

Raymarine®



AXIOM™ PRO

Installation instructions

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Software updates



Check the Raymarine website for the latest software releases for your product.
www.raymarine.com/software

Product documentation



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Contents

| | |
|--|-----------|
| Chapter 1 Important information | 9 |
| Disclaimers | 9 |
| RF exposure | 9 |
| Compliance Statement (Part 15.19) | 9 |
| FCC Interference Statement (Part 15.105 (b)) | 9 |
| Innovation, Science and Economic Development Canada (ISED) | 10 |
| Innovation, Sciences et Développement économique Canada (Français) | 10 |
| Japanese approvals | 10 |
| MSIP Warning Statement for Radio Devices (Korea only) | 10 |
| Declaration of Conformity | 11 |
| Product disposal | 11 |
| Warranty registration | 11 |
| Technical accuracy | 11 |
| Chapter 2 Document and product information | 13 |
| 2.1 Product documentation | 14 |
| User manuals Print Shop | 14 |
| LightHouse™ 3 MFD Operation instructions | 14 |
| 2.2 Applicable products | 15 |
| Axiom™ Pro Multifunction Displays | 15 |
| 2.3 Compatible transducers — Axiom™ Pro MFDs | 16 |
| RealVision transducers | 16 |
| DownVision™ transducers | 18 |
| CHIRP conical beam transducers (using DownVision™ type connector) | 18 |
| 2.4 Parts supplied - Axiom Pro 9 and 12 | 19 |
| 2.5 Parts supplied - Axiom Pro 16 | 19 |
| Chapter 3 Installation | 21 |
| 3.1 Selecting a location | 22 |
| General location requirements | 22 |
| EMC installation guidelines | 22 |
| RF interference | 23 |
| Compass safe distance | 23 |
| GNSS (GPS) location requirements | 23 |
| Touchscreen location requirements | 25 |
| Wireless location requirements | 25 |
| Viewing angle considerations | 25 |
| Product dimensions | 26 |
| 3.2 Mounting options | 27 |
| 3.3 Surface mounting | 28 |
| Fitting the Menu-Home button | 29 |
| Removing the bezel pieces | 29 |

| | |
|---|-----------|
| 3.4 Bracket (trunnion) mounting..... | 30 |
| Chapter 4 Connections..... | 31 |
| 4.1 Connections overview (Axiom Pro)..... | 32 |
| Connecting cables..... | 34 |
| 4.2 Axiom Pro / Axiom XL power connection | 34 |
| In-line fuse and thermal breaker ratings..... | 35 |
| Power distribution..... | 35 |
| Grounding — optional dedicated drain wire | 39 |
| 4.3 NMEA 2000 (SeaTalkng®) connection | 40 |
| 4.4 NMEA 0183 connection | 40 |
| 4.5 Transducer connection (Axiom Pro)..... | 41 |
| RealVision™ 3D transducer extension cable | 42 |
| Axiom transducer adaptor cables..... | 42 |
| 4.6 Network connection..... | 43 |
| 4.7 GA150 connection | 43 |
| 4.8 Accessory connection | 43 |
| 4.9 Axiom Pro analog video connection..... | 45 |
| Chapter 5 Maintaining your display | 47 |
| 5.1 Service and maintenance..... | 48 |
| Routine equipment checks | 48 |
| 5.2 Product cleaning | 48 |
| Cleaning the display case..... | 48 |
| Cleaning the display screen | 48 |
| Cleaning the sun cover..... | 49 |
| Chapter 6 Troubleshooting | 51 |
| 6.1 Troubleshooting | 52 |
| 6.2 Power up troubleshooting | 53 |
| Performing a power on reset - Axiom Pro..... | 53 |
| 6.3 GNSS (GPS) troubleshooting | 54 |
| 6.4 Sonar troubleshooting..... | 55 |
| 6.5 Wi-Fi troubleshooting | 58 |
| 6.6 Touchscreen troubleshooting | 61 |
| 6.7 Miscellaneous troubleshooting | 62 |
| Chapter 7 Technical support..... | 63 |
| 7.1 Raymarine product support and servicing | 64 |
| Viewing product information (LightHouse™ 3)..... | 65 |
| Remote Support via AnyDesk..... | 66 |
| 7.2 Learning resources | 66 |
| Chapter 8 Technical specification..... | 67 |
| 8.1 Axiom Pro technical specification | 68 |

| | |
|--|-----------|
| 8.2 Internal sonar specification | 69 |
| RealVision™ 3D sonar specification..... | 69 |
| 1kW sonar specification | 70 |
| 8.3 Internal GNSS (GPS / GLONASS) receiver specification | 70 |
| 8.4 NMEA 0183 sentences..... | 70 |
| 8.5 NMEA 2000 PGNs | 71 |
| Chapter 9 Spares and accessories | 73 |
| 9.1 AXIOM Pro accessories..... | 74 |
| Axiom transducer adaptor cables..... | 74 |
| Legacy MFD adaptor plates..... | 74 |
| 9.2 AXIOM Pro spares..... | 75 |
| 9.3 RayNet to RayNet cables and connectors | 76 |
| RayNet to RJ45 adapter cables | 76 |
| 9.4 SeaTalkng® cables and accessories..... | 78 |

Chapter 1: Important information



Warning: Product installation and operation

- This product must be installed and operated in accordance with the instructions provided. Failure to do so could result in personal injury, damage to your vessel and/or poor product performance.
- Raymarine recommends certified installation by a Raymarine approved installer. A certified installation qualifies for enhanced product warranty benefits. Contact your Raymarine dealer for further details, and refer to the separate warranty document packed with your product.



Warning: High voltage

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

Disclaimers

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.

This product uses digital chart data, and electronic information from Global Navigation Satellite Systems (GNSS) which may contain errors. Raymarine does not warrant the accuracy of such information and you are advised that errors in such information may cause the product to malfunction. 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 chart data or information utilized by the product and supplied by third parties.

This product supports electronic charts provided by third party suppliers which may be embedded or stored on memory card. Use of such charts is subject to the supplier's End-User Licence Agreement.

RF exposure

This equipment complies with FCC / ISED RF exposure limits for general population / uncontrolled exposure. The wireless LAN / Bluetooth antenna is mounted behind the front facia of the display. This equipment should be installed and operated with a minimum distance of 1 cm (0.39 in) between the device and the body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures.

Compliance Statement (Part 15.19)

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

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

FCC Interference Statement (Part 15.105 (b))

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular

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

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio / TV technician for help.

Innovation, Science and Economic Development Canada (ISED)

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

Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

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

Innovation, Sciences et Développement économique Canada (Français)

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

Son fonctionnement est soumis aux deux conditions suivantes:

1. cet appareil ne doit pas causer d'interférence, et
2. cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

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

Japanese approvals

In the frequency band used for this device, campus radio stations (radios stations that require a license) and specified low power radio stations (radio stations that do not require license) for mobile identification and amateur radio stations (radio stations that require license) used in industries such as microwave ovens, scientific, medical equipment devices and production line of other factories are also being operated.

1. Before using this device, please make sure that campus radio stations and specified low power radio stations for mobile identification and amateur radio stations are not being operated nearby.
2. In case there is any case of harmful interference to campus radio stations for mobile identification caused by this device, please immediately change the frequency used or stop the transmission of radio waves and then consult about the measures to avoid interference (for example, the installation of partitions) through the contact information below.
3. Besides, when in trouble, such as when there is any case of harmful interference to specified low power radio stations for mobile identification or amateur radio stations caused by this device, please consult through the following contact information.

Contact information: Please contact your local authorized Raymarine dealer.

MSIP Warning Statement for Radio Devices (Korea only)

- 제작자 및 설치자는 해당 무선설비가 전파혼신 가능성이 있으므로 안전 인명과 관련된
- 서비스는 할 수 없음을 사용자 설명서 등을 통하여 운전자 및 사용자에게 충분히 알릴 것

- 법에 의해 전 방향 전파 발사 및 동일한 정보를 동시에 여러 곳으로 송신하는 점-대-다지점 서비스에의 사용은 금지되어 있습니다.

Declaration of Conformity

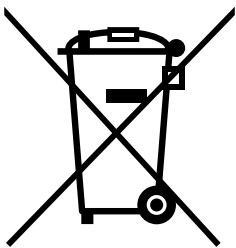
FLIR Belgium BVBA declares that the radio equipment types Axiom Pro multifunction displays, part numbers E70371, E70481, E70372, E70482, E70373, E70483, are in compliance with the Radio Equipment Directive 2014/53/EU.

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

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: www.raymarine.eu/recycling.



Warranty registration

To register your Raymarine product ownership, please visit www.raymarine.com and register online.

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

Technical accuracy

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

Chapter 2: Document and product information

Chapter contents

- 2.1 Product documentation on page 14
- 2.2 Applicable products on page 15
- 2.3 Compatible transducers — Axiom™ Pro MFDs on page 16
- 2.4 Parts supplied - Axiom Pro 9 and 12 on page 19
- 2.5 Parts supplied - Axiom Pro 16 on page 19

2.1 Product documentation

The following documentation is applicable to your product:

All documents are available to download as PDFs from www.raymarine.com

Documentation

| Description | Part number |
|--|--|
| Installation instructions (This document) | 87319 |
| Surface mounting template | <ul style="list-style-type: none">• 9" — 87235• 12" — 87236• 16" — 87313 |
| Legacy MFD to Axiom Pro adaptor plates installation instructions | 87321 |
| RCR-SDUSB Installation instructions | 87317 |
| LightHouse™ 3 Basic operation instructions | 81369 |
| LightHouse™ 3 Advanced operation instructions | 81370 |

User manuals Print Shop

Raymarine provides a Print Shop service, enabling you to purchase a high-quality, professionally-printed manual for your Raymarine product.

Printed manuals are ideal for keeping onboard your vessel, as a useful source of reference whenever you need assistance with your Raymarine product.

Visit <http://www.raymarine.co.uk/view/?id=5175> to order a printed manual, delivered directly to your door.

For further information about the Print Shop, please visit the Print Shop FAQ pages: <http://www.raymarine.co.uk/view/?id=5751>.

Note:

- Accepted methods of payment for printed manuals are credit cards and PayPal.
- Printed manuals can be shipped worldwide.
- Further manuals will be added to the Print Shop over the coming months for both new and legacy products.
- Raymarine user manuals are also available to download free-of-charge from the Raymarine website, in the popular PDF format. These PDF files can be viewed on a PC / laptop, tablet, smartphone, or on the latest generation of Raymarine multifunction displays.

LightHouse™ 3 MFD Operation instructions

For operation instructions for your product please refer to the LightHouse™ 3 MFD Operation instructions.



The Basic (81369) and Advanced (81370) LightHouse™ 3 Operation Instructions can be downloaded from the Raymarine website: www.raymarine.com/manuals. Please check the website to ensure you have the latest documentation.

2.2 Applicable products

This document is applicable to the following products:

Axiom™ Pro Multifunction Displays

| Product number | Name | Description |
|----------------|-------------------|--|
| E70371 | Axiom™ Pro 9 RVX | 9" MFD with built-in RealVision™ 3D and 1kW sonar module. |
| E70481 | Axiom™ Pro 9 S | 9" MFD with built-in 200W CHIRP sonar module. |
| E70372 | Axiom™ Pro 12 RVX | 12" MFD with built-in RealVision™ 3D and 1kW sonar module. |
| E70482 | Axiom™ Pro 12 S | 12" MFD with built-in 200W CHIRP sonar module. |
| E70373 | Axiom™ Pro 16 RVX | 16" MFD with built-in RealVision™ 3D and 1kW sonar module. |
| E70483 | Axiom™ Pro 16 S | 16" MFD with built-in 200W CHIRP sonar module. |

2.3 Compatible transducers — Axiom™ Pro MFDs

Depending on your MFD variant you can connect the following transducer types directly to your MFD:

Axiom Pro S:

- CPT-S CHIRP conical beam transducers that utilize the 9 pin DownVision™ connector.

Axiom Pro RVX — RV connection:

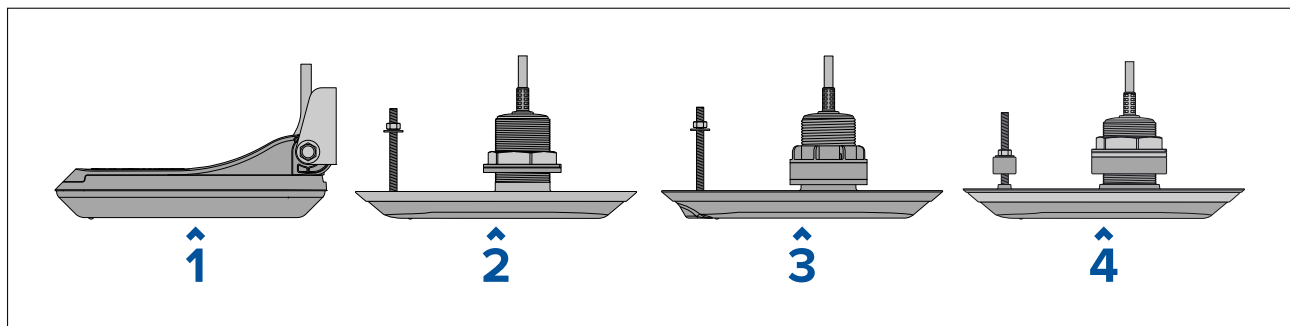
- RealVision™ 3D transducers.
- DownVision™ transducers.
- Non-CHIRP transducers can be connected using available adaptor cables. Refer to the Raymarine® website for compatible transducers: www.raymarine.com/transducers.

Axiom Pro RVX — X connection:

- 1kW transducers. Refer to the Raymarine® website for compatible transducers: www.raymarine.com/transducers.
- Other transducers using available adaptor cables.

RealVision transducers

The transducers listed below can be connected directly to RealVision™ 3D variant MFDs.

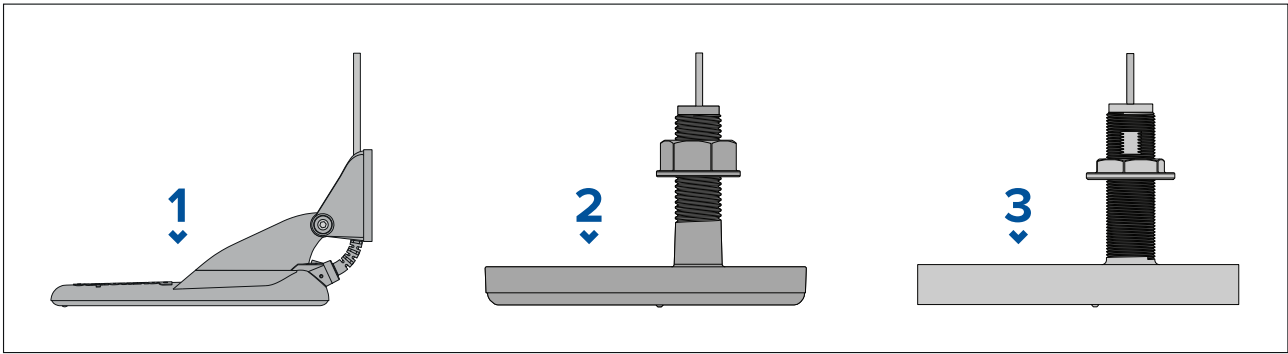


| | |
|---|--|
| 1 | <ul style="list-style-type: none"> • RV-100 RealVision™ 3D plastic transom mount transducer (A80464) |
| 2 | <ul style="list-style-type: none"> • RV-200 RealVision™ 3D bronze 0° thru-hull all-in-one transducer (A80465) • RV-212P and RV-212S RealVision™ 3D bronze 12° thru-hull split-pair transducers (T70318) <ul style="list-style-type: none"> – RV-212P port transducer (A80466) – RV-212S starboard transducer (A80467) • RV-220P and RV-220S RealVision™ 3D bronze 20° thru-hull split-pair transducers (T70319) <ul style="list-style-type: none"> – RV-220P port transducer (A80468) – RV-220S starboard transducer (A80469) |
| 3 | <ul style="list-style-type: none"> • RV-300 RealVision™ 3D plastic 0° thru-hull all-in-one transducer (A80470) • RV-312P and RV-312S RealVision™ 3D plastic 12° thru-hull split-pair transducers (T70320) <ul style="list-style-type: none"> – RV-312P port transducer (A80471) – RV-312S starboard transducer (A80472) • RV-320P and RV-320S RealVision™ 3D plastic 20° thru-hull split-pair transducers (T70321) <ul style="list-style-type: none"> – RV-320P port transducer (A80473) – RV-320S starboard transducer (A80474) |
| 4 | <ul style="list-style-type: none"> • RV-400 RealVision™ 3D stainless steel 0° thru-hull all-in-one transducer (A80615) • RV-412P and RV-412S RealVision™ 3D stainless steel 12° thru-hull split-pair transducers (T70450) <ul style="list-style-type: none"> – RV-412P port transducer (A80616) |

- **RV-412S** starboard transducer (A80617)
- **RV-420P** and **RV-420S** RealVision™ 3D stainless steel 20° thru-hull split-pair transducer (T70451)
 - **RV-420P** port transducer (A80618)
 - **RV-420S** starboard transducer (A80619)

DownVision™ transducers

The transducers listed below can be connected directly to DownVision™ (DV) variant MFDs. An adaptor is required for connection to RealVision™ (RV) variant MFDs.



