supplied)

This product includes a chassis grounding point, which MUST be connected via a dedicated ground wire (not supplied), to the vessel's RF ground point. **This is in addition to the ground wire included in the product's power cable, which must also be connected to the same RF ground point.**

It is important that an effective RF ground is connected to the system. A single common ground point should be used for all equipment. If several items require grounding, each item of equipment can be grounded by connecting each product's ground and drain wires (as applicable) to a single local point (e.g. within a distribution panel), and then this point connected via an appropriately-rated conductor to the vessel's RF common ground point. An RF ground point is typically a circuit with a very low-impedance signal at Radio Frequency (RF), connected to the water via an electrode immersed in the water or bonded to the inner side of the hull in an area that is underwater.

On vessels without an RF ground system, the ground and drain wires (as applicable) of all equipment should be connected directly to the vessel's negative battery terminal.

The dc power system should be either:

- Negative grounded ("bonded"), with the negative battery terminal connected to the vessel's RF ground.
- Floating, with neither battery terminal connected to the vessel's ground.

The preferred minimum requirement for the path to ground (bonded or non-bonded) is via a flat tinned copper braid, with a 30 A rating or greater. If this is not possible, an equivalent stranded wire conductor may be used, rated as follows:

- for runs of <1 m (3 ft), use 6 mm2 (10 AWG) or greater.
- for runs of >1 m (3 ft), use 8 mm2 (8 AWG) or greater.

In any grounding system, always keep the length of connecting braid or wires as short as possible.

Ground connection

The YachtSense™ Link unit includes a dedicated grounding point, which MUST be connected as described below.

The ground wire is connected to the product using the M3 screw and washers that are supplied pre-fitted to the product's grounding point.

To connect the grounding point, an M3 ring crimp and suitable wire (which is not supplied with the product) is required to create a ground connection.
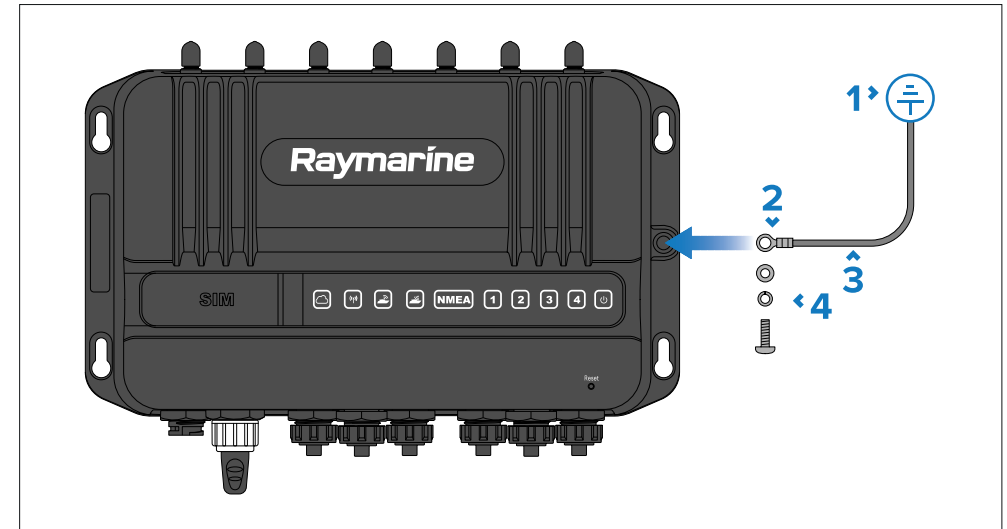
1. Vessel grounding point.
2. M3 size ring crimp (not supplied).
3. Ground wire connected to vessel's RF ground (not supplied).
4. Grounding screw and washers (supplied pre-fitted to the unit).

CHAPTER 12: ANTENNA CONNECTIONS

CHAPTER CONTENTS

12.1 5-in-1 antenna connections

The supplied 5-in-1 antenna is connected to the antenna connections on the top of the YachtSense™ Link unit.

Connectors and cables are labelled appropriately. Connections are made by pushing the relevant cable connector over the relevant connector on the router and securing by turning the connector nut clockwise until tight.

The antenna's supplied captive cable is 5 m (16.4 ft) in length. **This length can be extended if required using the optional 5 m (16.4 ft) antenna extension kit (A80701), for a total cable length (including the antenna's supplied captive cable) of 10 m (32.8 ft).**

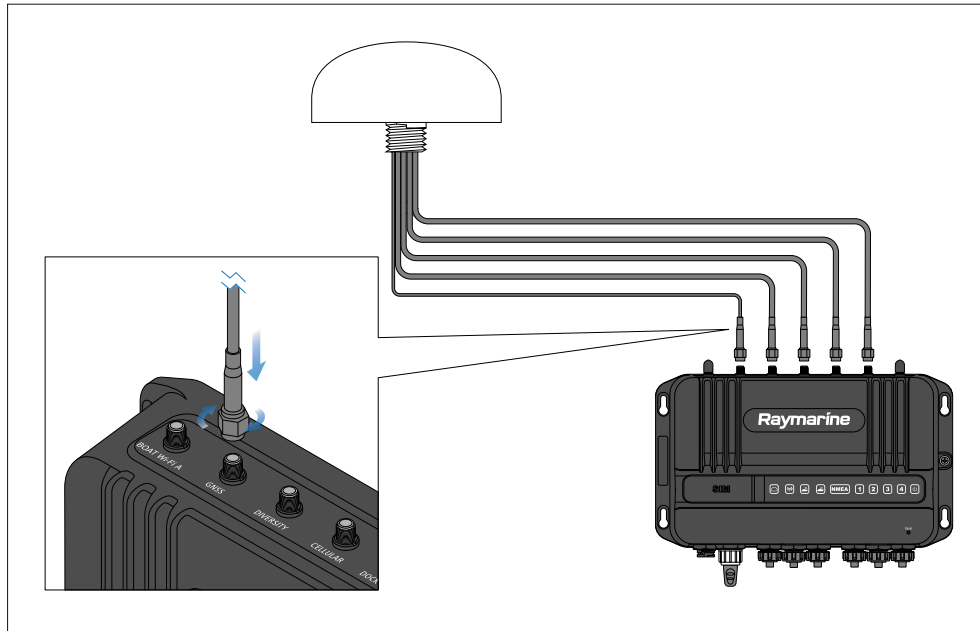## Antenna extension kit

The 5 m (16.4 ft) antenna captive cables on the supplied 5-in-1 antenna can be extended by 5 m (16.4 ft), using the optional antenna cable extension kit (A80701). This provides a **total** cable length (including the antenna's supplied captive cable) of 10 m (32.8 ft).
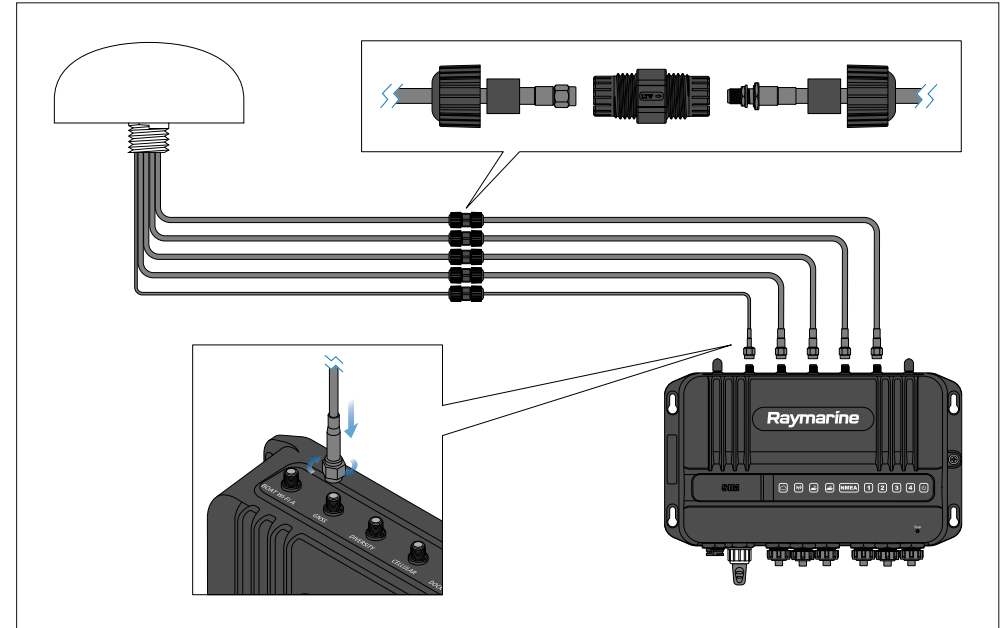
The extension kit consists of:

- 4 x extension cables for the **DOCK WLAN A**, **DOCK WLAN B**, **Cellular** and **Diversity** connections.
- 1 x extension cable for the **GNSS** (GPS) connection (the thinner cable).
- 5 x waterproof cable joiners.
- 2 x thicker sleeves for use with the waterproof cable joiner on the GNSS (GPS) cable.

The supplied 5-in-1 antenna cable connectors are connected to the opposing connector on the relevant extension cable. The cable joiner must be fitted over this connection to provide a watertight seal.

The opposite end of the extension cable must then be connected to the relevant connection on the router.

Refer to the instruction sheet provided with the cable extension kit for details on how to assemble the waterproof cable joiners.

12.2 Boat Wi-Fi antenna connections

The supplied Wi-Fi antennas are connected to the *[BOAT Wi-Fi]* connections on the top of the YachtSense™ Link.
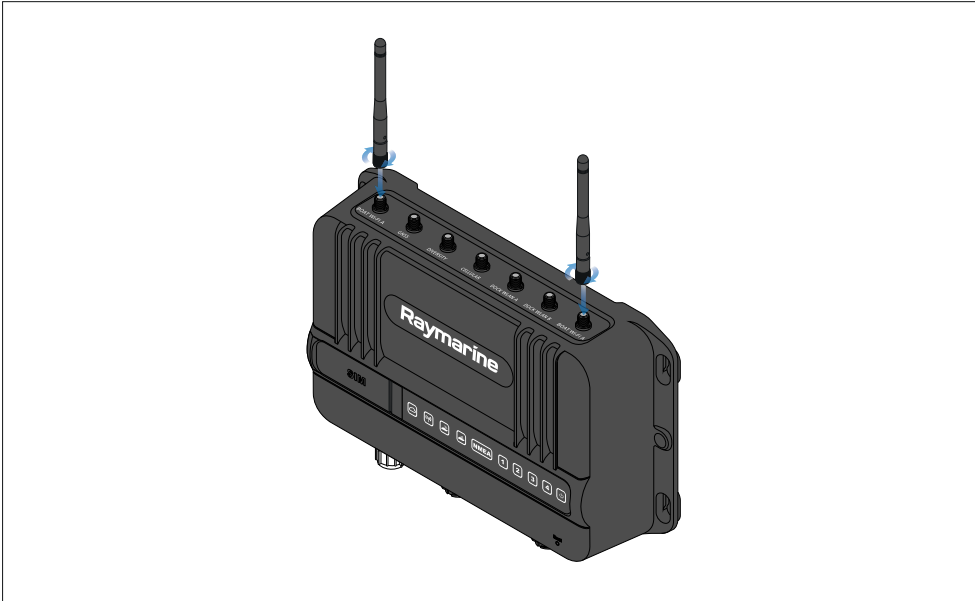
Connect the antennas by screwing them in clockwise until hand tight.

CHAPTER 13: NETWORK CONNECTIONS

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13.1 Display connections

Raymarine displays require both an Ethernet (RayNet) and a SeaTalkng ® connection to the router.

> **Note:**
>
> The router is compatible with Raymarine displays running LightHouse™ 4, v4.0 and above.
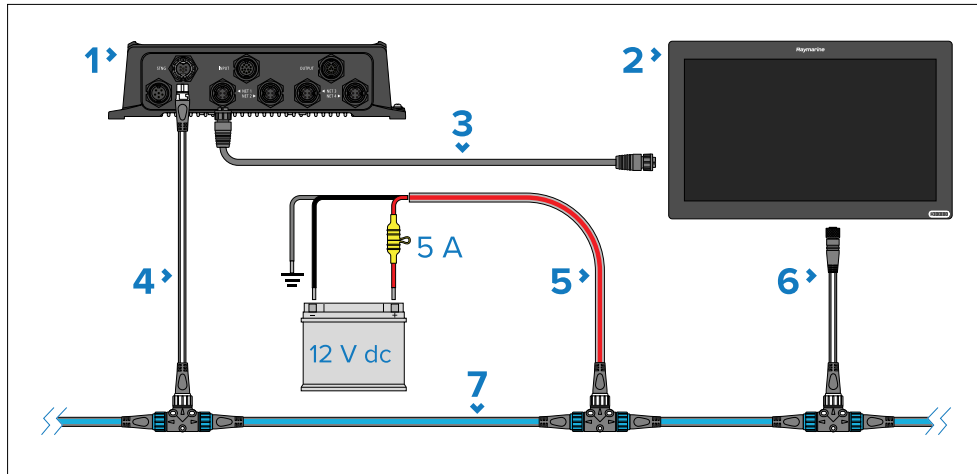
1. YachtSense™ Link router

2. Compatible display (e.g.: Axiom®, Axiom®+, Axiom® Pro, Axiom® XL).

3. RayNet to RayNet network cable.

4. SeaTalkng ® spur cable.

5. SeaTalkng ® power cable (supplying 12 V dc power for the backbone; a 5 A inline fuse is also required).

6. SeaTalkng ® to DeviceNet spur cable.

7. SeaTalkng ® backbone.

13.2 RayNet connections

Up to 4 RayNet devices can be connected to the YachtSense™ Link using the RayNet connections. RayNet networks can also be created or expanded by connecting the YachtSense™ Link to a Raymarine network switch.
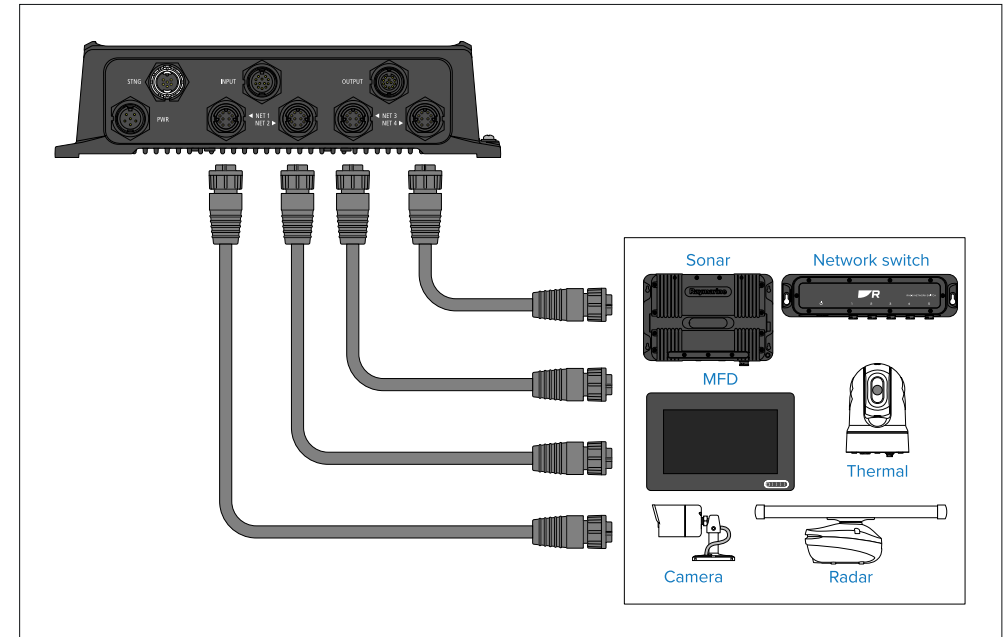
13.3 SeaTalkng connection

The router should be connected to a SeaTalkng ® backbone using the supplied SeaTalkng ® spur cable. Connection to a SeaTalkng ® backbone enables compatible data to be received and transmitted by the router. The SeaTalkng ® connection also enables communications with Raymarine Axiom™ MFDs and Raymarine YachtSense™ Digital Control Systems.
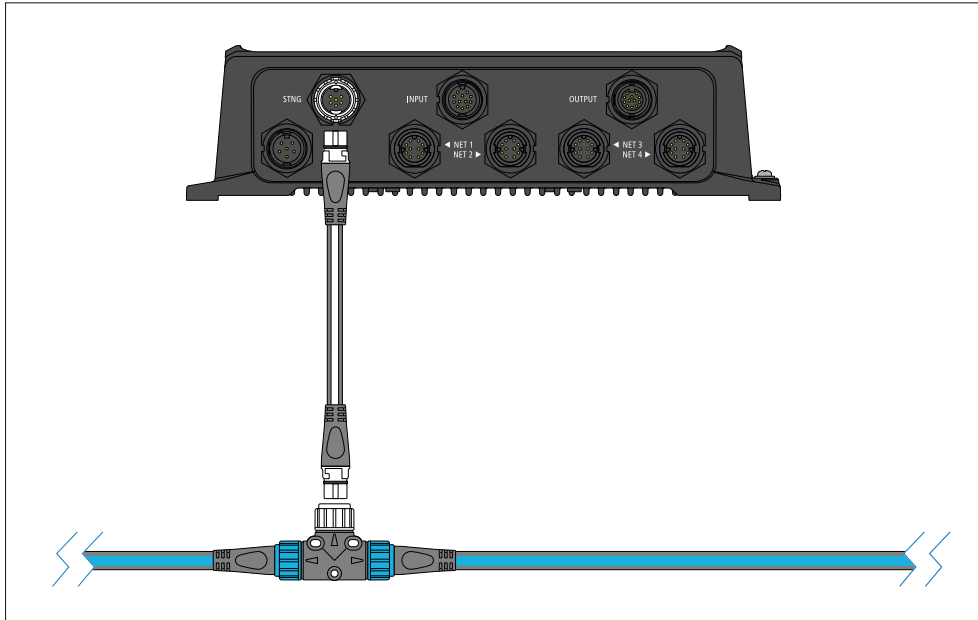
Note:

The SeaTalkng ® backbone requires a dedicated 12 V dc power supply and is not supplied power from the router.

CHAPTER 14: WIRED INTERNET CONNECTION

<u>CHAPTER CONTENTS</u>

14.1 Wired internet connection

The router can connect to the internet using a wired connection to a Wide Area Network (WAN) such as a broadband satellite internet system or a hard wired marina connection.

> **Note:**
>
> - The router must be connected to the WAN using RayNet port 4 *[NET 4]* network connection.
>
> - The router must be configured to allow the *[NET 4]* network connection to be used for WAN. For configuration details refer to:
>   **p.75 — Configuring a wired internet connection**

The YachtSense Link router connects to the WAN using a RayNet to RJ45 cable.

Example WAN connection
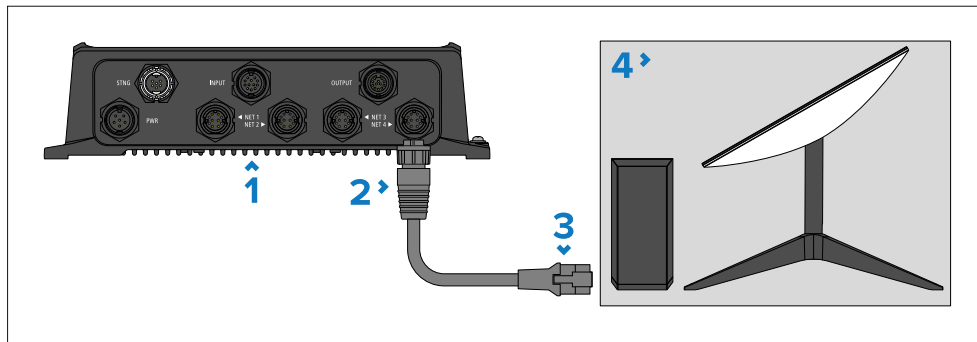
1. YachtSense Link router.

2. RayNet connection to the *[NET 4]* Ethernet connection.

3. RJ45 connection to WAN.

4. WAN (e.g.: Broadband satellite internet system).

CHAPTER 15: INPUT AND OUTPUT CHANNEL CONNECTIONS

CHAPTER CONTENTS

15.1 Input and output channels

- The router's input and output channels enable creation of a simple digital monitoring / control system. As device connections are outside of Raymarine's control the company will not be held liable for damage or injury caused due to incorrect connections.

- Input and output device connections should only be carried out by a competent person familiar with vessel digital switching systems.

- The Router's output channels are rated at 200 mA and are only intended to be connected to devices via standard automotive relays.

- If in any doubt or for further advice please contact Raymarine Technical Support.

15.2 Input cable wiring

The router's I/O channels 1 to 4 are input channels. The supplied input cable (included in kit: R70800) must be used to connect devices to the router's input connector.

Important:

- The negative power wire (0 V return) of the YachtSense™ Link's power cable must be connected to the same power supply negative as all connected input devices.

- Each device must have a positive supply connection to a positive channel wire on the input cable and a negative supply connection to the input cable's common negative wire.

I/O cable
kit: R70800
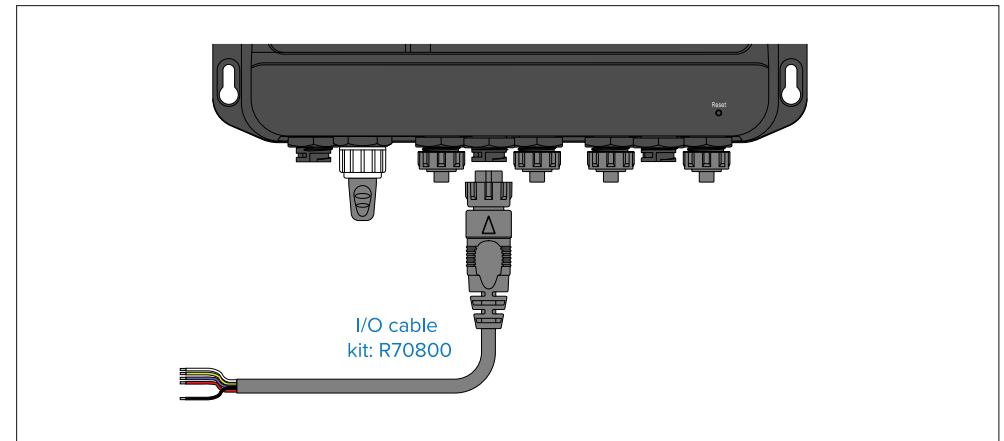
Input cable signal wires

- White = Channel 1 + (positive)

- Yellow = Channel 2 + (positive)

- Purple = Channel 3 + (positive)

- Red = Channel 4 + (positive)

- Black = Common - (negative)

The input channels can be monitored from the YachtSense™ Link web interface or from the Raymarine app.

15.3 Input channel connections

The input channels can be configured as follows:

- **Analog** — voltage monitoring from 0 V dc to supply voltage.

- **Digital** — switch state detection when connected between channel and supply voltage. Switches can be normally open or normally closed.

The input channel configuration details refer to: **Configuring input channels**

Note:

- The input channel cannot detect switch state on switches that are switched to negative supply.

- All connections to positive voltage supply should be fused appropriately.

When configured for digital switch detection, an input channel can be used to wake the router from low power mode. Refer to the Power management page of the router's web interface for settings.

The input channels are protected up to 32 V dc (in case of inadvertent connection) and are opto isolated when driven from another device or supply.

The input channel will automatically switch between low voltage (0 V dc to 8 V dc) and High voltage (8 V dc to supply voltage). The two thresholds are for the application of hysteresis.

Example connections

Example — Switch detection (Digital)
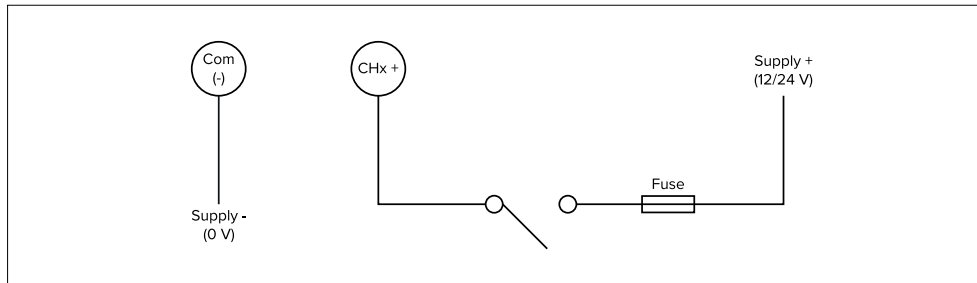
Example — Voltage monitor (Analog)
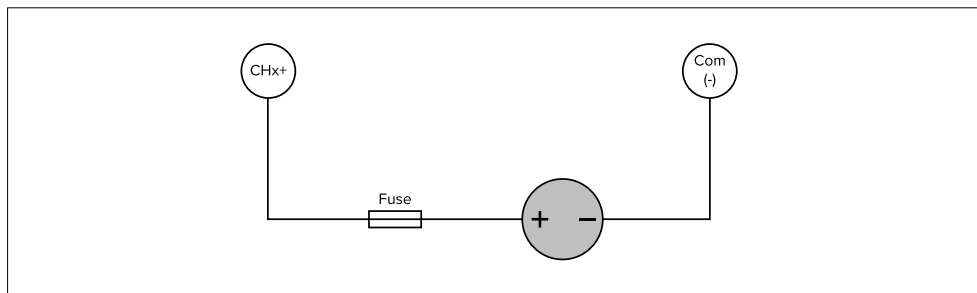
15.4 Output cable wiring

The router's I/O channels 5 to 8 are output channels. The supplied output cable (included in kit: R70800) must be used to connect automotive relays to the router's output connector.
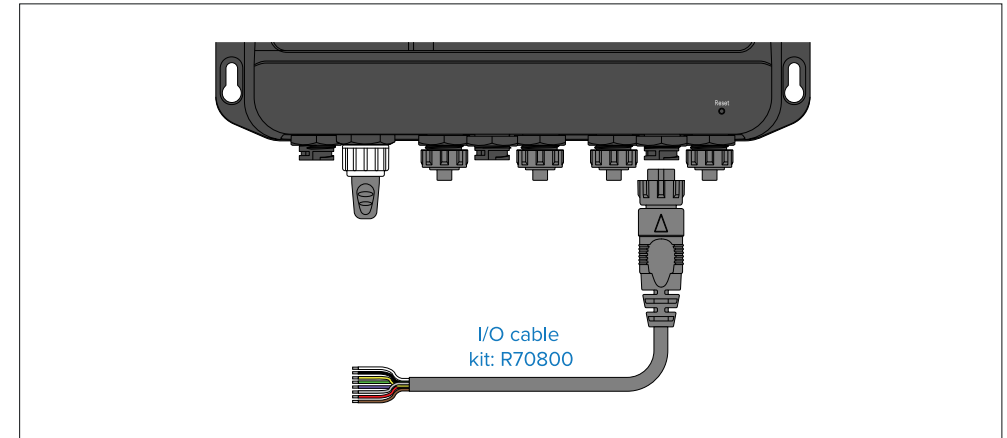
Output cable signal wires

- White = Output 1 Normally open terminal (N/O)

- Black = Output 1 Common terminal (COM)

- Yellow = Output 2 Normally open terminal (N/O)

- Green = Output 2 Common terminal (COM)

- Purple = Output 3 Normally open terminal (N/O)

- Gray = Output 3 Common terminal (COM)

- Red = Output 4 Normally open terminal (N/O)

- Brown = Output 4 Common terminal (COM)

The output channels can be controlled from the YachtSense™ Link web interface or from the Raymarine app.

