



Raymarine®

WG-1

Installation Instructions

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CONTENTS

CHAPTER 1 IMPORTANT INFORMATION..... 7

Safety warnings.....	7
Product warnings.....	7
Regulatory notices.....	7
UK Compliance statement.....	7
Compliance Statement (Part 15.19).....	7
FCC Interference Statement (Part 15.105 (b)).....	7
Innovation, Sciences et Développement économique Canada (Français).....	8
Innovation, Science and Economic Development Canada (ISED).....	8
CE Operating temperature and compliance statement.....	8
NCC Compliance statement (Taiwan).....	8
SRRC Compliance statement (China).....	8
Declaration of Conformity.....	8
PSTI Compliance.....	9
Disclaimer.....	9
Water ingress.....	9
Warranty policy and registration.....	9
Product disposal.....	9
IMO and SOLAS.....	9
Technical accuracy.....	10
Publication copyright.....	10

CHAPTER 2 DOCUMENT INFORMATION..... 11

2.1 Applicable products.....	12
2.2 Document information.....	12

2.3 Product documentation.....	12
Obtain the latest documentation.....	12
2.4 Document conventions.....	12
2.5 Document illustrations.....	13

CHAPTER 3 PRODUCT AND SYSTEM OVERVIEW..... 14

3.1 Product overview.....	15
3.2 Compatible devices.....	15
3.3 System example.....	16
3.4 Software updates.....	16

CHAPTER 4 PARTS SUPPLIED..... 17

4.1 Parts supplied.....	18
-------------------------	----

CHAPTER 5 PRODUCT DIMENSIONS..... 19

5.1 Product dimensions — Wireless gateway.....	20
--	----

CHAPTER 6 LOCATION REQUIREMENTS..... 21

6.1 Warnings and cautions.....	22
6.2 Location requirements — Wireless gateway.....	22
Compass safe distance.....	22
6.3 Wireless location requirements for optimum performance.....	23

CHAPTER 7 MOUNTING — WIRELESS GATEWAY..... 25

7.1 Wireless gateway mounting options.....	26
7.2 Tools required for surface mounting.....	26
7.3 Surface mounting using the studs and finger nuts.....	27

CHAPTER 8 WIRELESS CONNECTION	28
8.1 Remote control Bluetooth connection	29
8.2 RCU-1 pairing	29
Manual Bluetooth pairing	29
Initiate Bluetooth pairing from a chartplotter	30
Bluetooth connections settings	31
 CHAPTER 9 CABLES AND CONNECTIONS — GENERAL INFORMATION.....	 32
9.1 General cabling guidance	33
Cable types and length	33
Cable routing and bend radius	33
Strain relief	33
Circuit isolation	33
Cable shielding	34
Connecting cables	34
9.2 System example	34
9.3 Connecting DeviceNet cables	35
 CHAPTER 10 POWER CONNECTION (WIRELESS GATEWAY)	 36
10.1 SeaTalk NG power supply	37
Inline fuse requirement	37
Inline fuse and thermal breaker ratings	37
10.2 12 Volt dc only	38
10.3 SeaTalk NG power cables	38
10.4 SeaTalk NG power cable extension	38
10.5 SeaTalk NG product loading	39
10.6 SeaTalk NG power connection point	39
10.7 SeaTalk NG system loading	39
10.8 Power distribution — SeaTalk NG	40

10.9 Power connection via Autopilot Control Unit (ACU-Series)	42
 CHAPTER 11 TROUBLESHOOTING.....	 43
11.1 Troubleshooting	44
11.2 Wireless troubleshooting	44
11.3 LED diagnostic guidance	46
11.4 WG-1 LED diagnostics	47
 CHAPTER 12 MAINTENANCE.....	 49
12.1 Routine equipment checks	50
 CHAPTER 13 TECHNICAL SUPPORT	 51
13.1 Raymarine technical support and servicing	52
13.2 Learning resources	53
13.3 Viewing product information from a chartplotter	53
 CHAPTER 14 TECHNICAL SPECIFICATION — WIRELESS GATEWAY	 55
14.1 Physical specification	56
14.2 Power specification	56
14.3 Environmental specification	56
14.4 Bluetooth specification	56
14.5 Conformance specification	56
14.6 Product markings	57
 CHAPTER 15 SPARES AND ACCESSORIES.....	 58
15.1 Accessories — Wireless gateway	59
15.2 SeaTalk NG cables and accessories	59
 APPENDIX A NMEA 2000 PGN SUPPORT	 65

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.
- Certified installation by an approved installer is recommended. A certified installation qualifies for enhanced product warranty benefits. Contact your dealer for further details.



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

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.

Regulatory notices

UK Compliance statement

This product complies with the *Statutory Instrument 1206 Radio Equipment Regulations 2017*.

This product transmits within the frequency ranges of **less than or equal to:**

- 2402 MHz – 2480 MHz, less than 20 dBm

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.



Warning: FCC Warning (Part 15.21)

Changes or modifications to this equipment not expressly approved in writing by Raymarine UK Ltd could violate compliance with FCC rules and void the user's authority to operate the equipment.

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, 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.

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(B) / NMB-003(B).

CE Operating temperature and compliance statement

Operating temperature:

This product's operational temperature range is: -25°C (-13°F) to + 55°C (131°F).

Compliance statement:

This product complies with the *2014/53/EU Radio Equipment Directive (RED)*.

In accordance with Article 10.8(a) and 10.8(b) of the RED, the following table provides information on the frequency bands used and the maximum EIRP (Effective Isotropic Radiated Power) of the product for sale in the EU:

Frequency Range	Maximum EIRP
Bluetooth 2.4GHz	7.89 dBm

NCC Compliance statement (Taiwan)

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前述合法通信，指依電信管理法規定作業之無線電通信。

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SRRC Compliance statement (China)

2023/7/1起“使用微功率短距离无线电发射设备应当符合国家无线电管理有关规定”

Declaration of Conformity

Declaration of Conformity for product sold into the UK, Australia and New Zealand, and EU member state regions.

Raymarine UK Ltd declares that the radio equipment type product listed below is in conformity with the relevant sections of the listed designated standards and / or other normative documents:

- WG-1 Wireless Gateway, part number: R70947.

Region	Standard	Mark
UK	EMC Regulations 2016	
EU	Radio Equipment Directive 2014/53/EU	
Australia and New Zealand	AS/NZS 4417.1 & 2	

The original Declaration of Conformity certificates may be obtained via the documentation page at www.bit.ly/WG-1-docs

PSTI Compliance

For products sold into the United Kingdom (UK), use the following link to obtain the product's Statement of Compliance with the *Product Security and Telecommunications Infrastructure* (PSTI) Regulations:

Visit the following web address and enter the product's model name or number (SKU) into the provided search field:

- www.bit.ly/rym-sec-com

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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Important information

Water ingress

Water ingress disclaimer

Although the waterproof rating capacity of this product meets the stated water ingress protection standard (refer to the product's *Technical Specification*), water intrusion and subsequent equipment failure may occur if the product is not installed correctly or subjected to high-pressure washing. Raymarine will not warrant products subjected to high-pressure washing.

Warranty policy and registration

Visit the Raymarine website to **read the latest warranty policy**, and **register** your product's warranty online: www.bit.ly/rym-warranty

It is important that you register your product to receive full warranty benefits. Your product package includes a barcode label indicating the serial number of the unit. This serial number is also provided on a label affixed to the product itself. You will need this serial number when registering your product online.

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>

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.

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 to ensure you have the most up-to-date version(s) of the documentation for your product: www.docs.raymarine.com

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CHAPTER 2: DOCUMENT INFORMATION

CHAPTER CONTENTS

- [2.1 Applicable products — page 12](#)
- [2.2 Document information — page 12](#)
- [2.3 Product documentation — page 12](#)
- [2.4 Document conventions — page 12](#)
- [2.5 Document illustrations — page 13](#)

2.1 Applicable products

This document is applicable to the following products:

- WG-1 Wireless Gateway, part number: R70947.

2.2 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.bit.ly/rym-docs

2.3 Product documentation

The following documentation is applicable to your product:

Applicable documents

Document	Description
87493	WG-1 Wireless Gateway Installation Instructions.
87496	WG-1 Wireless Gateway Mounting Template.
87281	Deck Mounting Kit Installation Instructions. (Provides alternative mounting methods for the WG-1 wireless gateway when using the Deck mounting kit).
87274	Pole / Rail Mount Adaptor Accessory Installation Instructions (Provides alternative mounting methods for the WG-1 wireless gateway).

Related documents

Document	Description
81406	LightHouse 4 Advanced Operation Instructions
81426	RCU-1 Operation Instructions

Obtain the latest documentation

This document may not reflect the latest information available for your product. Please ensure that you obtain the **latest version** of documentation for your product from the Raymarine website.

QR code	Link
---------	------



<https://www.bit.ly/WG-1-docs>

2.4 Document conventions

The following conventions are used throughout this document.

Formatting of user interface menus and settings.

References to menus, setting options and physical buttons are formatted using square brackets [].

Examples:

- “You can select your desired cartography from the *[Cartography selection]* menu.”
- “MFD apps are accessed from the *[Homescreen]*.”
- “Press the *[Home]* button to return to the Homescreen.”

Procedures for performing specific tasks using the product’s user interface.

The term “**Select**” is used to refer to the action of:

- Touchscreen control — using your finger to select a menu option or item on the screen.

- Physical buttons — Highlighting an item using the navigational controls and confirming the selection by pressing the *[OK]* button.

Examples:

- “Select *[OK]* to confirm your selection.”
- “Select *[Set-up]*.”

Procedures for navigating menu hierarchies.

Menu hierarchies are used in this document to provide a quick summary on how to access a particular function or menu option.

Examples:

- “The internal sonar module is disabled using the Fishfinder app menu: *[Menu > Set-up > Sounder Set-up > Internal Sounder]*.”
- “The internal GPS can be switched off from the GPS settings menu: *[Homescreen > Status area > Satellites > Settings > Internal GPS]*.”

2.5 Document illustrations

While every effort is made to ensure that the illustrations provided in this publication accurately reflect the final released product, due to editorial and production lead times, your product — and if applicable — its user interface, may differ slightly from the illustrations provided in this document, depending on product variant and date of manufacture.

All images are provided for illustration purposes only.

CHAPTER 3: PRODUCT AND SYSTEM OVERVIEW

CHAPTER CONTENTS

- [3.1 Product overview — page 15](#)
- [3.2 Compatible devices — page 15](#)
- [3.3 System example — page 16](#)
- [3.4 Software updates — page 16](#)

3.1 Product overview

The WG-1 is a wireless Bluetooth gateway that is used to connect compatible Raymarine Bluetooth devices to the SeaTalk NG / NMEA 2000 network.

The WG-1 is supplied either pre-paired with a compatible Raymarine Bluetooth device, or can be supplied on its own.



Wireless gateway features:

- Bluetooth version 5.1.
- Connect up to 3 devices simultaneously.
- Connects directly to the SeaTalk NG / NMEA 2000 network using the supplied SeaTalk NG to DeviceNet adaptor cable.
- Suitable for above and below decks installation.
- Pole, Rail, Surface or Bulkhead mountable (mounting kits available).
- 12 V dc operation (protected up to 32 V dc), via the SeaTalk NG / NMEA 2000 network.
- Waterproof to IPx6, IPx7.