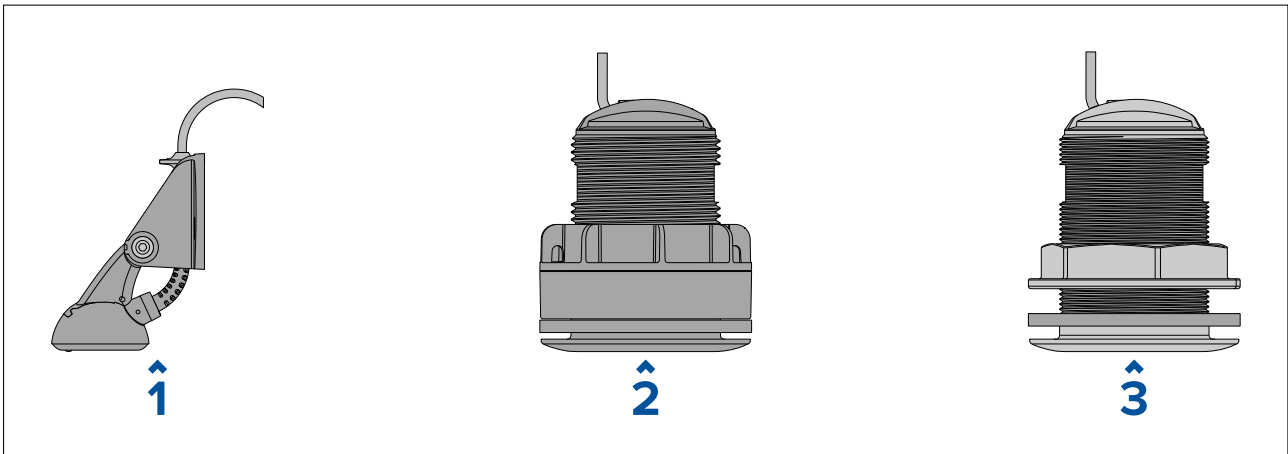
| | |
|---|---|
| 1 | CPT-100DVS plastic transom mount transducer (A80351) (replaces CPT-100 A80270) |
| 2 | CPT-110 plastic thru-hull transducer (A80277) |
| 3 | CPT-120 bronze thru-hull transducer (A80271) |

CHIRP conical beam transducers (using DownVision™ type connector)

The transducers listed below can be connected directly to DownVision™ (DV) variant MFDs or via an adaptor cable to RealVision™ (RV), RealVision™ + 1kW (RVX) and Sonar (S) variant MFDs.

CPT-S transducers use CHIRP sonar technology to produce a conical-shaped sonar beam.

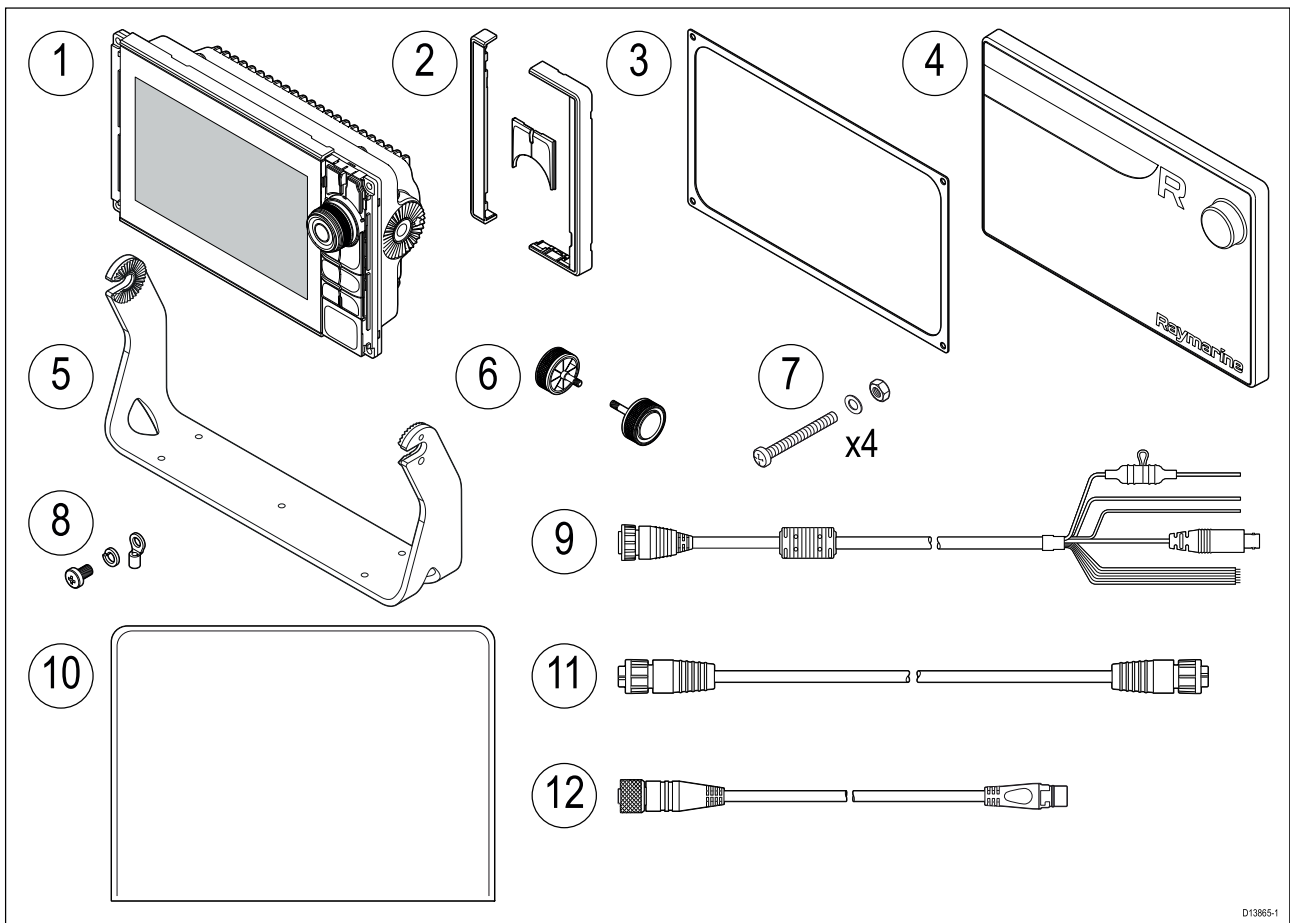
Note: CPT-S transducers do NOT offer DownVision™ channels.



| | |
|---|---|
| 1 | <ul style="list-style-type: none"> • CPT-S plastic transom transducer (E70342) |
| 2 | <ul style="list-style-type: none"> • CPT-S plastic thru-hull 0° angled element (E70339) • CPT-S plastic thru-hull 12° angled element (A80448) • CPT-S plastic thru-hull 20° angled element (A80447) |
| 3 | <ul style="list-style-type: none"> • CPT-S bronze thru-hull 0° angled element (A80446) • CPT-S bronze thru-hull 12° angled element (E70340) • CPT-S bronze thru-hull 20° angled element (E70341) |

2.4 Parts supplied - Axiom Pro 9 and 12

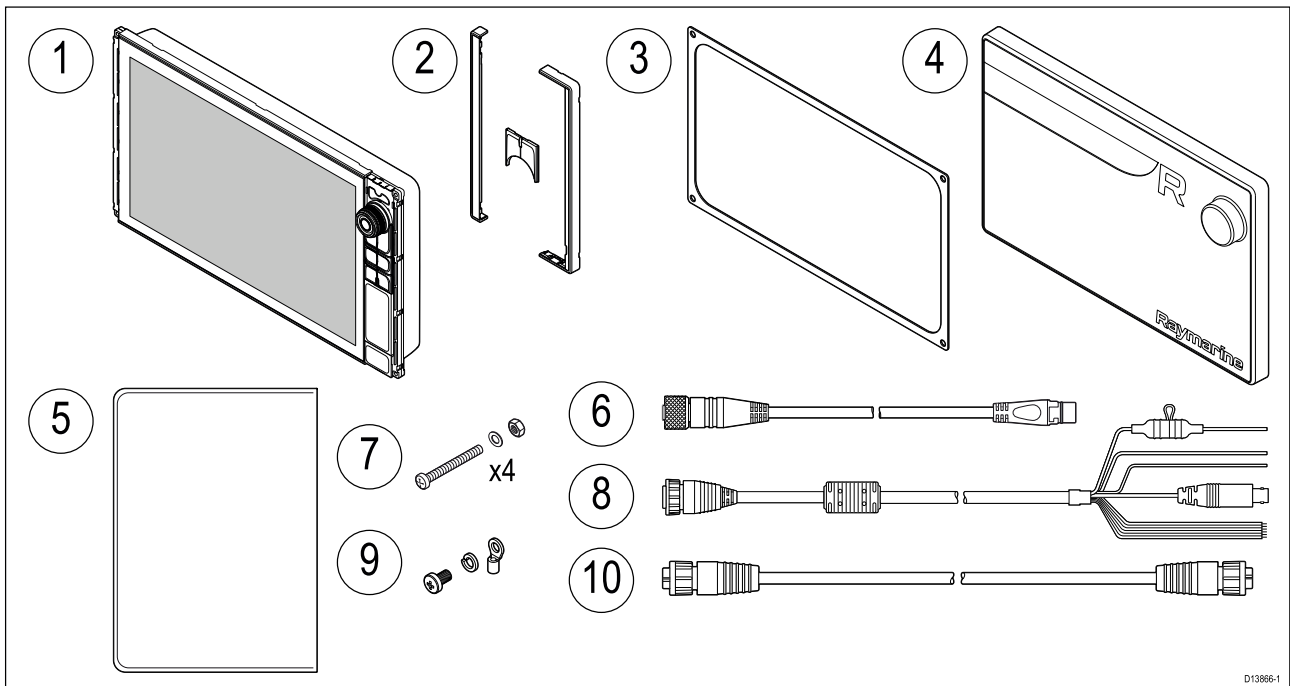
The parts listed are supplied with the following product numbers: E70371, E70481, E70372 and E70482.



1. Axiom Pro MFD
2. Front bezel pieces and Upper keypad
3. Panel mount gasket
4. Suncover
5. Trunnion bracket
6. Trunnion knobs x 2
7. Fixings (M4 x 40 pan head bolt x 4, M4 Nylock nut x 4 and M4 washer x 4)
8. M3x5 screw, M3 spring washer and M3 crimp terminal (for optional grounding connection)
9. Power/Video/NMEA 0183 cable 1.5 m (4.92 ft) straight
10. Documentation pack
11. RayNet 2 m (6.6 ft) network cable
12. SeaTalkng™ to DeviceNet adaptor cable

2.5 Parts supplied - Axiom Pro 16

The parts listed are supplied with the following product numbers: E70373 and E70483.



1. Axiom Pro MFD
2. Front bezel pieces and Upper keypad
3. Panel mount gasket
4. Suncover
5. Documentation pack
6. SeaTalkng™ to DeviceNet adaptor cable
7. Fixings (M4 x 40 pan head bolt x 4, M4 Nylock nut x 4 and M4 washer x 4)
8. Power/Video/NMEA 0183 cable 1.5 m (4.92 ft) straight
9. M3x5 screw, M3 spring washer and M3 crimp terminal (for optional grounding connection)
10. RayNet 2 m (6.6 ft) network cable

Chapter 3: Installation

Chapter contents

- [3.1 Selecting a location on page 22](#)
- [3.2 Mounting options on page 27](#)
- [3.3 Surface mounting on page 28](#)
- [3.4 Bracket \(trunnion\) mounting on page 30](#)

3.1 Selecting a location

Caution: Product weight

- Refer to the technical specification for your product to ensure the intended mounting surface is suitable to bear its weight.
- 2 people may be required for installation of larger / heavier products.



Warning: Switch off power supply

Ensure the vessel's power supply is switched OFF before starting to install this product. Do NOT connect or disconnect equipment with the power switched on, unless instructed in this document.



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).

General location requirements

When selecting a location for your product it is important to consider a number of factors.

Key factors which can affect product performance are:

- **Ventilation** — To ensure adequate airflow:
 - Ensure that product is mounted in a compartment of suitable size.
 - Ensure that ventilation holes are not obstructed. Allow adequate separation of all equipment.Any specific requirements for each system component are provided later in this chapter.
- **Mounting surface** — Ensure product is adequately supported on a secure surface. Do not mount units or cut holes in places which may damage the structure of the vessel.
- **Cabling** — Ensure the product is mounted in a location which allows proper routing, support and connection of cables:
 - Minimum bend radius of 100 mm (3.94 in) unless otherwise stated.
 - Use cable clips to prevent stress on connectors.
 - If your installation requires multiple ferrites to be added to a cable then additional cable clips should be used to ensure the extra weight of the cable is supported.
- **Water ingress** — The product is suitable for mounting both above and below decks. Although the unit is waterproof, it is good practice to locate it in a protected area away from prolonged and direct exposure to rain and salt spray.
- **Electrical interference** — Select a location that is far enough away from devices that may cause interference, such as motors, generators and radio transmitters / receivers.
- **Power supply** — Select a location that is as close as possible to the vessel's DC power source. This will help to keep cable runs to a minimum.

EMC installation guidelines

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

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

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

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

- Raymarine equipment and cables connected to it are:

- At least 1 m (3.3 ft) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 2 m (6.6 ft).
- More than 2 m (6.6 ft) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The product is supplied from a separate battery from that used for engine start. This is important to prevent erratic behavior and data loss which can occur if the engine start does not have a separate battery.
- Raymarine specified cables are used.
- Cables are not cut or extended, unless doing so is detailed in the installation manual.

Note:

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

RF interference

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

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

To minimize interference from such equipment:

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

Compass safe distance

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

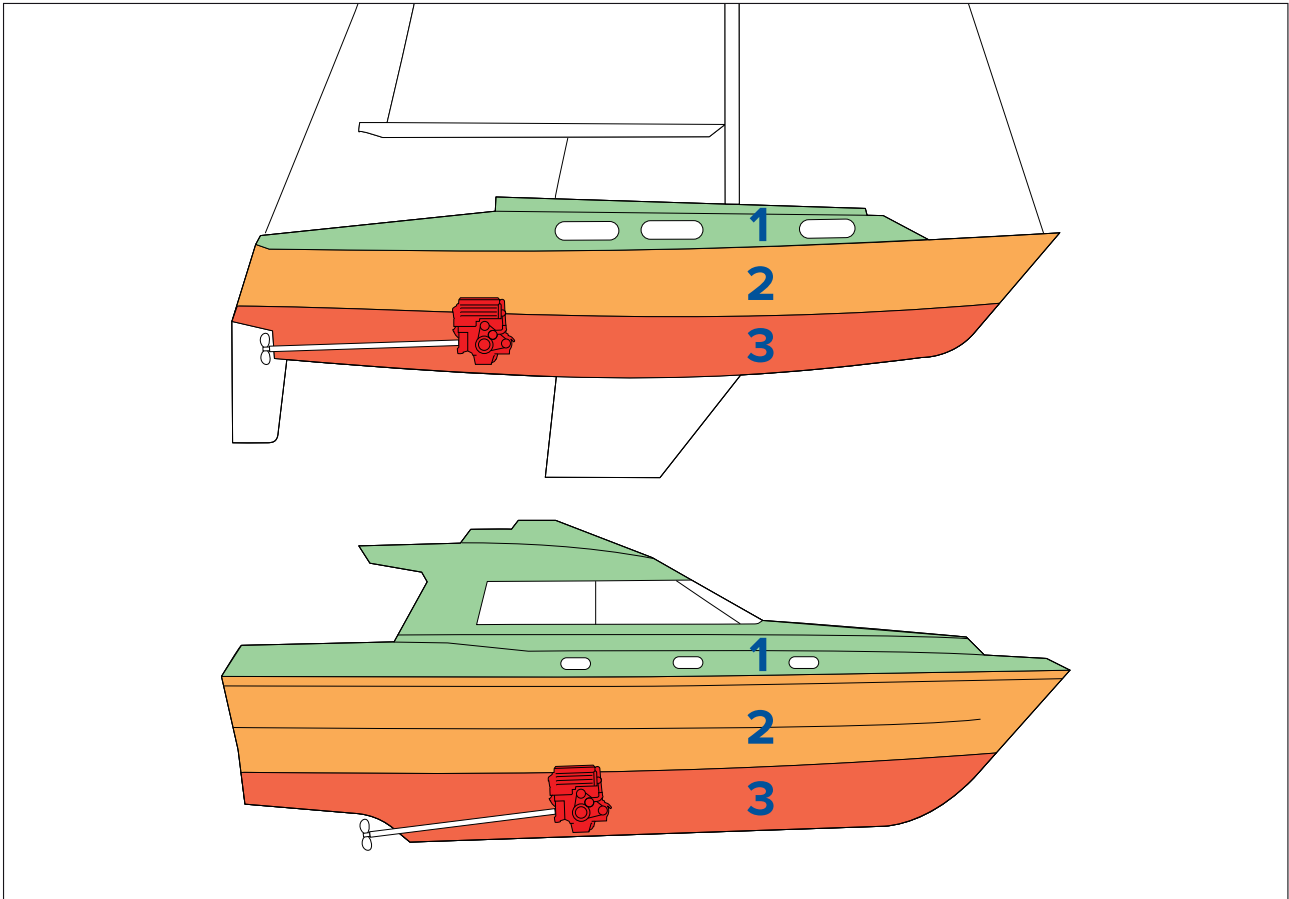
When choosing a suitable location for the product you should aim to maintain the maximum possible distance from any compasses. Typically this distance should be at least 1 m (3.3 ft) in all directions. However for some smaller vessels it may not be possible to locate the product this far away from a 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 state.