15.5 Output channel connections

The output connection includes 4 configurable output channels. Output channels can be configured as either a *[Toggle]* switch (On/Off) or a *[Pulse]* (Momentary on). The output channels are intended to be connected to devices via an appropriate relay.

For details on configuring the output channels refer to: **Configuring output channels**

> **Note:**
>
> - It is NOT intended that devices are connected directly to the output channels.
> - It is recommended that you use a relay with a built in protection diode.
> - The router's output channels do NOT supply voltage to devices. The output channel's terminals (N/O and COM) are shorted together using internal relays within the router to complete a circuit.

The output channels voltage characteristics are as follows:

- Maximum throughput per channel is 200 mA.
- Voltage protection up to 32 V dc (in case of inadvertent connections).
- Each output channel has a 200 mA internal thermal fuse.

The router's output channels (Channels 5 to 8) can be used to power on connected devices or systems. Output channels can be configured so that connected devices switch on automatically when the router is woken from low power mode. For further details refer to: **p.90 — Power management page**

Toggle output connection

The connection diagram is provided as an example of how to connect a *[Toggle]* output channel (items 1 and 2) via a relay (5) to control a device. The other components in the diagram may not reflect your installation and sound electrical judgement should always be used when attempting to connect the router's output channels.

Example automotive 4 or 5 pin relay (type B) connection diagram
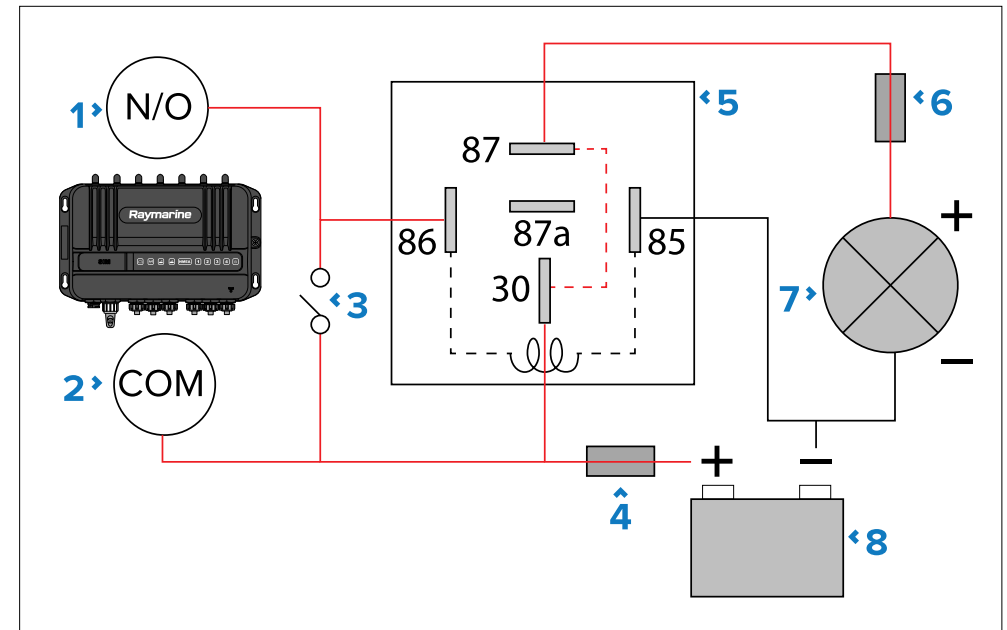
1. Router output channel Normally Open terminal (e.g.: Output 1 White wire).
2. Router output channel Common terminal (e.g.: Output 1 Black wire).
3. Parallel switch.
4. Suitably rated power supply fuse.
5. Automotive 5 pin relay
   - **30** — High power feed.
   - **86** — Relay coil feed (Trigger wire).
   - **85** — Relay coil ground.
   - **87** — High power output (normally open contact).

- **87a** — High power output (normally closed contact).

6. Suitably rated device fuse.

7. Device (e.g.: lighting).

8. Power supply.

Pulse output connection

The connection diagram below is provided as an example of how to connect a *[Pulse]* output channel (items 1 and 2) to control a device that requires either: a pulse to switch on and a pulse to switch off, or a momentary device that only requires power for less than 30 seconds. Please note, the other components shown in the diagram may not reflect your specific installation, and sound electrical judgement should always be used when attempting to connect the router's output channels.

Example pulse/momentary output connection diagram

1. Router output channel **Normally Open** (N/O) terminal (e.g.: Output 1, White wire).
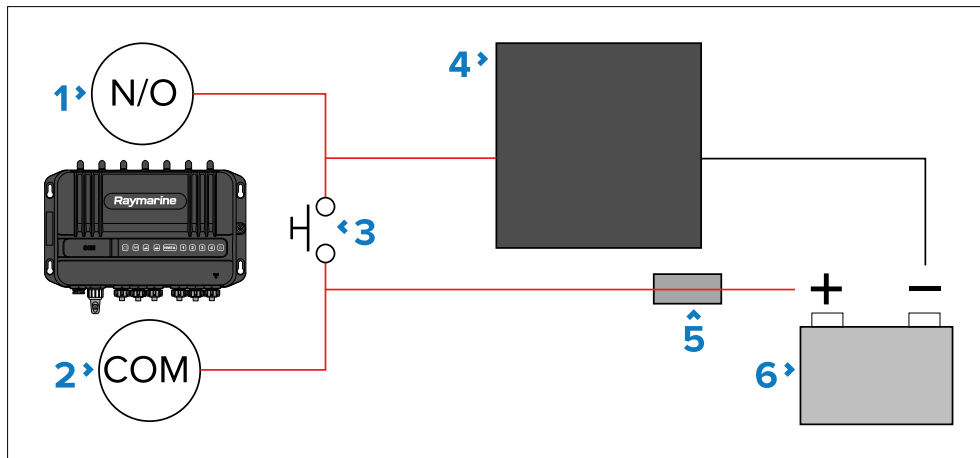
2. Router output channel **Common** (COM) terminal (e.g.: Output 1, Black wire).

3. Push or momentary switch.

4. Device.

5. Suitably-rated fuse.

6. Power supply.

CHAPTER 16: SIM CARDS

CHAPTER CONTENTS

16.1 Inserting SIM cards

YachtSense™ Link has dual SIM card slots which accept Micro SIM cards (Nano SIMs can be used with a Nano to Micro SIM adaptor).

Important:

- The SIM card will require activation in store or online as it cannot be activated using the router. For guidance refer to **p.72 — SIM card activation**
- Inserting SIM cards is a delicate procedure do NOT use tools or sharp objects as this may damage the SIM tray or contacts.
- Ensure that the steps are followed in sequence.

Note:

- A SIM card is not supplied with the YachtSense™ Link and will need to be purchased separately.
- If only using a single SIM card it should be inserted into SIM slot 1.
- Once SIM cards are inserted the router must be configured to allow use of mobile data. Refer to: **p.73 — Configuring mobile data**

1. Open the SIM card cover.
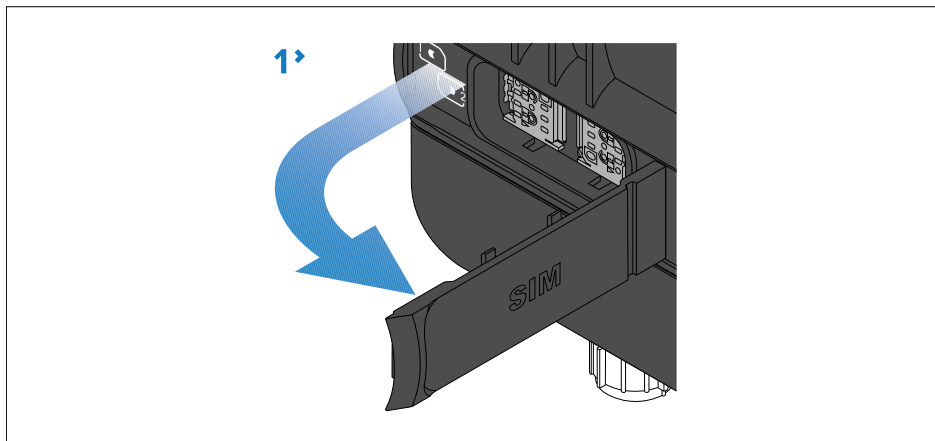
2. Use your fingernail to slide the front edge of the SIM tray(s) into the unlocked position.

    SIM 1 slides to the left and SIM 2 slides to the right.

Important:

Do NOT use tools or sharp objects in the holes of the SIM tray to open.
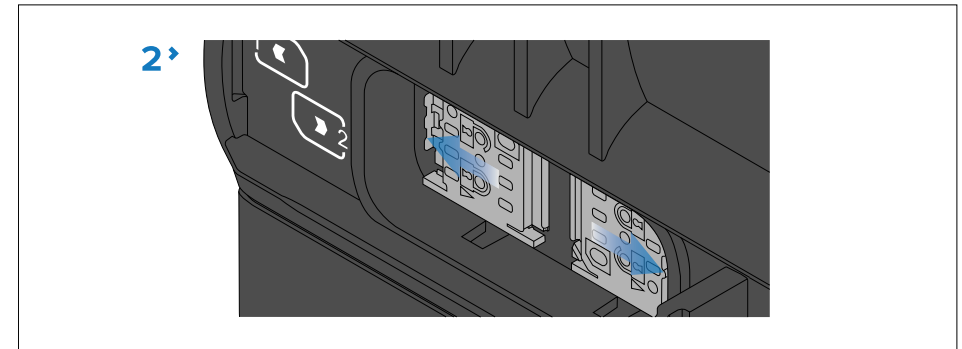
3. Gently open the SIM trays in the direction shown.

    SIM 1 is hinged on the left and SIM 2 is hinged on the right.
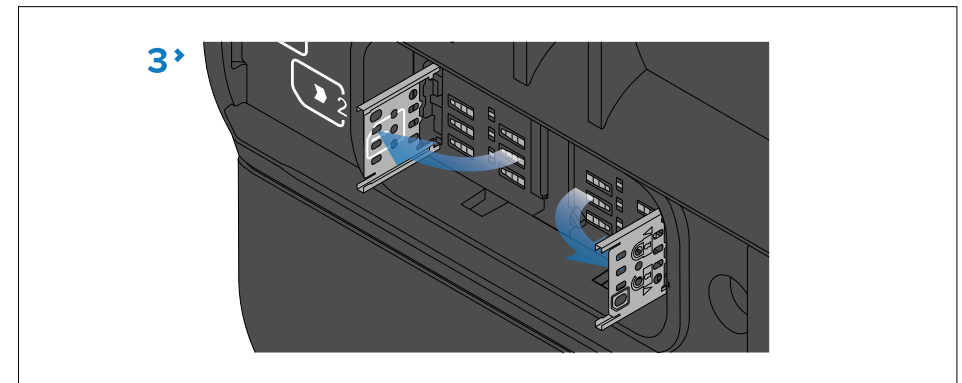
4. Ensuring correct orientation, insert your Micro SIM card(s) into the trays.
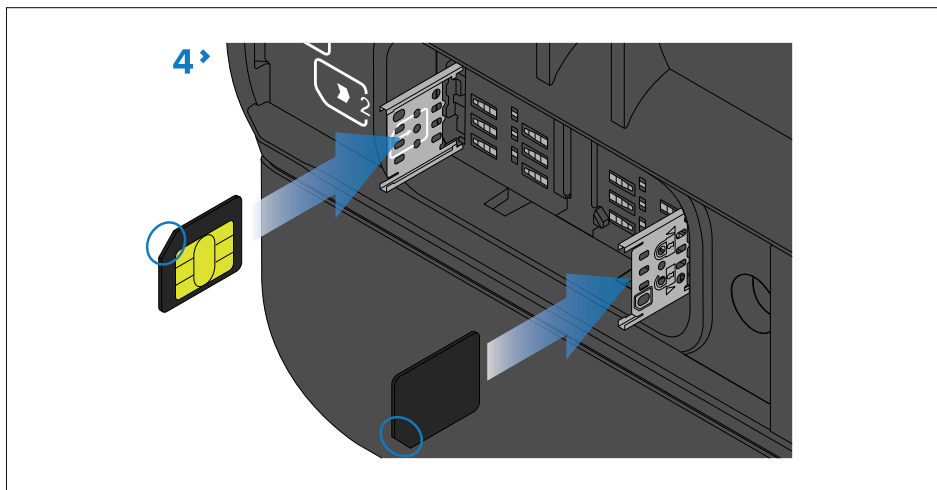
5. Gently close the SIM trays in the direction shown.
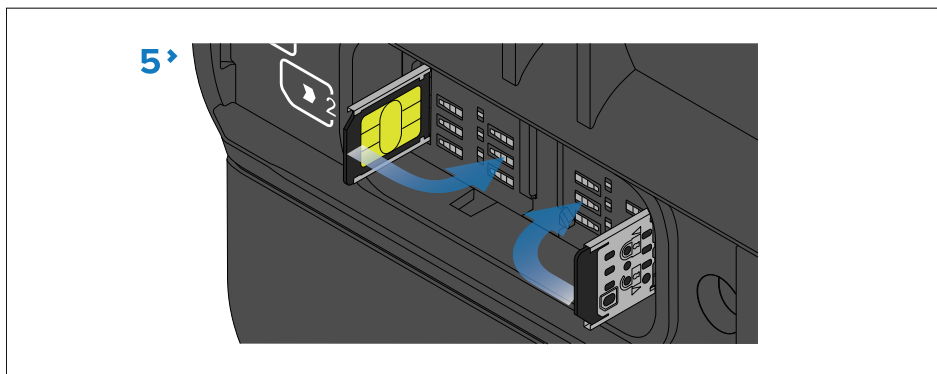
6. Use your fingernail to slide the SIM trays into the locked position.

   SIM 1 slides to the right and SIM 2 slides to the left.

Important:

Do NOT use tools or sharp objects in the holes of the SIM tray to close.
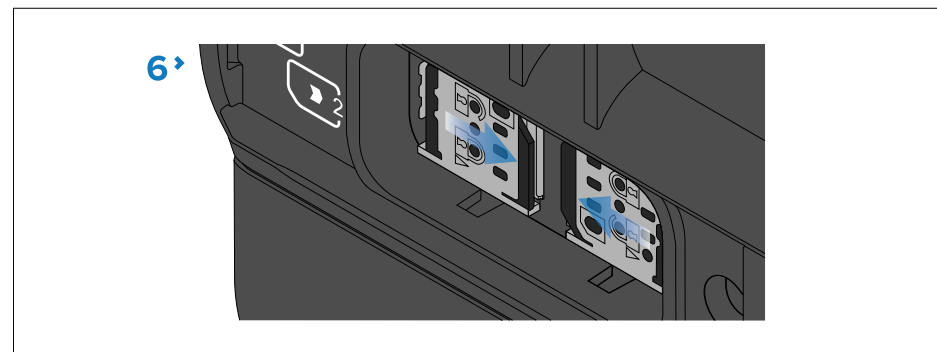
7. Close the SIM card cover, ensuring that it is correctly seated all the way around the edge.
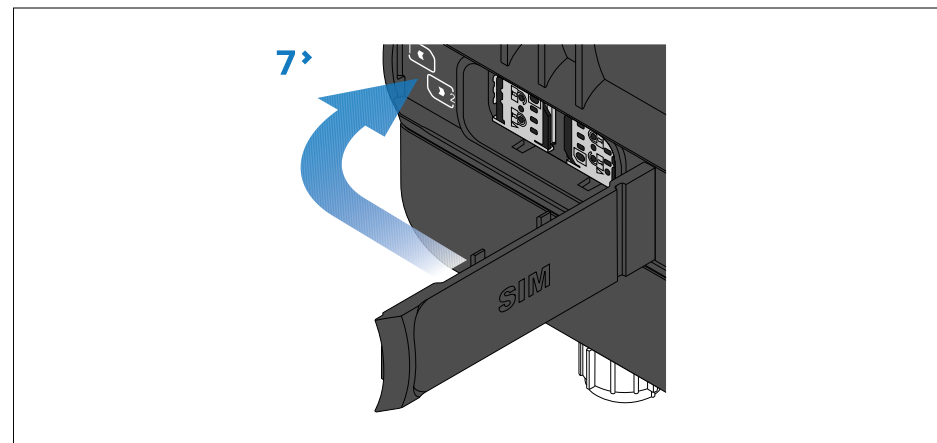
CHAPTER 17: IMEI NUMBER

CHAPTER CONTENTS

17.1 Router IMEI number

Each router has a unique International Mobile Equipment Identity (IMEI) number. Your SIM/mobile network provider needs your router's IMEI number to register the router with their network.

SIM/mobile network providers use the IMEI number to identify valid devices, and can use IMEI numbers to prevent stolen devices accessing their network. For example, in the event that a device is stolen, the owner can ask their network provider to add the stolen device's IMEI number to a blacklist, thereby blocking the stolen device from accessing the network, and, in some cases, other networks also.

Your network provider may be able to obtain the IMEI number for your router automatically. If this is not possible, you will need to provide the IMEI number to your network provider.

IMEI number locations
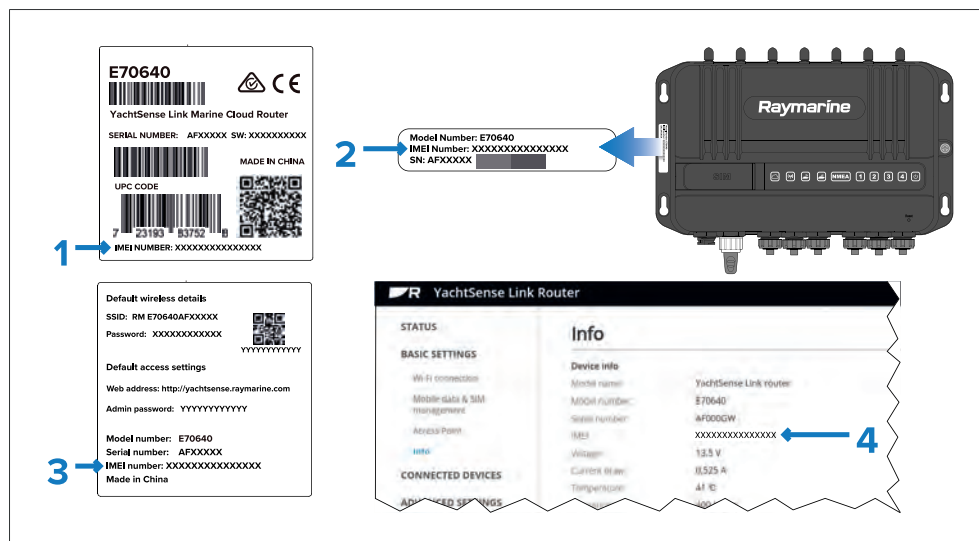
The router's IMEI number can be found at the following locations:

1. On the product box label.

2. On the serial number label located on the left side of the router.

3. On the spare product label supplied in the box.

4. On the router's *[Info]* web interface page, which is accessible by navigating to: *[Basic settings > Info]*.

CHAPTER 18: GETTING STARTED

CHAPTER CONTENTS

18.1 Status page overview

Once you have logged-in to the router's web interface, the status page is displayed.

The status page provides the following details and settings:

1. Links to Router's settings pages.

2. *[Language]* selection.

3. *[Help]* — Access the embedded help.

4. Visualization of connections.

5. The *[Cloud]* section identifies the router's cloud connection status.

6. The *[Wi-Fi connection]* section identifies the router's external *[DOCK WLAN]* Wi-Fi connection status, name (SSID), and signal strength (e.g.: the connection details to a marina Wi-Fi).

7. The *[Mobile network]* section identifies which SIM card is currently in use.

8. The *[Wired Internet connection]* section identifies the router's *[Wired internet connection]*. (WAN) connection status.

9. The *[Access point]* section identifies the router's internal *[BOAT Wi-Fi]* connection status, and the access point's name (SSID).

10. *[Wi-Fi connections]* — Identifies the devices connected to the router's Wi-Fi access point.

11. *[Ethernet connections]* — Identifies the devices connected to the router's wired (RayNet) Ethernet connections.

Selecting the connection heading on the right side of the Status page or the icons in the Status diagram will open the relevant configuration page.

18.2 Accessing the web interface from a Raymarine display

The router's settings are accessed using the built-in web interface. The web interface can be accessed using a wired connection to a Raymarine display running the LightHouse 4 operating system..

> **Important:**
>
> The display and router must be connected to the same Ethernet network using the RayNet connection, and must both also be connected to the same NMEA 2000 (SeaTalk NG) network.
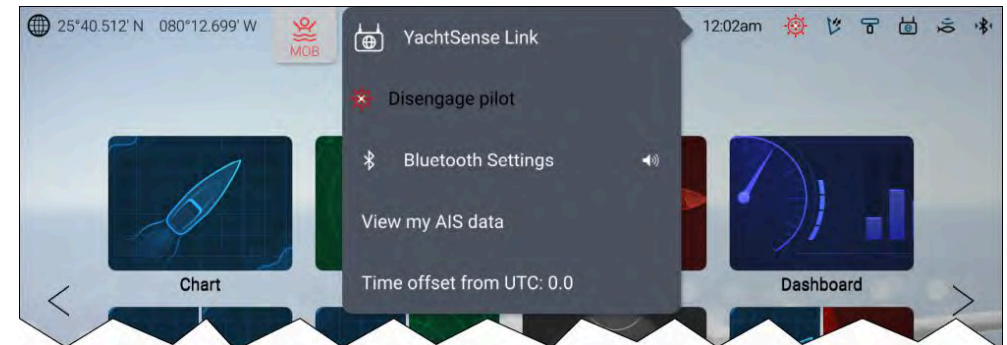
From the display's homescreen:

1. Select the status area on the top right of the screen.

2. Select *[YachtSense Link]* from the pop-over options.

The status page is displayed. You can now use the Menu displayed on the left to navigate the web interface and change the router's settings, as required.

The router's web interface can also be accessed from the *[Network]* menu: *[Homescreen > Settings > Network]* by selecting *[Raymarine Yachtsense Link]* from the list and then selecting *[Router settings]* from the pop-over options.

18.3 Accessing the web interface using a wired connection

The router's settings are accessed using the built-in web interface. The web interface can be accessed using a wired connection to a PC or laptop.

Important:

Ensure that your PC/laptop is configured to be assigned an IP address automatically (via DHCP).

---

1. Ensure that the router's power connection has been wired to a suitably-rated power supply in accordance with the information provided in the Power Connection section: **p.45 —** Power connection
2. Connect the RayNet end of the supplied RayNet to RJ45 cable to one of the router's network ports.

3. Connect the RJ45 end of the RayNet to RJ45 cable to your PC/laptop.
4. Switch on the router's power supply.
5. Wait for the router to start up and for your PC/laptop's network connection to be established.
6. Launch the PC/laptop's web browser, enter '**http://yachtsense.raymarine.com**' into the address bar, and then press *[Enter]*/*[Return]*.

Important:

Supported browsers — The web interface can be accessed using the following supported browsers: Chrome, Firefox, Edge and Safari. **Internet Explorer (IE) is NOT supported**.

The status page is displayed. You can now use the Menu displayed on the left to navigate the web interface and change the router's settings, as required.

18.4 Accessing the web interface using a Wi-Fi connection

The router's settings are accessed using the built in web interface. The web interface can be accessed using a wireless connection to a mobile device or PC/laptop.

Important:

- **Supported browsers** — The web interface can be accessed using the following supported browsers: *Chrome*, *Firefox*, *Edge* and *Safari*. **Internet Explorer (IE) is NOT supported**. If you experience problems using generic browsers on a mobile device, try using one of the listed supported browsers instead.

- **IP address** — Your device's IP address must be in the same range as the router's IP address. By default, most Wi-Fi and Ethernet connections are configured to obtain an IP address automatically, via DHCP. This will ensure your device's and router's IP addresses are in the same range. If your device is assigned a static IP address then it must be in the same range as the router's IP address. Your router's IP address can be found on an MFD's *[Network]* settings tab: *[Homescreen > Settings > Network]*. Then select **Raymarine Yachtsense Link** from the list of network devices, and select the *[Product Info]* option., Alternatively, you can use a network discovery tool to identify the router's IP address.

- **VPNs** — Some VPNs can block access to the router's web interface. If you use a VPN, ensure it is disconnected before trying to access the web interface.

Example credentials label

Note:

The details in the illustration above are an **example only**, and do not reflect the actual credentials for your router.

1. **Default wireless details** — Wi-Fi credentials used for connecting mobile devices to the router's Wi-Fi network.

2. **Default access to settings** — Log in details for the router's settings web interface.

To access the web interface using a Wi-Fi connection, follow the steps below:

1. Ensure the router has been supplied power in accordance with the power connection details: **p.45 —** Power connection

2. Turn on the router's power supply.

3. Wait for the router to complete its startup sequence.

4. Connect your mobile device to the router's Wi-Fi network using the SSID and password located on the Credentials label on the side of the router (refer to item 1 in the above illustration).

5. Open a web browser on your connected mobile device.

6. [1]Enter '**http://yachtsense.raymarine.com**' or your router's IP address into your web browser's address bar and press *[Enter]*/*[Return]*.

The status page is displayed. You can now use the Menu displayed on the left to navigate the web interface and change the router's settings, as required.

18.5 Accessing settings pages

From the router's status page you can access all of the router's settings. The first time you click a link you will be requested to log in to the router.

1. Click a link on the left hand side of the Status page.

   You can also select the Wi-Fi network, Mobile network and Router access point headings or icons to access the relevant settings page.

2. Enter the admin password (default password can be found on the credentials label located on the left side of the router).

3. Select *[OK]*.

The selected page will open.

18.6 Internet connections

The YachtSense Link router can be connected to the internet using cellular, Wi-Fi and wired connections.

Cellular

The cellular connection requires compatible, activated SIM cards to be inserted into the router and uses the *[Cellular]* and *[Diversity]* 5 in 1 antenna connections for its signal. For cellular connections please ensure that:

- The SIM card(s) have been properly activated. For details refer to: **p.72 — SIM card activation**

- The SIM card(s) have been inserted correctly. For details refer to: **p.64 — Inserting SIM cards**

- Mobile data options for the SIM card(s) has been configured. For details refer to: **p.73 — Configuring mobile data**

- Sufficient data is remaining on your SIM plan.

- The vessel is in range of a cell tower.

The cellular connection will be used when no Wi-Fi or wired internet connection is available.

The cellular connection is the only internet connection that can remotely wake the router from *[Low power mode]*.