3.2 Compatible devices

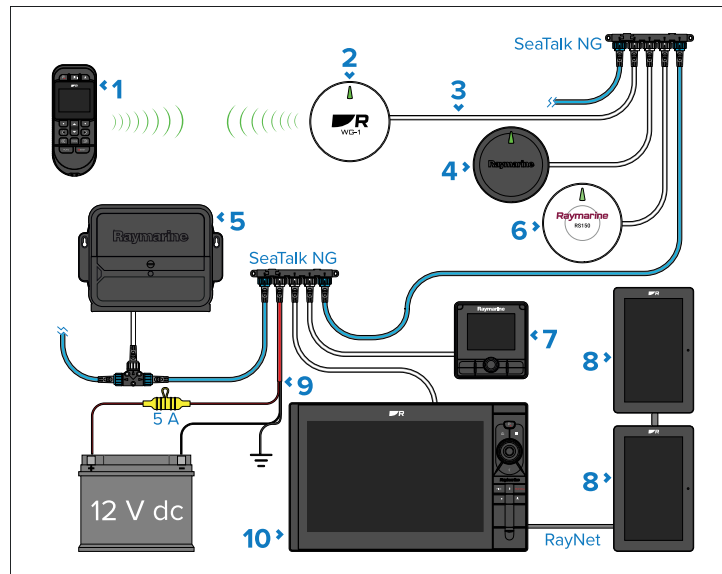
The following Raymarine Bluetooth devices are compatible with the WG-1 Wireless Gateway:



- RCU-1 Autopilot Remote Control, part number: A80835. The RCU-1 is supplied with the WG-1 Wireless Gateway when ordering part number E70718.

3.3 System example

The following system example shows an RCU-1 Autopilot Remote Control connected to an autopilot system via the WG-1 Wireless Gateway.



1. RCU-1 Remote Autopilot Controller.
2. WG-1 Wireless Gateway.
3. DeviceNet to SeaTalk NG adapter cable.
4. Evolution-Series sensor (e.g.: EV-1).
5. Evolution-Series ACU (e.g.: ACU-200).
6. RS150 GNSS (GPS) receiver.
7. p70Rs autopilot control head.
8. Alpha-Series displays.
9. SeaTalk NG power connection (12 V dc **only**).
10. Axiom 2 Pro chartplotter.

3.4 Software updates

Product software updates may be made available which add new features and improve existing functionality. It's important to ensure that you have the latest software for your products by regularly checking the Raymarine website for new software releases.

To check for the latest software updates and the software update procedure for your specific product(s), refer to: www.bit.ly/rym-software

Unless otherwise stated, software updates for Raymarine products are performed using a Raymarine MFD / chartplotter.

- Where applicable, you should always backup your user data and settings before performing a software update.
- To update SeaTalk NG products, you must use the datamaster MFD / chartplotter which is physically connected to the SeaTalk NG backbone.
- Ethernet (RayNet) products can be updated from any MFD / chartplotter on the same network as the product to be updated.
- In order to perform a software update, any connected Autopilot or Radar must be switched to Standby.
- The MFD / chartplotter "Check online" feature is only available when connected to the Internet.

Note:

If in doubt as to the correct procedure for updating your product software, refer to your dealer or Raymarine technical support.

Caution: Installing software updates

- The software update process is carried out at your own risk. Before initiating the update process ensure you have backed up any important files.
- Ensure that the product(s) has a reliable power supply and that the update process is not interrupted.
- Damage caused by an incomplete update is not covered by Raymarine warranty.
- By downloading the software update package, you agree to these terms.

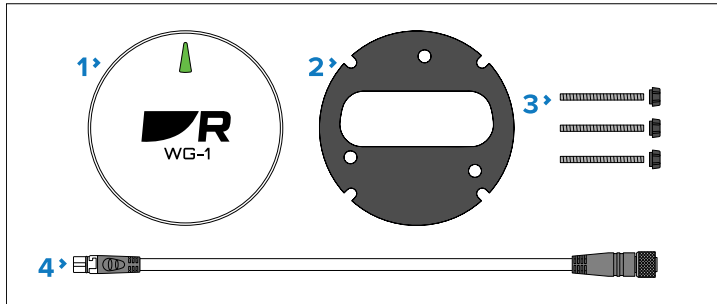
CHAPTER 4: PARTS SUPPLIED

CHAPTER CONTENTS

- [4.1 Parts supplied — page 18](#)

4.1 Parts supplied

The following parts are supplied with the WG-1 Wireless Gateway.



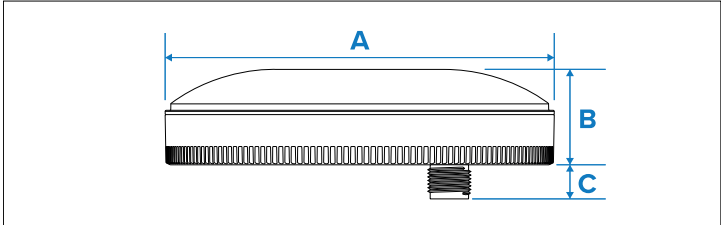
Description	
1	WG-1 Wireless Gateway.
2	Waterproof gasket.
3	3 x M4x40 threaded studs and finger nuts (for mounting the wireless gateway).
4	SeaTalk NG to DeviceNet adaptor cable, 6 m (19.69 ft).

CHAPTER 5: PRODUCT DIMENSIONS

CHAPTER CONTENTS

- 5.1 Product dimensions — [Wireless gateway](#) — page 20

5.1 Product dimensions — Wireless gateway



Dimension		Dimension	
A	108.48 mm (4.27 in)	B	26.61 mm (1.05 in)
C	9.5 mm (0.37 in)		

CHAPTER 6: LOCATION REQUIREMENTS

CHAPTER CONTENTS

- [6.1 Warnings and cautions — page 22](#)
- [6.2 Location requirements — Wireless gateway — page 22](#)
- [6.3 Wireless location requirements for optimum performance — page 23](#)

6.1 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.7 — 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).

6.2 Location requirements — Wireless gateway

Important requirements to consider when choosing a suitable location to mount the product.

- The product is suitable for installation above or below decks.
- Before installing the wireless gateway, a pre-installation test should be performed in order to gauge the connection reliability between the wireless gateway and the wireless device(s) that will connect to it.
- In optimum open air, clear line-of-sight conditions, a connection between the wireless gateway and the wireless device is possible up to distances of 30 m (98.43 ft). However, the maximum connection distance between the wireless gateway and wireless device will vary depending on the installation environment (i.e. obstructions and interference). In order to ensure optimum connection performance, both units should be mounted in accordance with the requirements specified under the following section: [p.23 — Wireless location requirements for optimum performance](#)
- On larger vessels (e.g.: >50 m (164 ft)) it is recommended that the wireless gateway is mounted amidships.
- The product must be mounted on a level surface.

- The product can be mounted on a vertical surface such as a bulkhead or mast etc, using the Bulkhead bracket supplied in the *Deck mounting kit*, part number: A80437. For more information, refer to the following documentation: '[87281 Deck Mounting Kit Installation Instructions](#)'.
- The product can be mounted on a pole or rail using the Pole mount adapter supplied in the *Pole / Rail mounting adapter kit*, part number: A80370. For more information, refer to the following documentation: '[87274 Pole / Rail Mount Adapter — Accessory Installation Instructions](#)'.
- Do NOT mount the product on top of a mast.
- The product location must be at least 1 m (3.28 ft.) away from sources that can cause interference, such as compasses, electrical cables, motors, generators, VHF radio units and other transmitters / receivers.
- Ensure that the product is NOT mounted in the path of the beam emitted from radar scanners.
- Choose a location where the product will be safe from physical damage and excessive vibration.
- Choose a location where the product will not be subjected to a load or force.
- Mount the product away from any source of heat or potential flammable hazards, such as fuel vapor.
- The product should be mounted in a location where the diagnostics LED is viewable.

Note:

Product orientation is not important, but aesthetically the product may look better with the LED 'arrow' pointing towards the vessel's bow.

Compass safe distance

To prevent potential interference with the vessel's magnetic compasses, ensure an adequate distance is maintained from the product.

When choosing a suitable location for the product, you must aim to maintain a distance of **at least** 1 m (3.3 ft.) in all directions from any compasses.

For some smaller vessels it may not be possible to locate the product this far away from a compass. In this situation, when choosing the installation location for your product, ensure that the compass is not affected by the product when it is in a powered on state.

6.3 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 maximize 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.

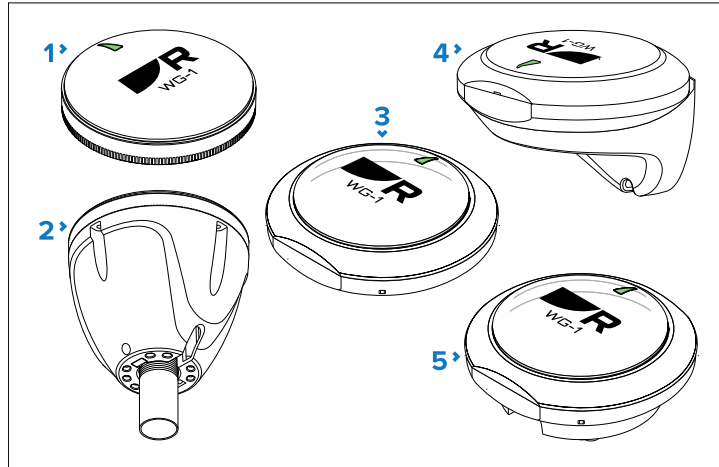
CHAPTER 7: MOUNTING — WIRELESS GATEWAY

CHAPTER CONTENTS

- [7.1 Wireless gateway mounting options — page 26](#)
- [7.2 Tools required for surface mounting — page 26](#)
- [7.3 Surface mounting using the studs and finger nuts — page 27](#)

7.1 Wireless gateway mounting options

The following mounting options are available for the WG-1 Wireless Gateway:



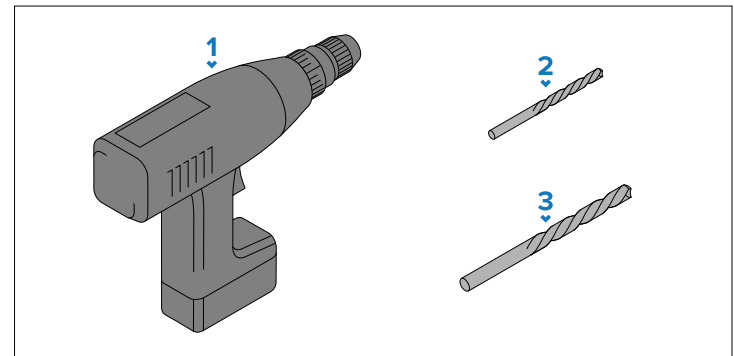
Mounting method	Required mounting kit	Instructions
Surface mounting (without <i>Mounting tray</i>)	Studs and finger nuts (supplied).	p.27 — Surface mounting using the studs and finger nuts
Pole / rail mounting	<i>Pole / Rail mounting adapter kit</i> (part number: A80370).	87274 Pole / Rail Mount adapter — Accessory Installation Instructions
Surface mounting (with <i>Mounting tray</i>)	<i>Deck mounting (Clamshell / Riser) kit</i> (part number: A80437).	87281 Deck Mounting Kit Installation Instructions