GNSS (GPS) location requirements

In addition to general guidelines concerning the location of marine electronics, there are a number of environmental factors to consider when installing equipment with an internal GNSS receiver.

Mounting location

- Above Decks (e.g. open air) mounting: Provides optimal performance. (For equipment with appropriate waterproof rating.)
- Below Decks (e.g. enclosed space) mounting: Performance may be less effective and may require an external antenna or receiver mounted above decks.



| | | |
|---|---|---|
| 1 |  | This location provides optimal performance (above decks). |
| 2 |  | In this location, performance may be less effective. |
| 3 |  | This location is NOT recommended. |

Vessel construction

The construction of your vessel can have an impact on performance. For example, the proximity of heavy structures such as a structural bulkhead, or the interior of larger vessels may result in a reduced signal. The construction materials can also have an impact. In particular, steel, aluminium or carbon surfaces can impact performance. Before locating equipment with an internal antenna below decks, or on a steel, aluminium or carbon construction vessel or surface, seek professional assistance.

Prevailing conditions

The weather and location of the vessel can affect performance. Typically calm clear conditions provide a more accurate position fix. Vessels at extreme northerly or southerly latitudes may also receive a weaker signal. An antenna mounted below decks will be more susceptible to performance issues related to the prevailing conditions.

Touchscreen location requirements

Note:

Touchscreen performance can be affected by the installation environment, specifically Touchscreen displays installed above decks, where it will be open to the elements may exhibit the following:

- Hot Touchscreen temperature — If the display is mounted where it will be exposed to prolonged periods of direct sunlight, the touchscreen may become hot.
- Erroneous Touchscreen performance — Exposure to prolonged rain and / or water wash over may cause the display to respond to 'false touches', caused by the rain/water hitting the screen.

If, due to the required installation location, exposure to these elements is anticipated then it is recommended that you consider:

- Installing a remote keypad such as the RMK-10 and operating the display remotely — Touch-only displays.
- Locking the Touchscreen and using the physical buttons instead — HybridTouch displays.
- Attaching a third-party 'display hood accessory' to reduce direct sunlight exposure and the volume of water that the display is exposed to.

Wireless location requirements

A number of factors can influence wireless performance. It is important to ensure you test the connection performance at the desired location before installing wireless-enabled products.

Distance

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.

Line of sight

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.

The construction of your vessel can also have an impact on wireless performance. For example, metal structural bulkheads and roofing will reduce — and in certain situations — block the wireless signal.

If the wireless signal passes through a bulkhead containing power cables this can also degrade wireless performance.

Reflective surfaces such as metal surfaces, some types of glass and even mirrors can drastically affect performance or even block the wireless signal.

Interference and other equipment

Wireless products should be installed at least 1m (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.

Interference from other people's wireless devices can also 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).

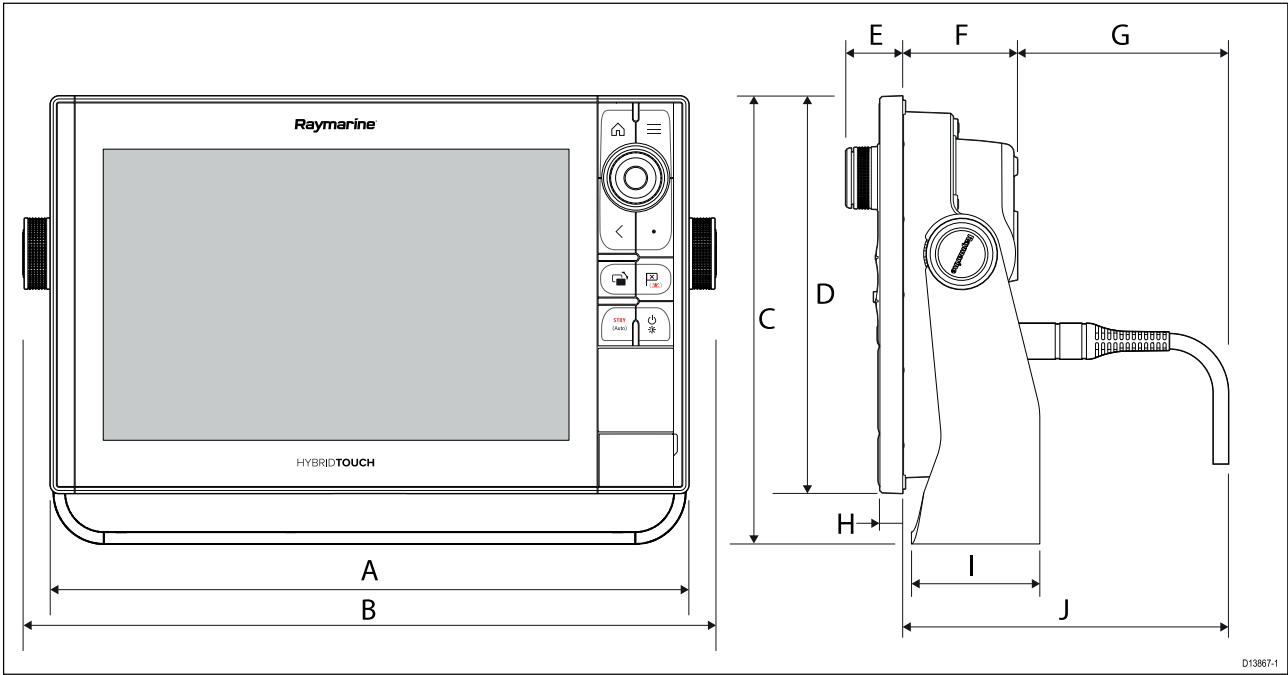
Viewing angle considerations

As display contrast and color are affected by the viewing angle, It is recommended that you temporarily power up the display, prior to installation, to enable you to best judge which location provides the optimum viewing angle.

For the viewing angles for your product refer to [p.67 — Technical specification](#)

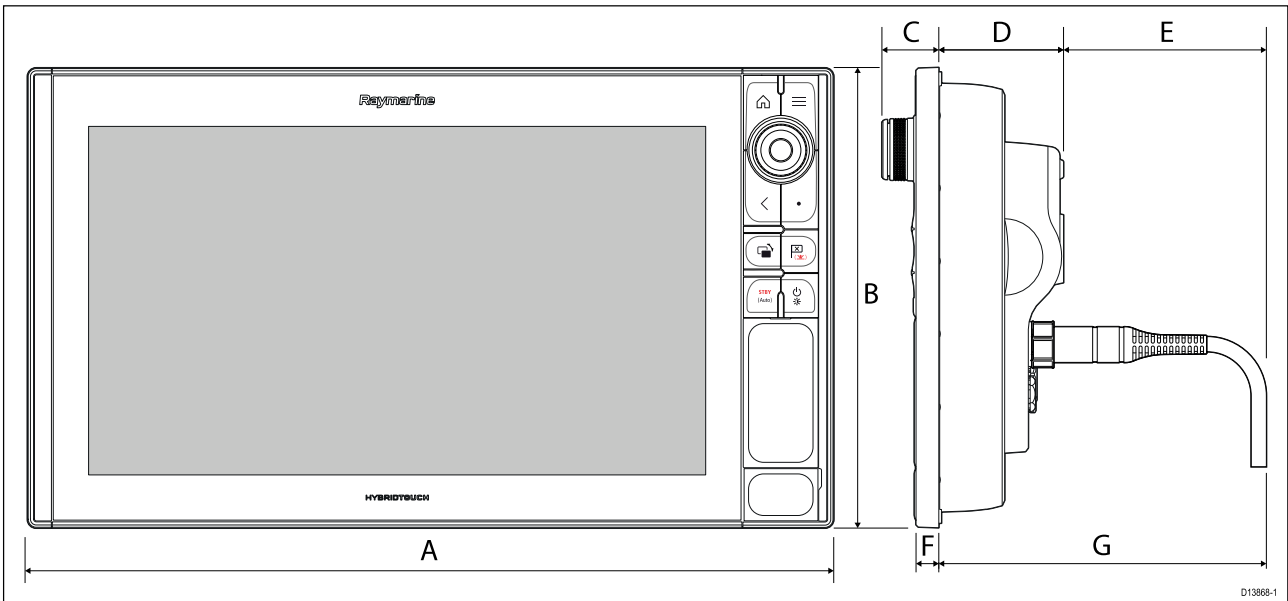
Product dimensions

Axiom Pro 9 and 12 dimensions



| | Axiom Pro 9 | Axiom Pro 12 |
|---|---|--|
| A | 299.32 mm (11.78 in) | 358.03 mm (14.1 in) |
| B | 329.5 mm (12.97 in) | 388.5 mm (15.3 in) |
| C | 186.2 mm (7.33 in) | 246.13 mm (9.69 in) |
| D | 173.79 mm (6.84 in) | 222.8 mm (8.77 in) |
| E | 33.4 mm (1.31 in) | 31.9 mm (1.26 in) |
| F | 64.5 mm (2.54 in) | 64.4 mm (2.54 in) |
| G | 137.05 mm (5.4 in) straight connector 117.05 mm (4.61 in) right angled connector | 137.1 mm (5.4 in) straight connector 117.1 mm (4.61 in) right angled connector |
| H | 12.86 mm (0.51 in) | 12.86 mm (0.51 in) |
| I | 84 mm (3.31 in) | 89 mm (3.50 in) |
| J | 201.5 mm (7.93 in) straight connector 181.5 mm (7.15 in) right angled connector | 201.5 mm (7.93 in) straight connector 181.5 mm (7.15 in) right angled connector |

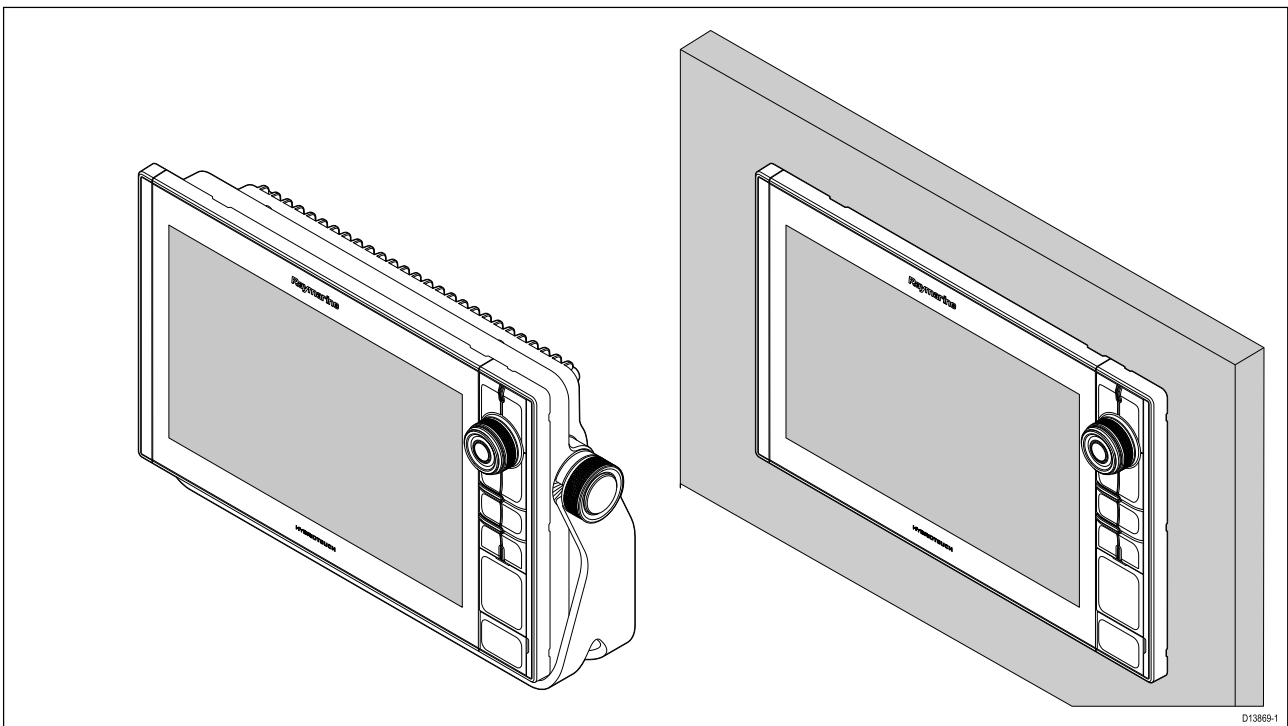
Axiom Pro 16 dimensions



| | |
|---|--|
| A | 452.02 mm (17.8 in) |
| B | 258 mm (10.16 in) |
| C | 33.4 mm (1.31 in) |
| D | 68.4 mm (2.69 in) |
| E | 138.6 mm (5.46 in) straight connector 118.6 mm (4.67 in) right angled connector |
| F | 15.2 mm (0.6 in) |
| G | 207 mm (8.15 in) straight connector 187 mm (7.36 in) right angled connector |

3.2 Mounting options

Axiom Pro 9, 12, and 16 can be surface mounted. The Axiom Pro 9 and 12 can also be bracket mounted on a trunnion.



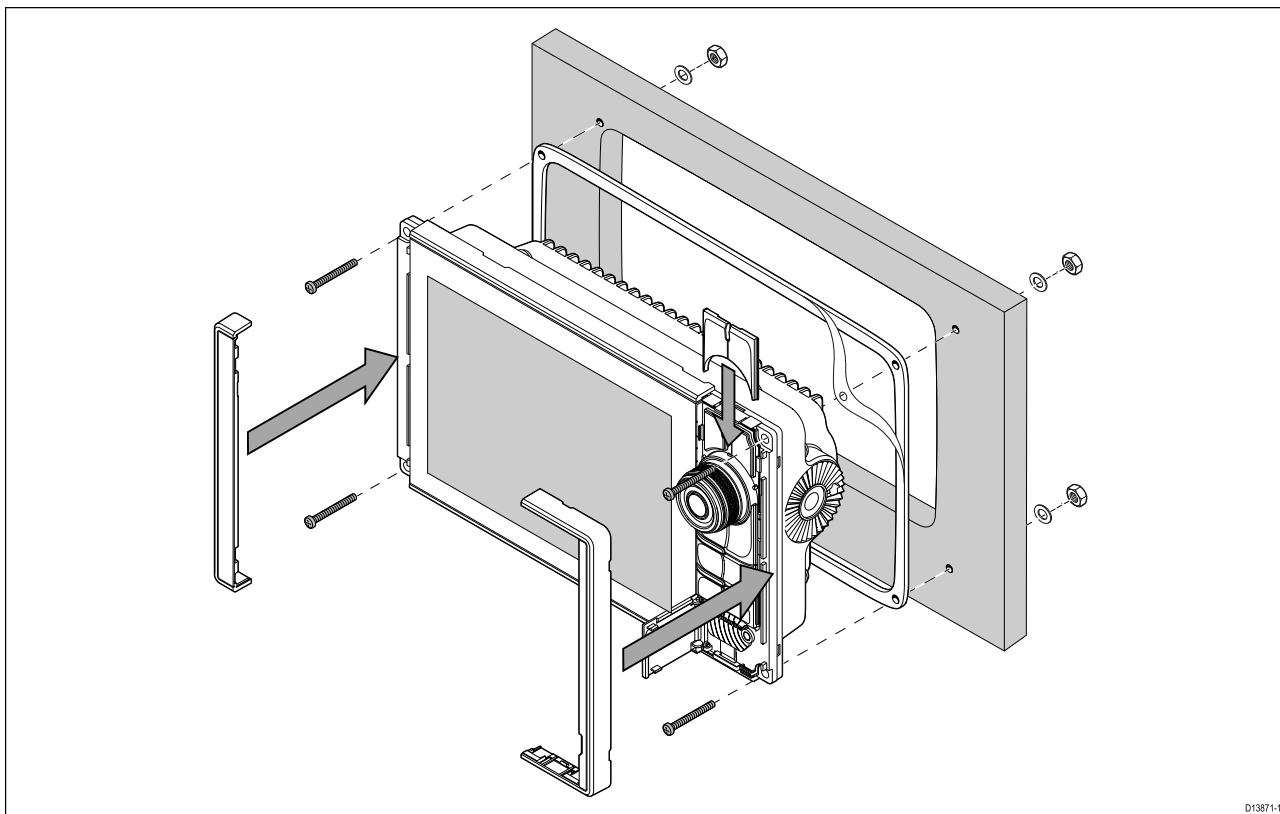
Legacy MFD adaptor plates are also available to enable you to easily swap out older MFDs for new Axiom Pro MFDs, please refer to [Chapter 9 Spares and accessories](#) for a list of available adaptors.

3.3 Surface mounting

The MFD can be surface mounted.

Before mounting the unit, ensure that you have:

- Selected a suitable location.
- Identified the cable connections and route that the cables will take.
- Detached the Menu/Home buttons keypad.
- Detached the front screw covers.