Wi-Fi

The external Wi-Fi *[BOAT WI-FI]* connection must be connected to an external Wi-Fi access point or hotspot that has an internet connection. The *[BOAT WI-FI]* uses the *[BOAT WI-FI A]* and *[BOAT WI-FI B]* 5 in 1 antenna connections for its signal. For an external Wi-Fi connection ensure that:

- The router is connected to the relevant external access point or hotspot. For details refer to: **p.74 — Connecting to an available Wi-Fi network**

- The vessel is in range of the external access point or hotspot.

The router will automatically connect to saved external Wi-Fi connections when they are in range. External Wi-Fi connections will be used in preference to cellular connections, unless a wired internet connection is present and enabled.

Wired connection

The wired internet connection enables connection to a wired Wide Area Network (WAN) that has an internet connection. The wired internet connection uses the router's *[NET 4]* wired network connection to connect to a satellite broadband internet provider's hardware or a marina's wired internet connection. For a wired internet connection ensure that:

- The router has been correctly configured for a wired internet connection. For details refer to: **p.75 — Configuring a wired internet connection**

- The WAN is connected to the *[NET 4]* wired network connection. For details refer to: **p.57 — Wired internet connection**

18.7 SIM card activation

The router acts as a cellular data modem which has LTE 4G capability. The process for activating a SIM card differs for this type of device, compared to activating a SIM card for use in a smartphone, tablet, or a hotspot or modem device supplied by the network provider.

Before you can connect to the network provider's cellular network and obtain Internet access, the SIM card and data plan need to be activated / authorized on the network provider's cellular network. For some SIM cards and data plans, this is an automatic process, where the network providers pre-activate or pre-authorize the SIM cards, either before or during the SIM card purchase process. However, **some network providers require you to take additional steps to activate / authorize the SIM card and data plan before use**. The procedure for doing this differs from provider to provider:

Guidance

- Ensure you know your router's IMEI (*International Mobile Equipment Identity*) number, as the network provider will need this in order to register your router device on their network.

- Check with the network provider **before** trying to activate the SIM card, as **the router cannot activate a SIM card via a mobile web page**.

- Ensure you tell the network provider that the SIM card is going to be used in a Cellular data modem with LTE 4G capability.

- You may need to ask the network provider to activate the SIM card in-store, online or via their customer support team, because you cannot activate it via a mobile web page.

- You should activate the SIM card specifically for the router's unique IMEI number, and only put the SIM card in the router it is assigned to — no other devices. Some providers may throttle SIM cards that are detected in multiple devices i.e.: if you activate it using your phone and then switch the SIM card to the router.

- Check your data plan carefully, as some providers may offer a limited amount of data for hotspot connection and then a much lower speed once the initial allowance is used up. For example, at the time of this publication, Verizon in the USA offered its "Essential" data plan, which provides 15 GB of mobile hotspot data, and then unlimited lower-speed data (600 Kbps), once the initial 15 GB is consumed.

For more information on the specific data allowance and SIM card activation process applicable to your SIM card, please refer to the relevant network provider, and also the following section: p.99 — Mobile / cellular data troubleshooting

18.8 Configuring mobile data

Follow the steps below to configure the router for Internet access, using the mobile data plan(s) for your SIM card(s). If 2 SIM cards are installed in the router, the steps below should be carried out for both SIMs.

Note:

Pre-pay / Pay As You Go (PAYG) SIM cards require activation and top up with the provider before use.

Follow the procedure described below to configure the router for mobile Internet access.

Important: If, after following the steps below you are unable to successfully use the router to access the Internet using mobile data, refer to the troubleshooting advice in the following section: **p.99 — Mobile / cellular data troubleshooting**

From the *[Mobile data and SIM management]* page: *[Basic settings > Mobile data and SIM management]*.

1. Select *[SIM1]* or *[SIM2]*.

2. To allow automatic switching between SIM card when there is no network coverage or when your data limit on one SIM card has been reached, tick the relevant tick box at the top of the page.

3. To allow mobile data to be used, tick the *[Mobile data]* option.

4. Select the date (day of the month) that your data allowance renews, using the *[Router data usage cycle]* drop-down list.

5. To set up a notification when your SIM card gets close to its data limit, tick the *[Set data warning]* option, and then enter a value in the *[Data warning]* field.

6. To set up a notification when your SIM card reaches its data limit, tick the *[Set data limit]* option, and then enter a value in the *[Data limit]* field.

7. If the APN (Access Point Name) for your provider is not listed, you will need to obtain the settings from your network provider and then modify an existing entry with the details. For details on manually configuring APN settings, refer to: **p.99 — Mobile / cellular data troubleshooting**

8. To save all changes, select the *[Save]* button located at the top of the page.

Selecting a mobile network manually

Usually the router will detect your network provider automatically based on your SIM card. If automatic selection fails or you need to assign a network provider manually, automatic selection can be disabled.

From the Mobile data & SIM management settings page:

1. Disable the *[Automatic network selection]* toggle switch.

   The router will perform a scan and display a list of available network providers.
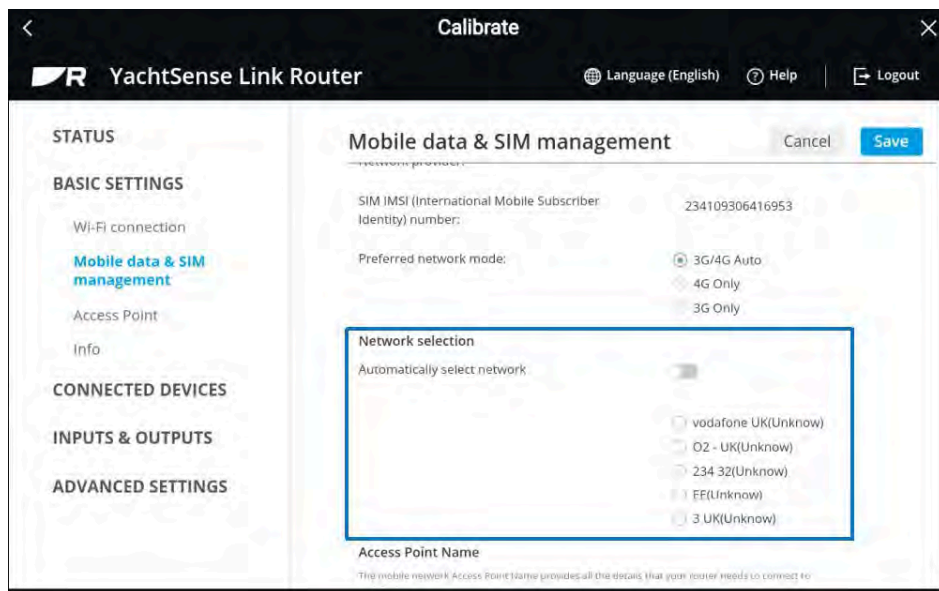
2. Select the desired network provider.
3. When selecting a network provider manually you will also need to check the APN settings for the selected provider and edit the APN settings as necessary.

Manual APN settings configuration

When you power up the router after inserting a SIM card for the first time, the APN settings may be configured correctly automatically, in which case Internet access should be available to the router. However, if you cannot access the Internet via the router, and the Status for the Mobile network connection is showing in the router's Status page as *[Not in use]*, *[Not connected]*, or *[Error]*, it is likely that the APN settings for your SIM card provider are missing or incorrect. In this case, the correct APN settings will need to be entered manually.

You will need to obtain the correct APN settings from the SIM card network provider. You can usually find these settings by performing an Internet search; for example: "*Vodafone UK APN settings*", or similar. If you are unable to find the settings on the Internet, you may need to **contact the network provider of the SIM card.** There may also be different settings required for monthly contract SIMs and Pay As You Go (PAYG) SIMs.

For details on manually configuring APN settings, refer to:
p.99 — Mobile / cellular data troubleshooting

18.9 Connecting to an available Wi-Fi network

Follow the steps below to connect to an external Wi-Fi network (e.g.: the Wi-Fi hotspot at your marina).

From the *[Wi-Fi connection]* page: *[Basic settings > Wi-Fi connection]*.
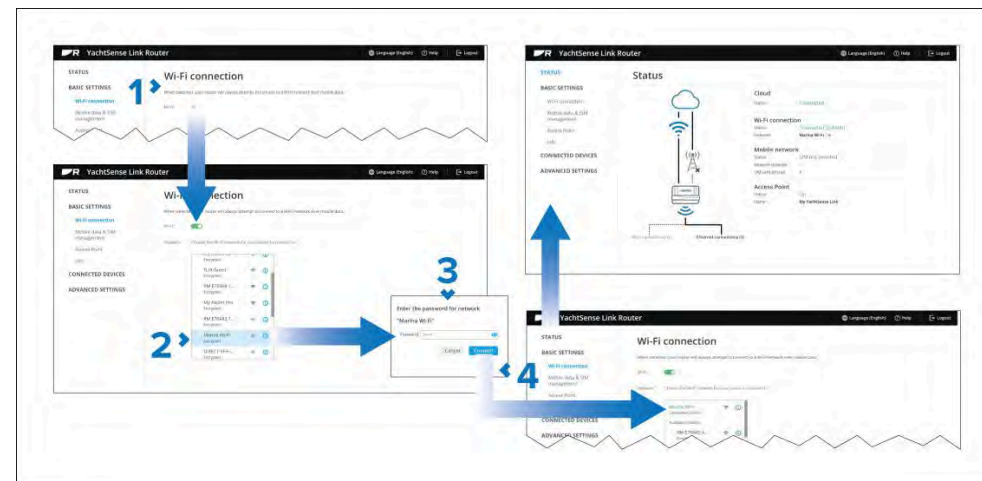
1. Enable your router's *[Wi-Fi]* connection using the toggle switch.
2. Select the Wi-Fi network you want to connect to from the list.

   You can select the [Info] icon next to the Wi-Fi network to view information about the network.

3. Enter the password for the network in the password field.
4. Select *[Connect]*.

18.10 Connecting to a Wi-Fi network manually

You can connect to a network that is not in the list but is in range, i.e.: a Wi-Fi network that is not broadcasting its SSID.

1. Select *[Add network]*.
2. Enter the Wi-Fi network name (SSID) in the *[Network name]* field.
3. Select the Security type from the *[Security]* drop down box.
4. Enter the networks password in the *[Password]* field.
5. Select *[Connect]*.

18.11 Forgetting a saved Wi-Fi network

When the router connects to a Wi-Fi network, the details will automatically be saved so that the router can connect to it automatically when it is in range. If you do NOT wish to connect to this Wi-Fi network again in the future, follow the steps below to 'forget' the network.

1. Select the *[Info]* icon next to the saved Wi-Fi network to display the network information.
2. Select *[Forget network]*.

Alternatively, you can also turn off automatic network connection by disabling *[Connect automatically]* from the Info dialog.

18.12 Configuring a wired internet connection

The router can connect to the internet using a wired connection to a Wide Area Network (WAN), such as a broadband satellite internet system or a hard-wired marina internet connection.

Note:

When the WAN connection is enabled, it becomes the primary connection to the internet. If you wish to use Cellular or Wi-Fi connections instead, disable the WAN connection by removing the tick from the *[Wired internet connection]* tick box located on the *[Wired internet connection]* page in *[BASIC SETTINGS]*.

1. Ensure that the WAN device is powered off or disconnected from the router before configuring the wired internet connection.
2. Open the router's *[WAN set-up]* page: *[ADVANCED SETTINGS > WAN set-up]*.
3. Select the *[Use Ethernet 4 as the router's WAN port]* tick box and then select the *[Save]* button.

   A tick indicates that [NET 4] is now a WAN port.

4. Select the *[Wired internet connection]* tick box from the *[Wired internet connection]* page in *[BASIC SETTINGS]* and select the *[Save]* button.

A tick indicates that the router will use the WAN port for its primary internet connection.

5. Power up or connect the router to the WAN using the *[NET 4]* RayNet network connection. For connection details, refer to:
   p.57 — Wired internet connection

Note:

If the router ever has to be reset the WAN hardware should be powered off until the router has been re-configured.

18.13 Setting up the router's access point

Follow the steps below to set up the router's access point.

From the *[Access Point]* settings page: *[Basic settings > Access Point]*.
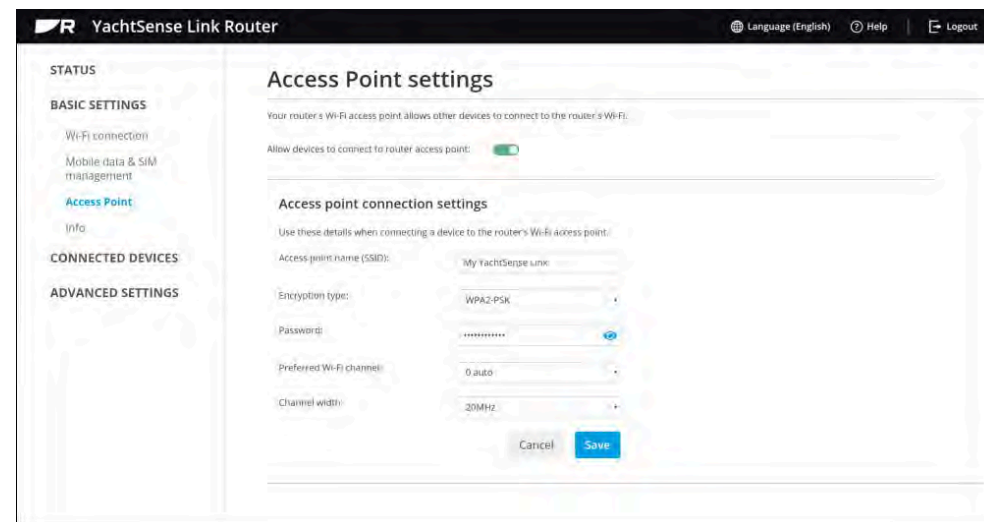
1. Enable the router's access point using the toggle switch.
2. If required, change the router's default access point connection settings.

Important:

- The *[Preferred Wi-Fi channel]* and *[Channel width]* settings do not need to be changed unless you experience interference due to Wi-Fi congestion.
- Changing the *[Encryption type]* to *No encryption* is not recommended as anyone within range will be able to connect to your router.

3. Click *[Save]*.

18.14 Network security

Your network is only as secure as its most vulnerable component. Security vulnerabilities risk allowing unintentional access to your network and its connected wireless and wired devices.

To ensure that your network is secure, as a minimum you should:

- Regularly check for security updates for all your wireless and wired networked devices.
- For applicable devices, ensure you use a reputable antivirus program with the latest virus definitions.

- Always use the strongest encryption type for your router's access point settings.
- Use a strong router access point password (i.e. a longer password such as a memorable phrase).
- Change your password periodically.
- Be cautious who you share your password with.
- If you need to write down your password, ensure it is kept in a secure place where it is not easily viewable.

18.15 Connecting an Android device to the router's access point

Android devices can be connected to the router's Wi-Fi access point.

Open your Android device's Wi-Fi settings from the top drop down menu or via the *[Settings]* icon.

Example Android Wi-Fi connection
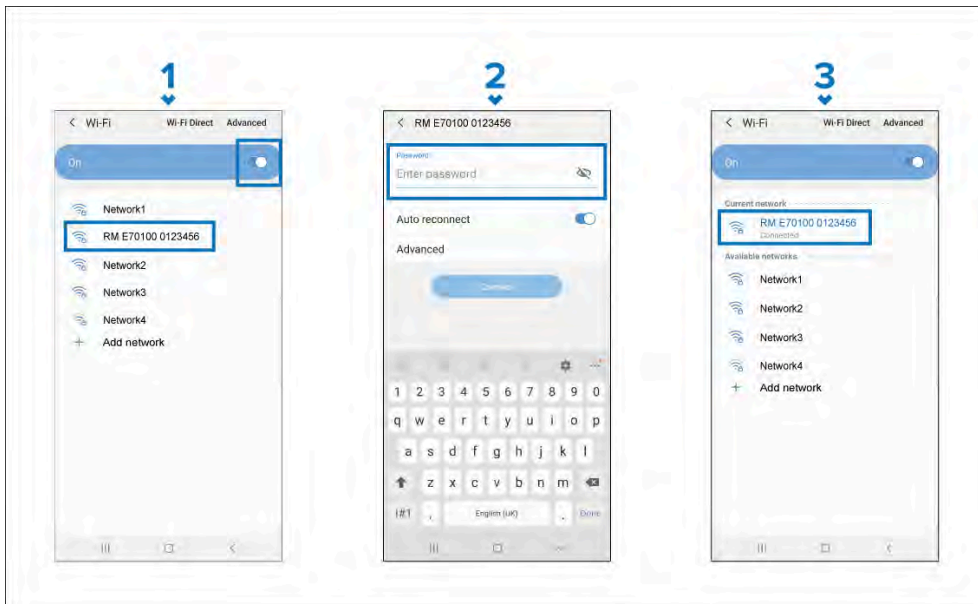
Note:

Depending on device type, manufacturer and version of the Android operating system in use, screens and options may be different than those shown in the example above.

1. Enable Wi-Fi by setting the toggle to **On** (blue), and select your router's SSID from the list of available networks.
2. Enter your router's Wi-Fi password and select *[Connect]*.

   The password is case sensitive.

3. When your Android device is connected to your router's Wi-Fi access point, "Connected" will be displayed under the router's SSID.

For troubleshooting advice, refer to the Wi-Fi troubleshooting information in the *Troubleshooting* chapter: **p.98 — Troubleshooting**

18.16 Connecting an Apple iOS device to the router's Wi-Fi access point

Apple iOS devices can be connected to the router's Wi-Fi access point.

Open your iOS device's Wi-Fi settings from the top drop down menu or via *[Settings]*.
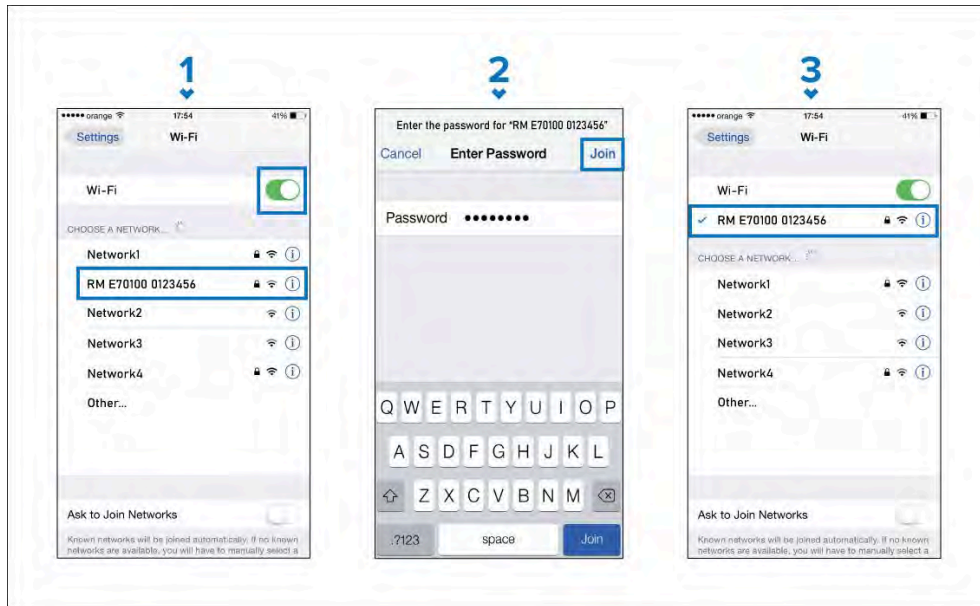
Note:

Depending on device type, and iOS version in use, screens and options may be different than those shown in the example above.

1. Enable Wi-Fi by setting the toggle to **On** (green), and select your router from the available networks.
2. Enter your router's Wi-Fi password and select *[Join]*.

   The password is case sensitive.

3. When your iOS device is connected to your router's Wi-Fi, a *blue tick* is displayed next to the router's SSID.

For troubleshooting advice, refer to the Wi-Fi troubleshooting information in the *Troubleshooting* chapter: **p.98 —** Troubleshooting

CHAPTER 19: REGISTERING (ONBOARDING) AND DEREGISTERING (OFFBOARDING)

CHAPTER CONTENTS

19.1 Register your router (Onboarding)

After setting up your *[YachtSense Link]* router and configuring its wireless networks (Wi-Fi and / or cellular (mobile) connections), you can use the Raymarine app to create a boat system and register your router with your Raymarine account. This process is known as "Onboarding". Registering links you router to your account and enables monitoring and control of compatible systems connected to your router from the Raymarine app.

> **Note:**
>
> - **You cannot register a router that is already registered to a different account.** The router must first be deregistered (offboarded) by its existing owner — refer to:
>   - **p.80 — YachtSense Link router account transfer / ownership transfer**
>   - **p.80 — Boat system and router removal**
> - If your mobile device is already connected to an MFD or a different YachtSense Link router it must be disconnected before another router / boat system can be added.

The registration process includes:

1. Connecting your mobile device to your **YachtSense™ Link** router's Wi-Fi connection.
2. Creating a boat system by entering your boat's name.
3. Scanning the router's QR code to connect the router to your account. The QR code can be found on the label on the side of your router or on the Info page of the router's web interface.

The Raymarine app provides step by step instructions on how to register your router.

19.2 YachtSense Link router account transfer / ownership transfer

YachtSense Link routers can only be registered with one account at a time.

To register the router with a different account it must first be deregistered from the existing account. For instructions refer to: **p.81 — Removing a router**

Attempts to register to a router that is already registered to a different account will fail.

If you receive a message when trying to register your router that states it is already assigned to another account, you will need to contact the previous owner and ask them to remove the router from their account.

If you cannot contact the previous owner, Raymarine technical support may be able to contact them on your behalf.

In most cases if the previous owner cannot be reached or is unwilling to remove the router from their account, it will NOT be possible for you to register your router.

If you purchased the router new, via either a third party reseller or as a refurbished unit, and you receive a message that your router is already assigned to an account, you should return it to the seller for a refund or exchange and let them know that it is already registered to another account.

19.3 Boat system and router removal (Offboarding)

Removing a boat system

A boat system can be removed from the Raymarine app following the steps below:

1. Select the menu icon located on the left of the screen to open the side menu.
2. Select and hold on the boat system of the boat you want to remove.

   If you have more than one boat set up, you will first need to select the relevant boat system from the dropdown list.

3. Select *[Delete]* and then confirm the deletion.
4. Select *[Delete]* again to confirm.
5. Select *[OK]*.
6. You must also unsync the chartplotter (MFD) from the Raymarine app by accessing the *[My data]* menu on your chartplotter (MFD) and selecting *[Mobile sync]* and *[Cancel Raymarine sync]*.

The boat system and all of its devices are now removed from your app. If the deleted boat system included a YachtSense Link-Series YachtSense Link router then the router will also be deregistered (offboarded) from your account and can now be registered (onboarded) again to the same account, or to a different account.

Note:

The router must be power cycled before it can be registered (onboarded) again.

Removing a router

You can remove (deregister) a YachtSense Link-Series YachtSense Link router from a boat system using the Raymarine app.

1. Select the menu icon located on the left of the screen to open the side menu.
2. If you have more than one boat system, select the relevant boat system that the router is connected to.
3. Select the *[YachtSense Link]* router.
4. Select *[Remove]*.
5. Confirm by selecting *[Remove]*.
6. You must also unsync the chartplotter (MFD) from the Raymarine app by accessing the *[My data]* menu on your chartplotter (MFD) and selecting *[Mobile sync]* and *[Cancel Raymarine app sync]*.

The router is now removed from the boat system and deregistered (offboarded) from your account. The router can now be registered (onboarded) again to the same account, or to a different account.

Note:

The router must be power cycled before it can be registered (onboarded) again.
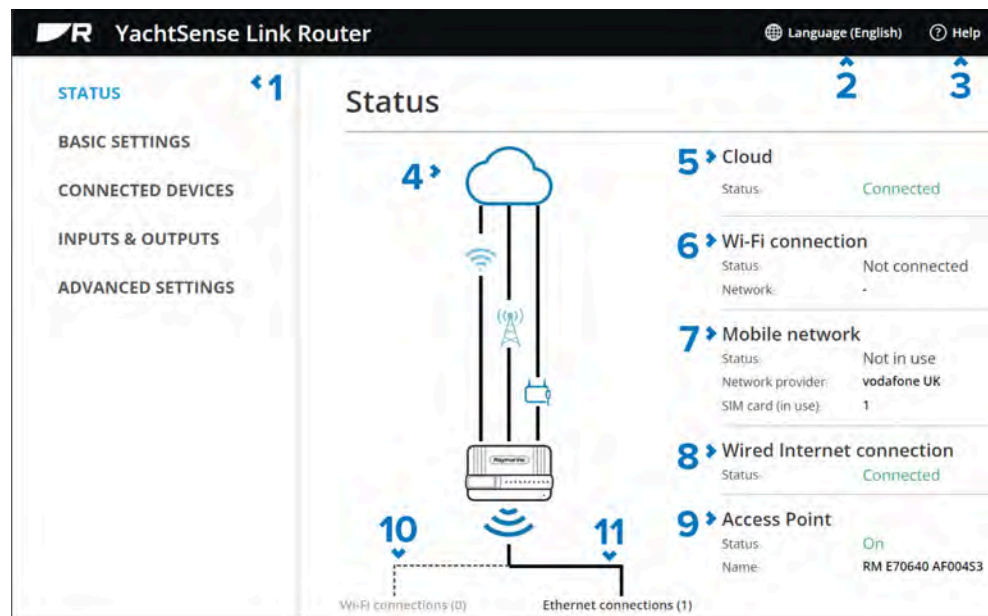
CHAPTER 20: WEB INTERFACE (SETTINGS)

CHAPTER CONTENTS

20.1 Status page overview

Once you have logged-in to the router's web interface, the status page is displayed.

The status page provides the following details and settings:

1. Links to Router's settings pages.

2. *[Language]* selection.

3. *[Help]* — Access the embedded help.

4. Visualization of connections.

5. The *[Cloud]* section identifies the router's cloud connection status.

6. The *[Wi-Fi connection]* section identifies the router's external *[DOCK WLAN]* Wi-Fi connection status, name (SSID), and signal strength (e.g.: the connection details to a marina Wi-Fi).

7. The *[Mobile network]* section identifies which SIM card is currently in use.

8. The *[Wired Internet connection]* section identifies the router's *[Wired internet connection]*. (WAN) connection status.

9. The *[Access point]* section identifies the router's internal *[BOAT Wi-Fi]* connection status, and the access point's name (SSID).

10. *[Wi-Fi connections]* — Identifies the devices connected to the router's Wi-Fi access point.

11. *[Ethernet connections]* — Identifies the devices connected to the router's wired (RayNet) Ethernet connections.

Selecting the connection heading on the right side of the Status page or the icons in the Status diagram will open the relevant configuration page.

20.2 Basic settings

Wi-Fi connection page

The Wi-Fi connection page allows you to connect to a Wi-Fi access point such as the Wi-Fi provided by your marina. When connected to a Wi-Fi access point that has an internet connection your router will provide internet access to devices connected to the router's access point and devices connected to the router's wired RayNet network connections.

From the Wi-Fi connection page you can:

- Use the toggle switch to enable and disable the router's Wi-Fi connection.

- Select the info icon next to available Wi-Fi networks to view network details.

- Connect to an available Wi-Fi network.