Mounting method	Required mounting kit	Instructions
Bulkhead mounting (with <i>Mounting tray</i> and <i>Bulkhead bracket</i>)	<i>Deck mounting (Clamshell / Riser) kit</i> (part number: A80437).	87281 Deck Mounting Kit Installation Instructions
Surface mounting (with <i>Riser</i> and <i>Mounting tray</i>)	<i>Deck mounting (Clamshell / Riser) kit</i> (part number: A80437).	87281 Deck Mounting Kit Installation Instructions

To obtain the mounting instructions listed above, visit:
www.bit.ly/rym-docs

7.2 Tools required for surface mounting

The following tools are required for surface mount installations:

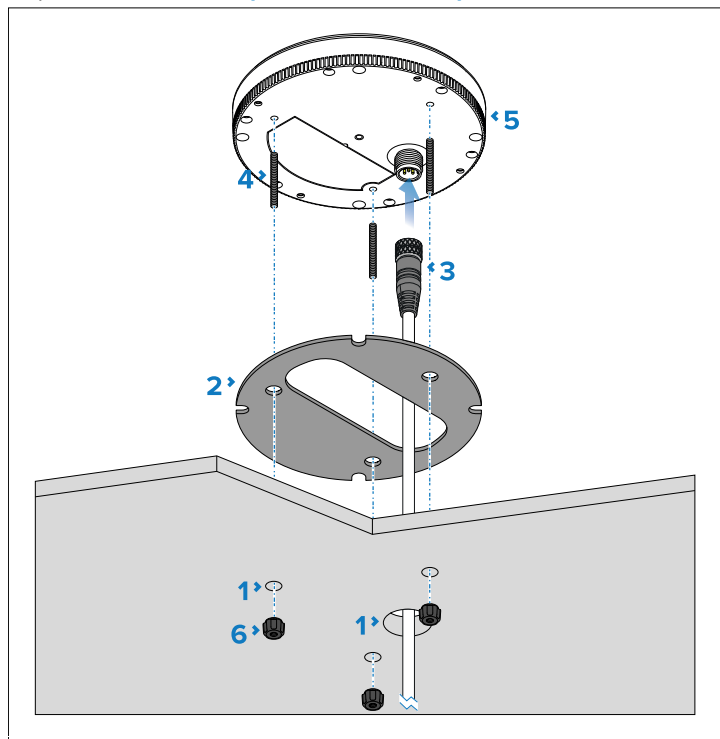


Description	
1	Power drill.
2	4 mm (¹¹ / ₆₄) drill bit.
3	22 mm drill bit (for connector/cable hole).

7.3 Surface mounting using the studs and finger nuts

The product can be mounted on a surface that is up to (approximately) 28 mm (1.10 in) thick, using the fixings supplied with the product. To mount on a thicker surface, longer studs will be required.

Ensure that the chosen location meets the product's location requirements; refer to: [p.21 — Location requirements](#)



1. Using the supplied mounting template, drill 3 holes for the fixings and a hole for the connector / cable.
2. Place the mounting gasket into position on the underside of the product.
3. Feed the cable up through the hole in the mounting surface. Connect the cable to the connector on the underside of the product, then secure by using the cable connector's locking mechanism. Connect the other end of the cable to an available spur connection.
4. Screw the threaded studs into the underside of the product (these should be hand-tight only).
5. Position the product so that the mounting studs pass through the holes in the mounting surface.
6. Secure the product to the mounting surface using the finger nuts (these should be hand-tight only).

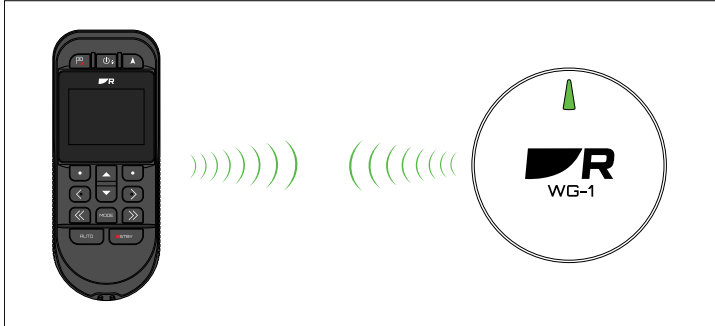
CHAPTER 8: WIRELESS CONNECTION

CHAPTER CONTENTS

- [8.1 Remote control Bluetooth connection — page 29](#)
- [8.2 RCU-1 pairing — page 29](#)

8.1 Remote control Bluetooth connection

The RCU-1 uses a wireless Bluetooth connection to pair with the WG-1 Wireless Gateway.



Note:

For optimum performance there should always be a clear line of sight between the remote control and wireless gateway.

8.2 RCU-1 pairing

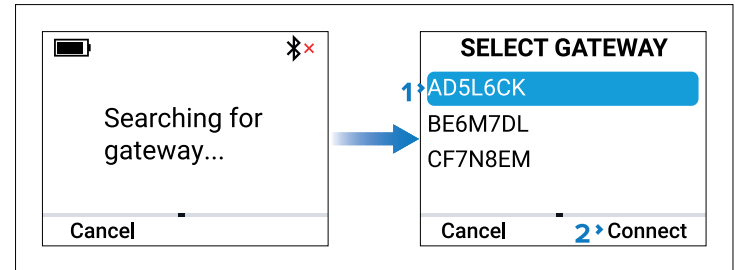
Manual Bluetooth pairing

The remote control must be paired with the wireless gateway.

If your RCU-1 Autopilot Remote Control and WG-1 Wireless Gateway were purchased as a system pack (E70718), the remote control will be pre-paired to the wireless gateway. The remote control will automatically connect with the wireless gateway when it is powered on.

If you have purchased your remote control and wireless gateway separately (e.g. as a spare or accessory), the remote control will need to be manually paired to the wireless gateway.

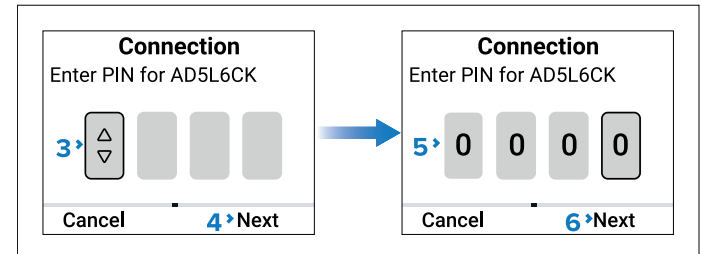
When the remote is powered on, after accepting the *[Terms]* page, the remote will automatically start searching for wireless gateways.



1. Use the *[Up]* and *[Down]* buttons to highlight your wireless gateway in the list of devices.

*If more than one gateway is discovered, you can identify its serial number by checking its product label, or by checking the list of networked devices on a compatible chartplotter's Network settings menu: *[Homescreen > Settings > Network]*.*

2. Press the *[Connect]* (Right softkey) button.



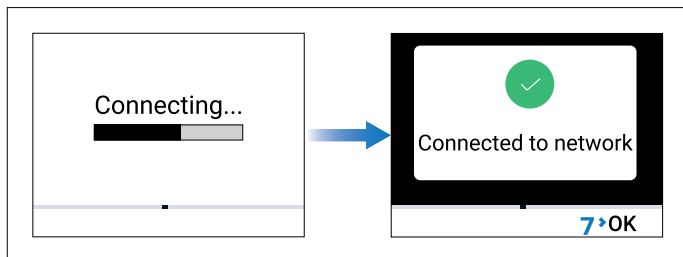
3. Enter the first digit of the PIN, using the *[Up]* and *[Down]* buttons.

Note:

The wireless gateway's PIN number is: **0000**.

4. Press the *[Next]* (Right softkey) button.
5. Repeat steps 3 and 4 for the remaining 3 PIN digits.

- After entering the fourth digit of the PIN, pressing the *[Next]* button will initiate the connection.



- Press the *[OK]* button when the “*Connected to network*” message is displayed.

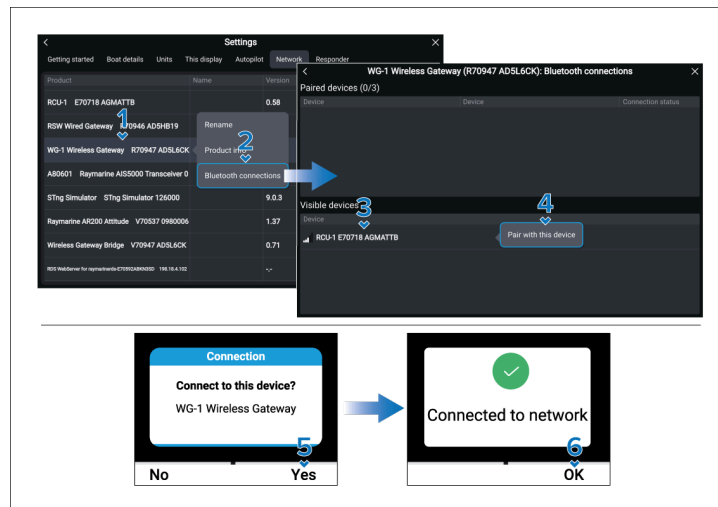
Note:

If the pairing process fails, re-check the wireless gateway’s PIN number, power cycle the wireless gateway and the remote control, and then re-attempt pairing.

Initiate Bluetooth pairing from a chartplotter

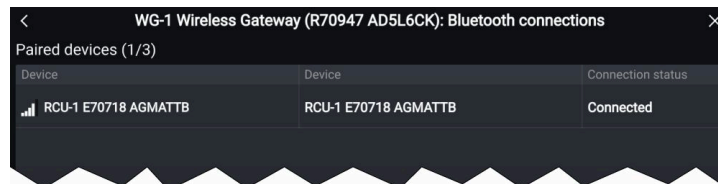
If your remote control and wireless gateway have been purchased as a system pack (E70718), the remote control will be pre-paired to the wireless gateway out-of-the-box, and the remote control will connect to the wireless gateway when it is powered up. If you have purchased your remote control and wireless gateway separately (e.g. as a spare or accessory), the remote control will need to be manually paired to the wireless gateway. Pairing can be initiated from the *[Bluetooth connections]* page on a networked LightHouse 4 chartplotter.

To pair your remote control to the wireless gateway:



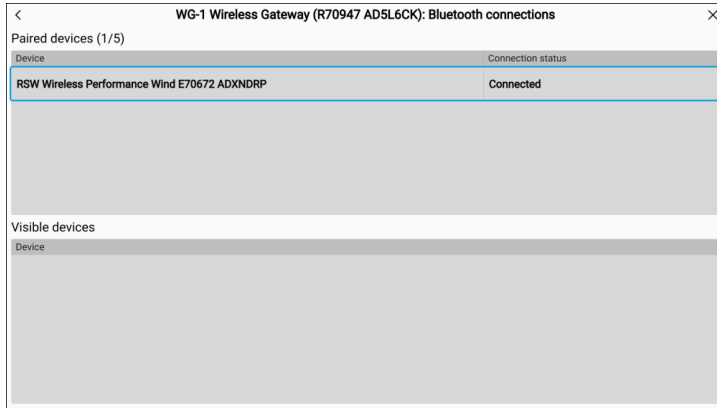
- Select your *[WG-1 Wireless Gateway]* from the list of devices in the *[Network]* settings menu: *[Homescreen > Settings > Network > WG-1 Wireless Gateway]* on your networked LightHouse 4 multifunction display/chartplotter.
- Select *[Bluetooth connections]* from the pop-over options.
- Select your remote control from the *[Visible devices]* list.
- Select *[Pair with this device]* from the pop-over options. Pairing on the remote control will be initiated.
- Select *[Yes]* on the remote control. The remote control will pair with the wireless gateway.
- Select *[OK]*.