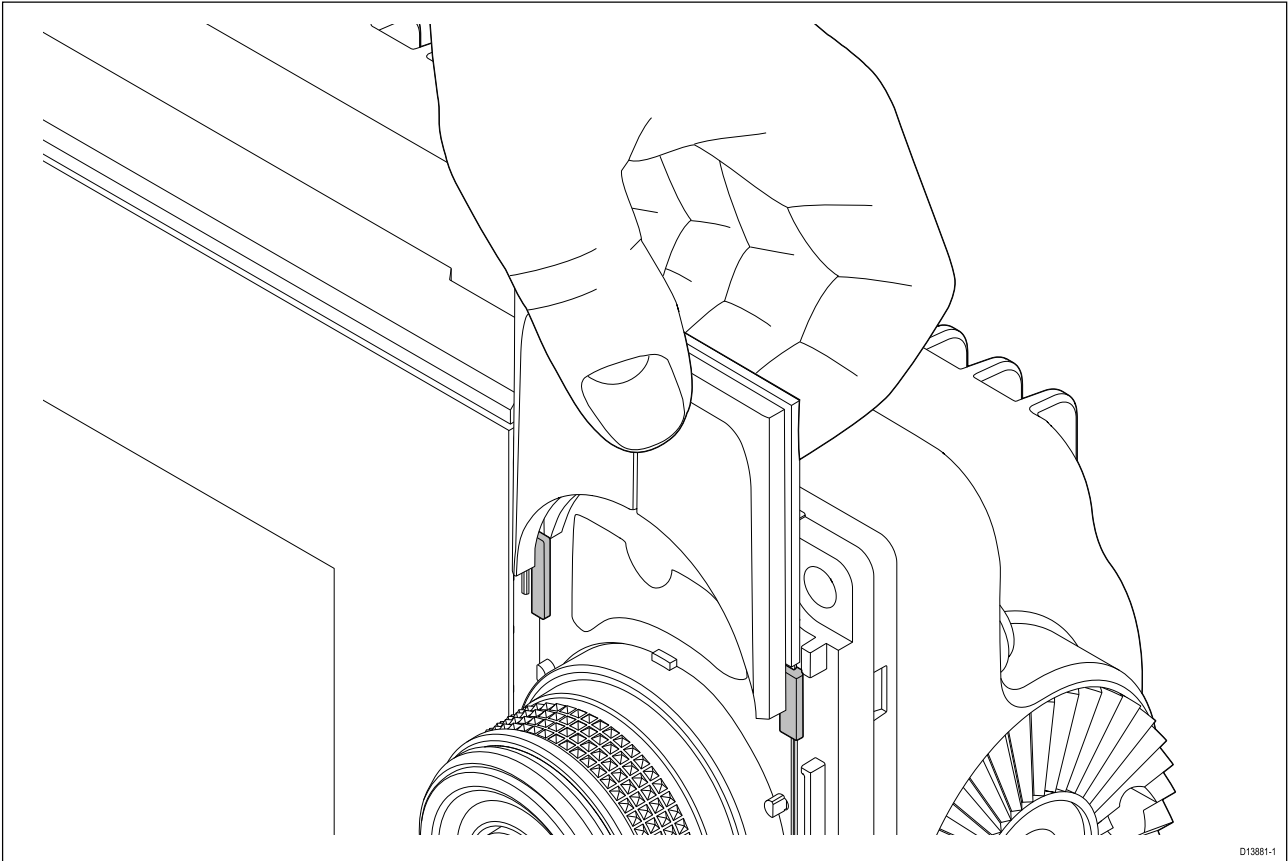


1. Check the chosen mounting location. A clear, flat area with suitable clearance behind the panel is required.
2. Fix the supplied mounting template to the chosen location using masking or self-adhesive tape.
3. Using a suitable hole saw (the size is indicated on the template), make a hole in each corner of the cut-out area.
4. Using a suitable saw, cut along the inside edge of the cut-out line.
5. Ensure that the unit fits into the removed area and then file around any rough edges until smooth.
6. Drill 4 holes as indicated on the template to accept the fixings.
7. Place the gasket onto the rear of the display and press firmly onto the flange.
8. Connect the power, data and other cables to the MFD.
9. Slide the unit into place and secure using the fixings provided.
10. Attach the Menu/Home buttons keypad, by sliding it down from above the MFD.
11. Attach the bezel pieces to either side of the MFD.

Note: The supplied gasket provides a seal between the unit and a suitably flat and stiff mounting surface or binnacle. The gasket should be used in all installations. It may also be necessary to use a marine-grade sealant if the mounting surface or binnacle is not entirely flat and stiff or has a rough surface finish.

Fitting the Menu-Home button

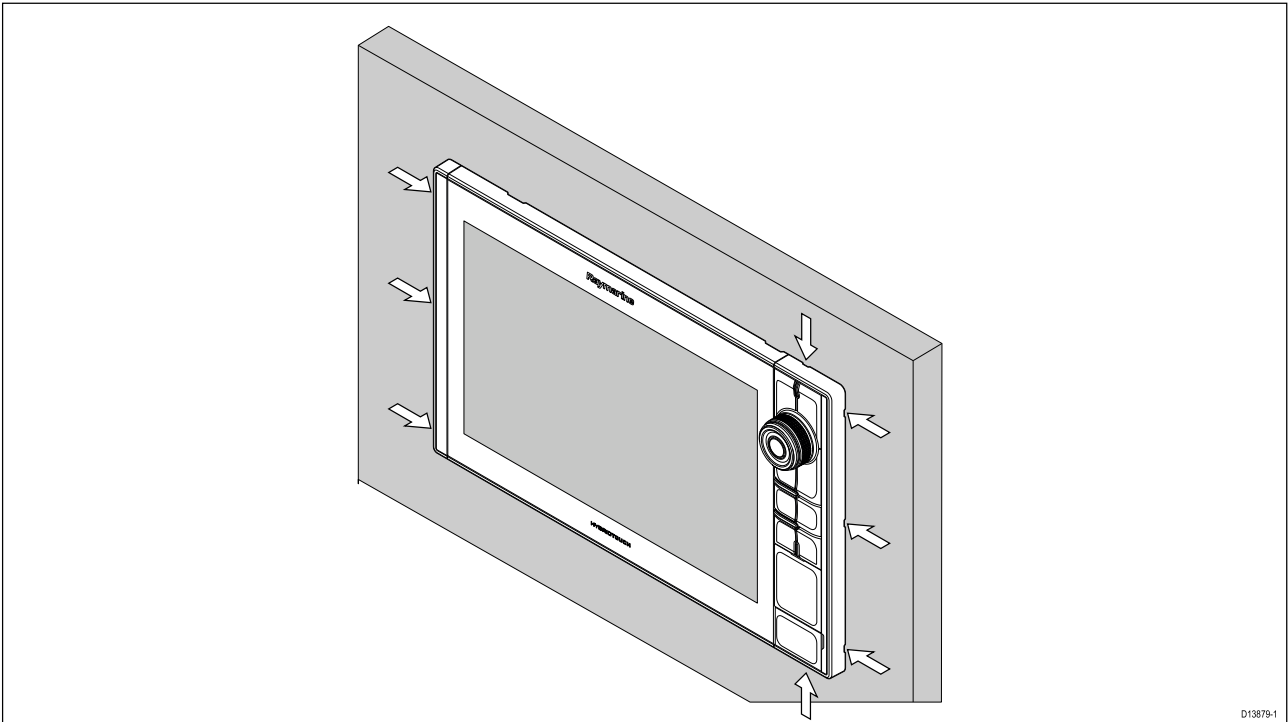
Follow the steps below to fit the Menu/Home button.



1. Slide the backing plate behind the locating tabs as shown below.

Removing the bezel pieces

If you need to remove the MFD once installed then the bezel pieces will need to be removed to gain access to the fixings.



1. Carefully insert the tip of a small flat blade screw driver into the recessed areas around the edge of the bezel pieces.
2. Gently lever the screw driver to push the bezel piece forward, away from the display. The bezel piece should now come away from the display easily.

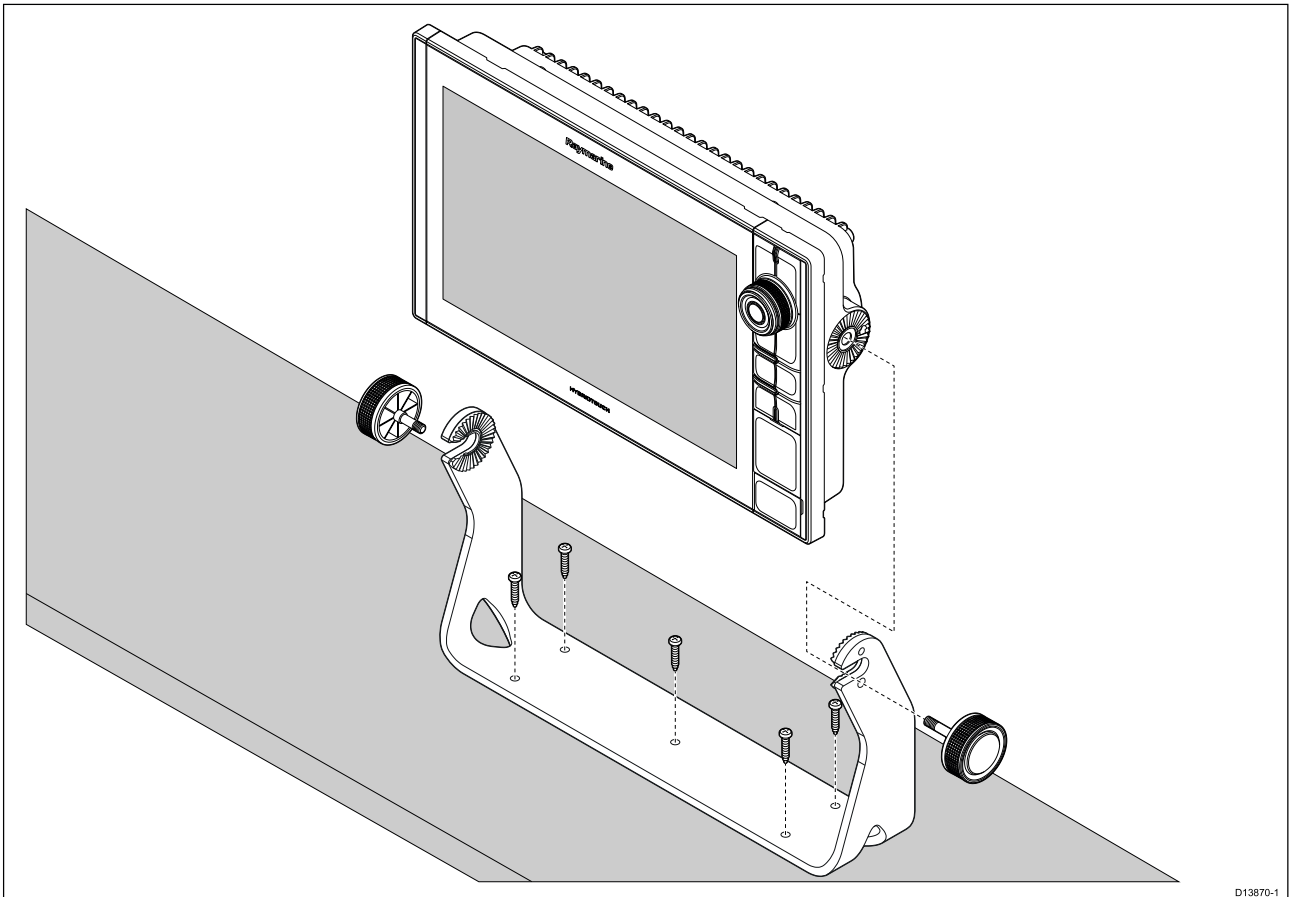
3.4 Bracket (trunnion) mounting

Axiom Pro 9 and 12 MFDs can be mounted on the supplied trunnion bracket. The bracket can be used to mount your MFD on a horizontal surface.

Ensure you have chosen a suitable mounting location for your MFD, with sufficient head room to allow the MFD's angle to be adjusted or the MFD to be removed if necessary. If installing 'above head' take extra care to ensure the knobs are tightened sufficiently to prevent them coming undone due to vibration when underway.

Before mounting the unit ensure that you have:

- Sourced adequate fixings to secure the bracket to your mounting surface.
- Attached the Menu/Home buttons and bezel pieces.



1. Using the Bracket as a template, Mark and drill 5 x pilot holes on the mounting surface.
2. Use self tapping screws to secure the trunnion bracket to the mounting surface.

If the mounting surface is too thin for the screws provided, use stainless steel machine screws, washers and locking nuts, alternatively reinforce the rear of the mounting surface.

3. Using the bracket knobs, secure the MFD to the Bracket, ensuring the ratchet teeth are correctly engaged.

The knobs should be tightened by hand, sufficiently to prevent the MFD from moving whilst your vessel is underway.

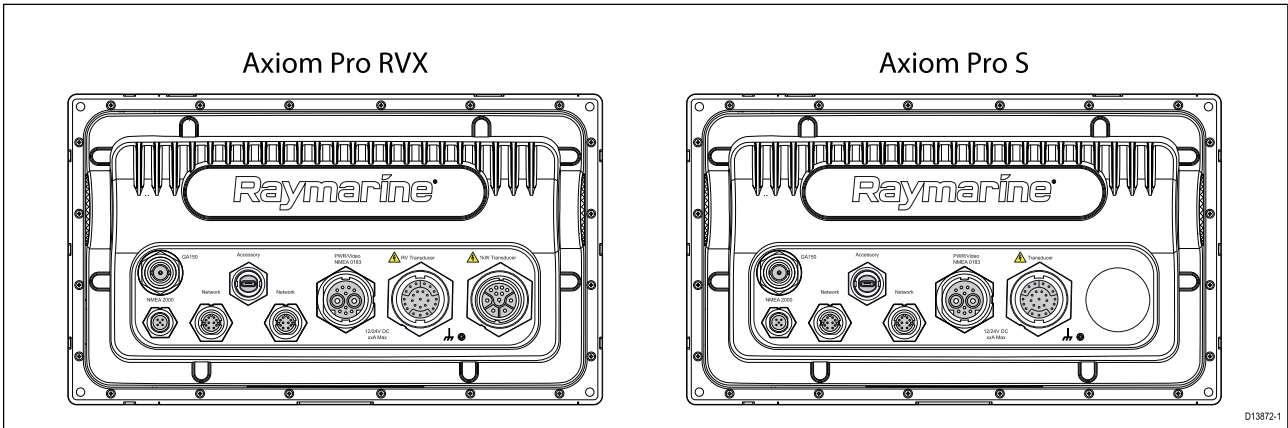
4. Route and connect necessary cables.

Chapter 4: Connections

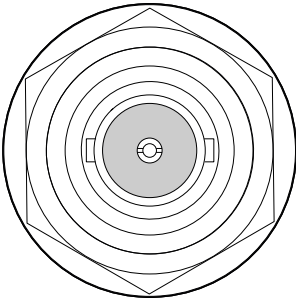
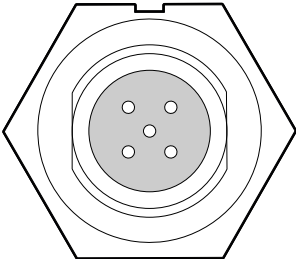
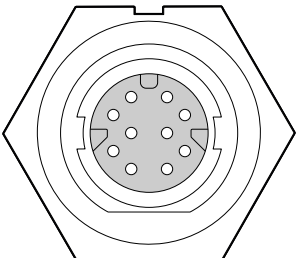
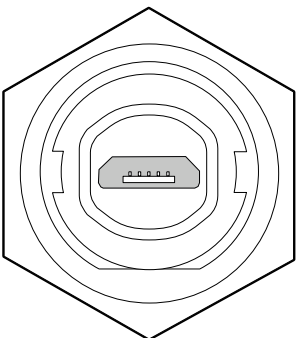
Chapter contents

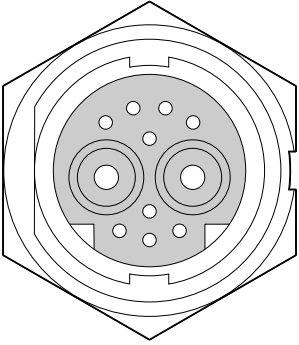
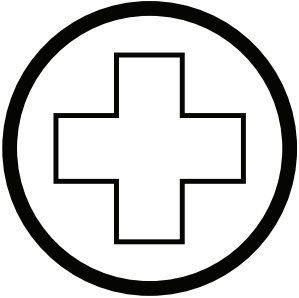
- 4.1 Connections overview (Axiom Pro) on page 32
- 4.2 Axiom Pro / Axiom XL power connection on page 34
- 4.3 NMEA 2000 (SeaTalkng[®]) connection on page 40
- 4.4 NMEA 0183 connection on page 40
- 4.5 Transducer connection (Axiom Pro) on page 41
- 4.6 Network connection on page 43
- 4.7 GA150 connection on page 43
- 4.8 Accessory connection on page 43
- 4.9 Axiom Pro analog video connection on page 45

4.1 Connections overview (Axiom Pro)



Axiom Pro connection options

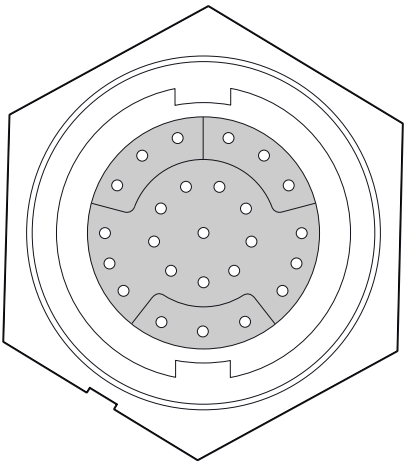
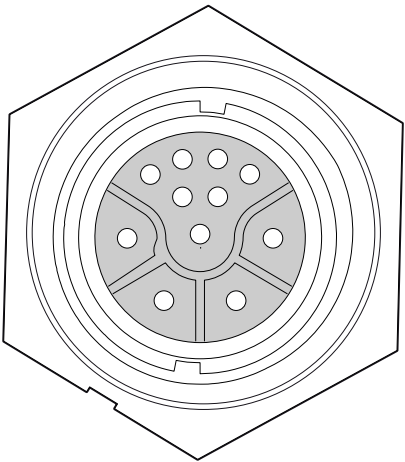
| Connector | Connector | Connects to: | Suitable cables |
|---|--------------------------|--|---|
|  | GA150 connection | GA150 antenna | GA150's fitted cable |
|  | NMEA 2000 connection | <ul style="list-style-type: none"> SeaTalkng® backbone NMEA 2000 backbone | <ul style="list-style-type: none"> SeaTalkng® to DeviceNet adaptor cable DeviceNet cables |
|  | Network connection (x 2) | RayNet network or device | RayNet cable with female connector |
|  | Accessory connection | <ul style="list-style-type: none"> RCR-SDUSB remote card reader RCR-2 remote card reader | RCR-SDUSB/RCR-2's fitted cable |

| Connector | Connector | Connects to: | Suitable cables |
|---|---|---|---|
|  | Power / Video in / NMEA 0183 connection | 12/24 V DC power supply / Video input / NMEA 0183 | Power/Video/0183 cable |
|  | Optional grounding point | Vessel RF ground, or negative battery terminal | Refer to Grounding – optional dedicated drain wire section for details |

Note:
Refer to [Chapter 9 Spares and Accessories](#) for available cables.