- Connect to a Wi-Fi network manually.

- Forget a saved Wi-Fi network.

The router will connect automatically to saved Wi-Fi networks when they are in range. When available the Wi-Fi connection will be used in preference to a cellular connection.

Mobile data & SIM management page

The mobile data & SIM management page provides access to settings related to the router's cellular connection, SIM management options and mobile data usage statistics. When a SIM card is inserted in to the router's SIM card slot the cellular connection will be enabled. If the SIM card has a valid connection and unused data allowance the router will provide internet access to devices

connected to the router's access point and devices connected to the router's wired RayNet network connections. The router can be configured to use dual SIM cards.

When using dual SIM cards, you can enable automatic switching when one SIM card has no network coverage or when its data limit has been reached. Use the Tick box at the top of the page to enable SIM switching.

[Primary SIM:] — when using dual SIM cards, the Primary SIM option determines which SIM card the router will try to use first when it is powered up.

Note:

The primary SIM will be used if:

- Mobile data is enabled,
- The SIM has network coverage,
- The SIM has remaining data for the current period.

If the conditions above are not met then the router will switch to use the second SIM card.

From the mobile data & SIM management page you can select *[SIM1]* or *[SIM2]* to view the following details and settings for each SIM card.

- *[Mobile data:]* — switches mobile data on and off, when switched on the router can access the internet using your SIM card's data allowance.

- *[Data roaming:]* — switches data roaming on and off. Data roaming allows you to use your data allowance when outside of your home country. Using data roaming may incur additional fees from your network provider.

- **Data usage graph**— view data usage statistics.

- *[Router data usage cycle]* — set the date at which your data allowance renews each month.

- **Data warning and limit** — set data warning and limit so that you do not exceed your data allowance. You will be notified by the Raymarine app when the specified data warning and data limit for the month has been reached.

  – *[Set data warning]* — Enables and disables the data warning notification.

  – *[Data warning]* — Specifies the data warning notification value. The data warning should be set to a value under your data limit so that you

receive a warning notification when you are running out of mobile data for the month (data usage cycle).

  – *[Set data limit]* — Enables and disables the data limit notification.

  – *[Data limit]* — Specifies the data limit notification value. The data limit should be set close to your monthly allowance so that you are notified when to stop using mobile data allowance for the selected SIM card.

Note: There may be differences between how the router and your network provider measure usage and so it is recommended that data limit is set lower than your actual data limit.

- **Mobile network** — The mobile network section provides details and settings for your SIM card network provider's Access Point Name (APN). The APN settings are used to connect to your network provider and the internet.

  – **Network provider** — The name of your SIM card / network provider is displayed.

  – **SIM IMSI** — Your SIM card unique International Mobile Subscriber Identity number is displayed.

  – *[Preferred network mode]* — If required you can change your preferred network, the available options are: *3G/4G/Auto*, *4G only* or *3G only*.

  – **Network selection** — *[Automatically select network]* — If required automatic network selection can be disabled so that a network can be selected manually.

  – **Access Point Name** — A list of Access Point Names (APNs) applicable to your SIM provider will be displayed.

Important: If the APN you require is not listed or you're unable to connect to the Internet using the current APN settings, you will need to modify an existing APN by selecting the "pencil" Edit icon on the right:

Name	APN	Username	
⦿ Vodafone UK	internet	web	✏️
◯ Vodafone UK Prepay	pp.vodafone.co.uk	wap	✏️
◯ Custom APN	-	-	✏️

You will need to obtain the APN settings from the SIM card network provider. You can usually find these settings by performing an Internet search; for example: "*Vodafone UK APN settings*", or similar. If you are unable to find the settings on the Internet, you may need to **contact the network provider of the SIM card.**. If you still have problems accessing the Internet, switch the *[APN protocol]* option from *[IPv4 / IPv6 auto]* to *[IPv4]* or *[IPv6]*. **After changing the APN details, ensure that you Save the changes to the page, and power cycle the router.**

– *[Reset APN settings]* — Reverts the APN settings to default values.

• *[SIM info]* — View SIM card details.

• *[Lock SIM]* — Lock the SIM card or change the PIN for the SIM card.

Access point page

Wi-Fi enabled devices can connect to the router's wireless access point and connect to the internet using the router's Wi-Fi network connection and / or cellular network wireless connections.

The router's wireless access point can be enabled and disabled using the toggle switch at the top of the page.

When enabled, the following router wireless access point settings can be configured:

• *[Access point name (SSID)]* — This is the name of the Wi-Fi network that will be displayed on devices when connecting to the router's Wi-Fi network.

• *[Password]* — The password that will need to be entered on devices when setting up their Wi-Fi connection to the router.

• *[Preferred Wi-Fi channel]* — Allows you to select your preferred Wi-Fi channel. Interference can occur in areas where many Wi–Fi networks are using the same channel. Moving to a less-used channel should eliminate this interference.

• *[Channel width]* — Allows you to switch between *Single channel* (20 MHz) 144 Mb and *Dual channel* (40 MHz) 300 Mb channel width. Dual channel provides faster speed, however in areas where there is wireless channel congestion, a single channel may reduce interference.

• *[Encryption type]* — Allows selection of the type of encryption to be used to secure Wi-Fi communications. *WPA2–PSA* is the default and recommended encryption type.

Note: Changing the *[Encryption type]* to *No encryption* is NOT recommended, as any Wi-Fi devices within range will be able to connect to the router.

If you change any of the default settings, ensure that you select *[Save]* at the top of the page to keep the changes.

Info page

The Info page provides technical information useful for diagnostics and troubleshooting.

From info page displays the following information:

• Router hardware related information.

• Router software related information.

• Cellular network related information.

A QR code is available at the bottom of the Info page that can be used to link your router to a Raymarine cloud account.

For troubleshooting purposes you can also save crash logs by selecting *[Save system logs]*.

20.3 Connected devices page

The connected devices page provides a list of all devices connected to the router using Ethernet or wireless connections.

The details include:

- Device name
- MAC address
- IP address
- Connection type

20.4 Advanced settings

LAN set-up

Ethernet configuration page

The Ethernet configuration page provides IP address details and configuration settings for the router's wired network connections.

> **Important:**
>
> IP configuration is for advanced users and should not be changed, unless for a specific reason. Disabling automatic configuration will affect compatibility with Raymarine MFDs.

The *[Configure IP]* options are:

- *Automatically (DHCP on)* — This is the recommended setting which allows IP addresses to be automatically assigned to connected devices by the router using IP addresses within the range specified in the DHCP server.
- *Manually (DHCP on)* — This setting allows you to manually configure the router's LAN IP address, subnet mask and default gateway and allows connecting devices to be automatically assigned an IP address within the range you specify in the DHCP server.
- *Manually (DHCP off)* — This settings allows you to manually configure the router's LAN IP Address, subnet mask and default gateway but does not assign IP addresses to connected devices.

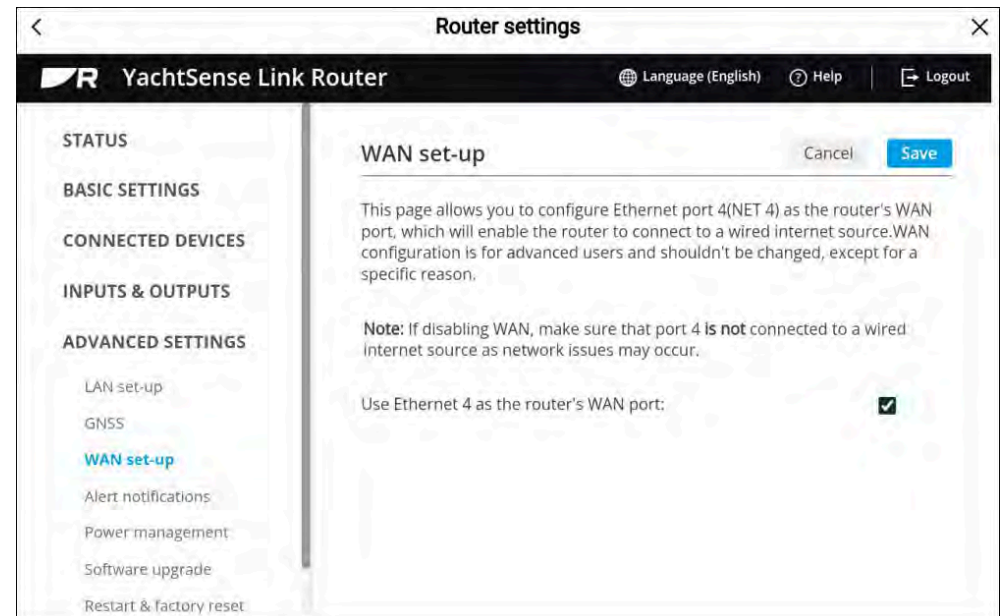> **Note:**
>
> With DHCP switched off each wired device will have to be manually assigned an IP address in the same range as your router's IP address.

Configuring a wired internet connection

The router can connect to the internet using a wired connection to a Wide Area Network (WAN), such as a broadband satellite internet system or a hard-wired marina internet connection.

> **Note:**
>
> When the WAN connection is enabled, it becomes the primary connection to the internet. If you wish to use Cellular or Wi-Fi connections instead, disable the WAN connection by removing the tick from the *[Wired internet connection]* tick box located on the *[Wired internet connection]* page in *[BASIC SETTINGS]*.
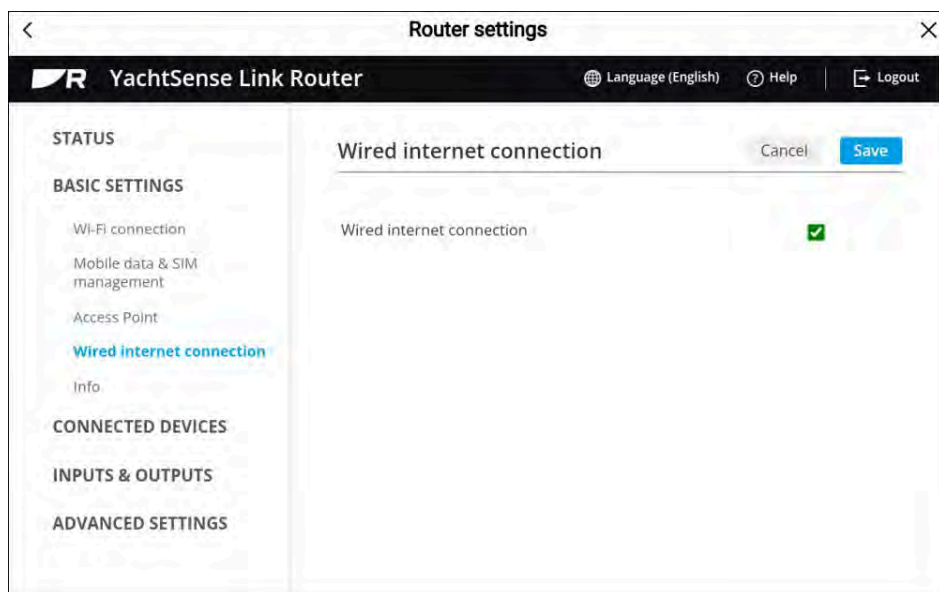

1. Ensure that the WAN device is powered off or disconnected from the router before configuring the wired internet connection.

2. Open the router's *[WAN set-up]* page: *[ADVANCED SETTINGS > WAN set-up]*.

3. Select the *[Use Ethernet 4 as the router's WAN port]* tick box and then select the *[Save]* button.

   A tick indicates that [NET 4] is now a WAN port.

4. Select the *[Wired internet connection]* tick box from the *[Wired internet connection]* page in *[BASIC SETTINGS]* and select the *[Save]* button.

A tick indicates that the router will use the WAN port for its primary internet connection.

5. Power up or connect the router to the WAN using the *[NET 4]* RayNet network connection. For connection details, refer to:
   p.57 — Wired internet connection

Note:

If the router ever has to be reset the WAN hardware should be powered off until the router has been re-configured.

Wi-Fi configuration page

The Wi-Fi configuration page provides IP address details and configuration settings for the router's Wi-Fi access point connection.

Important:

IP configuration is for advanced users and should not be changed, unless for a specific reason.

The router's Wi-Fi IP address, subnet mask and default gateway can be configured and the IP address range and lease time used for the Wi-Fi DHCP server can be set.

IPv6 page

IPv6 settings can be configured from the IPv6 page.

Important:

IPv6 settings are for advanced users and should not be changed, unless for a specific reason.

You can change the router's IPv6 global ID and enable and disable IPv6 over Ethernet and Wi-Fi connections using the relevant checkbox. You can also specify subnet IDs for both Ethernet and Wi-Fi connections.

GNSS page

The GNSS page provides settings and information for the router's internal GNSS (GPS) receiver.

The following settings and information is available:

- *[GNSS fix status]* — provides position fix status.
- *[Internal GNSS]* — enables and disables the internal GNSS (GPS) receiver.
- *[Restart GNSS]* — reboots the internal GNSS (GPS) receiver.
- *[GNSS Constellations]* — enables use of a second GNSS constellation. Either GLONASS (Russia), Galileo (Europe) or Beidou (China) GNSS systems can be used in addition to the GPS (United States) system.
- *[Differential positioning]* — enables use of differential positioning satellites, which may improve your position fix.

- *[Differential positioning systems]* — Allows selection of specific localized Satellite Based Augmentation Systems (SBAS).

- *[Satellites in use]* — Provides details of the positioning satellites currently being tracked.

Inputs and outputs

Settings and status pages are available for the management of devices connected to the router's inputs and outputs.

The following pages are available

- *[Channels configuration]*— configure input and output channels.

- *[Channel monitoring and control]* — view status of input channels and switch output channels on and off.

For details of input and output connections and wiring refer to:
p.58 — Input and output channel connections

Configuring input channels

The router's input channels (channels 1 to 4) can be configured from the *[Channels configuration]* page: *[ADVANCED SETTINGS > Inputs & Outputs > Channels configuration]*.
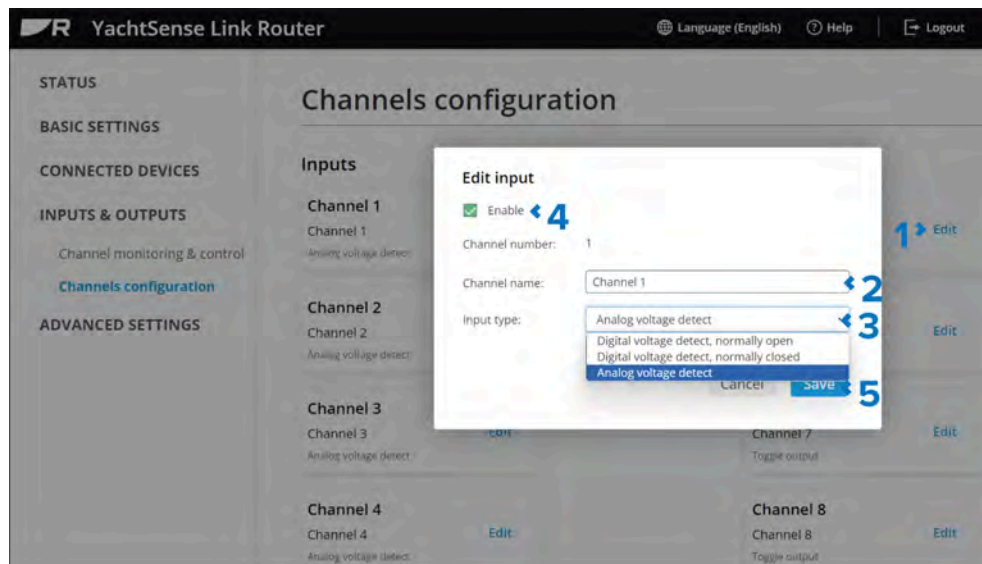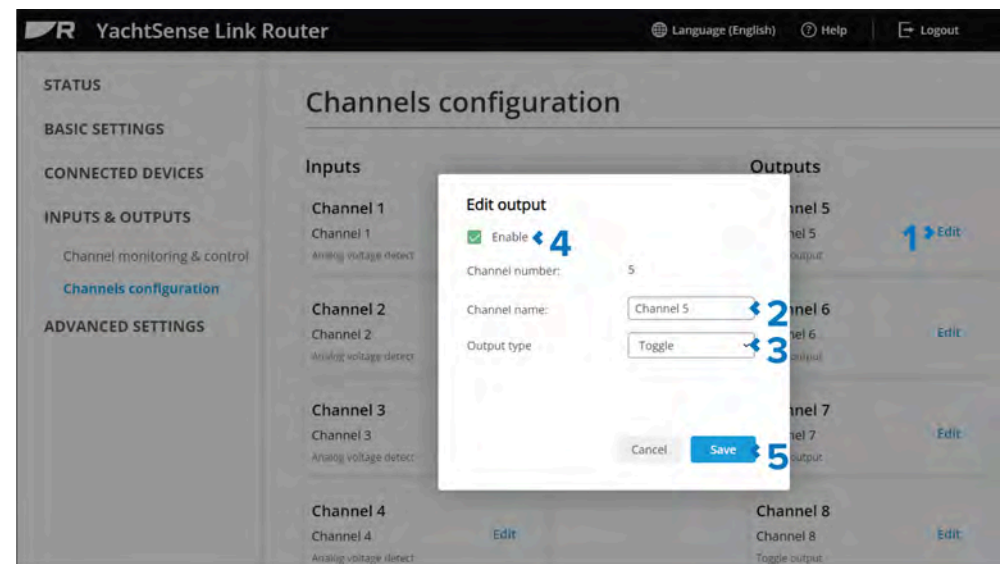

1. Select *[Edit]* next to the relevant input channel.

2. Enter a name for the channel in the *[Channel name]* field.
3. Select the *[Input type]* drop down list, and choose either:
   - *[Digital voltage detect, normally open]* — used for switch state detection.
   - *[Digital voltage detect, normally closed]* — used for switch state detection.
   - *[Analog voltage detect]* — used for voltage monitoring.
4. Select (tick) the *[Enable]* tick box.
5. Select *[Save]*.

Configuring output channels

The router's output channels (channels 5 to 8) can be configured from the *[Channels configuration]* page: *[Inputs & Outputs > Channels configuration]*.

1. Select *[Edit]* next to the relevant output channel.
2. Enter a name for the channel in the *[Channel name]* field.
3. Select the *[Output type]* drop down list, and choose either:
   - *[Toggle]* — Toggle will have an *[On]* state and an *[Off]* state.
   - *[Pulse]* — Pulse is a momentary *[On]* signal, and automatically switches off after the time in seconds specified in the *[Pulse length]* field.

> **Important:**
>
> A pulse output cannot detect the state of the connected device. To detect the state you will have to connect and configure an input channel for the devices.

4. Select (tick) the *[Enable]* tick box to enable the output channel.

5. Select *[Save]*.

Input channel monitoring

The router's input channels (channels 1 to 4) can be monitored from the *[Channel monitoring & control]* page: *[ADVANCED SETTINGS > Inputs & Outputs > Channel monitoring & control]*.

- When an input channel's input type is set to *[Analog voltage detect]* the channel's voltage will be displayed.

- When the input channel's input type is set to *[Digital voltage detect, normally open]* or *[Digital voltage detect, normally closed]* then the channel's status i.e.: ACTIVE or INACTIVE will be displayed.

Output channel control

The router's output channels (channels 5 to 8) can be controlled from the *[Channel monitoring & control]* page: *[ADVANCED SETTINGS > Inputs & Outputs > Channel monitoring & control]*.

Use the toggle switches to switch output channels on and off.

Alert notifications page

Alert notifications can be configured for the router's supply voltage and input channel voltage.

> **Note:**
>
> Each input channel warning must be configured with a unique Alert ID with a value between 1,000 and 65,000.

Low voltage warning

A low voltage warning can be set which triggers when the voltage available to the router drops below a specified value.

By selecting *[Edit]* for a specific *[Low voltage warning]*, you can specify a unique *[Alert ID]*. You can also enable and disable notifications using the *[Allow notification]* checkbox, and specify the voltage at which the alert will be triggered.

Input channel alerts

Alerts can also be set for each input channel (Channels 1 to 4).

By selecting *[Edit]* for a specific input channel, you can specify a unique *[Alert ID]*. You can also enable and disable notifications using the *[Allow notification]* checkbox.

When the input channel's input type has been configured as *[Digital voltage detect, normally open]* or *[Digital voltage detect, normally closed]*, you can enter a voltage and select whether the alert is triggered when the channel has *[Met]* or *[Not met]* the specified voltage. You can also enter an alert notification message.

When the input channel's input type has been configured as *[Analog voltage detect]*, you can enter a voltage and select whether the alert is triggered when the channel's voltage value is below or above the specified voltage. You can also enter an alert notification message.

Alert sending

Power management page

The router has 2 power modes: **Always on**, and **Low power (sleep)**. In low power (sleep) mode, the router's power consumption is reduced. The router can be woken from low power mode when certain conditions are met.

In *[Always on]* mode, the router is fully powered and all connections are active.

Low power (sleep) mode:

In *[Low power mode]* the router is placed into a low power state, and the router's Wi-Fi connections are disabled.

When Low power mode is enabled, the router will commence a 2 minute countdown. If no condition that can wake the router is detected within the 2 minute countdown, the router will enter low power mode.

Conditions that can wake the router or prevent the router entering Low power mode are:

- a powered on Axiom® or Axiom® 2 MFD is connected to the router.

- the Raymarine app is used to access the router. This requires the router to be connected to your cloud account via the Raymarine app using a cellular connection.

- an alert notification is triggered. Alerts are configured from the *[Alert notifications]* page.

- a device such as a switch is used which is connected to one of the router's input channels (Channels 1 to 4). This requires the relevant input channel to be enabled under *[Also wake on]*.

- a user connects to the router's web interface.

- a software update is in progress.

When the router is in Low power mode, the power LED will flash green once every 3 seconds and the router will wake every 15 minutes to send data to the Raymarine cloud for telemetry and geofencing purposes. Once the data is sent, the router will re-enter Low power mode, unless a wake condition is met.

Note:

If a compatible MFD is switched on while the router is in Low power mode, when the router wakes to send telemetry data it will not switch back to low power mode.

When the router receives a wake condition it will usually take a couple of minutes for the router to resume full power mode.

Powering other devices

The router's output channels (Channels 5 to 8) can be used to power on connected devices or systems. To power the connected device when the router is woken from lower power mode, tick the relevant output channel in the *Power management page*.

Important:

To keep changes made in the *Power management page*, click *[Save]*.

Performing a router software upgrade

Raymarine® regularly issues software updates for its products which provide new and enhanced features and improved performance and usability. It is important to ensure that you have the latest software for your products by regularly checking the Raymarine® website for new software releases.

Note:

The upgrade should be performed from a wired network device such as a PC/laptop or Raymarine® MFD. It is not recommended to perform the upgrade process from a device connected using Wi-Fi.

To upgrade the software on your router, follow the steps below:

1. Check your router's current software version. You can check your router's current software version by checking the *Info* page located under *Basic settings* in the router's web interface.

2. If available, download updated software from the Raymarine® website: www.raymarine.com/software

3. Access the router's web interface:

   - From a Raymarine® MFD, refer to:
   p.69 — Accessing the web interface from a Raymarine display

   - From a PC/laptop, refer to:
   p.70 — Accessing the web interface using a wired connection

4. Open the router's *[Software upgrade]* page located under *[Advanced settings]*.

5. If requested, enter the router's admin password and select *[OK]*.

6. Click *[Browse file to upload]*.

7. Locate and select the downloaded file.

   The file will upload to the router.

8. Click *[Upgrade]*.

   The router will now be upgraded. The upgrade process can take some time. Do NOT disconnect the router, PC/laptop, or Raymarine® MFD until the process is complete.

Once the process is complete, the router will restart.

Restart & factory reset

If you encounter problems with your router it can be restarted or reset to its factory default settings from the *Restart & factory reset* page.

- *[Restart router]* — restarts the router.

- *[Reset to factory defaults]* — removes all changes made to the router's settings, and resets it to the factory default settings.

Note: The router can also be reset to factory default settings using the physical *reset* button located on the front of the router. Refer to:
p.110 — Performing a hard reset

Performing a factory reset to restore default settings

Follow the steps below if you need to reset the router to its factory default settings, but want to re-connect it to the same Raymarine cloud account.

1. Access the router's web interface:

2. Select *[Restart & factory reset]* from the *[Advanced settings]* menu.

3. Select *[Reset to factory defaults]*.

4. Select *[Reset]*.

Note:

If your router was linked to your Raymarine cloud account, then the next time you open your Raymarine app the router will be automatically added back to your account.

Performing a factory reset prior to disposal / change of ownership or account

In the event that you need to dispose of your router or sell it, and your router has been linked to your Raymarine cloud account, it must first be removed from your account and then restored to its factory default settings.

Note:

If your router is not connected to your Raymarine cloud account then steps 1 to 4 below are not necessary.

1. Open the Raymarine app on your mobile device and log in if required.

2. Select the menu icon located on the left of the screen to open the side menu.

3. If you have more than 1 boat system select the relevant boat system that the router is connected to.

4. Select the *[YachtSense Link]* router.

5. Select *[Remove]* and then confirm the removal.

   A confirmation e-mail will be sent to the e-mail address registered with your cloud account, and the router will no longer be linked to your account.

6. Access the router's web interface:

7. Select *[Restart & factory reset]* from the router's *[Advanced settings]* menu.

8. Select *[Reset to factory defaults]*.

9. Select *[Reset]*.

All personal details, passwords and cloud account details have now been removed, and the router has been reset to its factory default settings.

Changing the admin password

The default password used to access the router's web interface can be changed.

Important:

Ensure that you make a note of the new password. If you forget the new password you will not be able to log in to the router's web interface.

To change the password follow the steps below

1. Enter the current password in the *[Current password:]* field.
2. Enter your new password in the *[Create new password:]* field.
3. Re-enter the new password in the *[Confirm new password:]* field.
4. Click *[Change password]*.

Note:

If you can no longer access the router's web interface you can perform a network settings reset. Refer to: **p.110 —** Password reset (forgotten password)

20.5 Help

Selecting the Help icon in the top right of the web interface will provide access to the router's help pages and online documentation for your router.

CHAPTER 21: RAYMARINE APP

CHAPTER CONTENTS

21.1 How to obtain the Raymarine app

The Raymarine app is available for Android and Apple iOS devices, and can be installed on your mobile device from the relevant app store.