Once paired, the remote control will appear in the *[Paired devices]* list and display the *[Connected]* status.



Bluetooth connections settings

Bluetooth connections to the wireless gateway can be managed from the *[Bluetooth connections]* settings menu on a networked LightHouse 4 multifunction display / chartplotter, by navigating to: *[Homescreen > Settings > Network > WG-1 Wireless Gateway > Bluetooth connections]*



When selecting a device listed under the *[Paired devices]* or *[Visible devices]* lists, the following options will be available:

Paired devices options:

- *[Disconnect]* — Disconnects the selected device from the wireless gateway. When disconnected, the selected device will not transmit data to the system that the wireless gateway is networked to. This option is only available if the selected device's status is set to *[Connected]*.
- *[Connect]* — (Re)connects the selected device to the wireless gateway. When connected, the selected device will transmit data to the system that the wireless gateway is networked to. This option is only available if the selected device's status is set to *[Not connected]*.
- *[Unpair]* — Removes the selected device from the *[Paired devices]* list. Once removed, a passkey will be required when attempting to re-pair the selected device with the wireless gateway.

Visible devices options:

- *[Pair with this device]* — Pair the selected device to the wireless gateway.

Note:

- The wireless gateway can be paired to a maximum of 5 Bluetooth devices at any one time.
- If your Bluetooth device does not appear on the *[Bluetooth connections]* page or if the pairing attempt fails, refer to the troubleshooting advice found in the following section:
[p.43 — Troubleshooting](#)

CHAPTER 9: CABLES AND CONNECTIONS — GENERAL INFORMATION

CHAPTER CONTENTS

- [9.1 General cabling guidance — page 33](#)
- [9.2 System example — page 34](#)
- [9.3 Connecting DeviceNet cables — page 35](#)

9.1 General cabling guidance

Cable types and length

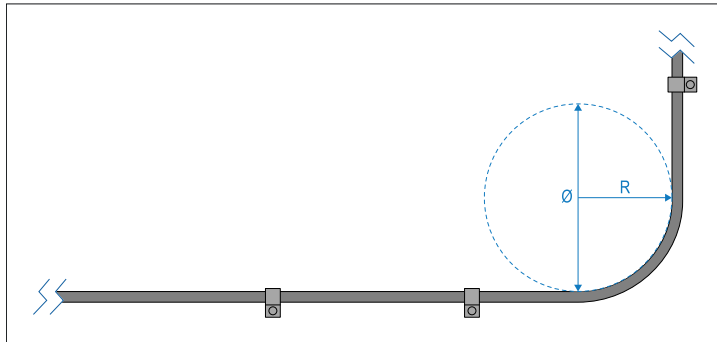
It is important to use cables of the appropriate type and length.

- 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).

Cable routing and bend radius

To maximize cable performance and lifespan, it's important to ensure that all cables are routed correctly and adequate space is provided to allow for each cable's minimum bend radius.

Minimum cable bend radius



Do NOT bend cables excessively. Wherever possible, ensure that your chosen product installation location allows enough clearance for the minimum cable bend diameter specified in the following table:

	Description	Value
Ø	Cable minimum bend diameter .	200 mm (7.87 in.)
R	Cable minimum bend radius .	100 mm (3.94 in.)

Note:

For products where multiple different cable types are connected, each with a different minimum cable bend radius, the higher figure is provided in the table above (i.e. the cable with the greatest minimum bend radius is specified).

Cable routing — best practices

- Protect all cables from physical damage and exposure to heat. Use trunking or conduit where possible. Do NOT run cables through bilges or doorways, or close to moving or hot objects.
- Secure cables in place using cable clips or cable ties. Coil any excess cable and tie it out of the way.
- Where a cable passes through an exposed bulkhead or deckhead, use a suitable watertight feed-through (conduit).
- Do NOT run cables near to engines or fluorescent lights.
- Always route data cables as far away as possible from:
 - Other equipment and cables.
 - High current-carrying AC and DC power lines.
 - Antennas.

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.

Circuit isolation

Appropriate circuit isolation is required for installations using both AC and DC current:

- Always use isolating transformers or a separate power-inverter to run PCs, processors, displays and other sensitive electronic instruments or devices.
- If using Weather FAX audio cables, always use an isolating transformer.
- If using a third-party audio amplifier, always use an isolated power supply.
- If using an RS232/NMEA converter, always ensure optical isolation on the signal lines.

- Always ensure that PCs or other sensitive electronic devices have a dedicated power circuit.

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 adapters (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, adapters, or other signal-coupling devices used in cable runs **maintain all shield connections throughout the cable run.**

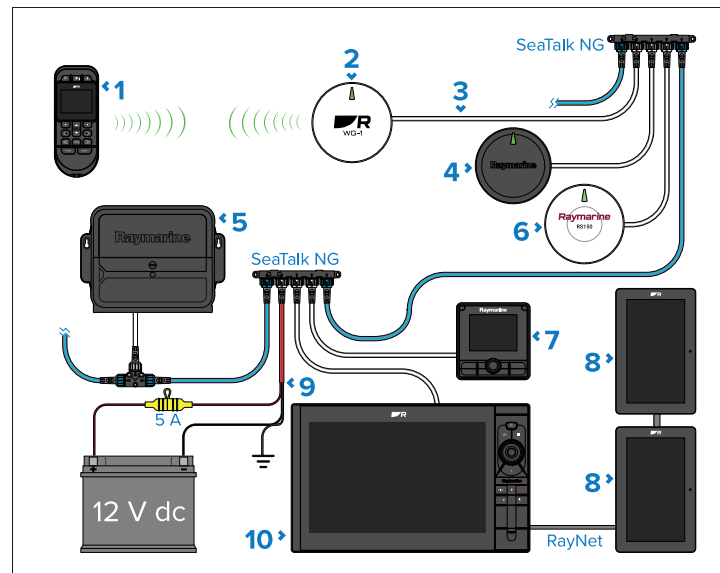
Connecting cables

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.

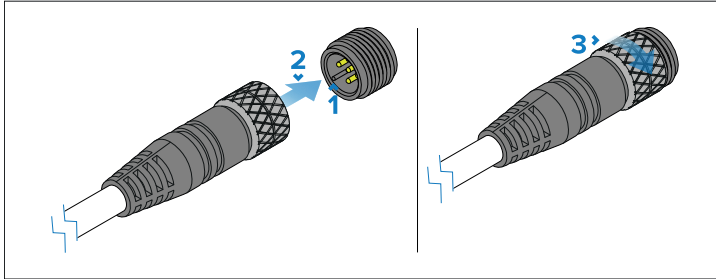
9.2 System example

The following system example shows an RCU-1 Autopilot Remote Control connected to an autopilot system via the WG-1 Wireless Gateway.



1. RCU-1 Remote Autopilot Controller.
2. WG-1 Wireless Gateway.
3. DeviceNet to SeaTalk NG adapter cable.
4. Evolution-Series sensor (e.g.: EV-1).
5. Evolution-Series ACU (e.g.: ACU-200).
6. RS150 GNSS (GPS) receiver.
7. p70Rs autopilot control head.
8. Alpha-Series displays.
9. SeaTalk NG power connection (12 V dc **only**).
10. Axiom 2 Pro chartplotter.

9.3 Connecting DeviceNet cables



1. Ensure the inner groove on the cable's DeviceNet connector is correctly aligned with the inner groove on your product's DeviceNet connector.
2. Fully insert the cable connector.
3. Rotate the DeviceNet locking collar clockwise until the cable is secure.

CHAPTER 10: POWER CONNECTION (WIRELESS GATEWAY)

CHAPTER CONTENTS

- 10.1 SeaTalk NG power supply — page 37
- 10.2 12 Volt dc only — page 38
- 10.3 SeaTalk NG power cables — page 38
- 10.4 SeaTalk NG power cable extension — page 38
- 10.5 SeaTalk NG product loading — page 39
- 10.6 SeaTalk NG power connection point — page 39
- 10.7 SeaTalk NG system loading — page 39
- 10.8 Power distribution — SeaTalk NG — page 40
- 10.9 Power connection via Autopilot Control Unit (ACU-Series) — page 42

10.1 SeaTalk NG power supply

Your product is supplied power via the SeaTalk NG backbone (or the NMEA 2000 backbone if applicable).

A SeaTalk NG backbone requires a single 12 V dc power supply. Power can be supplied to the SeaTalk NG backbone by one of the following methods:

- ⁽¹⁾ Direct connection to a 12 V dc battery using an inline 5 amp fuse.
- Connection to a 12 V dc distribution panel using a 3 amp thermal breaker.
- ⁽²⁾ Connection to the SeaTalk NG connector of an ACU-Series Autopilot Control Unit (not ACU-100 or ACU-150), or an SPX-Series course computer (not SPX-5).
- For 24 V vessels, connection must be via a 5 amp, regulated, continuous 24 V dc to 12 V dc converter.

Note:

- ⁽¹⁾ The battery used for starting the vessel's engine(s) should NOT be used to power the SeaTalk NG backbone. If the SeaTalk NG backbone cannot be powered by an alternate power source, products may experience a loss of voltage when the vessel's engine(s) are started.
- ⁽²⁾ The ACU-100, ACU-150 or SPX-5 cannot be used to power the SeaTalk NG backbone.
- The course computer SeaTalk NG connector includes a power switch that must be in the On position to provide power to the backbone.

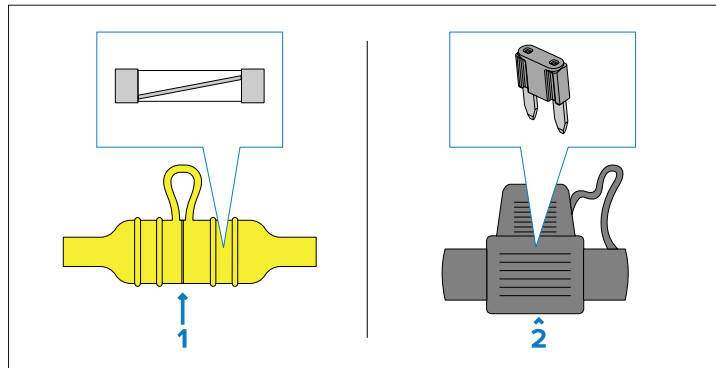
Inline fuse requirement

If your product is NOT supplied with an inline fuse (whether separately or fitted to the power cable), you **MUST** fit a suitably-rated inline fuse to your product's red power wire, housed in a waterproof fuse holder.

The illustration below shows the two main types of inline fuse with waterproof holder, for use in marine electronics installations. Fuses in a variety of ratings are widely available at chandleries and marine electrical retailers.