Depending on MFD variant different transducer connections are available

Axiom Pro RVX – transducer connection options

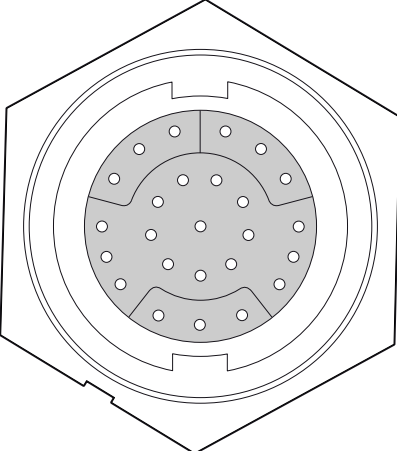
| Connector | Connects to: | Suitable cables |
|---|----------------------------|---|
|  | RealVision™ 3D transducers | <ul style="list-style-type: none"> • Transducer's fitted cable • Extension cable • Adaptor cable |
|  | 1kW transducers | <ul style="list-style-type: none"> • Transducer's fitted cable • Extension cable • Adaptor cable |

Note:

Refer to [2.3 Compatible transducers](#) for a list of compatible transducers.

Refer to [Chapter 9 Spares and Accessories](#) for available transducer adaptor cables.

Axiom Pro S – transducer connection options

| Connector | Connects to: | Suitable cables |
|---|--|--|
|  | <p>CPT-S transducers via adaptor cables.</p> | <ul style="list-style-type: none"> • Adaptor cables |

Note:

Refer to [Chapter 9 Spares and Accessories](#) for available cables.

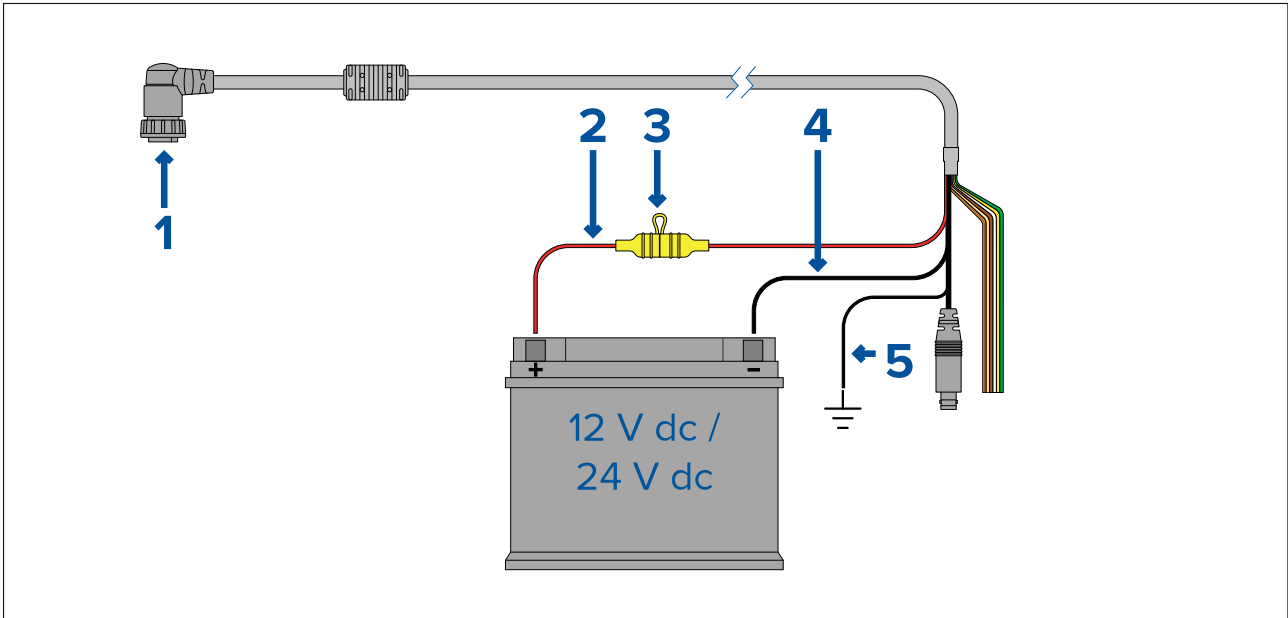
Connecting cables

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.

4.2 Axiom Pro / Axiom XL power connection

The power cable must be connected to a 12 or 24 V dc power supply; this can be achieved by connecting directly to a battery, or via a distribution panel. The product is protected against reverse polarity.



Note:

- Axiom Pro MFDs are supplied with a power cable that has a straight connector.
- Axiom XL MFDs are supplied with a power cable that has a right-angled connector.

1. Power/Video/NMEA 0183 cable connects to the rear of the MFD.
2. Positive (Red) wire connects to battery positive (+) terminal.
3. Inline fuse. For suitable fuse ratings, refer to: *In-line fuse and thermal breaker ratings*.
4. Negative wire connects to the battery's negative (-) terminal.
5. Ground wire connects to RF ground point. If no ground point is available connect to the battery negative (-) terminal.

In-line fuse and thermal breaker ratings

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

| In-line fuse rating | Thermal breaker rating |
|---------------------|--------------------------------------|
| 15 A | 15 A (if only connecting one device) |

Note:

- The suitable fuse rating for the thermal breaker is dependent on the number of devices you are connecting. If in doubt consult an authorized Raymarine dealer.
- Your product's power cable may have a fitted in-line fuse. If not, you must fit an in-line fuse to the positive wire of your product's power connection.

Caution: Power supply protection

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

Power distribution

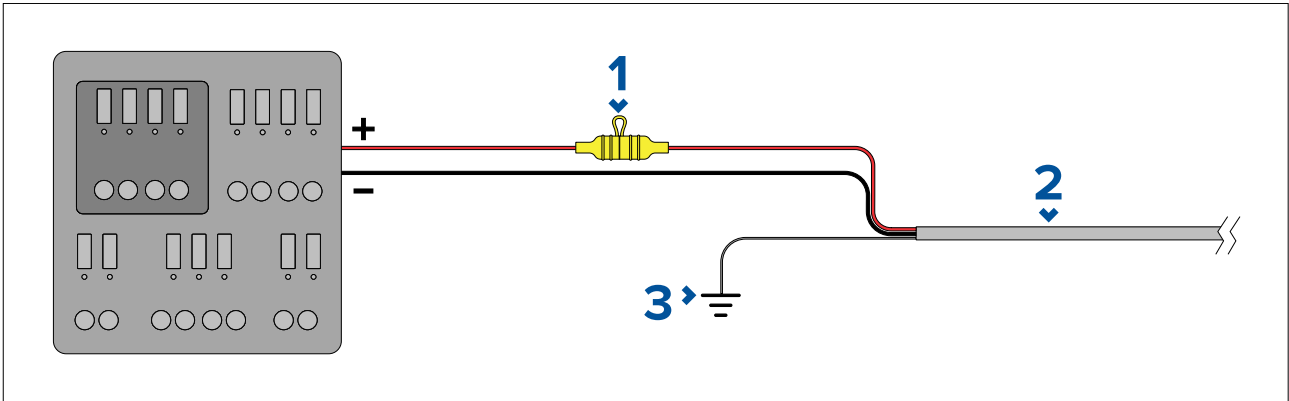
Recommendations and best practice.

- The product is supplied with a power cable, either as a separate item or a captive cable permanently attached to the product. Only use the power cable supplied with the product. Do NOT use a power cable designed for, or supplied with, a different product.
- Refer to the *Power connection* section for more information on how to identify the wires in your product's power cable, and where to connect them.
- See below for more information on implementation for some common power distribution scenarios:

Important:

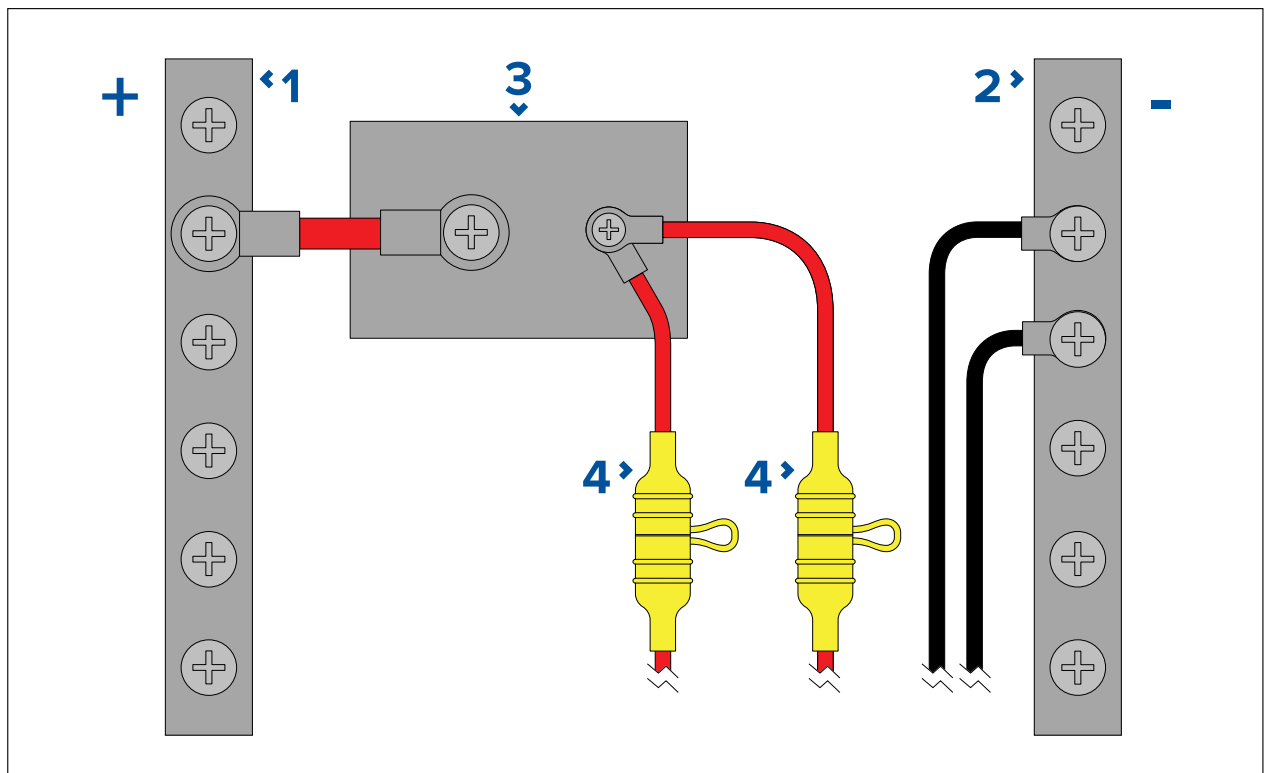
- When planning and wiring, take into consideration other products in your system, some of which (e.g. sonar modules) may place large power demand peaks on the vessel's electrical system, which may impact the voltage available to other products during the peaks.
- The information provided below is for 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 dealer or a suitably qualified professional marine electrician.

Implementation – connection to distribution panel (Recommended)



| | |
|---|--|
| 1 | Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: <i>In-line fuse and thermal breaker ratings</i> . |
| 2 | Product power cable. |
| 3 | Drain wire connection point. |

- It is recommended that the supplied power cable is connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point.
- The distribution point should be fed from the vessel's primary power source by 8 AWG (8.36 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 1 item of equipment shares a breaker, use individual in-line fuses for each power circuit to provide the necessary protection.



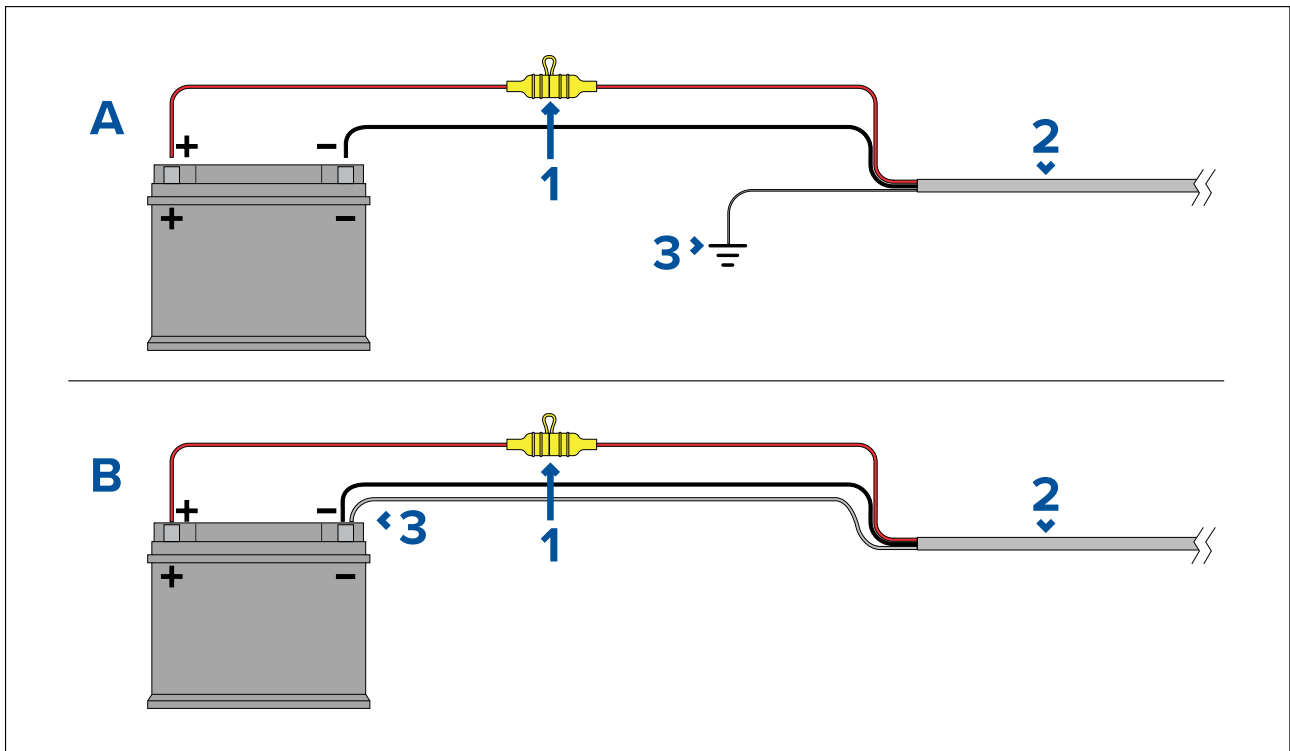
| | |
|---|--|
| 1 | Positive (+) bar |
| 2 | Negative (-) bar |
| 3 | Circuit breaker |
| 4 | Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: <i>In-line fuse and thermal breaker ratings</i> . |

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 supplied with your product may be connected directly to the vessel's battery, via a suitably rated fuse or breaker.
- The power cable supplied with your product may NOT include a separate drain wire. If this is the case, only the power cable's red and black wires need to be connected.
- If the power cable is NOT supplied with a fitted inline fuse, you MUST fit a suitably rated fuse or breaker between the red wire and the battery's positive terminal.
- Refer to the inline fuse ratings provided in the product's documentation.
- If you need to extend the length of the power cable supplied with your product, ensure you observe the dedicated *Power cable extensions* advice provided in the product's documentation.



| | |
|---|--|
| 1 | Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: <i>In-line fuse and thermal breaker ratings</i> . |
| 2 | Product power cable. |
| 3 | Drain wire connection point. |

Battery connection scenario A:

Suitable for a vessel with a common RF ground point. In this scenario, if your product's power cable is supplied with a separate drain wire then it should be connected to the vessel's common ground point.