To obtain the Raymarine app from the relevant app store for your device, point your mobile device's camera at one of the following QR codes:

Apple iOS	Android
Download on the App Store	GET IT ON Google play
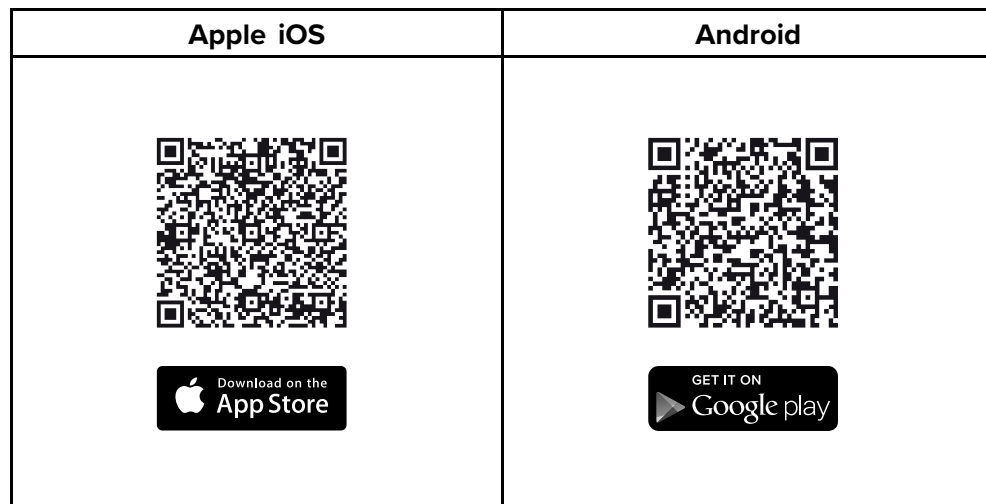
Once you've installed the app, you will need to create a Raymarine account to log in to the app.

21.2 How to connect guide

If the app is not currently connected to a boat system, the *[How to connect]* option is available in the app to guide you through setting up a boat system and connecting to your chartplotter (MFD) or YachtSense Link-Series YachtSense Link router.

21.3 Connect directly to a chartplotter (MFD)

You must be connected directly to the chartplotter's (MFD's) Wi-FI connection.

If your display does not have an Internet connection, you must log in to the Raymarine app first before switching network.

If your display does not have a connection to the Internet, when you connect to it, your mobile device may automatically revert to its previous network. If you try to connect again a notification is displayed. Select *[Connect]* or *[Connect anyway]*.

When you are connected to a chartplotter (MFD), you can:

- 21.4 Start display mirroring
- View data
- 21.6 Transfer files
- 21.5 Transfer LightHouse charts

When connecting directly to a chartplotter (MFD) it must be configured to allow Wi-FI sharing: *[Homescreen > Settings > This display > Wi-Fi Sharing]*.

21.4 Display mirroring (view and control)

You can view and control your chartplotter (MFD) from the Raymarine app.

Chartplotters (MFDs) will be available under *[Display mirroring]* in the *[Control]* tab when connected to the same Wi-FI network as your mobile device. Select a chartplotter (MFD) to initiate display mirroring.

Display mirroring is always available when you are connected to the Router's Wi-FI connection or to a chartplotter's (MFD's) Wi-FI connection.

21.5 Transferring LightHouse Charts charts

The Raymarine app can be used to redeem LightHouse Charts chart vouchers and to download and transfer the charts directly to your chartplotter (MFD).

Note:

To download LightHouse Charts charts to a memory card you must first purchase a pre-formatted LightHouse Charts charts MicroSD card (part number: R70795 or R70838), and insert it into your chartplotter (MFD) before starting the transfer process.

1. Select the *[Management]* icon located at the bottom of the screen.

2. Select *[Charts]*.

   If you have already purchased charts, they will be listed in the *[My charts]* menu. Otherwise, the *[Chart catalog]* is displayed where you can search for charts and redeem voucher codes.
3. Select the chart that you want to download, using the *[My charts]* menu.
4. Follow the onscreen instructions to download your charts.

   During the download process, you will be able to group chart regions, Add [Streets & POI] and [Aerial photo] areas, and select a storage location.

Note:

Chart downloads have large files sizes and may take some time to download and transfer.

21.6 Chartplotter file transfer

File transfer between chartplotter (MFD) and your mobile device is available using the *[Chartplotter file transfer]* option in the *[Management]* tab.

If this is the first time that the file transfer has been attempted, you will need to confirm access from the chartplotter (MFD).

You can select a chartplotter (MFD) and then browse internal and external storage for either a file to be copied to your mobile device, or a location to upload a file from your mobile device.

Selecting a file from your chartplotter (MFD) provides the following related options:

- View the file

- Copy the file.

- Share the file.

You can also upload a file from your mobile device to your chartplotter (MFD) by selecting *[Upload a file here]*.

Note:

You cannot use the Raymarine app to delete files that are stored on your chartplotter (MFD).

21.7 Connect to your YachtSense Link-Series YachtSense Link router

After setting up your YachtSense Link-Series YachtSense Link router and configuring its wireless networks (Wi-FI and/or cellular (mobile) connections) you can use the Raymarine app to create a boat system and register your router to your Raymarine account. Registering allows off boat monitoring and control of compatible systems connected to your router.

Note:

- You cannot register a router that is already registered to a different account.

- If your mobile device is already connected to a boat system it must be disconnected before another boat system can be added.

- The premium subscription features can only be used on 2 boat systems at a time.

The registration process includes:

1. Connecting your mobile device to your YachtSense Link-Series YachtSense Link router's Wi-FI connection.

2. Creating a boat system by entering your boat's name.

3. Scanning the router's QR code to register the router to your account. The QR code can be found on the label on the side of your router or on the Info page of the router's web interface.

When connected to the router you can:

- 21.8 Create geofences

- View data

- 21.9 Control digital switching input and output channels

- 21.4 Start display mirroring

- 21.6 Transfer files

- 21.5 Transfer LightHouse charts

21.8 Geofencing

A Geofence is a security feature that alerts you if your boat leaves or enters a chosen area.

When a geofence alert is triggered a notification will be sent to the cellular telephone number specified in the *[Boat alerts]* settings.

Geofencing is available with a premium Raymarine app subscription.

Geofence

When your boat system includes a YachtSense Link-Series YachtSense Link router you can set up geofences.

1. Select *[+ Add new geofence]* from the Geofence tab.
2. Select *[Radius]*.

   A geofence circle is placed over your vessel.

3. Increase or decrease the geofence radius by selecting the circle and dragging towards or away from you vessel's location.

   Alternatively you can use the [+] (plus) and [–] (minus) buttons to fine tune the circle radius.

4. Select the *[Name]* field to customize the geofence name.
5. Enable the *[Boat leaves location]* and/or *[Boat enters location]* toggle switches as appropriate for your needs.
6. If desired, change the color of the geofence by selecting the colored circle in the color area.
7. Select *[Create]* from the top of the screen.

Multiple geofences can be created. The geofence circle radius can be adjusted or can be disarmed by selecting the relevant geofence details located at the bottom of the screen.

Temporary mooring

You can also create temporary mooring geofences for short stay stops.

Temporary mooring geofences are only triggered when your vessel exits a geofence circle, and are automatically deleted when it is disarmed.

You can only have one temporary mooring geofence active at any one time. Creating a second temporary mooring geofence will replace the first geofence.

21.9 Data view and channel control

Depending on your system's configuration, you can use the app to view live data and control certain channels.

- A data page can be created in the app to view compatible data which is available on your network.

Note: When the device running the Raymarine app (e.g. smartphone / tablet) is connected directly to a chartplotter (MFD), the data items available will be limited. Connecting to a YachtSense Link-Series YachtSense Link router will provide the maximum available data items.

- When connected to a boat system that includes a YachtSense Link-Series YachtSense Link router you can view the status of the input channels and switch the output channels on and off from the *[Control]* tab. If the channel has been disabled in the router's web interface, it will not be shown in the app.
- When your boat system includes both a YachtSense Link-Series YachtSense Link router and a YachtSense DCS-Series Digital Control System, the status and control of the input and output channels is available from the *[Control]* tab.
- When you have an active premium Raymarine app subscription and your boat system includes both a YachtSense Link-Series YachtSense Link router and a YachtSense DCS-Series Digital Control System, the status and control of the input and output channels can be accessed remotely when you are away from your boat.

Note:

In order for YachtSense DCS-Series Digital Control System controls to be available on the app, your YachtSense DCS-Series Digital Control System configuration must include the necessary app page layouts. If required, please contact your YachtSense DCS-Series Digital Control System installer, who will need to create an updated configuration for your system.

Viewing NMEA 2000 data

To create a data page for NMEA 2000 data, follow the steps below.

1. Select *[Add data]* from the Data tab.
2. Select a data category and then select the relevant data item.

3. To add more data items, select the *[+]* (plus) icon and repeat steps 2 and 3.

4. When finished, select *[Done]*.

To delete a data item, press and hold and then drag it to the *trash bin* icon at the bottom of the screen.

You can add or change data items at any time by selecting the *[Edit]* icon, located at the top of the data page.

21.10 User access management

You can log out / in to your account, edit your user account details or update your premium plan subscription by selecting the profile icon on the right side of the side menu.

21.11 Boat alerts

Alerts raised by your system can be viewed in the app by selecting *[Boat alerts]* from the side menu.

You can also enter a cellular telephone number to automatically receive boat alerts on your mobile device remotely.

The cellular telephone number can be entered by selecting the settings icon from the *[Boat alerts]* menu.

21.12 Boat systems

You can create up to 10 boat systems on the Raymarine app. With an active premium Raymarine app subscription up to 2 boat systems can be configured to receive premium features.

CHAPTER 22: TROUBLESHOOTING

CHAPTER CONTENTS

22.1 Mobile / cellular data troubleshooting

Common steps to assist you in troubleshooting and solving mobile / cellular data issues. The most common problem is no Internet access.

Confirm the problem

In order to obtain Internet access via mobile / cellular data, the YachtSense Link router requires a compatible SIM card fitted, which has an appropriate data plan. It is then usually possible to connect the YachtSense Link router to the relevant cellular network and start using the Internet immediately. To find out whether the YachtSense Link router has successfully obtained Internet access via mobile / cellular data, first check the **Status** page in the router's web page, or the Raymarine mobile app. If the router has successfully obtained Internet access via mobile / cellular data, you should see a *Mobile network* **Status** similar to the following:

No Internet connection

If you cannot access the Internet, and the Status for the Mobile network connection is showing in the Raymarine mobile app or the router's Status web page as *[Not in use]*, *[Not connected]*, *[Internet Unavailable]*, *[No Service]*, or *[Error]*, follow the information and procedures described below to solve your connection issues:

- Check SIM card is correctly installed.

- Ensure *[Mobile data]* and if applicable *[Data roaming]* is enabled.

- Ensure APN settings are correct (via the Router's *Mobile data & SIM management* page).

- Ensure that you have a suitable data plan for your SIM card.

- Call your network provider to activate your data plan and SIM card — **Examples of network providers that require this additional step are:** *T-Mobile*, **and** *AT&T* **(in the United States).**

- Visit a network provider's physical *official* store to activate your data plan and SIM card — **Examples of network providers that require this additional step are:** *Verizon* **(in the United States).**

- Conduct further mobile data error message troubleshooting.

Note:

Some network providers (such as *Verizon* in the United States, for example) require you to use a brand new SIM card in your YachtSense Link router, **which has never before been used in another device**.

These steps are described in more detail below:

Check SIM card is correctly installed

The first step is to confirm whether you have correctly installed the SIM card. Refer to: **p.64 — Inserting SIM cards**

Ensure *[Mobile data]*, and/or applicable *[Data roaming]* is enabled

The *[Mobile data]* setting must be enabled for the SIM card in use. If you are outside of your network provider's coverage area then *[Data roaming]* will also need to be enabled.
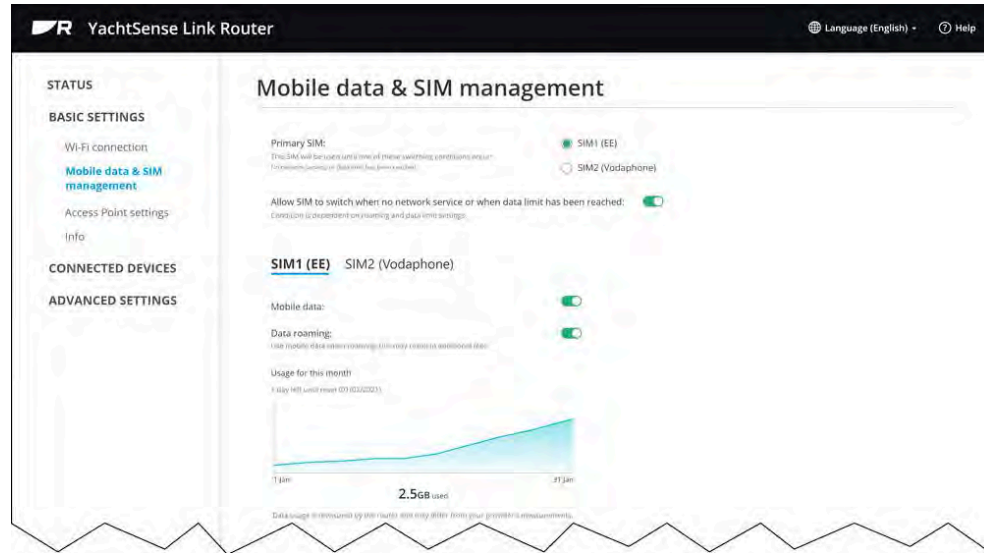
The *[Mobile data]* and *[Data roaming]* settings are available on the *[Mobile data & SIM management]* settings page.
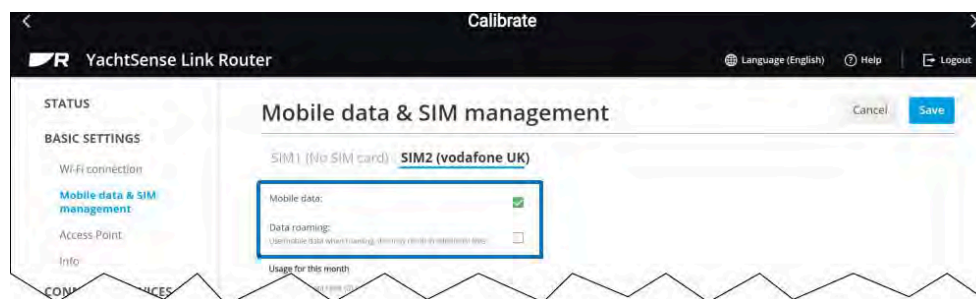
Ensure APN settings are correct

In some cases, the *[Access Point Name]* (APN) settings associated with the SIM card may be missing or incorrect.

Check your APN settings by scrolling down to the bottom of the Router's *[Mobile data & SIM management]* page:
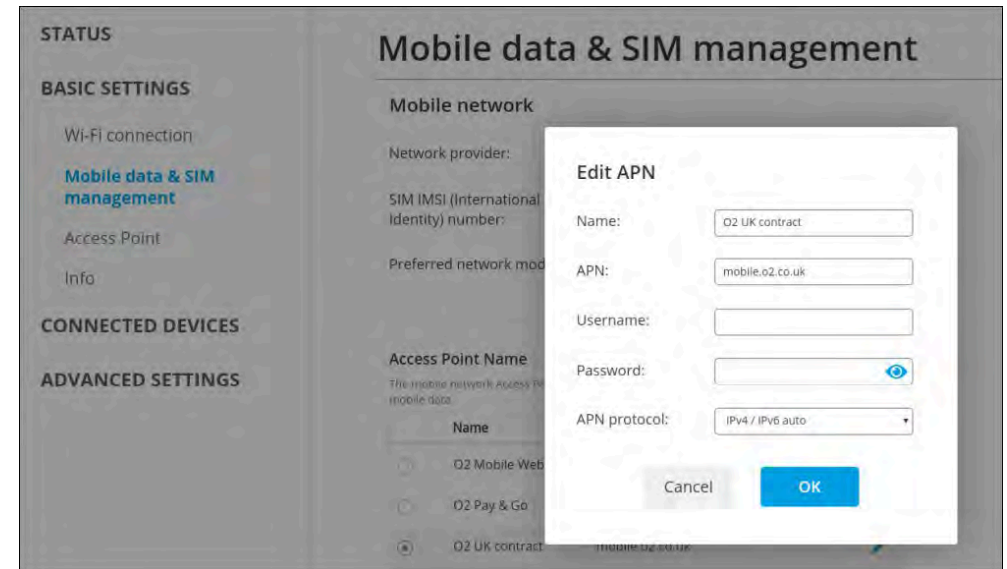

In the *[Access Point Name]* section of this page, a list of Access Point Names (APNs) applicable to your SIM provider will be displayed.

If the APN you require is not listed or you're unable to connect to the Internet using the current APN settings, you will need to modify an existing APN by selecting the "pencil" Edit icon on the right:

You can usually find these settings by performing an Internet search; for example: "*Vodafone UK APN settings*", or equivalent for your specific SIM card network provider. If you are unable to find the settings on the Internet, you may need to **contact the SIM card network provider**.

Once you have the correct APN details, enter them into the Edit APN dialog, and then select *[OK]*.

Note:

If you still have problems accessing the Internet, switch the *[APN protocol]* option from *[IPv4 / IPv6 auto]* to *[IPv4]* or *[IPv6]*.

After changing the APN details, ensure that you save the changes to the page, and power cycle the router.

Ensure that you have a suitable data plan for your SIM card

Some network providers may require that you have a specific type of data plan, such as one which only covers **mobile hotspot data**, for example. If you have this type of data plan but you're still unable to obtain Internet access, it may also be necessary to contact the network provider and specifically inform them that it's a "*third-party 4G modem*" device that you're trying to use, and not a hotspot device issued by the network provider.

Check your data plan carefully, as some providers may offer a limited amount of data for a hotspot connection, and then a much lower speed once the initial allowance is used up. For example, at the time of this publication, Verizon in the USA offered its "Essential" data plan, which provides 15 GB of mobile hotspot data, and then unlimited lower-speed data (600 Kbps), once the initial 15 GB is consumed.

Contact your network provider to activate your data plan and SIM card

Before you can connect to the network provider's cellular network and obtain Internet access, the SIM card and data plan need to be activated / authorized on the network provider's cellular network. For some SIM cards and data plans, this is an automatic process, where the network providers pre-activate or pre-authorize the SIM cards, either before or during the SIM card purchase process. However, **some network providers require you to take additional steps to activate / authorize the SIM card and data plan before use**. The procedure for doing this differs from provider to provider:

Important:

Before contacting your network provider, ensure that you have the following information to hand:

- **Your YachtSense Link router's unique IMEI number**. For more information on finding this, refer to: **p.67 — Router IMEI number**

- **Your SIM card's unique ICCID number**. This can usually be found on the back of the SIM card itself.

- **Activating via online chat** — Some network providers will allow you to activate your SIM card via an online chat with a customer support agent. It may also be necessary to specifically inform them that it's a "*third-party 4G modem*" device that you're trying to use, and not a hotspot device issued by the network provider.

- **Activating via a phone call** — For some network providers, it may be necessary to call the network provider's customer support service and activate your data plan and SIM card over the phone. It may also be necessary to specifically inform them that it's a "*third-party 4G modem*" device that you're trying to use, and not a hotspot device issued by the network provider.

Note:

When contacting a network provider by phone or online chat, **it is recommended that you stay on the call or chat until you have confirmed that the SIM card activation has worked correctly**. To do this, visit the Raymarine mobile app's or YachtSense Link router's **Status** page, and confirm that the Internet status is displayed as *Connected*:

Mobile network

Status: Connected (4G) ▂▃▅

Network provider: T-Mobile

SIM card (in use):   2
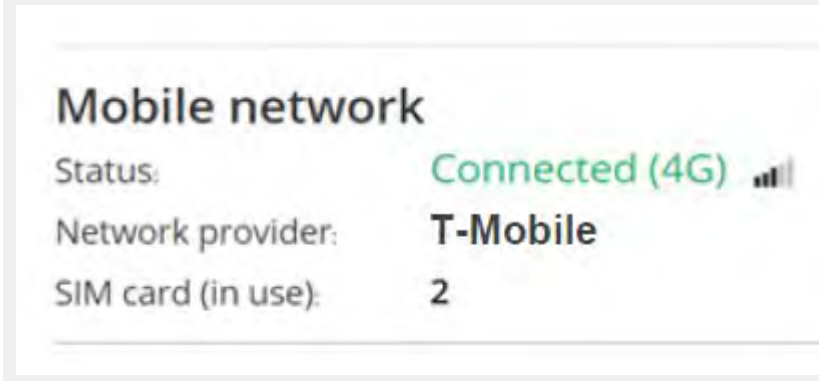
Visit a network provider's physical official store to activate your data plan and SIM card

For some network providers, **the data plan and SIM card may need to be activated in a physical store** (as opposed to online, or over the phone). This physical store may need to be **an official store**, as opposed to an authorized dealer or retailer. For example, in the United States, only staff at an official physical **Verizon Store** can correctly activate / authorize your data plan and SIM card on the Verizon network, and they must do this using a specific in-store device known as a "JETPACK" device.

Note also that some network providers (such as *Verizon* in the United States, for example) require you to use a brand new SIM card in your YachtSense Link router, **which has never before been used in another device**.

Before visiting your network provider's official store, ensure that you have the following information to hand:

- **Your YachtSense Link router's unique IMEI number**. For more information on finding this, refer to: **p.67 — Router IMEI number**

- **Your SIM card's unique ICCID number**. This can usually be found on the back of the SIM card itself.

- **It is also recommended that, before leaving the store, you ensure that your SIM card and data plan are assigned to the YachtSense Link router's IMEI number**

Note:

- Please also be aware that, following activation, data speeds may initially be restricted. **It can take up to 24 hours after activation to obtain full data speeds.**

- If, after contacting your network provider, the YachtSense Link router is not connected within 24 hours, it may be necessary to contact your network provider for a refund, and then to try a different provider.

Conduct further mobile data error message troubleshooting

The **Status** page in the router's web page, or the Raymarine mobile app provides further information on mobile / cellular data connection problems. For example:

Mobile network

Status:	SIM not inserted
Network provider:	-
SIM card (in use):	1

Status message	Possible causes and resolution
SIM not inserted:	A SIM card has not been installed in the YachtSense Link router, or it has not been installed correctly, and cannot be detected. Follow the instructions in the following topic to ensure that your SIM card is installed correctly: **p.64 — Inserting SIM cards**
No Service:	• **The YachtSense Link router is unable to access the cellular data network** — Refer to the information and procedures described above to activate your SIM card and data plan with the network provider. • **The YachtSense Link router is out of cellular network range** — Internet service will be resumed once the boat is moved to an area which has an adequate cellular signal from your network provider.
Internet unavailable:	Cellular data plan has expired. Contact your SIM card network provider.
Not in use:	The YachtSense Link router is using a Wi-Fi hotspot for its Internet access, instead of cellular data. Ensure that the *[Mobile data]* option on the *Mobile data & SIM management* page is ticked (enabled).

22.2 LED diagnostic guidance

Your product has diagnostic LEDs which can be used to identify the unit's status and to help troubleshoot any potential issues that may occur.

The following section provides two basic examples of how to interpret the LED diagnostic patterns included in this publication.

Example solid LED diagnostic pattern:
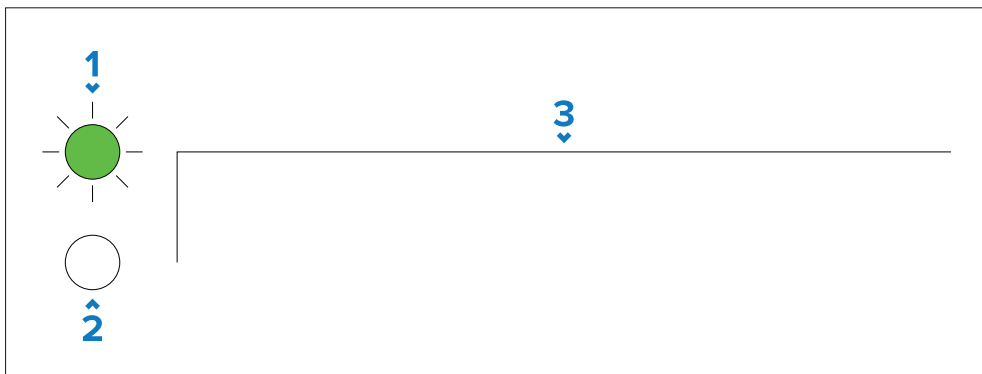
1. **LED ON** — Indicates the color assigned to the unit's diagnostic LED, and confirms that the diagnostic LED is active (switched **on**).

2. **LED OFF** — Indicates that the unit's diagnostic LED is inactive (switched **off**).

3. **Diagnostic pattern** — Indicates a diagnostic pattern based on the number and duration of *peaks* (indicating LED is switched **on**) and *troughs* (indicating LED is switched **off**) generated within the duration of the diagnostic pattern. In the example shown, a continuous peak occurs, indicating that the LED is permanently **on**.

Example flashing LED diagnostic pattern:
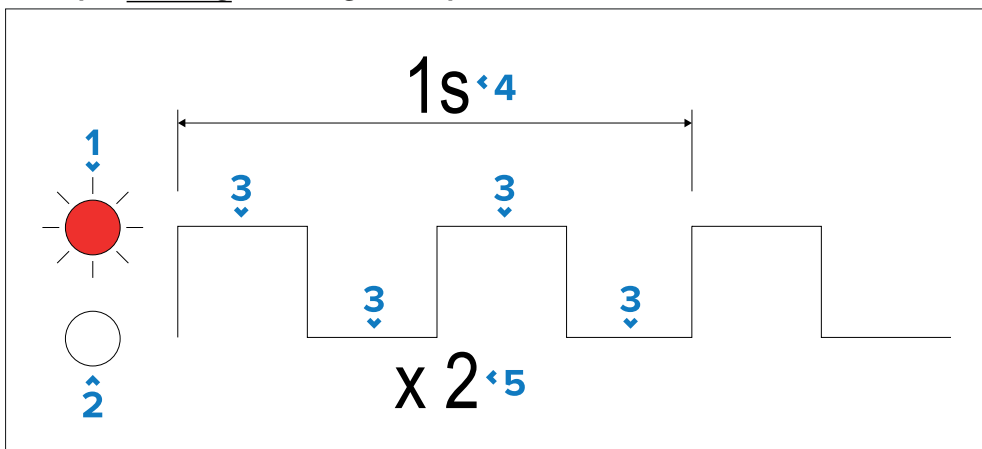
1. **LED ON** — Indicates the color assigned to the unit's diagnostic LED, and confirms that the diagnostic LED is active (switched **on**).

2. **LED OFF** — Indicates that the unit's diagnostic LED is inactive (switched **off**).

3. **Diagnostic pattern** — Indicates a diagnostic pattern based on the number and duration of *peaks* (indicating LED is switched **on**) and *troughs* (indicating LED is switched **off**) generated within the duration of the diagnostic pattern. In the example shown, a peak followed by a trough occurs and then repeats again, indicating that the LED flashes twice within a period of one second.

4. **Diagnostic pattern duration** — Indicates the total duration of the diagnostic pattern.

5. **Diagnostic pattern flash total** — Indicates the total number of flashes that occur within the diagnostic pattern.
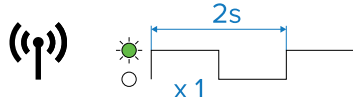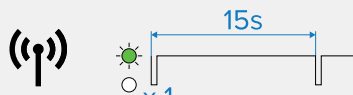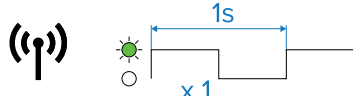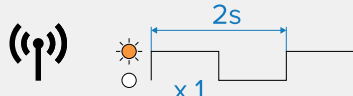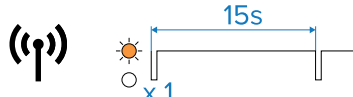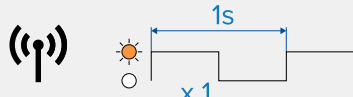
22.3 LED diagnostics

The LEDs located on the front of the router unit provide basic status information for the relevant network/connection.