Select one of the following fuse types to protect your product:

[Power connection \(Wireless gateway\)](#)



1. Waterproof fuse holder containing a “glass”-type inline fuse.
2. Waterproof fuse holder containing a “blade”-type inline fuse.

Fuse ratings:

- *Voltage rating* — must be equal to or greater than the voltage of your vessel's power supply.
- *Current rating* — refer to the *Inline fuse and thermal breaker rating* section in this document.

Inline fuse and thermal breaker ratings

The SeaTalk NG network's power supply requires a suitably-rated inline fuse or thermal breaker to be fitted.

Inline fuse rating	Thermal breaker rating
5A	3A (refer to note below)

Note:

The suitable fuse rating for the thermal breaker is dependent on:

1. How many devices you have connected to your SeaTalk NG network, and;
2. How many devices are sharing the same thermal breaker that your SeaTalk NG network is connected to.

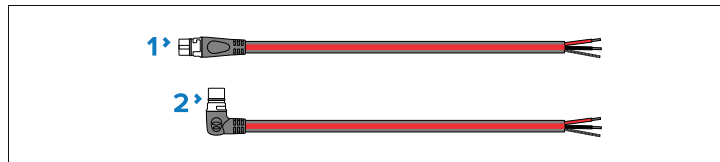
10.2 12 Volt dc only

This product must **ONLY** be connected to a 12 V dc power source.

10.3 SeaTalk NG power cables

The following SeaTalk NG power cables can be used to connect the backbone to your chosen **12 V dc** power supply:

Direct connection cables



1. Standard (straight) SeaTalk NG power cable, 2 m (6.6 ft) (part number: **A06049**).
2. Elbow (right-angled) SeaTalk NG power cable, 2 m (6.6 ft) (part number: **A06070**).

Wiring

- **+ Red (positive) wire** — connects to the battery or distribution panel positive terminal. A waterproof fuse holder with 5 A inline fuse (not supplied) must be fitted to this red wire.
- **– Black (negative) wire** — connects to battery or distribution panel negative terminal.
- **Drain wire** — connects to the vessel's RF common ground point (if available), or the battery's negative (-) terminal.

Autopilot Control Unit connection cable



1. 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.

10.4 SeaTalk NG power cable extension

If you need to extend the length of the SeaTalk NG power cable, ensure you observe the following advice:

- Ensure that any extensions of the SeaTalk NG power cable are of a sufficient gauge for the supply voltage, the total current load of the device, and the length of the cable run — as the cable run length increases, the greater the voltage drop will be from one end of the power cable to the other.
- Refer to the following table for typical **minimum** power cable wire gauges:

Cable length in meters (feet)	Wire gauge in AWG (mm ²) for 12 V supply
<8 (<25)	16 (1.31 mm ²)
16 (50)	14 (2.08 mm ²)
24 (75)	12 (3.31 mm ²)
>32 (>100)	10 (5.26 mm ²)

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 SeaTalk NG power cable where it enters the SeaTalk NG backbone, 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.)

10.5 SeaTalk NG product loading

The number of products that can be connected to a SeaTalk NG backbone depends on the current draw of each product and the physical length of the backbone cabling.

NMEA 2000 Load Equivalency Numbers (LEN) are used to express the amount of current that is drawn from SeaTalk NG products (**1 LEN = 50 mA**). The LEN for each product can be found in the product's *Technical Specification*.

Products which have a dedicated power supply connection and are connected to the SeaTalk NG backbone will still have an LEN rating. This is because the product's NMEA 2000 / SeaTalk NG internal transceiver will still be powered by the SeaTalk NG backbone.

LENs are used to determine the power connection point for the SeaTalk NG backbone.

10.6 SeaTalk NG power connection point

The point along the backbone where the power connection should be made is based on the length of the backbone.

Note:

- A 12 V dc power supply must be connected to a *white* spur SeaTalk NG connection on the backbone.
- Do NOT connect the power connection to a *blue* SeaTalk NG backbone connector.
- **With the exception of** the iTC-5 and the backbone itself, do NOT connect the power supply directly to a product's *white* SeaTalk NG spur connector.

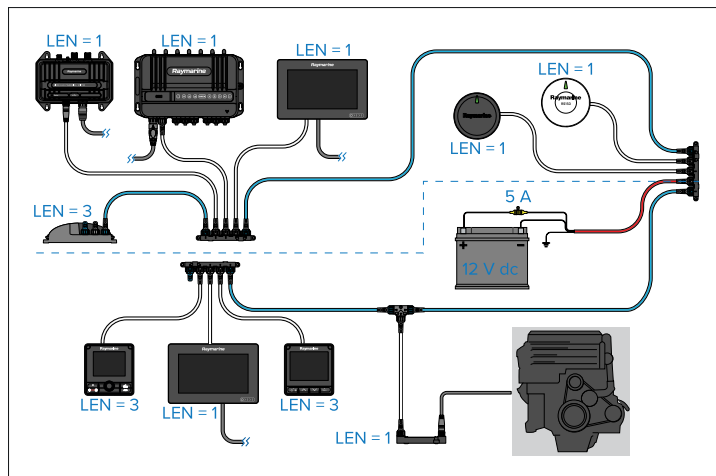
Small systems

If the backbone length is 60 m (197 ft) or less, the power connection may be made at any point in the backbone.

Large systems

If the backbone length is greater than 60 m (197 ft), the power connection should be made at a point that creates a balanced current draw from each side of the backbone. Load Equivalency Numbers (LEN) are used to determine the power connection point for the system.

Power connection (Wireless gateway)



In the example above, the system has an overall LEN of 16, so the optimum connection point would be to have a loading of 8 LEN either side of the connection point.

10.7 SeaTalk NG system loading

The maximum loading (LEN) for a SeaTalk NG system depends on the length of the backbone.

Unbalanced system loading:

- **Backbone Length:** 0 m (0 ft) to 20 m (66 ft) — **Maximum LEN:** 40
- **Backbone Length:** > 20 m (66 ft) to 40 m (131 ft) — **Maximum LEN:** 20
- **Backbone Length:** > 40 m (131 ft) to 60 m (197 ft) — **Maximum LEN:** 14

Balanced system loading:

- **Backbone Length:** 0 m (0 ft) to 60 m (197 ft) — **Maximum LEN:** 100
- **Backbone Length:** > 60 m (197 ft) to 80 m (262 ft) — **Maximum LEN:** 84
- **Backbone Length:** > 80 m (262 ft) to 100 m (328 ft) — **Maximum LEN:** 60
- **Backbone Length:** > 100 m (328 ft) to 120 m (394 ft) — **Maximum LEN:** 50

- **Backbone Length:** > 120 m (394 ft) to 160 m (525 ft) — **Maximum LEN:** 40
- **Backbone Length:** > 160 m (525 ft) to 200 m (656 ft) — **Maximum LEN:** 32

10.8 Power distribution — SeaTalk NG

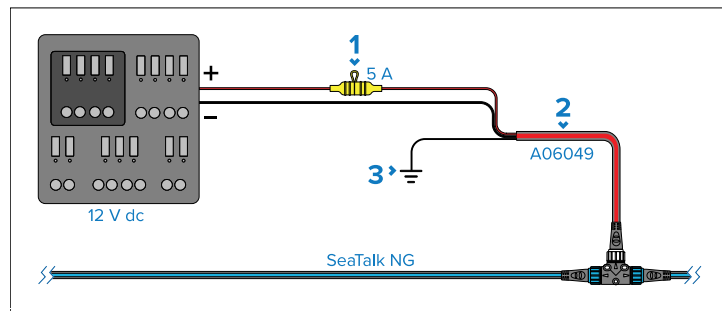
Recommendations and best practice.

- Only use approved SeaTalk NG power cables. Do NOT use a power cable designed for, or supplied with, a different product.
- See below for more information on implementation for some common power distribution scenarios.

Important:

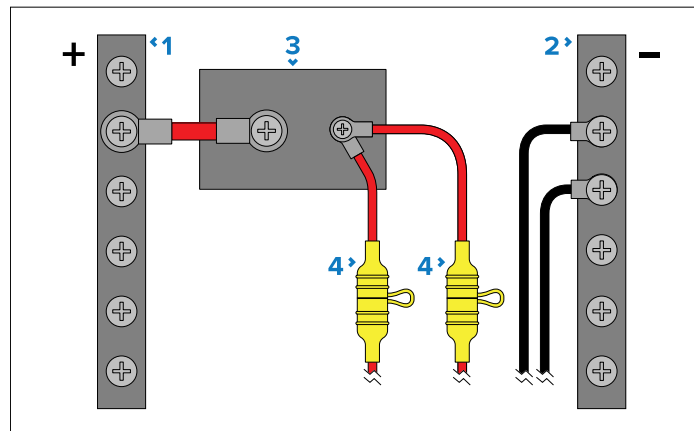
- When planning and wiring, take into consideration other products in your system, some of which (e.g. sonar modules) may place large power demand peaks on the vessel's electrical system, which may impact the voltage available to other products during the peaks.
- The information provided below is for guidance only, to help protect your product. It covers common vessel power arrangements, but does NOT cover every scenario. If you are unsure how to provide the correct level of protection, please consult an authorized Raymarine dealer or a suitably qualified professional marine electrician.

Implementation — connection to distribution panel (recommended)



1. Waterproof fuse holder with 5 A inline fuse must be fitted (not supplied).
2. SeaTalk NG power cable.
3. RF Ground connection point for drain wire.

- Ideally, the SeaTalk NG power cable should be connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point. It is recommended that a 5 A inline fuse is fitted to the red (positive) wire of the SeaTalk NG power cable.
- The distribution point should be fed from the vessel's primary power source by 8 AWG (8.36 mm²) 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 one item of equipment shares a breaker, use individual in-line fuses for each power circuit to provide the necessary protection.



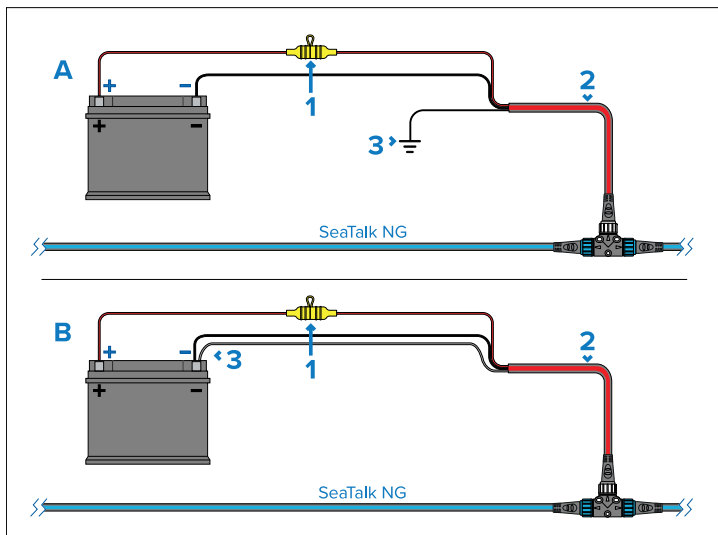
1. Positive (+) bar
2. Negative (-) bar
3. Circuit breaker
4. Waterproof fuse holder with 5 A inline fuse must be fitted (not supplied).

Important:

Observe the recommended fuse / breaker ratings provided in the product's documentation, however be aware that the suitable fuse / breaker rating is dependent on the number of devices being connected.