Battery connection scenario B:

Suitable for a vessel without a common grounding point. In this case, if your product's power cable is supplied with a separate drain wire then it should be connected directly to the battery's negative terminal.

Power cable extension

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

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

| Cable length in meters (feet) | Wire gauge in AWG (mm ²) for 12 V supply | Wire gauge in AWG (mm ²) for 24 V supply |
|-------------------------------|--|--|
| <8 (<25) | 16 (1.31 mm ²) | 18 (0.82 mm ²) |
| 16 (50) | 14 (2.08 mm ²) | 18 (0.82 mm ²) |
| 24 (75) | 12 (3.31 mm ²) | 16 (1.31 mm ²) |
| >32 (>100) | 10 (5.26 mm ²) | 16 (1.31 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 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.)

Grounding

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

More information

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

- BMEA Code of Practice for Electrical and Electronic Installations in Boats
- NMEA 0400 Installation Standard
- ABYC E-11 AC & DC Electrical Systems on Boats
- ABYC A-31 Battery chargers and Inverters
- ABYC TE-4 Lightning Protection



Warning: Product grounding

Before applying power to this product, ensure it has been correctly grounded, in accordance with the instructions provided.



Warning: Positive ground systems

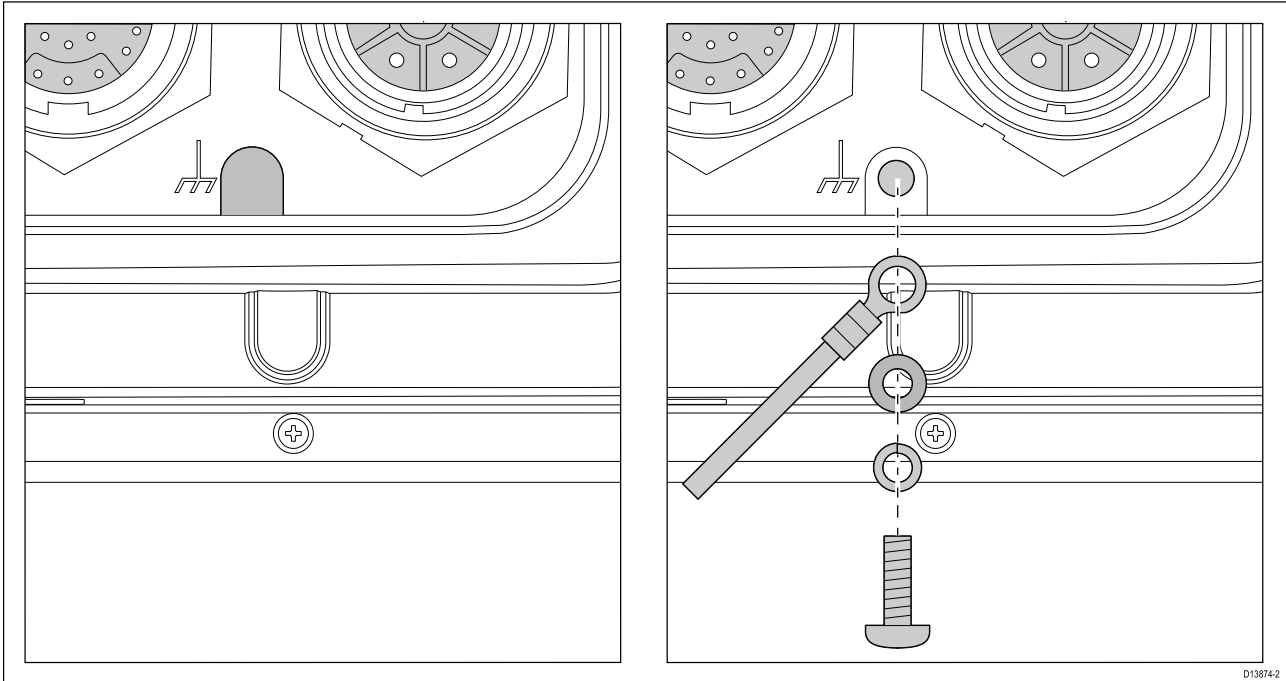
Do not connect this unit to a system which has positive grounding.

Grounding — optional dedicated drain wire

Frequencies emitted from equipment such as switch mode power supplies or MF/HF transmitters etc. can cause interference with your MFD's touchscreen. If you experience issues with touchscreen performance, fitting an additional dedicated drain wire can resolve the issue.

Note:

The additional wire supplements the drain wire (shield) that is part of the product's power cable and should ONLY be used when touchscreen interference is observed.



Use a small flat blade screw driver to remove the cover over the grounding screw hole.

Connect one end of the additional drain wire (not supplied) to your product.

Connect the other end of the additional drain wire to the same point as the power cable drain wire (shield). This will be either the vessel's RF ground point, or on vessels without an RF ground system, the negative battery terminal.

The dc power system should be either:

- Negative grounded, with the negative battery terminal connected to the vessel's ground; or
- Floating, with neither battery terminal connected to the vessel's ground.

If several items require grounding, they may first be connected to a single local point (e.g. within a switch panel), with this point connected via a single, appropriately-rated conductor, to the vessel's common RF ground point.

Implementation

The preferred minimum requirement for the path to ground is via a flat tinned copper braid, with a 30 A rating (1/4 inch) or greater. If this is not possible, an equivalent stranded wire conductor may be used, rated as follows:

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

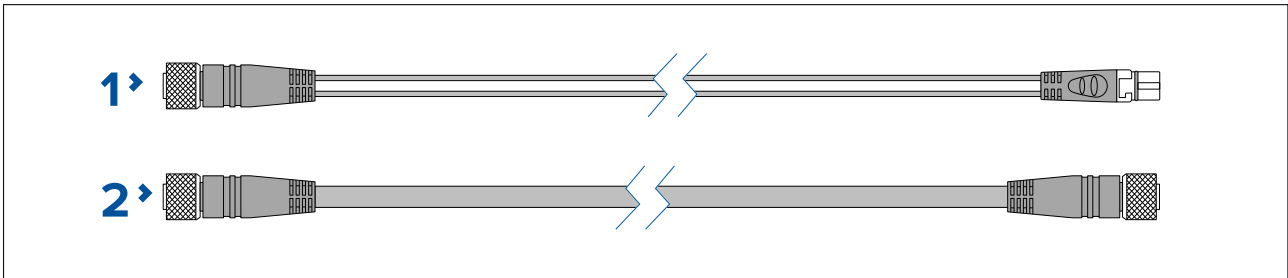
In any grounding system, always keep the length of connecting braid or wires as short as possible.

References

- ISO10133/13297
- BMEA code of practice
- NMEA 0400

4.3 NMEA 2000 (SeaTalkng®) connection

The MFD can transmit and receive data from devices connected on a compliant CAN bus network. The MFD is connected to the backbone using the MFD's NMEA 2000 connector.



1. Use the supplied DeviceNet to SeaTalkng® adaptor cable to connect your MFD to a SeaTalkng® backbone.
2. Alternatively you can connect your MFD to a NMEA 2000 backbone using a standard DeviceNet cable (not supplied).

Note:

1. SeaTalkng® and NMEA 2000 devices must be connected to a correctly terminated backbone that the MFD is also connected to. Devices cannot be connected directly to the MFD.
2. Refer to the instructions supplied with your SeaTalkng® / NMEA 2000 device for details on creating a backbone.
3. Refer to [Chapter 9 Spares and accessories](#) for a list of available SeaTalkng® cables..

4.4 NMEA 0183 connection

NMEA 0183 devices can be connected to your MFD using the NMEA 0183 wires on the supplied Power and data cable.

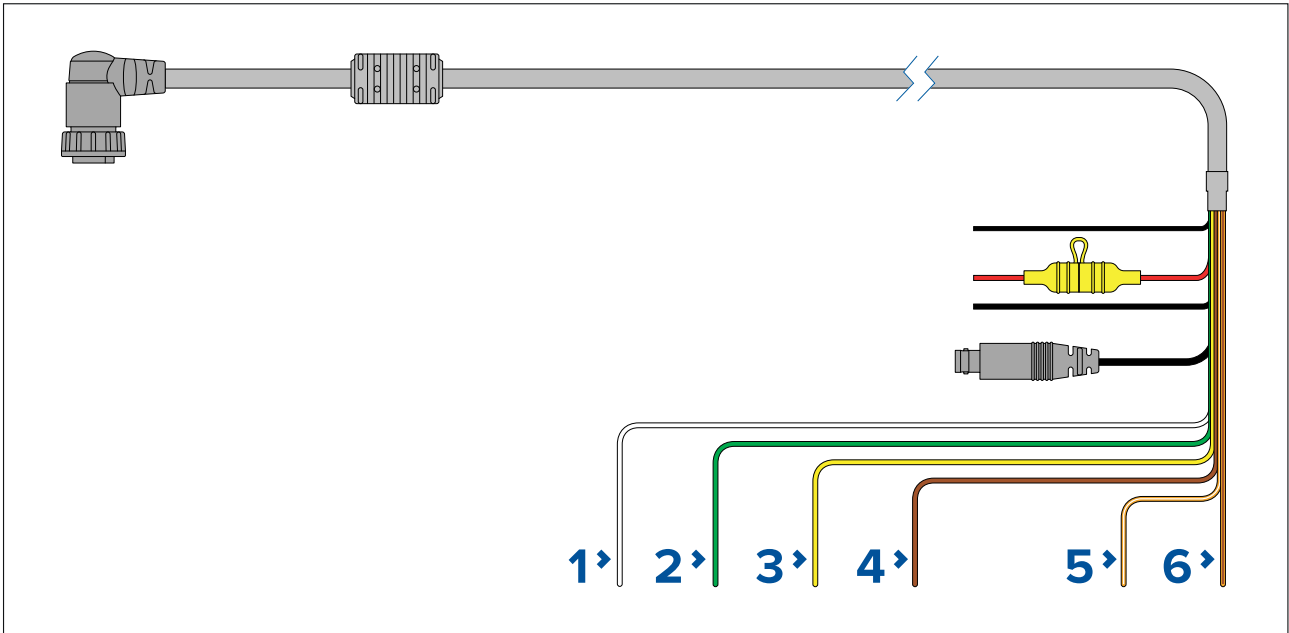
2 NMEA 0183 ports are available:

- **Port 1:** Input and output 4,800 or 38,400 baud rate.
- **Port 2:** Input only 4,800 or 38,400 baud rate.

Note:

- The Baud rate for each port must be set in your MFD's settings, refer to the operation instructions for your MFD for details on specifying baud rate.
- For Port 1, both the input and output communicate at the same baud rate. For example, if you have one NMEA 0183 device connected to Port 1 INPUT, and another NMEA 0183 device connected to Port 1 OUTPUT, both NMEA devices must use the same baud rate.

Up to 4 devices can be connected to the output port and up to 2 devices to the input ports.

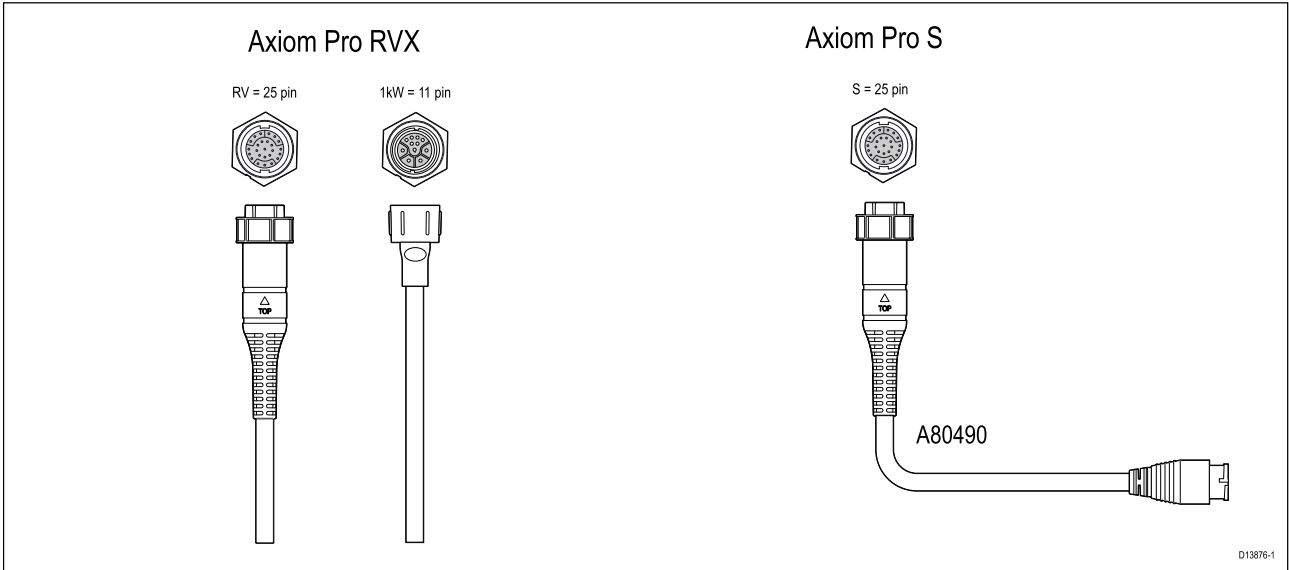


| | MFD connection | NMEA device connection |
|---|---|------------------------|
| 1 | Port 1, positive input (White) | Positive output |
| 2 | Port 1, negative input (Green) | Negative output |
| 3 | Port 1, positive output (Yellow) | Positive input |
| 4 | Port 1, negative output (Brown) | Negative input |
| 5 | Port 2, positive input (Orange / White) | Positive output |
| 6 | Port 2, negative input (Orange / Green) | Negative output |

Note:
Refer to instructions provided with your NMEA 0183 device for wire color, signal and port information.

4.5 Transducer connection (Axiom Pro)

If your MFD includes a built-in sonar module then you can connect a transducer to your MFD.



- Axiom Pro RVX:
 - 1 x 25 pin connector — connect to RealVision™ 3D transducers
 - 1 x 11 pin connector — connect to 1kW transducers.

- Axiom Pro S
 - 1 x 25 pin connector — connect to transducer adaptor cable A80490, the adaptor cable then connects to a CPT-S series transducer.

Note:

1. Only CPT-S series transducers can be connected to Axiom Pro S variant MFDs.
2. Transducer extension cables are available.
3. Adaptor cables are also available that enable connection of different transducers. Refer to [Chapter 9 Spares and accessories](#) for a list of available adaptor cables.

RealVision™ 3D transducer extension cable

For best performance, cable runs should be kept to a minimum. However, for some installations it may be necessary to extend the transducer cable.

- 3 m (9.8 ft), 5 m (16.4 ft), and 8 m (26.2 ft) transducer extension cables are available (part numbers: 3 m - A80475, 5 m - A80476, 8 m - A80477).
- It is recommended that a maximum of two cable extensions are used, with the total cable length not exceeding 18 m (59 ft).

Axiom transducer adaptor cables

The following adaptor cable are available to enable connection of a wider selection of transducers.

Axiom DV adaptor cables

| | |
|--------|---|
| A80484 | Axiom DV to 7-pin Embedded Transducer Adapter |
| A80485 | Axiom DV to 7-pin CP370 Transducer Adapter |
| A80486 | Axiom DV to 9-pin DV & 7-Pin Embedded Transducers Y-Cable |
| A80487 | Axiom DV to 9-pin DV & 7-Pin CP370 Transducers Y-Cable |

Axiom RV adaptor cables

| | |
|--------|--|
| A80488 | Axiom RV to 7-pin Embedded Transducer Adapter |
| A80489 | Axiom RV to 7-pin CP370 Transducer Adapter |
| A80490 | Axiom RV to 9-pin DV Transducer Adapter |
| A80491 | Axiom RV to 25-pin RV & 7-pin Embedded Transducers Y-Cable |
| A80492 | Axiom RV to 25-pin RV & 7-pin CP370 Transducers Y-Cable |
| A80493 | Axiom RV to 7-pin Embedded & 9-pin DV Transducers Y-Cable |
| A80494 | Axiom RV to 7-pin CP370 & 9-pin DV Transducers Y-Cable |

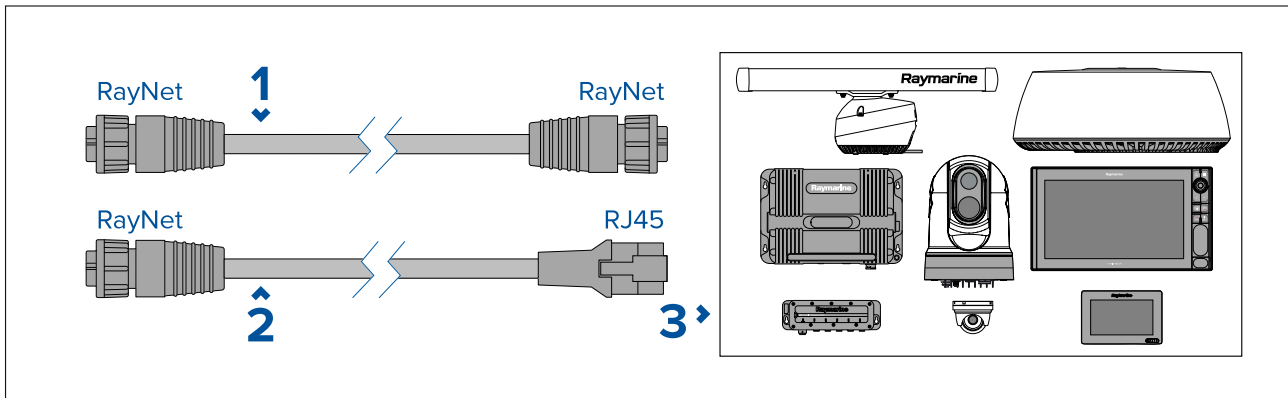
Caution: Transducer cable

- Do NOT use the transducer cable to lift or suspend the transducer; always support the transducer body directly during installation.
- Do NOT cut, shorten, or splice the transducer cable.
- Do NOT remove the connector.