Cloud LED

LED blink pattern	Status and troubleshooting
	(Green) Connected to cloud service Normal operation — No action necessary.
	(Red) Connection error / server not found If you have onboarded the router and the cloud LED is blinking red, you will need to: 1. Check that the router has an internet connection. 2. Check the Raymarine app to see if your router is connected. 3. Remove and re-link your router using the Raymarine app.

3G / 4G (Cellular / Diversity) LED

LED blink pattern	Status and troubleshooting
2s x 1 (green)	(Green) Connecting to 4G Normal operation — No action necessary.
15s x 1 (green)	(Green) Connected to 4G Normal operation — No action necessary.
1s x 1 (green)	(Green) Connected to 4G and transmitting data Normal operation — No action necessary.
2s x 1 (amber)	(Amber) Connecting to 3G Normal operation if 4G coverage is not available.
15s x 1 (amber)	(Amber) Connected to 3G Normal operation if 4G coverage is not available.
1s x 1 (amber)	(Amber) Connected to 3G and transmitting data Normal operation if 4G coverage is not available.
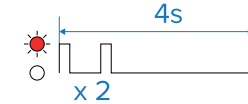
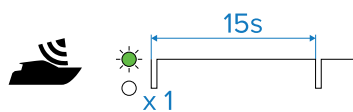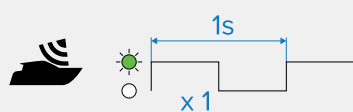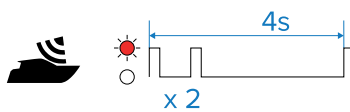| LED blink pattern	Status and troubleshooting
4s x 2 (red)	(Red) Not connected / no signal If you have a SIM card inserted, ensure that: 1. The SIM card is inserted correctly. 2. You have correctly registered the router and SIM card with the SIM network service provider. 3. Your APN settings are correctly configured. You may need to obtain these details from the SIM network service provider, and enter the settings manually.
5s x 3 (red)	(Red) No SIM card detected If you have a SIM card inserted, ensure that: 1. The SIM card is inserted correctly. 2. You have correctly registered the router and SIM card with the SIM network service provider. 3. Your APN settings are correctly configured. You may need to obtain these details from the SIM network service provider, and enter the settings manually.
(off)	(Off) Mobile data (Cellular) switched off Mobile data has been disabled in the router's settings. For details on setting up mobile data, refer to: **p.73 — Configuring mobile data**
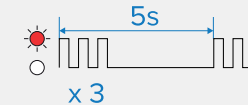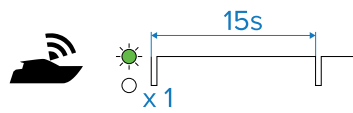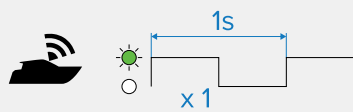
Boat Wi-Fi LED

LED blink pattern	Status and troubleshooting
15s, x 1 (green)	**(Green) Device(s) connected to router access point** Normal operation — No action necessary.
1s, x 1 (green)	**(Green) Device(s) connected to router access point and transferring data** Normal operation — No action necessary.
(off)	**(Off) router access point switched off** The router's Wi-Fi access point has been disabled in the router's settings. For details on setting up the access point, refer to: **p.76 — Setting up the router's access point**
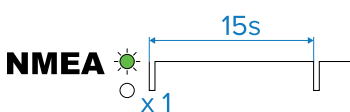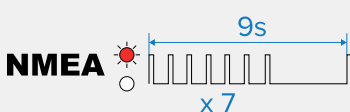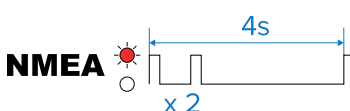
Dock WLAN LED

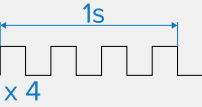| LED blink pattern	Status and troubleshooting
15s, x 1 (green)	**(Green) Connected to Wi-Fi** Normal operation — No action necessary.
1s, x 1 (green)	**(Green) Connected to Wi-Fi and transferring data** Normal operation — No action necessary.
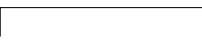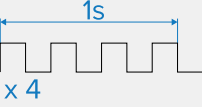
LED blink pattern	Status and troubleshooting
4s, x 2 (red)	**(Red) Unable to connect to Wi-Fi / No signal** Ensure that: 1. You are in range of the Wi-Fi access point you're trying to connect to. 2. The Wi-Fi access point is switched on/available. 3. You have the correct password to access the Wi-Fi access point.
(off)	**(Off) Wi-Fi switched off** The router's Wi-Fi connection has been disabled in the router's settings. For details on setting up the access point, refer to: **p.74 — Connecting to an available Wi-Fi network**
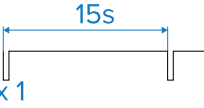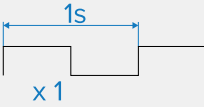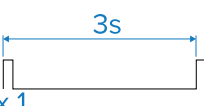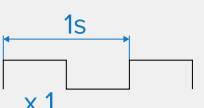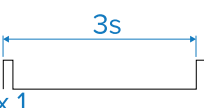
NMEA LED

LED blink pattern	Status and troubleshooting
NMEA 15s, x 1 (green)	**(Green) NMEA connected / OK** Normal operation — No action necessary.
NMEA 9s, x 7 (red)	**(Red) NMEA connected no data** Check that the sensors/devices are powered on and functioning correctly.
NMEA 4s, x 2 (red)	**(Red) NMEA not connected** Check that the NMEA 2000/SeaTalkng ® backbone is connected and powered on correctly.

Network (1 / 2 / 3 / 4) LEDs

LED blink pattern	Status and troubleshooting
1 2 3 4	**(White) Port connected 1,000 Mbits/s** Normal operation — No action necessary.
1 2 3 4 — 1s x 4	**(White) Transferring data 1,000 Mbits/s** Normal operation — No action necessary.
1 2 3 4	**(Amber) Port connected 10/100 Mbits/s** Normal operation — No action necessary.
1 2 3 4 — 1s x 4	**(Amber) Transferring data 10/100 Mbits/s** Normal operation — No action necessary.
1 2 3 4	**(Off) not connected/device switched off** If a device is connected to the router's network connection, check that it is switched on and that the cable is connected correctly and free from damage.

Power LED

LED blink pattern	Status and troubleshooting
15s x 1	**(Green) Powered up / OK** Normal operation — No action necessary.
1s x 1	**(Green) GNSS (GPS) no fix / Initializing** Normal operation whilst the router is powering up and the router's GNSS is obtaining a position fix. If this state persists, first try power cycling the router. Also check: 1. antenna connections. 2. antenna installation location. 3. obstructions in the antenna's view of the sky. If necessary, reposition the antenna.
3s x 1	**(Green) Low power mode** Low power mode — no action necessary. Router will resume normal operation when wake request is received.
1s x 1	**(Amber) Software update in progress** Normal operation when a software update is in progress.
3s x 1	**(Red) Fault** Check power supply voltage is sufficient. Refer to Raymarine Technical support.

22.4 Power up troubleshooting

Before troubleshooting problems with your power connection, ensure that you have followed the power connection guidance provided in the product's installation instructions and performed a power cycle/reboot of the device. The troubleshooting information below can be used if you are experiencing problems with powering up your product.

Blown fuse / tripped breaker

1. Check the fuse, located inline with the power cable. Ensure that it has the correct rating (refer to *Connections* chapter), as an under-rated fuse can affect the power supplied to the product. If the fuse has blown, replace with a new fuse.

2. Check the condition of relevant / additional fuses and breakers and connections; replace if necessary.

3. If fuse keeps blowing, check for cable damage, broken connector pins or incorrect wiring.

Poor / damaged / insecure power supply cable / connections

1. Check that the power cable connector is fully inserted into the unit and locked in position.

2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary.

3. With the unit turned on, try flexing the power cable near to the connector to see if this causes the unit to re-boot/lose power; replace if necessary.

4. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion; replace if necessary.

Incorrect power connection

The power supply may be wired incorrectly, ensure the installation instructions have been followed.

Power source insufficient

Check that your power supply (battery or distribution panel) is providing a minimum of 10.8 V to each component in the system.

22.5 Wi-Fi troubleshooting

Before troubleshooting problems with your Wi-Fi connection, ensure that you have followed the Wi-Fi location requirements guidance provided in the relevant installation instructions and performed a power cycle/reboot of the devices you are experiencing problems with. The troubleshooting information below can be used if you are experiencing problems connecting your router to an external Wi-Fi network (Dock WLAN) such as the Wi-Fi provided at a marina or if you are experiencing problems connecting mobile devices to the router's Wi-Fi access point Boat Wi-Fi).

Cannot find network

If you cannot find the Wi-Fi network, it could be for one of the following reasons:

- **Wi-Fi is disabled** — Enable the Wi-Fi connection on the device you are trying to connect to the network.

- **Router not broadcasting** — Ensure that the router you are trying to connect to is broadcasting its SSID. If you have no control over the router's settings or do not want the router to broadcast its SSID then you will need to connect to the router manually by entering it SSID and password.

- **Router is out of range** — Wi-Fi performance degrades over distance so devices farther away will receive less network bandwidth. Devices close to their maximum Wi-Fi range will experience slow connection speeds, signal dropouts or not being able to connect at all. Move the device closer to the router and try to connect.

- **Signal blocked or degraded** — Bulkheads, decks and other heavy structure can degrade and even block the Wi-Fi signal. Depending on the thickness and material used it may not always be possible to pass a Wi-Fi signal through certain structures. If possible, remove the obstruction, or try moving the device so that the obstruction is no longer present.

Cannot connect to the network

If the network is available but you cannot connect to it check the following:

- **Incorrect network credentials** — Ensure you are entering the password correctly. Network passwords are case sensitive.

- **Wrong network** — Ensure you are selecting the correct network.

- **Router is out of range** — Wi-Fi performance degrades over distance so devices farther away will receive less network bandwidth. Devices close to their maximum Wi-Fi range will experience slow connection speeds, signal

drop outs or not being able to connect at all. Move the device closer to the router and try to connect.

- **Signal blocked or degraded** — Bulkheads, decks and other heavy structure can degrade and even block the Wi-Fi signal. Depending on the thickness and material used it may not always be possible to pass a Wi-Fi signal through certain structures. If possible, remove the obstruction, or try moving the device so that the obstruction is no longer present.

- **Wi-Fi channel congestion** — In areas where there are a high number of Wi-Fi networks Wi-Fi channels can become congested making it difficult to connect or maintain a network connection. Try changing the Wi-Fi channel used by the router you are trying to connect to. You can use a free Wi-Fi analyzer app on a smart device to help you choose a less congested Wi-Fi channel.

- **Interference (2.4 GHz frequency)** — Interference can be caused by other devices that use the 2.4GHz frequency See list below of some common devices that use the 2.4GHz frequency:

  – Bluetooth devices

  – Microwave ovens

  – Fluorescent lighting

  – Cordless phones / baby monitors

  – Motion sensors

  Temporarily switch off devices in turn until you have identified the device causing the interference, then remove or reposition the offending device(s).

- **Interference (electrical and electronic devices)** — Interference caused by electrical and electronic devices or equipment and their associated cabling could generate an electromagnetic field which may interfere with the Wi-Fi signal. Temporarily switch off devices in turn until you have identified the device causing the interference, then remove or reposition the offending device(s).

Slow connection / frequent connection dropouts

If you experience slow connection speeds or a connection that regularly drops out, work through the 'Cannot find network' and 'Cannot connect to the network' troubleshooting above.

Slow internet troubleshooting

If your connection is good and you still experience speeds significantly slower than the realistic maximum speed, try the steps below.

For examples of typical data consumption for common tasks, refer to:

Note:

Please be aware that the achievable Wi-Fi speed **in optimum conditions** is typically about $^1/_3$ of the maximum theoretical speed. For example: the router's 2.4 GHz Wi-Fi access point has a maximum theoretical speed of 150 Mbps, so the maximum achievable speed in optimum conditions would be approximately 50 Mbps.

Factors such as distance, obstructions, interference, network congestion and network overheads will further reduce the achievable speed.

Wi-Fi connections

1. Check the condition of the *[BOAT Wi-Fi]* antennas located on the top of the router.

2. Ensure there is a clear line of sight between the Wi-Fi device and the router.

3. Change the router's Wi-Fi access point *[Preferred Wi-Fi channel]* — Use a freely available Wi-Fi analyzer app on your mobile device to find a less congested Wi-Fi channel and switch your router's Wi-Fi access point to this channel.

4. Change the router's Wi-Fi access point *[Channel width]* to *[40MHz]*.

5. Check for network congestion; other Wi-Fi or Ethernet-connected devices may be impacting throughput. If necessary, disconnect the other devices.

Ethernet connections

1. Check the condition of your Ethernet cabling and connections, and renew if necessary.

2. Check for network congestion; other Wi-Fi or Ethernet-connected devices may be impacting throughput. If necessary, disconnect the other devices.

22.6 GNSS position troubleshooting

Problems with the GNSS (GPS) and their possible causes and solutions are described here. Your position fix coordinates are displayed on the GNSS page of the web interface and in the Homescreen status area of a connected Raymarine MFD.

The router's GNSS fix details and settings can be accessed from the GNSS page of the router's web interface: *[ADVANCED SETTINGS > GNSS]*.

No position fix

- **Antenna connection problem** — Ensure that the supplied smart antenna is connected in accordance with the instructions provided. A GNSS position fix will not be possible if the antenna is not connected or the antenna cables are connected incorrectly.

- **Internal GNSS receiver disabled** — Unless your system uses a different source for GNSS position data (e.g.: an external GNSS receiver) then the router's GNSS receiver should be enabled. The router's internal GNSS can be enabled and disabled from the web interface GNSS page.

- **External GNSS receiver fault** — If you are using an external GNSS receiver for position data then ensure it is connected and working correctly. Refer to the troubleshooting guidance provided in your external GNSS receiver's documentation.

- **Antenna installation location** — GNSS antennas require a clear line of sight to the sky. Check that your antenna is installed in accordance with the antenna location requirements and that there are no obstructions obscuring the antenna's line of sight or no other devices causing interference.

- **Damaged or insecure cabling** — Check that connectors are fully inserted into the unit and locked in position. Check cabling and connectors for signs of damage or corrosion, replace if necessary.

- **Geographic location or prevailing conditions** — Some geographic location and prevailing weather conditions can prevent a position fix. Check to see if a position fix can be obtained in a different geographic location or under better weather conditions.

+---+
| ### Caution: Cable connections |
| |
| Ensure that the product is powered off before connecting or |
| disconnecting any cables. |
+---+

22.7 Web interface access troubleshooting

Before troubleshooting problems with accessing the router's web interface, ensure that you have followed the relevant 'RayNet connection' details for wired devices or the 'Accessing the web interface' instructions provided in the router's installation and operation instructions and performed a power cycle/reboot of the router. The troubleshooting information below can be used if you are still experiencing problems accessing the web interface.

Web interface not available

If you cannot access the router's web interface it could be for one of the following reasons:

No connection

Your device must have either a wired connection to one of the router's RayNet connections or be connected to the router's Wi-Fi access point to access the web interface.

Unsupported browser

The web interface can be accessed using the following supported browsers: Chrome, Firefox, Edge and Safari. **Internet explorer (IE) is NOT supported**. If you experience problems using generic browsers on a mobile device try using one of the listed supported browsers instead.

IP address

Your device's IP address must be in the same range as the router's IP address. By default most Wi-Fi and Ethernet connections are configured to obtain an IP address automatically. This will ensure your device's and router's IP address are in the same range. If your device is assigned a static IP address then it must be in the same range as the router's IP address. Your router's IP address can be found on an MFD's *[Network]* settings tab: *[Homescreen > Settings > Network]*. Then select **Raymarine Yachtsense Link** from the list of network devices, and select the *[Product Info]* option, alternatively you could use a network discovery tool to identify the router's IP address.

VPN blocking access

Some VPNs can block access to the router's web interface. If you use a VPN ensure it is disconnected before trying to access the web interface.

DNS not resolving

If for some reason your device cannot resolve the 'yachtsense.raymarine.com' address then try entering the routers IP address instead (e.g.: '198.18.0.239').

22.8 Password reset (forgotten password)

The default password that is required to access the router's settings can be changed. It is important that when changing the password you make a note of it somewhere in case you forgot the password.

If the default password is changed and you have forgotten the new password you can perform a networking reset. Performing a networking reset will revert the router's Wi-Fi and Ethernet settings and the admin password to its default settings The default password is printed on the credentials label located on the left side of the router.

22.9 Performing a network settings reset

If you have lost or can no longer remember the router's admin password you can perform a networking reset following the steps below.

Note:

Performing a networking reset will revert all customized Wi-Fi and Ethernet settings and the admin password to their factory default settings. All other settings will remain unchanged.
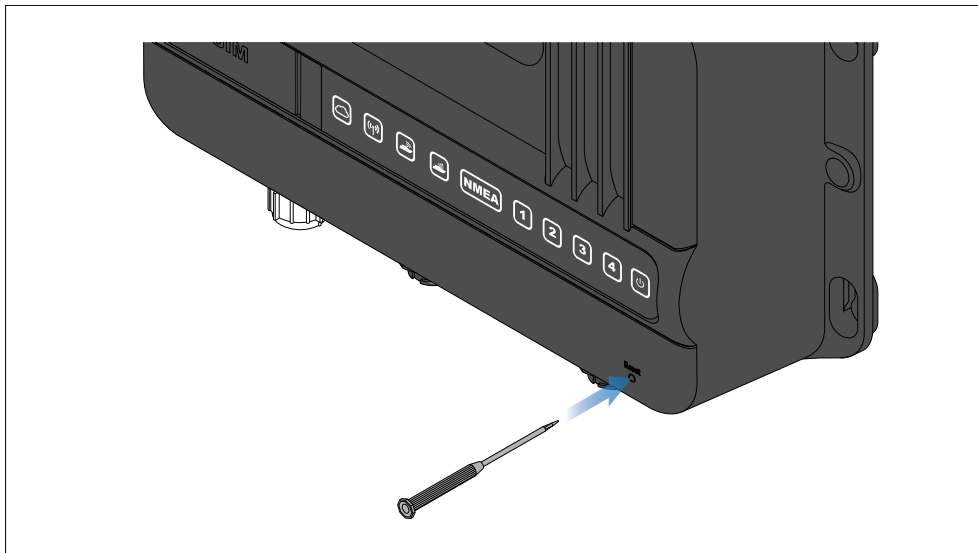
With the router powered on:

1. Insert a paper clip or a small screwdriver into the hard reset hole located on the bottom right of the router.
2. Press in and hold for approximately 2 seconds until the first 5 LEDs turn off and then blink green once simultaneously.
3. Remove the paperclip / screwdriver.

During the reset process the first 5 LEDs will turn solid amber. Once the Power LED turn solid green the networking reset is complete.

22.10 Performing a hard reset

If the router's web user interface becomes inaccessible then you can perform a hard reset of the router following the steps below.

Note:

- Before performing a hard reset try power cycling the router to see if that fixes the problem.
- Performing a factory reset will remove all customized settings and reset the router to its factory default settings.
- If the router is using a wired internet connection the WAN hardware should be powered off or disconnected before the router is reset.

With the router powered on:

1. Insert a paper clip or a small screwdriver into the hard reset hole located on the bottom right of the router.

2. Press in and hold for approximately 7 seconds until the first 5 LEDs turn off and then blink green once simultaneously.
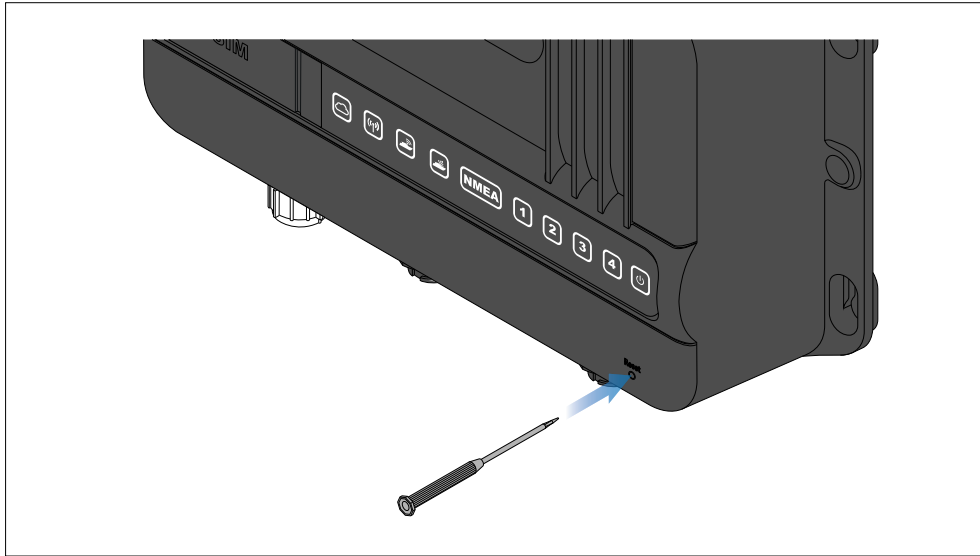
3. Remove the paperclip / screwdriver.

During the reset process the first 5 LEDs will turn solid amber. Once the Power LED turn solid green the router will be reset to its factory default settings and ready to use.

CHAPTER 23: MAINTENANCE

CHAPTER CONTENTS

23.1 Service and maintenance

This product contains no user serviceable components. Please refer all maintenance and repair to authorized Raymarine dealers. Unauthorized repair may affect your warranty.

> ⚠️ **Warning: High voltage**
>
> This product contains high voltage. Adjustments require specialized service procedures and tools only available to qualified service technicians. There are no user serviceable parts or adjustments. The operator should never remove the cover or attempt to service the product.

Routine equipment checks

It is recommended that you perform the following routine checks, on a regular basis, to ensure the correct and reliable operation of your equipment:

- Examine all cables for signs of damage or wear and tear.

- Check that all cables are securely connected.

23.2 Product cleaning

Best cleaning practices.

When cleaning products:

- Switch off power supply.

- Use a clean damp cloth to wipe clean.

- Do NOT use: abrasive, acidic, ammonia, solvent or other chemical based cleaning products.

- Do NOT use a jet wash.

23.3 Product returns

If you need to return your YachtSense Link router for service or repair, you must first remove it from your boat system, using the Raymarine app. This process is also known as "offboarding".

For instructions, refer to:

CHAPTER 24: TECHNICAL SUPPORT

CHAPTER CONTENTS

24.1 Raymarine technical support and servicing

Raymarine provides a comprehensive product support service, as well as warranty, service, and repairs. You can access these services through the Raymarine website, telephone, and e-mail.

Product information

If you need to request service or support, please have the following information to hand:

- Product name.
- Product identity.
- Serial number.
- Software application version.
- System diagrams.

You can obtain this product information using diagnostic pages of the connected display.

Servicing and warranty

Raymarine offers dedicated service departments for warranty, service, and repairs.

Don't forget to visit the Raymarine website to register your product for extended warranty benefits: https://www.raymarine.com/en-us/support/product-registration

United Kingdom (UK), EMEA, and Asia Pacific:

- E-Mail: emea.service@raymarine.com
- Tel: +44 (0)1329 246 932

United States (US):

- E-Mail: rm-usrepair@flir.com
- Tel: +1 (603) 324 7900

Web support

Please visit the "Support" area of the Raymarine website for:

- **Manuals and Documents** — http://www.raymarine.com/manuals
- **Technical support forum** — https://raymarine.custhelp.com/app/home
- **Software updates** — http://www.raymarine.com/software

Worldwide support

United Kingdom (UK), EMEA, and Asia Pacific:

- Help desk: https://raymarine.custhelp.com/app/home
- Tel: +44 (0)1329 246 777

United States (US):

- Help desk: https://raymarine.custhelp.com/app/home
- Tel: +1 (603) 324 7900 (Toll-free: +800 539 5539)

Australia and New Zealand (Raymarine subsidiary):

- E-Mail: aus.support@raymarine.com
- Tel: +61 2 8977 0300

France (Raymarine subsidiary):

- E-Mail: support.fr@raymarine.com
- Tel: +33 (0)1 46 49 72 30

Germany (Raymarine subsidiary):

- E-Mail: support.de@raymarine.com
- Tel: +49 40 237 808 0

Italy (Raymarine subsidiary):

- E-Mail: support.it@raymarine.com
- Tel: +39 02 9945 1001

Spain (Authorized Raymarine distributor):

- E-Mail: sat@azimut.es
- Tel: +34 96 2965 102

Netherlands (Raymarine subsidiary):

- E-Mail: support.nl@raymarine.com
- Tel: +31 (0)26 3614 905

Sweden (Raymarine subsidiary):

- E-Mail: support.se@raymarine.com
- Tel: +46 (0)317 633 670

Finland (Raymarine subsidiary):

- E-Mail: support.fi@raymarine.com
- Tel: +358 (0)207 619 937

Norway (Raymarine subsidiary):

- E-Mail: support.no@raymarine.com

- Tel: +47 692 64 600

Denmark (Raymarine subsidiary):

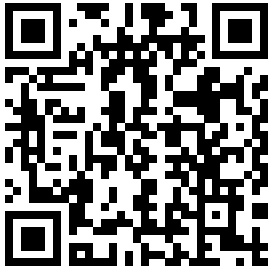- E-Mail: support.dk@raymarine.com

- Tel: +45 437 164 64

Russia (Authorized Raymarine distributor):

- E-Mail: info@mikstmarine.ru

- Tel: +7 495 788 0508

24.2 Frequently Asked Questions (FAQs)

A range of FAQs is available on the Raymarine website to assist you in using and troubleshooting your product.

To access the FAQs, visit the Raymarine website at the following link:

https://raymarine.custhelp.com/app/answers/list/kw/yachtsense link/search/1

24.3 Learning resources

Raymarine has produced a range of learning resources to help you get the most out of your products.

Video tutorials

Raymarine official channel on YouTube

- http://www.youtube.com/user/RaymarineInc

Training courses

Raymarine regularly runs a range of in-depth training courses to help you make the most of your products. Visit the Training section of the Raymarine website for more information:

- http://www.raymarine.co.uk/view/?id=2372

Technical support forum

You can use the Technical support forum to ask a technical question about a Raymarine product or to find out how other customers are using their Raymarine equipment. The resource is regularly updated with contributions from Raymarine customers and staff:

- https://raymarine.custhelp.com/app/home

24.4 Product returns

If you need to return your YachtSense Link router for service or repair, you must first remove it from your boat system, using the Raymarine app. This process is also known as "offboarding".