Implementation — direct connection to battery

- Where connection to a power distribution panel is not possible, the power cable may be connected to the vessel's battery.
- You **MUST** fit a 5 A inline fuse between the red wire and the battery's positive terminal.
- If you need to extend the length of the power cable, ensure you use suitably rated cable and that sufficient power (12 V dc) is available at the SeaTalk NG backbone's power connection.



1. Waterproof fuse holder with 5 A inline fuse must be fitted (not supplied).
2. SeaTalk NG power cable.
3. Connection point for drain wire.

Battery connection scenario A:

Power connection (Wireless gateway)

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

Battery connection scenario B:

Suitable for a vessel without a common RF ground point. In this scenario the power cable's drain wire should be connected directly to the battery's negative terminal.

SeaTalk NG Power cable extension

If you need to extend the length of the SeaTalk NG power cable, ensure you use suitably-rated cable, and that sufficient power is available at the SeaTalk NG backbone's power connection point:

- For power cable extensions, a **minimum** wire gauge of 16 AWG (1.31 mm²) is recommended. For cable runs longer than 15 m (49.2 ft), you may need to consider a thicker wire gauge (e.g. 14 AWG (2.08 mm²), or 12 AWG (3.31 mm²).
- 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.)

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.

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



Warning: 12 Volt dc only

This product must **ONLY** be connected to a 12 V dc power source.



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.

10.9 Power connection via Autopilot Control Unit (ACU-Series)

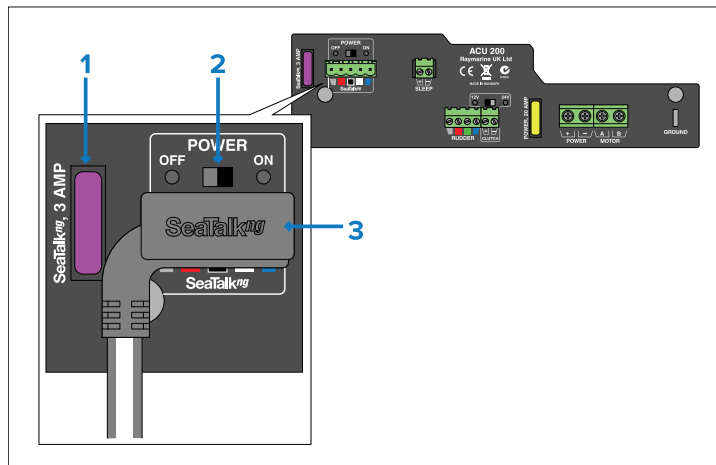
The SeaTalk NG backbone can be supplied 12 V dc power from a compatible Raymarine Autopilot Control Unit (ACU-Series).

Important:

The SeaTalk NG backbone must have a single power supply connection. If your SeaTalk NG backbone is supplied power directly from a battery or distribution panel, then you must ensure that the SeaTalk NG power switch on your ACU-Series is switched Off.

Note:

ACU-100, ACU-150 and SPX-5 autopilot control units cannot supply power to the SeaTalk NG backbone.



1. Fuse for SeaTalk NG power supply.
2. Power switch for SeaTalk NG power supply:
 - a. Select the *[OFF]* position if your SeaTalk NG backbone is supplied power directly from a battery or distribution panel.
 - b. Select the *[ON]* position if your SeaTalk NG backbone is supplied power by the ACU-Series.
3. ACU-Series/SPX-Series autopilot to SeaTalk NG spur cable (part number: R12112).

CHAPTER 11: TROUBLESHOOTING

CHAPTER CONTENTS

- [11.1 Troubleshooting — page 44](#)
- [11.2 Wireless troubleshooting — page 44](#)
- [11.3 LED diagnostic guidance — page 46](#)
- [11.4 WG-1 LED diagnostics — page 47](#)

11.1 Troubleshooting

The troubleshooting section provides possible causes and the corrective action required for common problems that are associated with the installation and operation of your product.

Before packing and shipping, all products are subjected to comprehensive testing and quality assurance programs. If you do experience problems with your product, this section will help you to diagnose and correct problems to restore normal operation.

If after referring to this section you are still having problems with your product, please refer to the *Technical support and servicing* section of this manual for useful links and contact details.

11.2 Wireless troubleshooting

Before troubleshooting problems with your wireless connection, ensure that you have followed the location requirements guidance provided in the relevant installation instructions and performed a power cycle/reboot of the devices you are experiencing problems with.

Device(s) not connected to the wireless gateway

Possible causes	Possible solutions
Device not powered.	Ensure that you have correctly followed the power connection information specified in the documentation which is supplied with your device.
Device out of range.	Wireless performance degrades over distance, so products farther away will receive less network bandwidth. Products installed close to their maximum wireless range will experience slow connection speeds, signal drop outs or no connection at all. In order to maintain a reliable connection, ensure that the distance between wireless products is kept to a minimum. For more information, refer to: p.21 — Location requirements

Possible causes	Possible solutions
Device signal is blocked.	• Bulkheads, decks and other heavy structure can degrade and even block the wireless signal. Depending on the material and its thickness, it may not always be possible to pass a wireless signal through certain structures. • Crew members (especially when wet) can also be obstructive to wireless signals, if their bodies pass through the signal area.
Device software incompatibility.	Ensure both devices are running the latest available software.

Unable to pair with a device

Possible causes	Possible solutions
Device out of range.	Wireless performance degrades over distance, so products farther away will receive less network bandwidth. Products installed close to their maximum wireless range will experience slow connection speeds, signal drop outs or no connection at all. In order to maintain a reliable connection, ensure that the distance between wireless products is kept to a minimum. For more information, refer to: p.21 — Location requirements
Device signal is blocked.	• Bulkheads, decks and other heavy structure can degrade and even block the wireless signal. Depending on the material and its thickness, it may not always be possible to pass a wireless signal through certain structures. • Crew members (especially when wet) can also be obstructive to wireless signals, if their bodies pass through the signal area.
Device software incompatibility.	Ensure both devices are running the latest available software.

Possible causes	Possible solutions
Incorrect password.	Ensure that you have enter the password correctly before attempting to retry and connect.
Connection time-out.	Before attempting to retry and connect, ensure that your device has been correctly installed in accordance with the guidance provided throughout the following section: p.21 — Location requirements

Connection extremely slow and or keeps dropping out

Possible causes	Possible solutions
Device out of range.	Wireless performance degrades over distance, so products farther away will receive less network bandwidth. Products installed close to their maximum wireless range will experience slow connection speeds, signal drop outs or no connection at all. In order to maintain a reliable connection, ensure that the distance between wireless products is kept to a minimum. For more information, refer to: p.21 — Location requirements
Device signal is blocked.	• Bulkheads, decks and other heavy structure can degrade and even block the wireless signal. Depending on the material and its thickness, it may not always be possible to pass a wireless signal through certain structures. • Crew members (especially when wet) can also be obstructive to wireless signals, if their bodies pass through the signal area.

Possible causes	Possible solutions
Interference being caused by other wireless-enabled devices.	Wireless products should be installed at least 1 m (3.28 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.
Interference caused by other devices that use the 2.4 GHz frequency See list below of some common devices that use the 2.4 GHz frequency:	Wireless products should be installed at least 1 m (3.28 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.

- Microwave ovens
- Fluorescent lighting
- Cordless phones / baby monitors
- Motion sensors

Possible causes	Possible solutions
Interference caused by electrical and electronic devices and associated cabling could generate an electromagnetic field which may interfere with the wireless signal.	Wireless products should be installed at least 1 m (3.28 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.
Interference from devices on other vessels. When in close proximity to other vessels, many other wireless signals may be present; for example, when moored up in a marina.	If possible, move your vessel to a location with less wireless traffic.

Network connection established but no data received

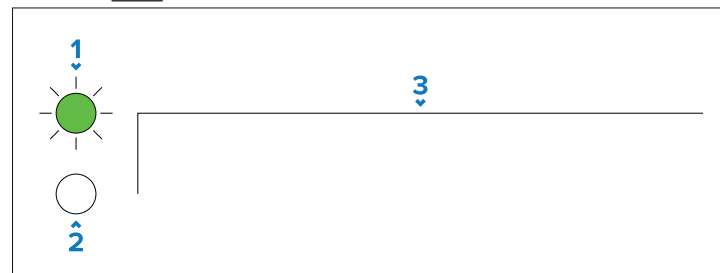
Possible causes	Possible solutions
Device software incompatibility.	Ensure both devices are running the latest available software.
Device fault.	1. Try updating software to a later version, or try reinstalling the current software. 2. Contact technical support for further assistance.

11.3 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.

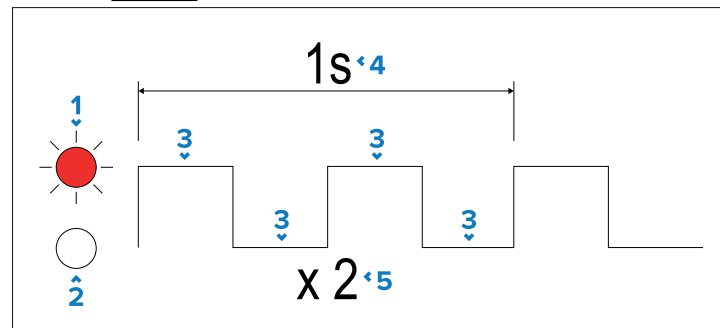
The following section provides two basic examples of how to interpret the LED diagnostic patterns included in this publication.

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 above, a continuous peak occurs, indicating that the LED is permanently **on**.

Example flashing LED diagnostic pattern:



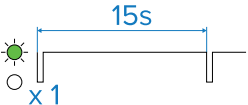
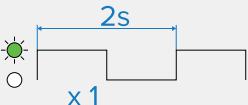
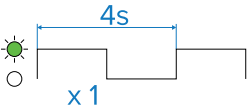
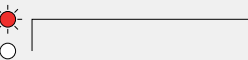
1. **LED ON** — Indicates the color assigned to the unit's diagnostic LED, and confirms that the diagnostic LED is active (switched **on**).
2. **LED OFF** — Indicates that the unit's diagnostic LED is inactive (switched **off**).
3. **Diagnostic pattern** — Indicates a diagnostic pattern based on the number and duration of *peaks* (indicating LED is switched

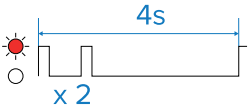
on) and *troughs* (indicating LED is switched **off**) generated within the duration of the diagnostic pattern. In the example shown above, a peak followed by a trough occurs and then repeats again, indicating that the LED flashes twice within a period of one second.

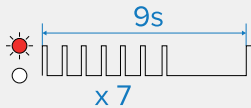
4. **Diagnostic pattern duration** — Indicates the total duration of the diagnostic pattern.
5. **Diagnostic pattern flash total** — Indicates the total number of flashes that occur within the diagnostic pattern.

11.4 WG-1 LED diagnostics

The wireless gateway has diagnostic LEDs on the front of the unit. These LEDs are used to identify the unit's status, and can be used for troubleshooting.

LED indication	LED status and possible solutions
	(Green) Powered up / Ok Normal operation — no user action is required.
	(Green) No wind vane connected / Wind vane connecting Check the relevant product, network cabling and connections for signs of damage or corrosion, and replace if necessary.
	(Green) Update in progress Normal operation — no user action is required.
	(Green) Gateway powering on Normal operation — no user action is required.