If the cable is cut, it cannot be repaired. Cutting the cable will also void the warranty.

4.6 Network connection

Your MFD can be directly connected to compatible products using the RayNet connections. Your MFD can also be connected to a SeaTalkhs[®] network when using a suitable network switch.



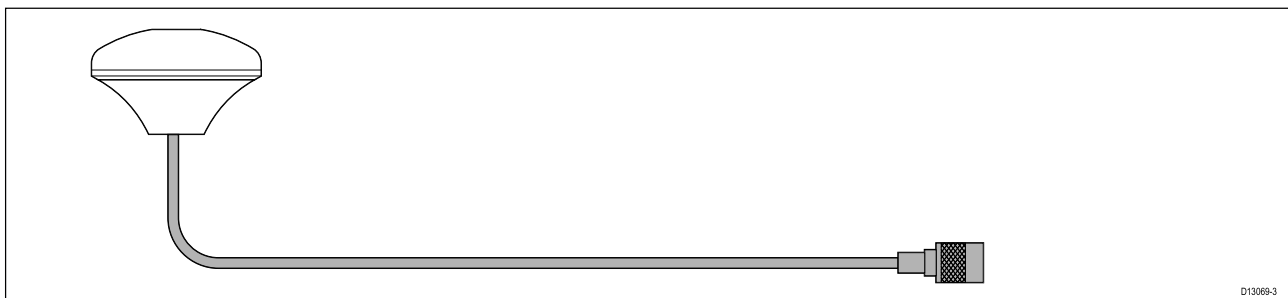
1. RayNet to RayNet cable — Connect one end of the RayNet cable to your MFD and the opposite end to a RayNet device or RayNet network switch.
2. RayNet to RJ45 cable — Connect the RayNet end of the cable to your MFD and the opposite end to an RJ45 device or RJ45 network switch or coupler.
3. Compatible network devices, such as a Network switch, Radar scanner, Sonar module, Thermal camera etc.

Note:

- Refer to the instructions supplied with your network product for specific connection information.
- Refer to [Chapter 9 Spares and accessories](#) for a list of available network cables.

4.7 GA150 connection

The GA150 (A80288) can be used to improve your MFD's GNSS receiver's reception.



For installation details, refer to the documentation provided with your GA150.

Note: The GA150 is compatible with the Axiom Pro and Axiom XL MFDs only.

4.8 Accessory connection

The RCR-SDUSB, RCR-1, Micro USB Extension Cable, or RCR-2 (available separately) can be connected to your MFD using the Accessory connection.

RCR connection

The following functions require a card reader attached to the MFD:

- use of electronic cartography — alternatively cartography can be shared from a networked MFD that does have a card reader attached.
- updating product software — alternatively if your MFD has a connection to the internet you can check online for software updates.
- import and export user data (waypoints, routes and tracks) — alternatively user data can be imported and exported from a networked MFD that does have a card reader attached.

- backup and restore settings — alternatively settings can be backed up and restored from a networked MFD that does have a card reader attached.
- viewing pdf files
- ⁽¹⁾ capturing and viewing screenshots or images (.png, .jpg files)
- ⁽²⁾ recording and viewing video files (.mov files)
- installation of third-party LightHouse app (.apk files) (for installation only; apps cannot be run directly from storage device).

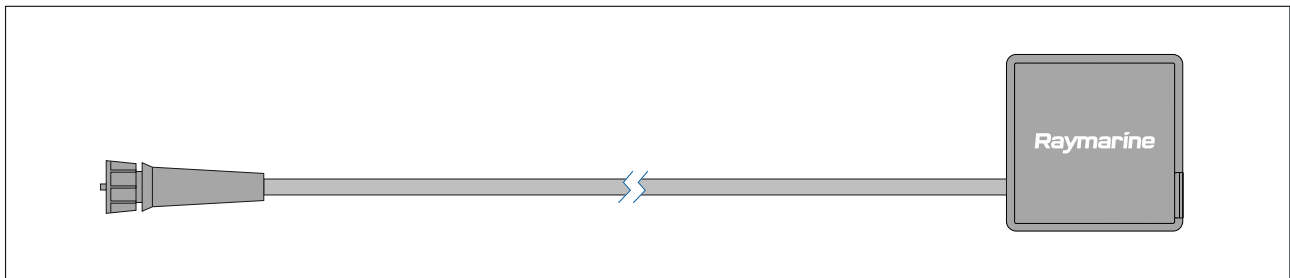
The following additional function requires a DJI Drone Extension Cable (A80630) attached to the MFD:

- connection of a compatible UAV (drone), for use with MFD’s UAV app.

Important:

1. To store images (.png, .jpg files), **External SD** or **External USB** must be selected as the **Screenshot File** location on the **This display** tab in the main MFD settings menu (accessible from Homescreen).
2. To store video (.mov files), **External SD** or **External USB** must be selected as the **Save Files** location on the **Photo & Video recording** tab in the Video app settings menu.

In addition to the storage uses listed above, the USB slot on the RCR-SDUSB can also supply 0.5A of current to charge mobile devices.



| Device | Supported media |
|------------------------------------|---|
| RCR-SDUSB (A80440) | 1x SD card (or MicroSD card when using an SD card adaptor) 1x USB (Type A connector) (e.g. for connection of an external USB hard drive or pen / flash drive) |
| RCR-1 (A80585) | 1x MicroSD card |
| RCR-2 (A80218) | 2x MicroSD card |
| Micro USB Extension Cable (A80630) | 1x Micro USB (Type Micro A connector) (e.g. for connection of an external USB hard drive or pen / flash drive; an additional adaptor may be required for the connection of some USB devices). |

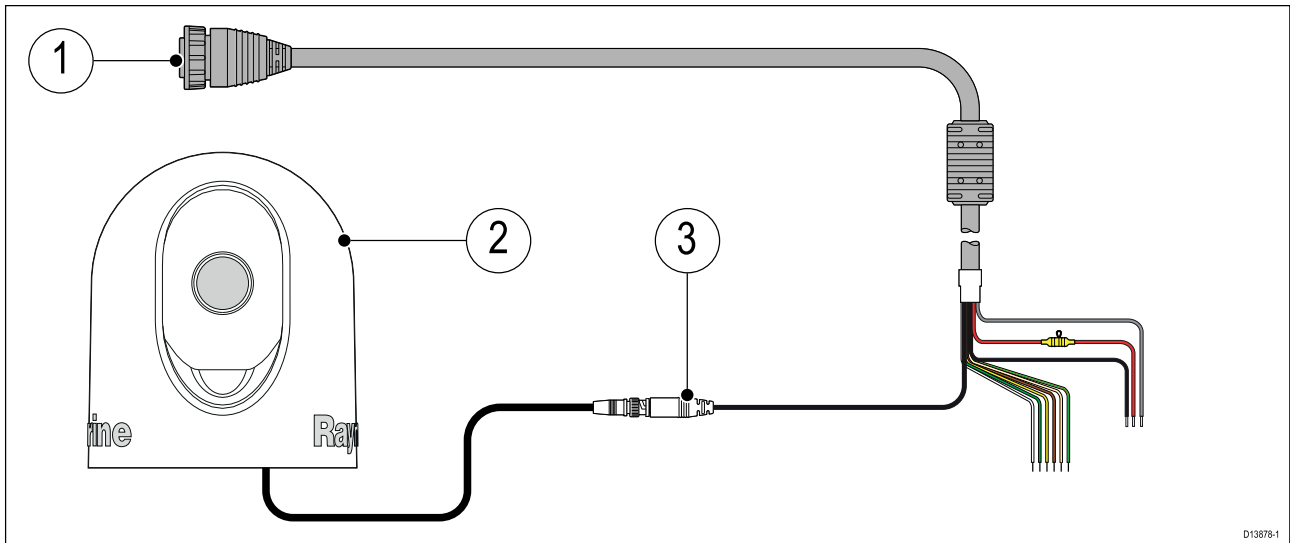
For installation details for these devices, please refer to the instructions provided with your accessory.

Warning: USB device power

Do NOT connect any device to the product’s USB connection that requires an external power source.

4.9 Axiom Pro analog video connection

Analog video sources such as a Thermal or security camera can be connected to your MFD using the BNC connector on the supplied Power/Video/NMEA 0183 cable. Your MFD will stream the feed over the SeaTalkhs[®] network to other compatible MFDs.



1. Power/Video/NMEA 0183 cable supplied with your MFD.
2. Analog video device.
3. Analog video BNC connector.

For installation details, refer to the documentation provided with your analog video device.

Chapter 5: Maintaining your display

Chapter contents

- [5.1 Service and maintenance on page 48](#)
- [5.2 Product cleaning on page 48](#)

5.1 Service and maintenance

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



Warning: High voltage

This product contains high voltage. Do NOT remove covers or attempt to access internal components, unless specifically instructed in the documentation provided.



Warning: FCC Warning (Part 15.21)

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

Caution: Sun covers

- If your product is supplied with a sun cover, to protect against the damaging effects of ultraviolet (UV) light, always fit the sun cover when the product is not in use.
- To avoid potential loss, sun covers must be removed when travelling at high speed, whether in water or when the vessel is being towed.

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.

5.2 Product cleaning

Best cleaning practices.

When cleaning products:

- Switch off power supply.
- Use a clean damp cloth to wipe clean.
- Do NOT use: abrasive, acidic, ammonia, solvent or other chemical based cleaning products.
- Do NOT use a jet wash.

Cleaning the display case

The display is a sealed unit and does not require regular cleaning. If it is necessary to clean the display, follow this basic procedure:

1. Switch off the power to the display.
2. Wipe the case with a clean, lint-free cloth.
3. If necessary, use a mild detergent to remove grease marks.

Cleaning the display screen

A coating is applied to the display screen. This makes it water repellent, and prevents glare. To avoid damaging this coating, follow this procedure:

1. Switch off the power to the display.
2. Rinse the screen with fresh water to remove all dirt particles and salt deposits.
3. Allow the screen to dry naturally.
4. If any smears remain, very gently wipe the screen with a clean microfibre cleaning cloth.

Cleaning the sun cover

The supplied sun cover features an adhesive surface. In certain conditions unwanted contaminants may stick to this surface. To avoid damaging the monitor display, clean the sun cover regularly following this procedure:

1. Carefully remove the sun cover from the display.
2. Rinse the sun cover with fresh water to remove all dirt particles and salt deposits.
3. Allow the sun cover to dry naturally.

Chapter 6: Troubleshooting

Chapter contents

- [6.1 Troubleshooting on page 52](#)
- [6.2 Power up troubleshooting on page 53](#)
- [6.3 GNSS \(GPS\) troubleshooting on page 54](#)
- [6.4 Sonar troubleshooting on page 55](#)
- [6.5 Wi-Fi troubleshooting on page 58](#)
- [6.6 Touchscreen troubleshooting on page 61](#)
- [6.7 Miscellaneous troubleshooting on page 62](#)

6.1 Troubleshooting

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

Before packing and shipping, all Raymarine 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 in order to restore normal operation.

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

6.2 Power up troubleshooting

Product does not turn on or keeps turning off

| Possible causes | Possible solutions |
|--|--|
| Blown fuse / tripped breaker. | <ol style="list-style-type: none"> 1. Check condition of relevant fuses and breakers and connections, replace if necessary. (Refer to the <i>Technical Specification</i> section of your product's installation instructions for fuse ratings.) 2. If fuse keeps blowing check for cable damage, broken connector pins or incorrect wiring. |
| Poor / damaged / insecure power supply cable / connections | <ol style="list-style-type: none"> 1. Check that the power cable connector is correctly orientated and fully inserted into the display connector and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, and replace if necessary. 3. With the display turned on, try flexing the power cable near to the display connector to see if this causes the unit to restart or lose power. Replace if necessary. 4. Check the vessel's battery voltage and the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion. 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. |
| Incorrect power connection | The power supply may be wired incorrectly, ensure the installation instructions have been followed. |

Product will not start up (restart loop)

| Possible causes | Possible solutions |
|-----------------------------|---|
| Power supply and connection | See possible solutions from the table above, entitled 'Product does not turn on or keeps turning off'. |
| Software corruption | <ol style="list-style-type: none"> 1. In the unlikely event that the product's software has become corrupted, try downloading and installing the latest software from the Raymarine website. 2. On display products, as a last resort, attempt to perform a 'Power on Reset'. Be aware that this will delete all settings / presets and user data (such as waypoints and tracks), and revert the unit back to factory defaults. |

Performing a power on reset - Axiom Pro

| |
|--|
| <p>Important:</p> <p>Before performing a power on reset ensure you have backed up your settings and user data to a memory card.</p> |
|--|

1. Switch off power at the breaker to ensure that the MFD is completely powered off, and not in Standby mode. Alternatively, remove the power cable from the display.
2. Within approximately 10 seconds of powering on your MFD, press and hold the **Back** and **Switch active** buttons until the screen goes black and the Raymarine logo appears.
The MFD will boot into Recovery mode.
3. Use the directional controls to highlight **Wipe data/factory reset**.
4. Press **Ok**.
5. Select **Yes** to restore your MFD to factory default settings.
6. When 'Data wipe complete' is displayed, select **Reboot system** now.

6.3 GNSS (GPS) troubleshooting

Potential problems with the GNSS (GPS) receiver and possible causes and solutions are described here.

| Problem | Possible causes | Possible solutions |
|--|--|---|
| “No Fix” GNSS status icon is displayed. | Geographic location or prevailing conditions preventing satellite fix. | Check periodically to see if a fix is obtained in better conditions or another geographic location. |
| | GNSS (GPS) connection fault. | Ensure that external GNSS connections and cabling are correct and fault free. |
| | External GNSS (GPS) receiver in poor location. For example: <ul style="list-style-type: none"> • Below decks. • Close proximity to transmitting equipment such as VHF radio. | Ensure GNSS (GPS) receiver has a clear view of the sky. |
| | GNSS (GPS) installation problem. | Refer to the installation instructions. |
| <p>Note: A GNSS Status screen is accessible from the display. This provides satellite signal strength and other relevant information.</p> | | |

6.4 Sonar troubleshooting

Problems with the sonar and their possible causes and solutions are described here.