For instructions, refer to: **p.81 — Removing a router**

CHAPTER 25: TECHNICAL SPECIFICATION

CHAPTER CONTENTS

25.1 Physical specification

Specification	
Dimensions:	• Width: 242.00 mm (9.53 in)
	• Height: 162.20 mm (6.39 in)
	• Depth: 63.00 mm (2.48 in)
Weight:	1.03 Kg (2.26 lb)

25.2 Environmental specification

Specification	
Operating temperature range:	-25°C (-13°F) to + 55°C (131°F)
Storage temperature range:	-30°C (−22°F) to + 70°C (158°F)
Humidity:	up to 93% @ 40°C (104°F)
Water ingress protection:	IPx6 and IPx7

25.3 Power specification

Specification	
Nominal supply voltage:	12 V / 24 V dc
Operating voltage range:	8 V dc to 32 V dc
Inline fuse rating:	8 A
Thermal breaker rating:	8 A
Maximum current @ 12 V dc	• External Wi-Fi connected: 1.05 A
	• Cellular connected: 0.94 A
Maximum current @ 24 V dc	• External Wi-Fi connected: 0.53 A
	• Cellular connected: 0.5 A
Low power mode current @ 12 V dc	0.03 A
Low power mode current @ 24 V dc	0.02 A

25.4 Wired connections specification

Specification	
Power connection:	1 x standard Raymarine 3-pin power connector (Positive, Negative and Ground).
NMEA 2000 connection:	DeviceNet connector (Load Equivalency Number = 1).
Ethernet connections:	4 x RayNet connectors (10/100/1,000 Mbits/s).
Input connection:	1 x input connector (4 x 1-wire input (+) channels and common ground wire using supplied input cable).
Output connection:	1 x output connector (4 x 2-wire (+) & (−) output channels).
Chassis ground connection:	1 x dedicated chassis ground point.
BOAT Wi-Fi antenna connections:	2 x RP SMA female connectors (connects to 2 x supplied dipole antennas).
DOCK WLAN antenna connections:	2 x RP SMA female connectors (connects to supplied 5-in-1 antenna).
Cellular antenna connection:	1x SMA female connector (connects to supplied 5-in-1 antenna).
Diversity antenna connection:	1 x SMA female connector (connects to supplied 5-in-1 antenna).
GNSS antenna connection:	1x SMA female connector (connects to supplied 5-in-1 antenna).

25.5 Wireless networks specification

Specification	
BOAT Wi-Fi:	Wi-Fi Access Point mode frequencies: • 2.4 GHz (2412 MHz to 2472 MHz / 2422 MHz to 2462 MHz): 13.28 dBm
DOCK WLAN:	Wi-Fi Station Mode frequencies: • 2.4 GHz (2412 MHz to 2472 MHz / 2422 MHz to 2462 MHz): 14.79 dBm • 5 GHz (5150 MHz to 5350 MHz / 5470 MHz to 5725 MHz): 14.94 dBm • 5.8 GHz (5725 MHz to 5875 MHz): 13.74 dBm
Cellular / Diversity:	3G / 4G frequencies: • LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28 • LTE-TDD: B38/B39/B40/B41 • WCDMA: B1/B2/B4/B5/B6/B8/B19 • GSM: B2/B3/B5/B8
LTE category:	4
Maximum theoretical download speed:	[1]Up to 150 Mbps
Maximum achievable download speed:	[2]Up to 50 Mbps
Maximum theoretical upload speed:	[1]Up to 50 Mbps
Maximum achievable upload speed:	[2]Up to 50 Mbps

Note:

Please be aware that the achievable Wi-Fi speed **in optimum conditions** is typically about $\frac{1}{3}$ of the maximum theoretical speed. For example: the router's 2.4 GHz Wi-Fi access point has a maximum theoretical speed of 150 Mbps, so the maximum achievable speed in optimum conditions would be approximately 50 Mbps.

Factors such as distance, obstructions, interference, network congestion and network overheads will further reduce the achievable speed.

Note:

The router uses a Category 4 LTE Modem. Download and upload speeds will be highly variable and depend on a variety of factors, including: proximity to cellular towers, environmental or physical interference of the signal, cellular network provider allocations, and cellular data plans.

25.6 Compliance / Approvals

This product is complaint or approved to the following standards or by the listed entities.

• Radio Equipment Directive 2014/53/EU
• EN 60945:2002 (Europe, Australia New Zealand)
• FCC Part 15C and Part 15E
• ISED ICES-003
• NMEA 2000 certified
• PTCRB: 4G, 3G approved
• AT&T certified
• Verizon certified

25.7 Product markings

The product includes the following approval / compliance markings.

• CE
• Australian Tick

- WEEE Directive

CHAPTER 26: SPARES AND ACCESSORIES

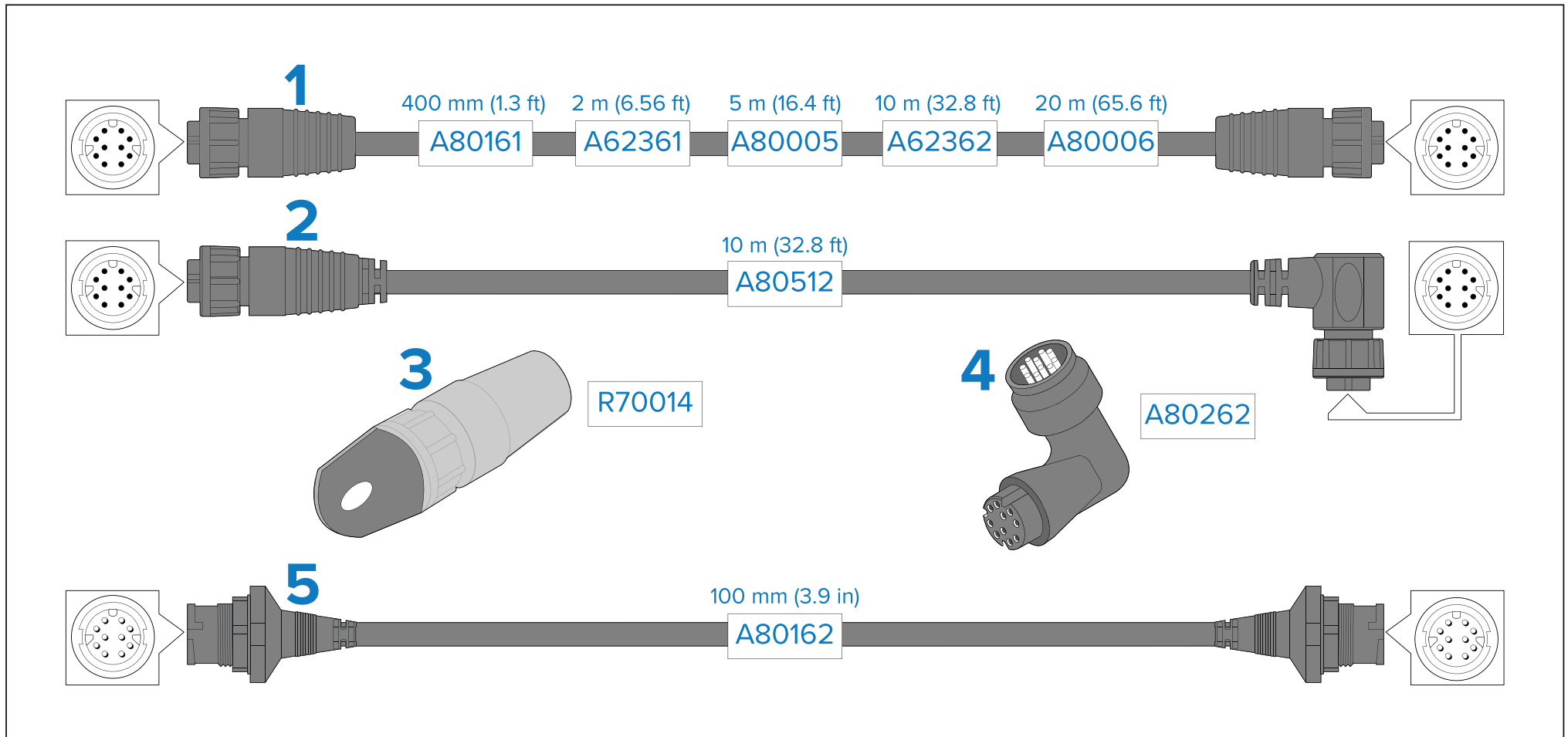## CHAPTER CONTENTS

26.1 Spares and Accessories

Accessories

- **R70800** — YachtSense Link I/O cable kit.
- **A80701** — 5-in-1 antenna extension cable 5 m (16.4 ft).
- **A80718** — 5-in-1 antenna thread extender kit.
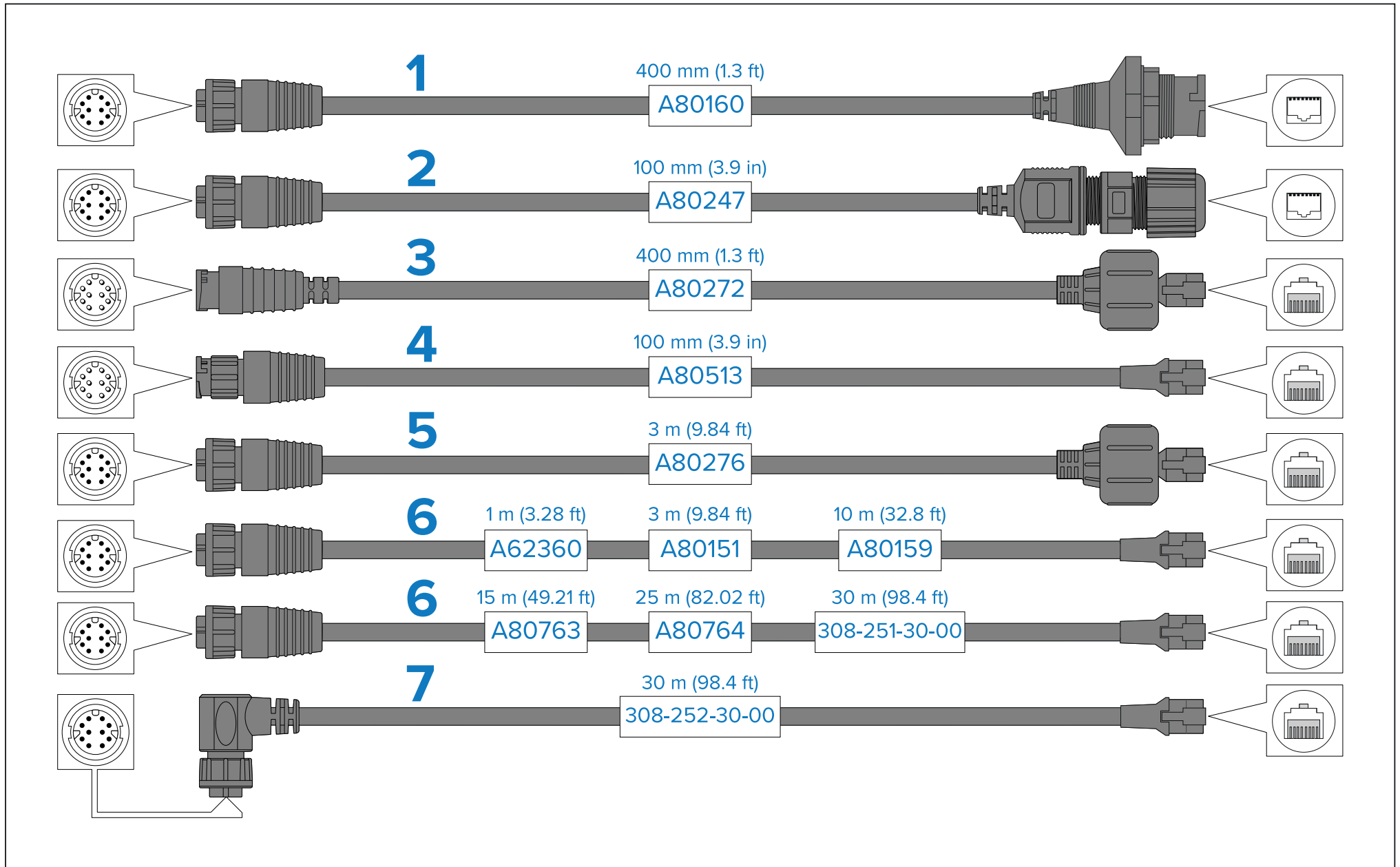
Spares

- **R70835** — YachtSense Link router only.
- **R70836** — Replacement Wi-Fi antenna pair.
- **R70799** — YachtSense Link power cable – 1.5 m (4.9 ft) with 8 A fitted fuse.
- **R70837** — replacement 5-in-1 antenna.
- **R70870** — 5-in-1 antenna replacement gasket and nut.
- **A62360** — RayNet to RJ45 cable – 1 m (3.3 ft).

26.2 RayNet to RayNet cables and connectors

1

400 mm (1.3 ft)	2 m (6.56 ft)	5 m (16.4 ft)	10 m (32.8 ft)	20 m (65.6 ft)
A80161	A62361	A80005	A62362	A80006

2

10 m (32.8 ft)
A80512

3
R70014

4
A80262

5

100 mm (3.9 in)
A80162

1. Standard RayNet connection cable with a RayNet (female) socket on both ends.

2. Right-angle RayNet connection cable with a straight RayNet (female) socket on one end, and a right-angle RayNet (female) socket on the other end. Suitable for connecting at 90° (right angle) to a device, for installations where space is limited.

3. RayNet cable puller (5 pack).

4. RayNet to RayNet right-angle coupler / adapter. Suitable for connecting RayNet cables at 90° (right angle) to devices, for installations where space is limited.

5. Adapter cable with a RayNet (male) plug on both ends. Suitable for joining (female) RayNet cables together for longer cable runs.

26.3 RayNet to RJ45, and RJ45 (SeaTalk HS) adapter cables

1 — 400 mm (1.3 ft) — A80160

2 — 100 mm (3.9 in) — A80247

3 — 400 mm (1.3 ft) — A80272

4 — 100 mm (3.9 in) — A80513

5 — 3 m (9.84 ft) — A80276

6
- 1 m (3.28 ft) — A62360
- 3 m (9.84 ft) — A80151
- 10 m (32.8 ft) — A80159

6
- 15 m (49.21 ft) — A80763
- 25 m (82.02 ft) — A80764
- 30 m (98.4 ft) — 308-251-30-00

7 — 30 m (98.4 ft) — 308-252-30-00

1. Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 (SeaTalk HS) socket on the other end, accepting the following cables with an RJ45 (SeaTalk HS) waterproof locking (male) plug:

   - A62245 (1.5 m).

   - A62246 (15 m).

2. Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 (SeaTalk HS) socket on the other end, along with a locking gland for a watertight fit.

3. Adapter cable with a RayNet (male) plug on one end, and an RJ45 (SeaTalk HS) waterproof (male) plug on the other end.

4. Adapter cable with a RayNet (male) plug on one end, and an RJ45 (male) plug on the other end.

5. Adapter cable with a RayNet (female) socket on one end, and an RJ45 (SeaTalk HS) waterproof (male) plug on the other end.

6. Adapter cable with a RayNet (female) socket on one end, and an RJ45 (male) plug on the other end.

7. Adapter cable with a right-angled RayNet (female) socket on one end, and an RJ45 (male) plug on the other end.

26.4 SeaTalk NG cables and accessories

SeaTalk NG cables and accessories for use with compatible products.

SeaTalk NG kits

SeaTalk NG kits enable you to create a simple SeaTalk NG backbone.

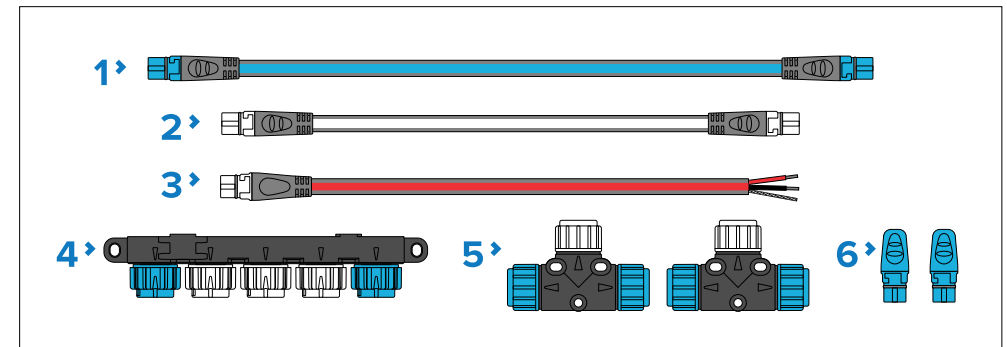**Starter kit (part number: T70134)** consists of:
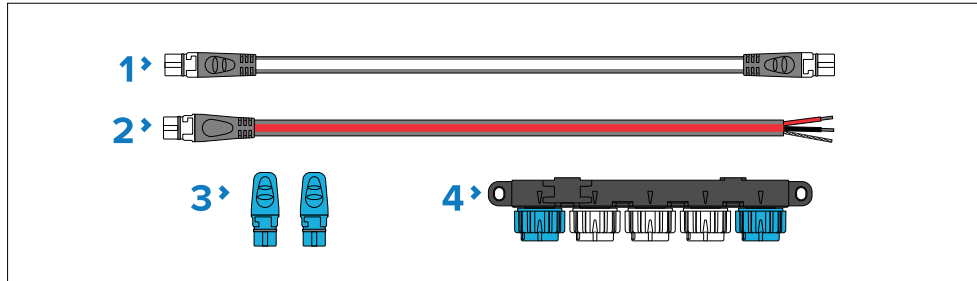
1. 1 x Spur cable 3 m (9.8 ft) (part number: **A06040**). Used to connect device to the SeaTalk NG backbone.

2. 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.

3. 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

4. 1 x 5-Way connector (part number: **A06064**). Each connector block allows connection of up to 3 SeaTalk NG devices. Multiple connector blocks can be 'daisy chained' together.

**Backbone kit (part number: A25062)** consists of:
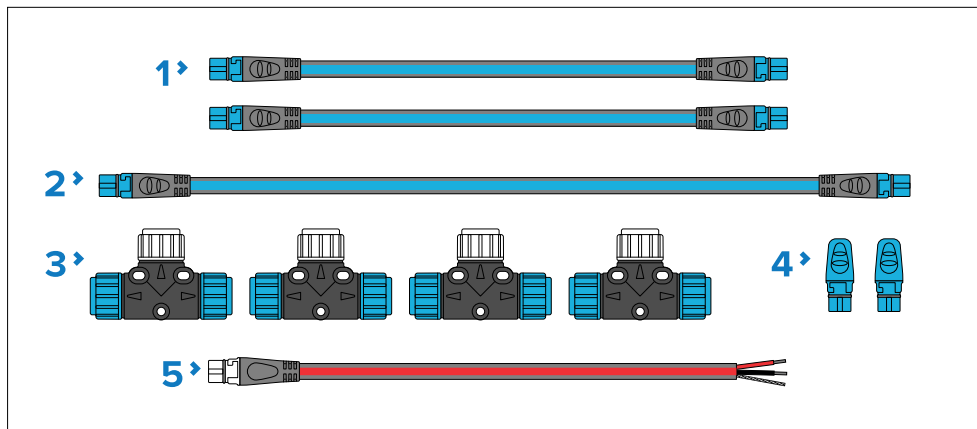
1. 2 x Backbone cables 5 m (16.4 ft) (part number: **A06036**). Used to create and extend the SeaTalk NG backbone.

2. 1 x Backbone cable 20 m (65.6 ft) (part number: **A06037**). Used to create and extend the SeaTalk NG backbone.

3. 4 x T-piece (part number: **A06028**). Each T-piece allows connection of one SeaTalk NG device. Multiple T-pieces can be 'daisy chained' together.

4. 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

5. 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.

Evolution-Series autopilot cable kit (part number: R70160) consists of:
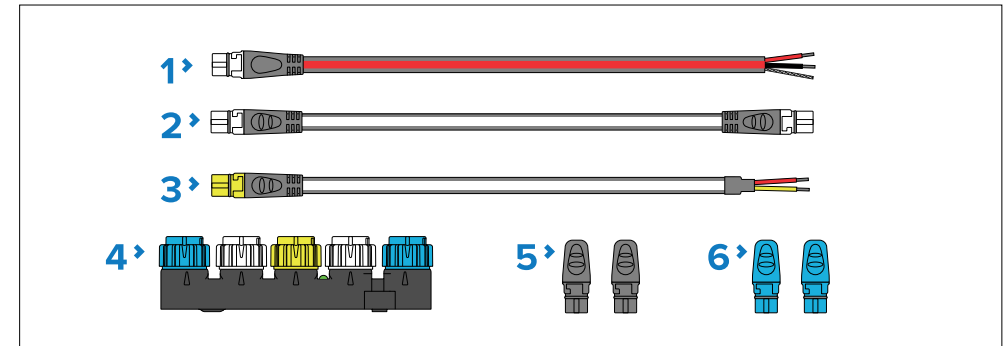

1. 1 x Backbone cable 5 m (16.4 ft) (part number: **A06036**). Used to create and extend the SeaTalk NG backbone.

2. 1 x Spur cable 1 m (3.3 ft) (part number: **A06040**). Used to connect device to the SeaTalk NG backbone.

3. 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.

4. 1 x 5-Way connector (part number: **A06064**). Each connector block allows connection of up to 3 SeaTalk NG devices. Multiple connector blocks can be 'daisy chained' together.

5. 2 x T-pieces (part number: **A06028**). Each T-piece allows connection of one SeaTalk NG device. Multiple T-pieces can be 'daisy chained' together.

6. 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

SeaTalk 1 to SeaTalk NG converter kit (part number: E22158) consists of:
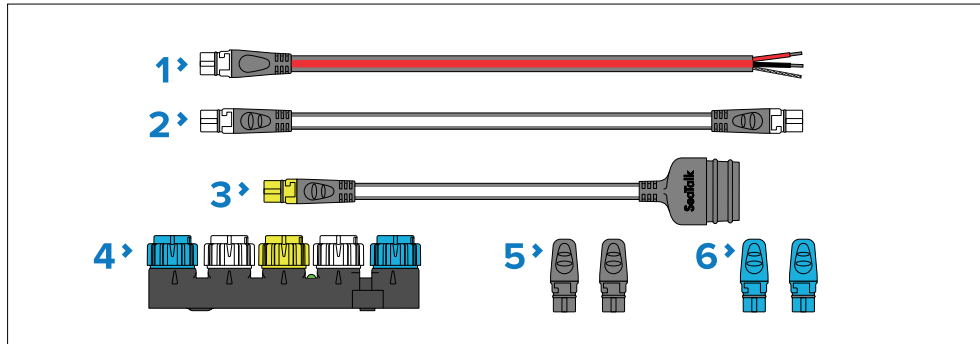
1. 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.

2. 1 x Spur cable 1 m (3.3 ft) (part number: **A06039**). Used to connect a device to the SeaTalk NG backbone.

3. 1 x SeaTalk 1 (3 pin) to SeaTalk NG adapter cable 0.4 m (1.3 ft) (part number: **A22164**). Used to connect SeaTalk 1 devices to the SeaTalk NG backbone via the SeaTalk 1 to SeaTalk NG converter.

4. 1 x SeaTalk 1 to SeaTalk NG converter (part number: **E22158**). Each converter allows connection of one SeaTalk 1 device and up to 2 SeaTalk NG devices.

5. 2 x Spur blanking plugs (part number: **A06032**). Used to cover unused spur connections in 5-way blocks, T-piece connectors and SeaTalk 1 to SeaTalk NG converter.

6. 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

NMEA 0183 VHF 2-wire to SeaTalk NG converter kit (part number: E70196) consists of:

1. 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.

2. 1 x Spur cable 1 m (3.3 ft) (part number: **A06039**). Used to connect a device to the SeaTalk NG backbone.

3. 1 x NMEA 0183 VHF stripped-end (2-wire) to SeaTalk NG adapter cable 1 m (3.3 ft) (part number: **A06071**). Used to connect an NMEA 0183 VHF radio to the SeaTalk NG backbone via the NMEA 0183 to SeaTalk NG converter.

4. 1 x SeaTalk 1 to SeaTalk NG converter (part number: **E22158**). Each converter allows connection of one SeaTalk 1 device and up to 2 SeaTalk NG devices.

5. 2 x Spur blanking plugs (part number: **A06032**). Used to cover unused spur connections in 5-way blocks, T-piece connectors, and the SeaTalk 1 to SeaTalk NG converter.

6. 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

SeaTalk NG spur cables

SeaTalk NG spur cables are required to connect devices to the SeaTalk NG backbone.
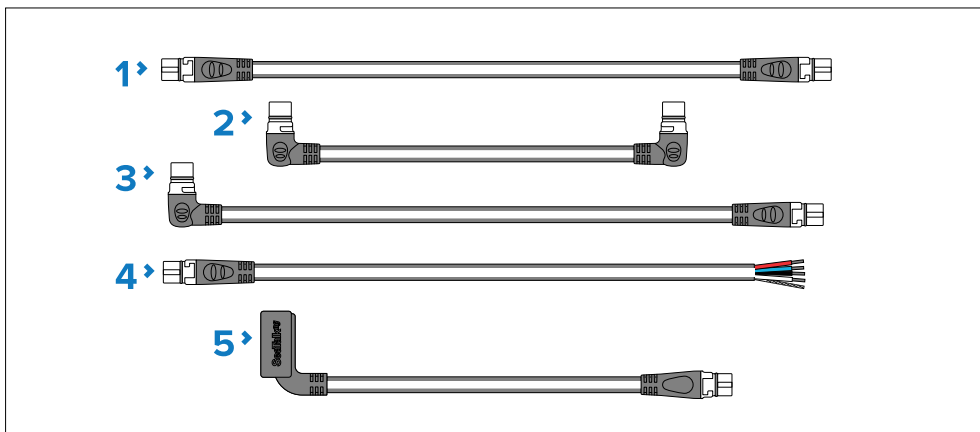
1. SeaTalk NG spur cables:

   - Spur cable 0.4 m (1.3 ft) (part number: **A06038**).

   - Spur cable 1 m (3.3 ft) (part number: **A06039**).

   - Spur cable 3 m (9.8 ft) (part number: **A06040**).

   - Spur cable 5 m (16.4 ft) (part number: **A06041**).

2. Elbow (right-angled) to elbow (right-angled) spur cable 0.4 m (1.3 ft) (part number: **A06042**). Used in confined spaces where a straight spur cable will not fit.

3. Elbow (right-angled) to straight spur cable 1 m (3.3 ft) (part number: **A06081**). Used in confined spaces where a straight spur cable will not fit.