LED indication	LED status and possible solutions
	(Red) CAN not connected - Check the relevant product, network cabling and connections for signs of damage or corrosion, and replace if necessary. - Consider contacting your local dealer or Raymarine Product Support.

LED indication	LED status and possible solutions
	(Red) CAN Fault • Check the relevant product, network cabling and connections for signs of damage or corrosion, and replace if necessary. • Consider contacting your local dealer or Raymarine Product Support.
	(No color) No power 1. 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. 2. Check the power supply cable and connectors for signs of damage or corrosion; replace if necessary. 3. Check that the power cable connector is fully inserted into the unit and locked in position. 4. With the unit turned on, try flexing the power cable near to the connector to see if this causes the unit to re-start/lose power; replace if necessary. 5. With the product under load, using a multi-meter, check for high voltage drop across all connectors / fuses etc, and replace if necessary.

CHAPTER 12: MAINTENANCE

CHAPTER CONTENTS

- [12.1 Routine equipment checks — page 50](#)

12.1 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.

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.

CHAPTER 13: TECHNICAL SUPPORT

CHAPTER CONTENTS

- 13.1 Raymarine technical support and servicing — page 52
- 13.2 Learning resources — page 53
- 13.3 Viewing product information from a chartplotter — page 53

13.1 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.

Servicing and warranty

Raymarine offers dedicated service departments for warranty, service, and repairs.

Visit the Raymarine website to **read the latest warranty policy**, and **register** your product's warranty online:

- www.bit.ly/rym-warranty

United Kingdom (UK), EMEA, and Asia Pacific:

- Web: www.bit.ly/rym-service
- Tel: +44 (0)1329 246 932

United States (US):

- Web: www.bit.ly/rym-service
- Tel: +1 (603) 324 7900

Web support

Please visit the “Support” area of the Raymarine website for:

- **Manuals and Documents** — www.bit.ly/rym-docs
- **Technical support forum** — www.bit.ly/rym-support
- **Software updates** — www.bit.ly/rym-software

Telephone and online support

Region	Contact details
All regions	Online support: www.bit.ly/rym-support
United Kingdom (UK) and EMEA	Telephone: +44 (0)1329 246 777 Address: Marine House, Cartwright Drive, Fareham, PO15 5RJ, UK.
United States (US)	Telephone: Tel: +1 (603) 324 7900 (Toll-free: +800 539 5539) Address: 110 Lowell Road, Hudson, NH 03051, USA.
Australia and New Zealand (Raymarine subsidiary)	Telephone: +61 2 8977 0300 Address: Suite 1.01, 26 Rodborough Road, Frenchs Forest, NSW, 2086, Australia.
France (Raymarine subsidiary)	Telephone: +33 (0)1 46 49 72 30 Address: 35 avenue Michel Crépeau, 17000 La Rochelle - France.
Germany (Raymarine subsidiary)	Telephone: +49 40 237 808 0 Address: Atlantic-Haus, Zirkusweg 1, 20359 Hamburg.
Italy (Raymarine subsidiary)	Telephone: +39 02 9945 1001 Address: Via L. Manara 2, 20812 Limbiate (MB), Italy.
Spain (Authorized Raymarine distributor)	Telephone: +34 96 2965 102 Email: sat@azimut.es
Netherlands / Benelux (Authorized Raymarine distributor)	Telephone: +31 (0)26 3614 905 Address: Florijnweg 21G, 6883 JN VELP, Nederland.

Region	Contact details
Sweden (Raymarine subsidiary)	Telephone: +46 (0)317 633 670 Address: Bolshedens Industriväg 18, 427 50 Billdal, Sweden.
Finland (Raymarine subsidiary)	Telephone: +358 (0)207 619 937 Address: Suomalaistentie 1-3, 02270 Espoo, Finland.
Norway (Raymarine subsidiary)	Telephone: +47 692 64 600 Address: Årvollskogen 30, 1529 Moss, Norway.
Denmark (Raymarine subsidiary)	Telephone: +45 437 164 64 Address: Centervej 7, 4600 Køge, Denmark.
Russia (Distributor)	Telephone: Tel: +7 495 788 0508 Email: info@mikstmarine.ru

13.2 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:

- www.bit.ly/rym-training

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

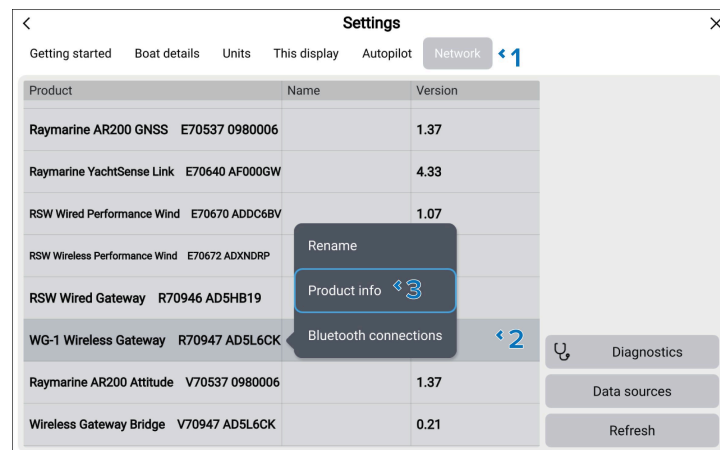
[Technical support](#)

using their Raymarine equipment. The resource is regularly updated with contributions from Raymarine customers and staff:

- www.bit.ly/rym-support

13.3 Viewing product information from a chartplotter

Hardware and software information related to your product can be viewed from a compatible chartplotter running LightHouse 4.



From the [*Homescreen* > *Settings*] menu:

1. Select the [*Network*] tab.
2. Select your device from the network list.

The software version for your device will be listed in the [Version] column of the network list.

3. Select [*Product info*] from the pop-over options.

The product information details for the selected device will be displayed.

<

Product information

×

WG-1 Wireless Gateway R70947 AD5L6CK

NMEA2000 info

Application version:

0.17

CAN address:

b1

Database Version:

3000

Model Version:

WG-1 Wireless Gateway

Product Code:

21781

Product ID:

R70947

Product name:

WG-1 Wireless Gateway

CHAPTER 14: TECHNICAL SPECIFICATION — WIRELESS GATEWAY

CHAPTER CONTENTS

- 14.1 Physical specification — page 56
- 14.2 Power specification — page 56
- 14.3 Environmental specification — page 56
- 14.4 Bluetooth specification — page 56
- 14.5 Conformance specification — page 56
- 14.6 Product markings — page 57

14.1 Physical specification

Specification	
Diameter:	108.48 mm (4.27 in)
Height:	26.61 mm (1.05 in)
Product weight (gateway only):	129 g (4.55 oz)

14.2 Power specification

Specification	
Nominal supply voltage:	12 V dc (Supplied by the SeaTalk NG network.)
Operating voltage range:	9 V dc to 16 V dc (protected up to 32 V dc)
Power consumption:	50 mA Max.
LEN (Load Equivalency Rating):	1

14.3 Environmental specification

Specification	
Operating temperature range:	-25 °C to +55 °C (-13 °F to 131 °F)
Storage temperature range:	-25 °C to +70 °C (-13 °F to 158 °F)
Relative humidity:	93%
Water ingress protection:	IPx6, IPx7

14.4 Bluetooth specification

Specification	
Bluetooth Version:	5.1
Connection range:	Up to 30 m (98.43 ft) with clear line of sight

14.5 Conformance specification

This product is compliant or approved to the following standards or by the listed entities.

Specification	
UK:	• SI 2016:1091: Electromagnetic Compatibility (EMC) Regulations 2016 • SI 2017:1206: The Radio Equipment Regulations 2017 • SI 2014:1638: The Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment Regulations 2012 • SI 2013:3113 The Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 • Product Security And Telecommunications Infrastructure (PSTI) Act 2022
EU & EFTA:	• Directive 2014/30/EC: Electromagnetic Compatibility (EMC) directive • Directive 2014/53/EU: Radio Equipment Directive (RED) • Directive 2002/95/EC: Restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment directive • Directive 2002/96/EC: Waste Electrical and Electronic Equipment (WEEE) directive

Specification	
USA:	CFR 47 Part 15, 1093: Radio Frequency devices
Australia and New Zealand:	AS/NZS 4417.1 & 2
Canada:	ISED RSS-210: Licence-Exempt Radio Apparatus: Category I Equipment
Taiwan:	NCC

14.6 Product markings

The product includes the following approval / compliance markings and/or IDs.

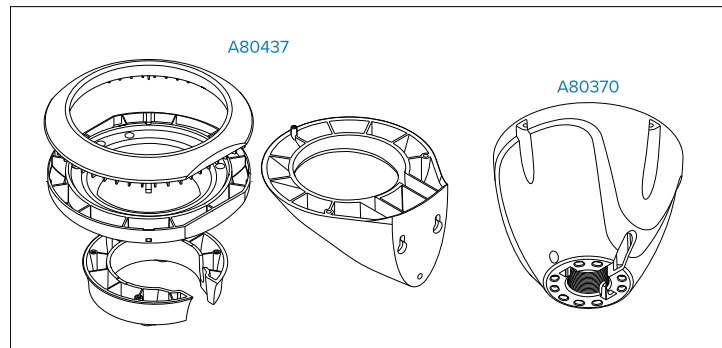
Product markings:	
UK:	UKCA
EU / EFTA:	- CE - WEEE
USA:	FCC
Canada:	ISED
Australia and New Zealand:	Regulatory Compliance Mark (RCM)

CHAPTER 15: SPARES AND ACCESSORIES

CHAPTER CONTENTS

- [15.1 Accessories — Wireless gateway — page 59](#)
- [15.2 SeaTalk NG cables and accessories — page 59](#)

15.1 Accessories — Wireless gateway



Part number	Description
A80437	Deck mounting (Clamshell / Riser) kit.
A80370	Pole / rail mounting adaptor kit.

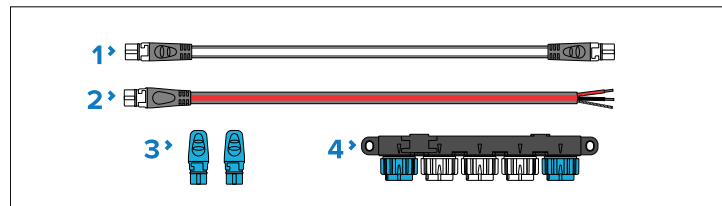
15.2 SeaTalk NG cables and accessories

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.

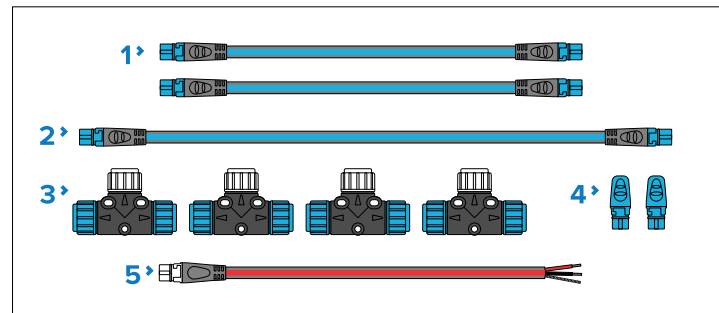
Starter kit (part number: T70134) consists of:



- 1 x Spur cable 3 m (9.8 ft) (part number: **A06040**). Used to connect device to the SeaTalk NG backbone.
- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.