4. SeaTalk NG to stripped-end spur cables (connects compatible products that do not have a SeaTalk NG connector, such as transducer pods):

   - SeaTalk NG to stripped-end spur cable 1 m (3.3 ft) (part number: **A06043**)

   - SeaTalk NG to stripped-end spur cable 3 m (9.8 ft) (part number: **A06044**)

5. ACU-Series / SPX-Series autopilot to SeaTalk NG spur cable 0.3 m (1.0 ft) (part number **R12112**). Connects the course computer to the SeaTalk NG backbone. This connection can also be used to provide 12 V dc power to the SeaTalk NG backbone.
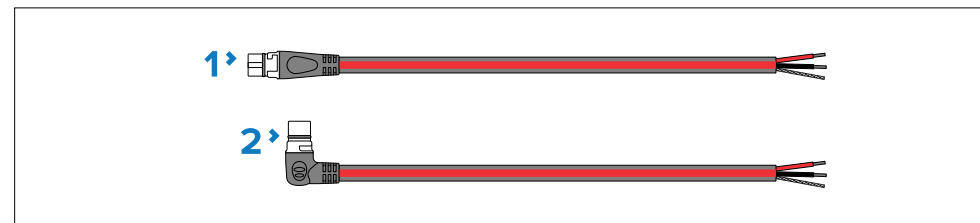
SeaTalk NG backbone cables

SeaTalk NG backbone cables are used to create or extend a SeaTalk NG backbone.
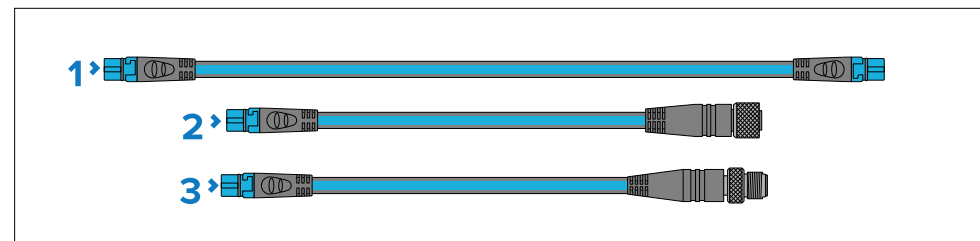
1. Backbone cables:

   - Backbone cable 0.4 m (1.3 ft) (part number: **A06033**).

   - Backbone cable 1 m (3.3 ft) (part number: **A06034**).

   - Backbone cable 3 m (9.8 ft) (part number: **A06035**).

   - Backbone cable 5 m (16.4 ft) (part number: **A06036**).

   - Backbone cable 9 m (29.5 ft) (part number: **A06068**).

   - Backbone cable 20 m (65.6 ft) (part number: **A06037**).

2. SeaTalk NG to DeviceNet (female) Backbone cable 0.4 m (1.3 ft) (part number: **A80675**)

3. SeaTalk NG to DeviceNet (male) Backbone cable 0.4 m (1.3 ft) (part number: **A80674**)

SeaTalk NG power cables

SeaTalk NG power cables are used to provide the SeaTalk NG backbone with a single 12 V dc power source. The power connection must include a 5 amp inline fuse (not supplied).

1. Power cable (straight) 2 m (6.6 ft) (part number: **A06049**).

2. Elbow (right-angled) power cable 2 m (6.6 ft) (part number: **A06070**).
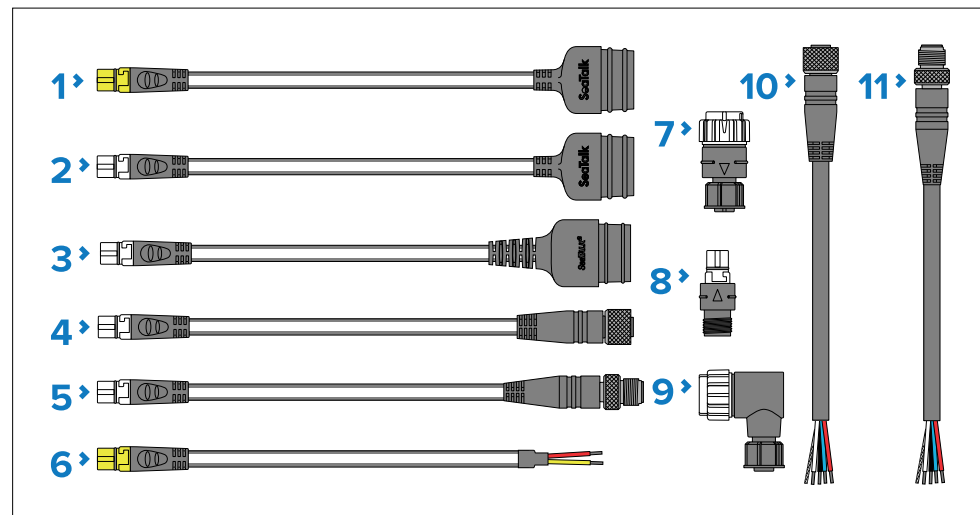
SeaTalk NG connectors

SeaTalk NG connectors are used to connect SeaTalk NG devices to the SeaTalk NG backbone and to create and extend the backbone.
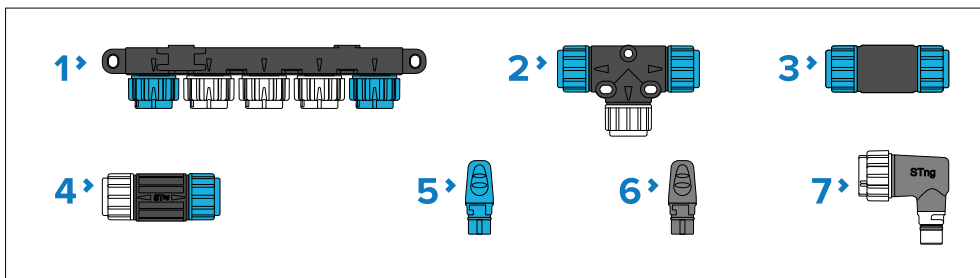
1. 5-Way connector (part number: **A06064**). Each connector block allows connection of up to 3 SeaTalk NG devices. Multiple connector blocks can be 'daisy chained' together.

2. T-piece (part number: **A06028**). Each T-piece allows connection of one SeaTalk NG device. Multiple T-pieces can be 'daisy chained' together.

3. Backbone extender (part number: **A06030**). Used to connect 2 backbone cables together.

4. Inline terminator (part number: **A80001**). Used to connect a spur cable and SeaTalk NG device at the end of a backbone instead of a backbone terminator.

5. Backbone terminator (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

6. Spur blanking plug (part number: **A06032**). Used to cover unused spur connections in 5-Way blocks, T-piece connectors, or the SeaTalk 1 to SeaTalk NG converter.

7. Elbow (right-angled) spur connector (part number: **A06077**). Used in confined spaces where a straight spur cable will not fit.

SeaTalk NG adaptors and adaptor cables

SeaTalk NG adaptor cables are used to connect devices designed for different CAN Bus backbones (e.g.: SeaTalk 1 or DeviceNet) to the SeaTalk NG backbone.

1. SeaTalk 1 (3 pin) to SeaTalk NG converter cable 1 m (3.3 ft) (part number: **A22164 / A06073**). Can be used to connect a SeaTalk 1 device to a SeaTalk NG backbone via the SeaTalk 1 to SeaTalk NG converter, or to connect a SeaTalk NG product directly to a SeaTalk 1 network.

2. SeaTalk 1 (3 pin) to SeaTalk NG adaptor cable 0.4 m (1.3 ft) (part number: **A06047**). Can be used to connect a SeaTalk 1 device to a SeaTalk NG backbone via the SeaTalk 1 to SeaTalk NG converter, or to connect a SeaTalk NG product directly to a SeaTalk 1 network.

3. SeaTalk 2 (5 pin) to SeaTalk NG adaptor cable 0.4 m (1.3 ft) (part number: **A06048**). Used to connect SeaTalk 2 devices or networks to a SeaTalk NG backbone.

4. SeaTalk NG to DeviceNet (female) adaptor cables connect NMEA 2000 devices that use a DeviceNet connector to the SeaTalk NG backbone, or connects SeaTalk NG devices to an NMEA 2000 network. The following cables are available:

   • SeaTalk NG to DeviceNet (female) adaptor cable 0.4 m (1.3 ft) (part number: **A06045**).

   • SeaTalk NG to DeviceNet (female) adaptor cable 1 m (3.3 ft) (part number: **A06075**).

5. SeaTalk NG to DeviceNet (male) adaptor cables. Connect NMEA 2000 devices that use a DeviceNet connector to the SeaTalk NG backbone, or connect SeaTalk NG devices to an NMEA 2000 network. The following cables are available:

- SeaTalk NG to DeviceNet (male) adaptor cable 0.1 m (0.33 ft) (part number: **A06078**).

- SeaTalk NG to DeviceNet (male) adaptor cable 0.4 m (1.3 ft) (part number: **A06074**).

- SeaTalk NG to DeviceNet (male) adaptor cable 1 m (3.3 ft) (part number: **A06076**).

- SeaTalk NG to DeviceNet (male) adaptor cable 1.5 m (4.92 ft) (part number: **A06046**).

6. NMEA 0183 stripped-end (2-wire) to SeaTalk NG adapter cable 1 m (3.3 ft) (part number: **A06071**). Used to connect an NMEA 0183 VHF radio to the SeaTalk NG backbone via the NMEA 0183 to SeaTalk NG converter.

7. SeaTalk NG (male) to DeviceNet (female) adaptor (**A06082***).

8. SeaTalk NG (female) to DeviceNet (male) adaptor (**A06083***).

9. SeaTalk NG (male) to DeviceNet (female) elbow (right-angled) adaptor (**A06084***).

10. DeviceNet (female) to stripped-end adaptor cable (0.4 m (1.3 ft)) (part number: **E05026**).

11. DeviceNet (male) to stripped-end adaptor cable (0.4 m (1.3 ft)) (part number: **E05027**).

Important:

* Do NOT connect the A06082, A06083, or A06084 adaptors directly to a backbone. Only connect as part of a **spur** connection between backbone and device.

Appendix A NMEA 2000 PGN support

Administration PGNs

- **59392** — ISO Acknowledge (Receive / Transmit)
- **59904** — ISO Request (Receive / Transmit)
- **60160** — ISO Transport protocol, data transfer (Receive)
- **60416** — ISO Transport protocol, connection management — BAM group function (Receive)
- **60928** — Address claim (Receive / Transmit)
- **65240** — ISO Commanded address (Receive)
- **126208** — Request group message (Receive)
- **126208** — Command group message (Receive)
- **126208** — Acknowledge group message (Transmit)
- **126464** — PGN transmit and receive list (Transmit)
- **126993** — Heartbeat (Transmit)
- **126996** — Product information (Transmit)
- **126998** — Configuration information (Transmit)

Data PGNs

- **126983** — Alert (Transmit)
- **126985** — Alert configuration (Transmit)
- **126986** — Alert configuration (Transmit)
- **126992** — System time (Transmit)
- **127250** — Vessel heading (Receive)
- **127251** — Rate of Turn (Receive)
- **127257** — Attitude (Receive)
- **127488** — Engine parameters, rapid update (Receive)
- **127489** — Engine parameters, dynamic (Receive)
- **127493** — Transmission parameters, dynamic (Receive)
- **127496** — Trip fuel consumption, vessel (Receive)
- **127497** — Trip fuel consumption, engine (Receive)

- **127498** — Engine parameters, static (Receive)
- **127501** — Binary status report (Receive)
- **127502** — Switch bank control (Receive/Transmit)
- **127503** — AC input status DEPRECATED (Receive)
- **127504** — AC output status DEPRECATED (Receive)
- **127505** — Fluid level (Receive)
- **127506** — DC detailed status (Receive)
- **127507** — Charger status DEPRECATED (Receive)
- **127508** — Battery status (Receive)
- **127509** — Inverter status DEPRECATED (Receive)
- **128259** — Speed (Receive)
- **128267** — Water depth (Receive)
- **129025** — Position, rapid update (Transmit)
- **129026** — COG & SOG, rapid update (Receive/Transmit)
- **129029** — GNSS position data (Receive/Transmit)
- **129033** — Local time offset (Receive/Transmit)
- **129044** — Datum (Transmit)
- **129539** — GNSS DOPs (Transmit)
- **129540** — GNSS Sats in view (Transmit)
- **129542** — GNSS Pseudorange noise statistics (Transmit)
- **129547** — GNSS Pseudorange error statistics (Transmit)
- **130306** — Wind data (Receive)
- **130310** — Environmental parameters DEPRECATED (Receive)
- **130311** — Environmental parameters DEPRECATED (Receive)
- **130312** — Temperature DEPRECATED (Receive)
- **130313** — Humidity (Receive)
- **130314** — Actual pressure (Receive)
- **130576** — Trim ab status (Receive)

Appendix B Typical throughput consumption

The following figures show the typical data consumption for common tasks.

Task / Traffic type	Typical consumption
Email/Web browsing	500 Kbps to 1 Mbps
SD video streaming	1 Mbps to 1.5 Mbps
HD video streaming	2 Mbps to 5 Mbps
4K video streaming	8 Mbps to 20 Mbps
Voice over IP (VoIP)	16 Kbps to 320 Kbps
Video calling	600 Kbps to 4 Mbps

Note:

The consumption figures are approximate and will vary depending specific software applications, number of users, and other considerations.

Appendix C Ethernet (IPv4) networking of Raymarine devices with third-party products

Raymarine uses a custom Ethernet (IPv4) networking configuration. Use the following information to help you understand how Raymarine's Ethernet (IPv4) implementation interacts with third-party Ethernet (IPv4) devices on your vessel, such as routers, switches, Access Points (APs) etc.

Important:

- Third-party networking products such as routers, switches, and Access Points (APs) *may* work when connected to Raymarine networks, when configured correctly. However, correct operation is not guaranteed. It's important to refer to the instructions provided by the relevant third-party device manufacturer, to ensure that your intended use of a third-party device is consistent with the device's design intent.

- Raymarine does not warrant that Raymarine products are compatible with products manufactured by any person or entity other than Raymarine.

- When using third-party products in your Raymarine electronics network, you should be aware of, and understand, the concepts and limitations described in the following Disclaimer: **p.11 —** Disclaimer

Overview

- Ethernet (IPv4) networking is a method for interconnecting multiple electronic devices, allowing many devices to function in a network and share data using only a single RJ45 or RayNet connection for each device.

- In order to function correctly, every Ethernet (IPv4) device (whether Raymarine or third-party) must have a unique IP address allocated to it, and it must not conflict with that of any other device.

- IPv4 addresses can be centrally-allocated to devices either **automatically**, using a method known as *DHCP* (Dynamic Host Configuration Protocol), or **manually** (i.e. allocated a static IP address). The most common method for allocating IPv4 addresses on vessel electronics networks is *DHCP*. In this configuration, the *server* device is known as a *DHCP server*.

Client / Server device	Example(s)
Raymarine IPv4 DHCP **client**	• Radar scanner (e.g. *Quantum*)
	• Sonar module (e.g. *CP470*)
	• IP camera (e.g. *CAM300*)
Raymarine IPv4 DHCP **server** and self-addressing device	• Chartplotter (MFD), running LightHouse 3 or LightHouse 4 (e.g. Axiom-Series)
	• Marine Router (e.g. YachtSense Link-Series YachtSense Link)
Third-party IPv4 DHCP **client**	IP camera
Third-party IPv4 DHCP **server**	• Router
	• Switch
	• Access Point (AP)

Note:

The DHCP server maintains a pool of IP addresses and "leases" an address to any DHCP-enabled client, when the client device first powers up and announces its presence on the network. Because the IP addresses are dynamic (leased) rather than static (permanently assigned), addresses no longer in use are automatically returned to the DHCP server's pool, for subsequent reallocation.

It's also possible to have multiple DHCP servers issuing addresses on an IPv4 network, but to avoid addressing conflicts, all DHCP servers must be carefully configured to only allocate IP addresses in distinct address ranges. The *subnet mask* must also be carefully configured, to ensure that devices can correctly communicate with one another.

Implementation

• Raymarine Ethernet (IPv4) devices expect to use a private **Raymarine IPv4 network**, which is designed to be internal to the vessel only. Raymarine has carefully chosen a specific IP address range (**198.18.0.0/21**) to ensure that it does not interfere with any external IP address ranges, or other legacy and real-world addressing constraints (including but not limited to marina Wi-Fi networks).

Note: Raymarine's IP address range is for **local traffic** within the **vessel's private Raymarine network only**, and does NOT traverse across Raymarine products to external networks, or to the Internet.

• In a Raymarine Ethernet (IPv4) network, IP addresses are self-allocated by certain Raymarine equipment in the following range: **198.18.0.32 to 198.18.3.255** (inclusive). **You must avoid placing any devices in this range using manual (static) IP addresses.**

• Whether your network includes only Raymarine Ethernet (IP) devices, or a mixture of Raymarine and third-party Ethernet (IPv4) devices, you have 3 options for configuring the Ethernet (IPv4) network and managing the IP addresses for your devices:

1. Use a Raymarine device as the sole DHCP server to allocate IP addresses automatically to all Raymarine and third-party Ethernet (IPv4) devices on the network. **For the purposes of simplicity and reliability, this is the recommended option for most vessels.** The following Raymarine devices can act as DHCP servers:

   a. **Raymarine chartplotter (MFD)**, running LightHouse 3 or LightHouse 4; or:

   b. **Raymarine YachtSense Link-Series YachtSense Link router**

Note: If both a Raymarine chartplotter (MFD) **and** YachtSense Link-Series YachtSense Link router are present in the same network, the YachtSense Link-Series YachtSense Link router MUST be configured as the DHCP server for that network. To facilitate this, the Raymarine chartplotter's (MFD's) DHCP setting defaults to *Automatic* as standard. On power up, if the YachtSense Link-Series YachtSense Link router is detected on the Ethernet network, any chartplotters (MFDs) in the network will disable their own *DHCP Server*, to permit the YachtSense Link-Series YachtSense Link router to manage the network's IP addresses. Only Raymarine chartplotters (MFDs) running LightHouse 4are compatible with the YachtSense Link-Series YachtSense Link router. Additionally, the most recent versions of the LightHouse 4 and YachtSense Link software must be used.

2. Use a third-party Ethernet (IPv4) device (such as a router or Access Point) to allocate IP addresses automatically, as a sole *DHCP server*. To do this, refer to the *Configuring a third-party router as DHCP server* section, below.

Note: Any Raymarine LightHouse 3 or LightHouse 4 chartplotters (MFDs) will still self-allocate their own IP address, even if a third-party DHCP server is being used to allocate IP addresses to other Raymarine or non-Raymarine *DHCP client* devices (Camera, Radar, Sonar etc.) on the network.

3. Manually configure static IP addresses for your devices. The address range **198.18.0.32 to 198.18.3.255** (inclusive) is used by Raymarine equipment, and any other third-party equipment on the network should not be set to a static IP address in this range. It should instead be set elsewhere in the 198.18.0.0/21 range.

Adding third-party devices to your Raymarine Ethernet (IP) network

• It is recommended that any third-party products connecting to a Raymarine Ethernet (IPv4) network (e.g., a third-party IP camera) are configured as DHCP clients, so that they automatically get allocated a correct IP address within the range used by the **Raymarine IPv4 network**. If this is not possible, (for example, in the scenario that your third-party IP Camera requires a static IP address), you should configure the product to have a static IP address within the following range: **198.18.0.1 to 198.18.0.31** (inclusive).

• Any third-party router in your network should be performing IPv4 *Network Address Translation* (NAT) from the private address to another one on an upstream interface.

Configuring a third-party router as DHCP server

In the scenario that you wish to use a third-party DHCP server to allocate the IP addresses for your vessel's IPv4 network, use the following information to help you configure the third-party DHCP server to work with Raymarine Ethernet (IPv4) client devices:

1. Configure the third-party DHCP server / router to use Raymarine's subnet details, which are as follows:

   a. Set the DHCP server's IP address to **198.18.0.1**

   b. Set the *netmask* to /21, i.e. **255.255.248.0**

   c. Set the DHCP range from **198.18.4.0 to 198.18.7.254** (inclusive). If this is not possible, ensure that the address range is smaller than this (but within the range of **198.18.4.0 to 198.18.7.254** (inclusive)).

   d. The address range **198.18.0.32 to 198.18.3.255** (inclusive) is used by Raymarine equipment, and therefore you must ensure that any other third-party equipment on the network is NOT set to a static IP address in this range.

2. It may be necessary to set the DHCP setting for **all** of the chartplotters (MFDs) on the vessel to *[Off]*. However, the default option (*[Auto]*) will likely work fine in many cases. If for any reason the third-party DHCP server starts up after the chartplotter (MFD) starts up, the user should manually set the chartplotter's (MFD's) DHCP switch to *[Off]*. This is because, when the chartplotter (MFD) starts up, its DHCP *[Auto]* feature tries to detect if another DHCP server is already present on the network.

3. In case of failure of the third-party device, the chartplotters (MFDs) can be easily configured to be the DHCP server again, by setting the chartplotter's (MFD's) DHCP setting back to *[Auto]*.

Adding third-party Wi-FI Access Points / Wi-FI routers to your Raymarine Ethernet (IPv4) network

• There is a large volume of multicast IPv4 traffic on the Raymarine Ethernet (IPv4) network. Many consumer Wi-FI Access Points / Wi-FI routers simply bridge all multicast traffic from the Ethernet interface to the Wi-FI interface when there are connected Wi-FI clients. This will result not only in poor Wi-FI performance but also in a reduction of usable Wi-FI spectrum to other Wi-FI users and vessels in the vicinity. If using a third-party Wi-FI Access Point or Wi-FI router, Raymarine recommends that *IGMP Snooping* is enabled on the third-party device, and additional checks are performed, in order to ensure that your device is not bridging any unexpected multicast traffic to its Wi-FI interface from the Raymarine Ethernet (IPv4) network.

• Raymarine's YachtSense Link-Series YachtSense Link router is pre-configured with IGMP Snooping enabled, and therefore does not bridge internal multicast traffic on the wired network to the Wi-FI network. No additional configuration is required in this respect.

Appendix D Software release history

Check the website for the latest software:

YachtSense Link **software download link**
www.bit.ly/yachtsense-link-download

This list includes *new features* only. It does NOT include software maintenance items, such as bug fixes or performance improvements.

Software version	Changes
v4.3 Date: August 2024	• Added support for WAN (wired internet connection) • Added support for "Pulse" output type for output channels.
v4.21 Date: Aug 2023	• YachtSense Link now supports Over The Air (OTA) updates, even if it is not on-boarded.
CloudConnector v1.2500	• Optimization of the amount of information being uploaded to the Cloud, so less data is being consumed. • Adjusted Depth filtering when uploading to the cloud - Resolution now is 0.1 m if <10 m and 1 m if =>10 m.

Software version	Changes

v4.20
Date: Aug 2023
	New Features and Improvements:
	
	• Implemented "Bridging" of data between the Wireless and RayNet networks on the YachtSense Router.
	• Allow user to manually select a cellular network – Ideal when roaming.
	
	Resolved Issued & Improvements:
	
	• User Interface Improvements:
	  – Within the Info section, now display the IPv4/IPv6 cellular status information.
	  – When disabling the SBAS satellites, it no longer deselects all of the SBAS constellations.
	• Resolved an issue where the system was not obtaining an IPv6 address from the cellular provider.
	• Implemented an advanced Modem Debug log, should additional information be required when fault finding.
	• The "Connected Devices" page now shows up to 40 products (was previously limited to 20).
	• Resolved an issue where the data usage graph went blank on SIM2.
	• Improvements to SIM1 and SIM2 switching functionality.
	• Identified and resolved a high CPU usage issue.
	• Improved the 'Access Point Name' (APN) settings and selection.
	• Other general User Interface and operational improvements.

Software version	Changes
v1.73 N2K stack Date: Jun 2023	• GPS fix timeout issue resolved on network. • Improvements to prevent future GPS rollover issues. • Corrected wind speed units from knots to m/s. • Other minor improvements.

CloudConnector: v1.20000
 	
Date: Jun 2023
	•
	  – Resolves an issue where the router I/O switch controls could intermittently not respond in the app, when user was away from the vessel and controlling the router over the internet.
	  – Engine Dynamic and Transmission Dynamic messages now correctly uploaded to the Raymarine app.

v4.17 Date: Jan 2023	• Improved Crash Logs download, from YachtSense Link to MFD / MicroSD card. • Updated User Interface to change references of "Rayconnect" to "Raymarine". • Resolves an IPV4 to IPV6 IP address processing issue, witnessed when using certain networks.

Software version	Changes
v4.12 Date: Aug 2022	• Required release for full support with the Raymarine App, when on-boarding the YachtSense Link router. • It is important that a router is "offboarded" from the cloud, when it is no longer associated with the original user (e.g., following the sale of a vessel, changing ownership of a router, or obtaining a warranty replacement etc.). This must be done via the Raymarine App.
v4.11 Date: Jun 2022	Initial release.

Appendix E Document change history

Revision	Changes
81397 (Rev 9) Date: August 2024	• Updated Product overview to include Wired internet connection. • Added software new features list. • Added Wired Internet Connection chapter. • Updated Inputs and outputs chapter to include details of toggle and pulse output types and provide example diagram for pulse type. • Re-worded input and output channel configuration details. • Added details of "Pulse" output type for output channels. • Updated web interface status page to include wired internet connection. • Added Slow internet connection troubleshooting. • Added typical consumption figures for common tasks to appendix. • Added internet connections summary. • Re-worded note regarding the alert-sending cool-down period, to clarify that it applies to SMS and PUSH notifications. • Removed guest account details. • Added Software version details. • Added Software history to appendix. • Updated networking details to reflect Ethernet to Wi-Fi bridging. • Added details for manual network provider selection. • Added note on mobile network speed to tech spec. • Added IP networking guidance to appendix. • Added SIM card activation guidance.

Revision	Changes
	• Added additional mobile data troubleshooting guidance. • Removed 3rd party companion app details.

81397 (Rev 8)
 	
Date: April 2023
	• Updated smart antenna details to include modified antenna supplied from May 2023.
	  – Changed thread pitch.
	  – Extended thread length
	  – Inserts for mounting using threaded studs.
	• Removed details for Wake On LAN as not supported.
	• Removed note RE router wakes in always on mode as the router remembers its mode.
	• Added details of 10 minute cool-down period between router sending alerts to a cellular number.
	• Added Wired connections technical specification.
	• Added details of how to read the LED diagnostic pattern images.

81397 (Rev 7) Date: January 2023	• Added cable connections warning. • Updated product overview. • Updated SIM card insertion details. • Updated power management details. • Added low power mode LED sequence. • Added GNSS troubleshooting details. • Moved Raymarine app details to dedicated chapter. • Illustration and table layout improvements.
81397 (Rev 6) Date: July 2022	• Re-organized and split chapters to make information easier to find. • Corrected antenna thread extender part number. • Added details about the location of the router's IMEI number.

Revision	Changes
	• Updated LED indicators to include troubleshooting details.
	• Added compliance and approvals details to technical specification.
81397 (Rev 5) Date: June 2022	• Updated to reflect new 5 wire input cable. • Updated input channel connection details. • Updated output channel connection details. • Added Raymarine app linking details. • Added router transfer of ownership details. • Added Raymarine app device removal details. • Updated input channel monitoring and configuration details using the web interface. • Updated alert notification details. • Updated details for accessing web interface via the LightHouse 4 homescreen. • Added details for third party hardware connections. • Added YachtSense ecosystem chapter.
81397 (Rev 4) Date: February 2022	Initial public release

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