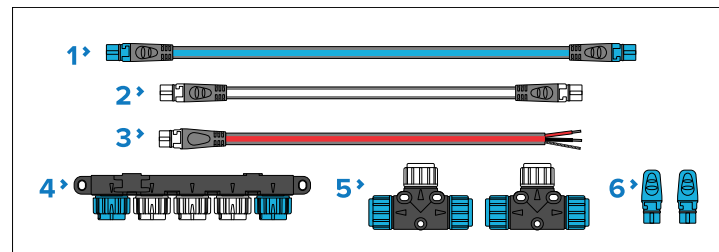
- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.
- 1 x 5-Way connector (part number: **A06064**). Each connector block allows connection of up to 3 SeaTalk NG devices. Multiple connector blocks can be 'daisy chained' together.

Backbone kit (part number: A25062) consists of:



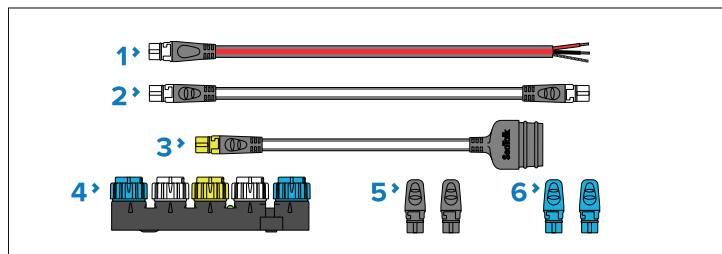
- 2 x Backbone cables 5 m (16.4 ft) (part number: **A06036**). Used to create and extend the SeaTalk NG backbone.
- 1 x Backbone cable 20 m (65.6 ft) (part number: **A06037**). Used to create and extend the SeaTalk NG backbone.
- 4 x T-piece (part number: **A06028**). Each T-piece allows connection of one SeaTalk NG device. Multiple T-pieces can be 'daisy chained' together.
- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.
- 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 x Backbone cable 5 m (16.4 ft) (part number: **A06036**). Used to create and extend the SeaTalk NG backbone.
- 1 x Spur cable 1 m (3.3 ft) (part number: **A06040**). Used to connect device to the SeaTalk NG backbone.
- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.
- 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.
- 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.
- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

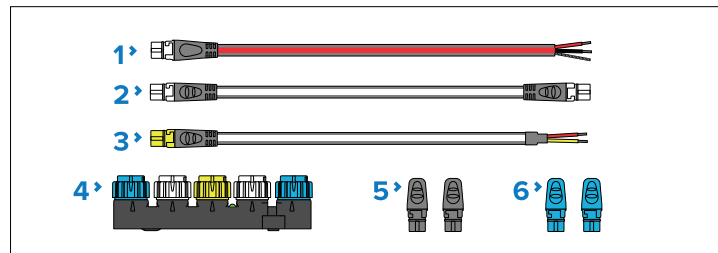
SeaTalk 1 to SeaTalk NG converter kit (part number: E22158) consists of:



- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.
- 1 x Spur cable 1 m (3.3 ft) (part number: **A06039**). Used to connect a device to the SeaTalk NG backbone.
- 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.
- 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.
- 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.

- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

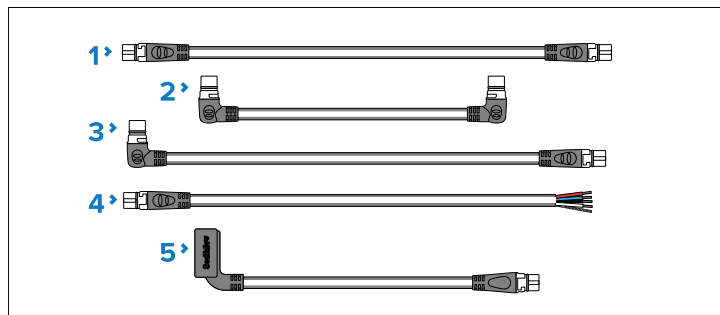
NMEA 0183 VHF 2-wire to SeaTalk NG converter kit (part number: E70196) consists of:



- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.
- 1 x Spur cable 1 m (3.3 ft) (part number: **A06039**). Used to connect a device to the SeaTalk NG backbone.
- 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.
- 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.
- 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.
- 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-200 / ACU-300 / ACU-400 / 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.

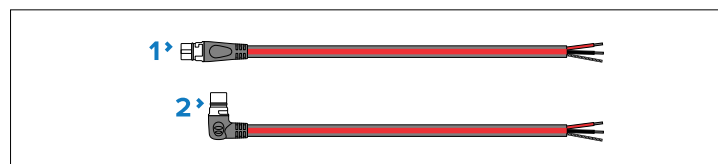


1. Backbone cables:

- 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

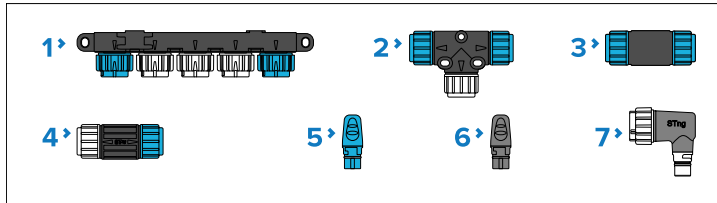
SeaTalk NG power cables are used to provide the SeaTalk NG backbone with a single 12 V dc power source. The power connection must include a 5 amp inline fuse (not supplied).



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

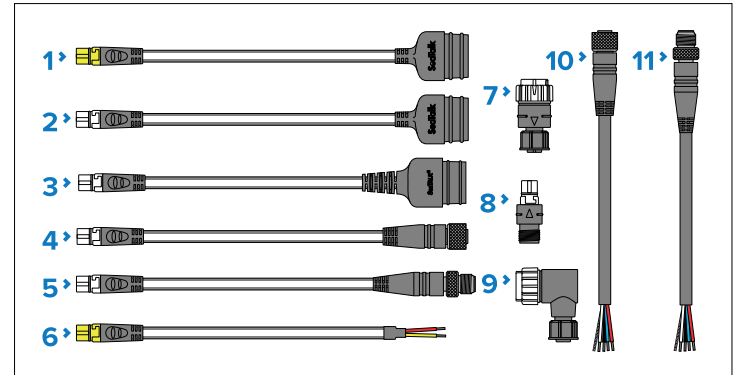
SeaTalk NG connectors are used to connect SeaTalk NG devices to the SeaTalk NG backbone and to create and extend the backbone.



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

Supported standard NMEA 2000 PGNs are listed below. NMEA 2000 Raymarine and other proprietary PGNs are not listed.

Note:

Support for some PGNs may be restricted to a specific application.

Administration PGNs

- **59392** — ISO Acknowledge (Transmit)
- **59904** — ISO Request (Receive / Transmit)
- **60160** — ISO Transport Protocol, Data Transfer (Receive)
- **60416** — ISO Transport Protocol, Connection Management — BAM Group Function (Receive)
- **60928** — ISO Address Claim (Receive / Transmit)
- **65240** — ISO Commanded address (Receive)
- **126208** — NMEA — Request, Commanded, Acknowledged Group Function (Receive / Transmit)
- **126464** — PGN Transmit and Receive List (Transmit)
- **126993** — Heartbeat (Receive / Transmit)
- **126996** — Product Information (Transmit)
- **126998** — Configuration Information (Transmit)

Data PGNs

- **126992** — System Time (Receive)
- **127233** — Man Overboard Notification (MOB) (Receive / Transmit)
- **127250** — Vessel Heading (Receive)
- **127258** — Magnetic Variation (Receive)
- **128259** — Speed, (Receive)
- **128267** — Water Depth (Receive)
- **128275** — Distance Log (Receive)
- **129025** — Position, Rapid Update (Receive)

- **129026** — COG & SOG, Rapid Update (Receive)
- **129029** — GNSS Position Data (Receive)
- **129033** — Time & Date (Receive)
- **129283** — Cross Track Error (Receive)
- **129284** — Navigation Data (Receive)
- **130306** — Wind Data (Receive)
- **130316** — Temperature, Extended Range (Receive)

Index

A

Accessories	
SeaTalk NG adaptor cables.....	62
SeaTalk NG backbone cables.....	61
SeaTalk NG cables.....	59
SeaTalk NG connectors	61
SeaTalk NG kits.....	59
SeaTalk NG Power cables	61
SeaTalk NG spur cables.....	60
Applicable documents	12
Applicable products	12

B

Backbone length,	
SeaTalk NG.....	39
Bluetooth	
Connection	29
Pairing	29
Specification.....	56

C

Cable	
Bend radius.....	33
Protection	33–34
Routing	33
Security.....	33
Strain relief.....	33
Cabling	
Circuit isolation	33
Circuit isolation	33
Compass safe distance	22
Compatible devices	15
Connecting cables	34
Connection	
Bluetooth.....	29
Connections	
Battery	41
Distribution panel	40

Power	37, 39, 42
Power connections	
Power distribution.....	40

D

Declaration of Conformity	8
Diagnostics	46
Dimensions	
Wireless Gateway	20
Distribution panel connection	40
Document information	
Latest documentation	12
Documentation	12

E

Environmental specification	56
-----------------------------------	----

F

Fuse requirement	37
------------------------	----

I

Inline fuse	37
Installation	27
Wireless gateway	26
Installation tools	26
Interference.....	22
<i>See also</i> Compass safe distance	

L

Latest documentation	12
LED diagnostics (WG-1).....	47
LEN (Load Equivalency Rating).....	56
Load equivalency number.....	39
Location requirements	22

Wireless	23
Wireless gateway	22
Wireless interference.....	23

M

Maintenance.....	7, 50
Mounting	
Wireless gateway	26

N

Network length,	
SeaTalk NG.....	39
NMEA 2000	65
LEN	39

P

PGNs	65
Power	
Battery connection.....	41
Distribution panel	40
Fuses.....	37
Sharing a breaker	40
Power cable extension.....	38, 41
Power connection point	39
Power specification.....	56
Product dimensions	
Wireless Gateway	20
Product documentation.....	12
Product information.....	53
Product loading.....	39
Product overview.....	15
Product recycling (WEEE).....	9
Product support	52

R

Routine checks	50
----------------------	----

S

SeaTalk NG.....	40
Adaptor cables.....	62
Backbone cables.....	61
Connectors	61
Kits.....	59
LEN.....	39
Load equivalency number.....	39
Power	37, 39, 42
Power cables.....	38, 61
Spur cables	60
System loading	39
SeaTalk NG cables.....	59
Service Center	52
Servicing	7, 50
Software updates	16, 24
Support forum.....	53
Surface mounting	27
System example	16, 34

T

Technical specification	
Bluetooth.....	56
Conformance specification	56
Environmental.....	56
Physical specification.....	56
Power	56
Product markings.....	57
Technical support	52–53
Tools required	26
Training courses.....	53
Troubleshooting	44
Diagnostics	46
Network LED diagnostics.....	47

U

Upgrading, software.....	16
--------------------------	----

W

Warranty..... 9, 52

WEEE Directive 9