Scrolling image is not being displayed

| Possible causes | Possible solutions |
|---|---|
| Sonar disabled | Select Ping Enable from the Sonar app's Sounder menu. |
| Incorrect transducer selected | Check that the correct transducer is selected in the Sonar app's Transducer menu. |
| Damaged cables | <ol style="list-style-type: none"> 1. Check that the transducer cable connector is fully inserted and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 3. With the unit turned on, try flexing the cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 4. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 5. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Sonar applications to stop scrolling or the unit to reset/turn off), replace if necessary. |
| Damaged or fouled transducer | Check the condition of the transducer ensuring it is not damaged and is free from debris/fouling, clean or replace as necessary. |
| Wrong transducer fitted | Ensure the transducer is compatible with your system. |
| External sonar module: SeaTalkhs™ / RayNet network problem. | <ul style="list-style-type: none"> • Check that the unit is correctly connected to the multifunction display or Raymarine network switch. If a crossover coupler or other coupler cable / adapter is used, check all connections ensuring connections are secure, clean and free from corrosion, replace if necessary. |
| External sonar module: Software mismatch between equipment may prevent communication. | Ensure all Raymarine products contain the latest available software, check the Raymarine website: www.raymarine.com/software for software compatibility. |

No depth reading / lost bottom lock

| Possible causes | Possible solutions |
|------------------------------|--|
| Transducer location | Check that the transducer has been installed in accordance with the instructions provided with the transducer. |
| Transducer angle | If the transducer angle is too great the beam can miss the bottom, adjust transducer angle and recheck. |
| Transducer kicked-up | If the transducer has a kick-up mechanism, check that it has not kicked up due to hitting an object. |
| Power source insufficient | With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible to establish actual voltage when the current is flowing. (Check your product's Technical specification for power supply requirements.) |
| Damaged or fouled transducer | Check the condition of the transducer ensuring it is not damaged and is free from debris / fouling. |

| Possible causes | Possible solutions |
|--------------------------------|--|
| Damaged cables | <ol style="list-style-type: none"> 1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 5. 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. 6. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Sonar applications to stop scrolling or the unit to reset/turn off), replace if necessary. |
| Vessel speed too high | Slow vessel speed and recheck. |
| Bottom too shallow or too deep | The bottom depth may be outside of the transducers depth range, move vessel to shallower or deeper waters as relevant and recheck. |

Poor / problematic image

| Possible causes | Possible solutions |
|---|--|
| Vessel stationary | Fish arches are not displayed if the vessel is stationary; fish will appear on the display as straight lines. |
| Scrolling paused or speed set too low | Unpause or increase sonar scrolling speed. |
| Sensitivity settings may be inappropriate for present conditions. | Check and adjust sensitivity settings or perform a Sonar reset. |
| Damaged cables | <ol style="list-style-type: none"> 1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 5. 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. 6. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Sonar applications to stop scrolling or the unit to reset/turn off), replace if necessary. |

| Possible causes | Possible solutions |
|---|--|
| Transducer location | <ul style="list-style-type: none"> • Check that the transducer has been installed in accordance with the instructions provided with the transducer. • If a transom mount transducer is mounted too high on the transom it may be lifting out of the water, check that the transducer face is fully submerged when planing and turning. |
| Transducer kicked-up | If the transducer has a kick-up mechanism, check that it has not kicked up due to hitting an object. |
| Damaged or fouled transducer | Check the condition of the transducer ensuring it is not damaged and is free from debris / fouling. |
| Damaged transducer cable | Check that the transducer cable and connection is free from damage and that the connections are secure and free from corrosion. |
| Turbulence around the transducer at higher speeds may affect transducer performance | Slow vessel speed and recheck. |
| Interference from another transducer | <ol style="list-style-type: none"> 1. Turn off the transducer causing the interference. 2. Reposition the transducers so they are further apart. |
| Unit power supply fault | Check the voltage from the power supply, if this is too low it can affect the transmitting power of the unit. |

6.5 Wi-Fi troubleshooting

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

Cannot find network

| Possible cause | Possible solutions |
|--|--|
| Wi-Fi not currently enabled on devices. | Ensure Wi-Fi is enabled on both Wi-Fi devices and rescan available networks. |
| Some devices may automatically turn off Wi-Fi when not in use to save power. | Power cycle / reboot devices and rescan available networks. |
| Device not broadcasting. | <ol style="list-style-type: none"> 1. Try to enable broadcasting of the device's network using the Wi-Fi settings on the device you are trying to connect to. 2. You may still be able to connect to the device, when it is not broadcasting, by manually entering the device's Wi-Fi Name / SSID and passphrase in the connection settings of the device you are trying to connect. |
| Devices out of range or signal being blocked. | Move devices closer together or, if possible remove the obstructions and then rescan available network. |

Cannot connect to network

| Possible cause | Possible solutions |
|---|--|
| Some devices may automatically turn off Wi-Fi when not in use to save power. | Power cycle/reboot devices and retry the connection. |
| Trying to connect to the wrong Wi-Fi network | Ensure you are trying to connect to the correct Wi-Fi network, the Wi-Fi network's name can be found in the Wi-Fi settings on the broadcasting device (the device that you are trying to connect to). |
| Incorrect network credentials | Ensure you are using the correct passphrase, the Wi-Fi network's passphrase can be found in the Wi-Fi settings on the broadcasting device (the device that you are trying to connect to). |
| Bulkheads, decks and other heavy structure can degrade and even block the Wi-Fi signal. Depending on the thickness and material used it may not always be possible to pass a Wi-Fi signal through certain structures | <ol style="list-style-type: none"> 1. Try repositioning the devices so the structure is removed from the direct line of sight between the devices, or 2. If possible use a wired connection instead. |
| Interference being caused by other Wi-Fi enabled or older Bluetooth enabled devices (Bluetooth and Wi-Fi both operate in the 2.4 GHz frequency range, some older bluetooth devices may interfere with Wi-Fi signals.) | <ol style="list-style-type: none"> 1. Change the Wi-Fi Channel of the device you are trying to connect to and retry the connection. You can use free Wi-Fi analyzer apps on your smart device to help you choose a better channel (channel with least traffic). 2. Temporarily disable each wireless device in turn until you have identified the device causing the interference. |

| Possible cause | Possible solutions |
|---|---|
| <p>Interference caused by other devices that use the 2.4GHz frequency See list below of some common devices that use the 2.4GHz frequency:</p> <ul style="list-style-type: none"> • Microwave ovens • Fluorescent lighting • Cordless phones / baby monitors • Motion sensors | <p>Temporarily switch off each device in turn until you have identified the device causing the interference, then remove or reposition the offending device(s).</p> |
| <p>Interference caused by electrical and electronic devices and associated cabling could generate an electromagnetic field which may interfere with the Wi-Fi signal.</p> | <p>Temporarily switch off each item in turn until you have identified the device causing the interference, then remove or reposition the offending device(s).</p> |

Connection extremely slow and or keeps dropping out

| Possible cause | Possible solutions |
|---|---|
| <p>Wi-Fi performance degrades over distance so products farther away will receive less network bandwidth. Products installed close to their maximum Wi-Fi range will experience slow connection speeds, signal drop outs or not being able to connect at all.</p> | <ul style="list-style-type: none"> • Move devices closer together. • For fixed installations such as a Quantum Radar, enable the Wi-Fi connection on an MFD installed closer to the device. |
| <p>Interference being caused by other Wi-Fi enabled or older Bluetooth enabled devices (Bluetooth and Wi-Fi both operate in the 2.4 GHz frequency range, some older bluetooth devices may interfere with Wi-Fi signals.)</p> | <ol style="list-style-type: none"> 1. Change the Wi-Fi Channel of the device you are trying to connect to and retry the connection. You can use free Wi-Fi analyzer apps on your smart device to help you choose a better channel (channel with least traffic). 2. Temporarily switch off each device in turn until you have identified the device causing the interference, then remove or reposition the offending device(s). |
| <p>Interference from devices on other vessels. When in close proximity to other vessels, for example, when moored up in a marina, many other Wi-Fi signals may be present.</p> | <ol style="list-style-type: none"> 1. Change the Wi-Fi Channel of the device you are trying to connect to and retry the connection. You can use free Wi-Fi analyzer apps on your smart device to help you choose a better channel (channel with least traffic). 2. If possible, move your vessel to a location with less Wi-Fi traffic. |

Network connection established but no data

| Possible cause | Possible solutions |
|--|---|
| <p>Connected to the wrong network.</p> | <p>Ensure that your devices is connected to the correct network.</p> |
| <p>Device software incompatibility</p> | <p>Ensure both devices are running the latest available software.</p> |
| <p>It may be possible that the device has become defective</p> | <ol style="list-style-type: none"> 1. Try updating software to a later version, or 2. try reinstalling the software. 3. Obtain new replacement device. |

Mobile application running slowly or not at all

| Possible cause | Possible solutions |
|--|---|
| Raymarine app not installed | Install mobile app from relevant app store. |
| Raymarine app version not compatible with MFD software | Ensure mobile app and MFD software are latest available versions. |
| Mobile apps not enabled on MFD | Enable “Viewing only” or “Remote Control” as required in the Mobile Apps setting on your MFD. |

6.6 Touchscreen troubleshooting

Problems with the touchscreen and their possible causes and solutions are described here.

| Problem | Possible causes | Possible solutions |
|---|--|--|
| Touchscreen does not operate as expected. | TouchLock is enabled. | Swipe your finger from left to right across the Power button swipe area to de-activate the TouchLock. |
| | Screen is not being operated with bare fingers, for example gloves are being worn. | Bare fingers must make contact with the screen for correct operation. Alternatively you may use conductive gloves. |
| | Water deposits on the screen. | Carefully clean and dry the screen in accordance with the instructions provided. |

6.7 Miscellaneous troubleshooting

Miscellaneous problems and their possible causes and solutions are described here.

| Problem | Possible causes | Possible solutions |
|---|--|--|
| Display behaves erratically: <ul style="list-style-type: none"> • Frequent unexpected resets. • System crashes or other erratic behavior. | Intermittent problem with power to the display. | Check relevant fuses and breakers. |
| | | Check that the power supply cable is sound and that all connections are tight and free from corrosion. |
| | | Check that the power source is of the correct voltage and sufficient current. |
| | Software mismatch on system (upgrade required). | Go to www.raymarine.com and click on support for the latest software downloads. |
| Corrupt data / other unknown issue. | Perform a factory reset. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p>Important: This will result in the loss of any settings and data (such as waypoints) stored on the product. Save any important data to a memory card before resetting.</p> </div> | |

Chapter 7: Technical support

Chapter contents

- [7.1 Raymarine product support and servicing on page 64](#)
- [7.2 Learning resources on page 66](#)

7.1 Raymarine product support and servicing

Raymarine provides a comprehensive product support service, as well as warranty, service, and repairs. You can access these services through the Raymarine website, telephone, and e-mail.

Product information

If you need to request service or support, please have the following information to hand:

- Product name.
- Product identity.
- Serial number.
- Software application version.
- System diagrams.

You can obtain this product information using diagnostic pages of the connected MFD.

Servicing and warranty

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

Don't forget to visit the Raymarine website to register your product for extended warranty benefits:

<http://www.raymarine.co.uk/display/?id=788>.

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

- E-Mail: emea.service@raymarine.com
- Tel: +44 (0)1329 246 932

United States (US):

- E-Mail: rm-usrepair@flir.com
- Tel: +1 (603) 324 7900

Web support

Please visit the "Support" area of the Raymarine website for:

- **Manuals and Documents** — <http://www.raymarine.com/manuals>
- **Technical support forum** — <http://forum.raymarine.com>
- **Software updates** — <http://www.raymarine.com/software>

Worldwide support

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

- Help desk: <https://raymarine.custhelp.com/app/ask>
- Tel: +44 (0)1329 246 777

United States (US):

- Help desk: <https://raymarine.custhelp.com/app/ask>
- Tel: +1 (603) 324 7900 (Toll-free: +800 539 5539)

Australia and New Zealand (Raymarine subsidiary):

- E-Mail: aus.support@raymarine.com
- Tel: +61 2 8977 0300

France (Raymarine subsidiary):

- E-Mail: support.fr@raymarine.com
- Tel: +33 (0)1 46 49 72 30

Germany (Raymarine subsidiary):

- E-Mail: support.de@raymarine.com
- Tel: +49 40 237 808 0

Italy (Raymarine subsidiary):

- E-Mail: support.it@raymarine.com
- Tel: +39 02 9945 1001

Spain (Authorized Raymarine distributor):

- E-Mail: sat@azimut.es

- Tel: +34 96 2965 102

Netherlands (Raymarine subsidiary):

- E-Mail: support.nl@raymarine.com
- Tel: +31 (0)26 3614 905

Sweden (Raymarine subsidiary):

- E-Mail: support.se@raymarine.com
- Tel: +46 (0)317 633 670

Finland (Raymarine subsidiary):

- E-Mail: support.fi@raymarine.com
- Tel: +358 (0)207 619 937

Norway (Raymarine subsidiary):

- E-Mail: support.no@raymarine.com
- Tel: +47 692 64 600

Denmark (Raymarine subsidiary):

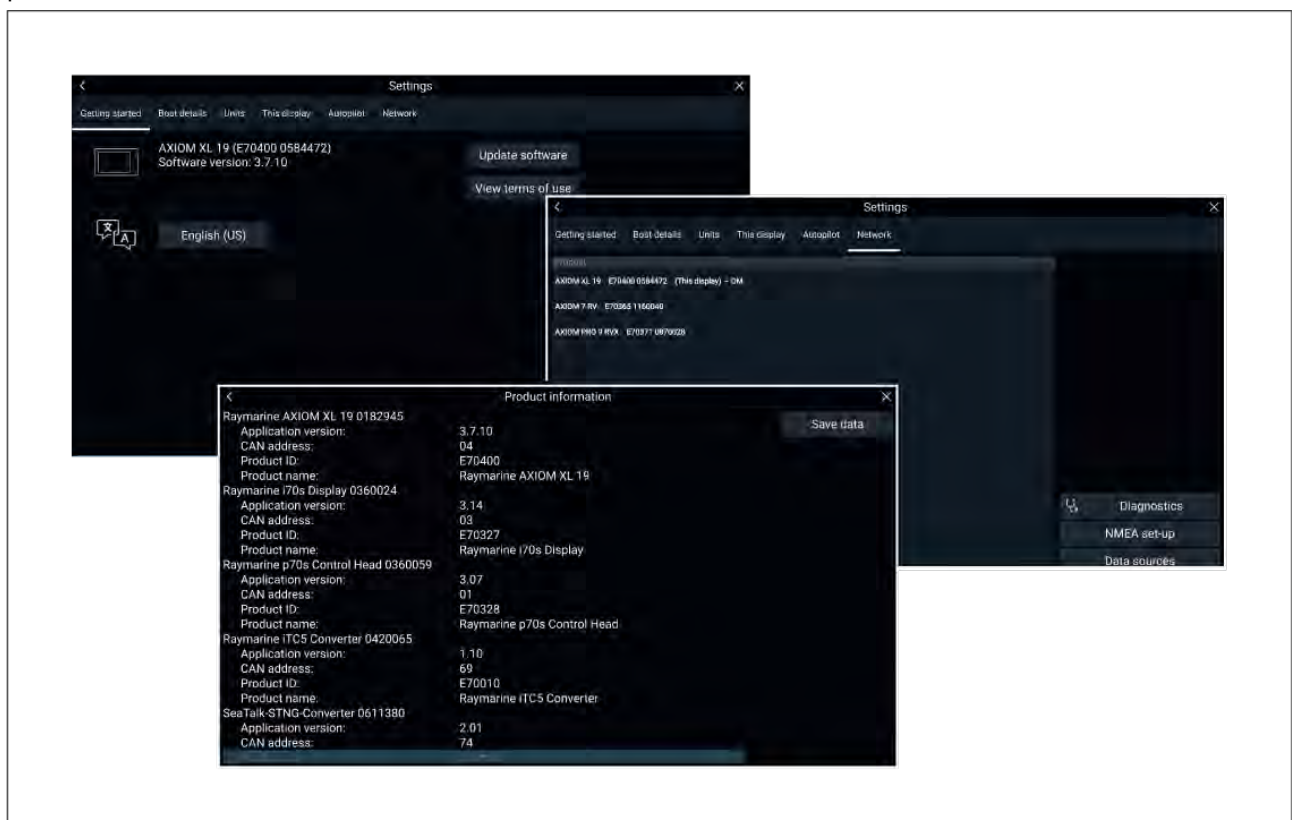
- E-Mail: support.dk@raymarine.com
- Tel: +45 437 164 64

Russia (Authorized Raymarine distributor):

- E-Mail: info@mikstmarine.ru
- Tel: +7 495 788 0508

Viewing product information (LightHouse™ 3)

Use the **Settings** menu to view hardware and software information about your MFD, and connected products.



1. Select **Settings**, from the Homescreen.

The **Getting started** menu contains hardware and software information for your MFD.

2. You can view further information about your MFD, or view information about products networked using SeaTalkhs® and SeaTalkng® / NMEA 2000, by selecting the **Network** tab, then:
 - i. to display detailed software information and your MFD's network IP address, select your MFD from the list.

- ii. to display detailed diagnostics information for all products, select **Product info** from the **Diagnostics** pop over menu.

Remote Support via AnyDesk

LightHouse 3 software versions v3.13 or later support remote support functions via the preloaded AnyDesk app.

The AnyDesk app enables a Raymarine Product Support representative to remotely connect to and control your MFD over an Internet connection, for the purposes of technical support and troubleshooting.

To get started, you will first need to contact Raymarine Product Support. If the representative considers that your support case would benefit from a remote session, you need to first ensure that your MFD has an active Internet connection via Wi-Fi. Next, launch the AnyDesk app from your MFD's homescreen, and then provide the displayed unique ID to the Raymarine Product Support representative. Then follow any further instructions provided to you by the representative.

Attention

- **AnyDesk is provided for troubleshooting and support purposes only, and is NOT intended to perform remote functions on your vessel. Raymarine will NOT be held liable for damage or injury to equipment or persons caused by the use of a remote connection to your MFD.**
- **Do not disclose your AnyDesk ID to anyone other than authorised Raymarine Product Support personnel.**
- **Do not use the AnyDesk app to remotely activate connected devices such as Autopilot, Radar or Sonar hardware.**

7.2 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:

- [YouTube](#)

LightHouse™ 3 tips and tricks:

- [Raymarine website](#)

Video Gallery:

- [Raymarine website](#)

Note:

- Viewing the videos requires a device with an Internet connection.
- Some videos are only available in English.

Training courses

Raymarine regularly runs a range of in-depth training courses to help you make the most of your products. Visit the Training section of the Raymarine website for more information:

- <http://www.raymarine.co.uk/view/?id=2372>

Technical support forum

You can use the Technical support forum to ask a technical question about a Raymarine product or to find out how other customers are using their Raymarine equipment. The resource is regularly updated with contributions from Raymarine customers and staff:

- <http://forum.raymarine.com>

Chapter 8: Technical specification

Chapter contents

- 8.1 Axiom Pro technical specification on page 68
- 8.2 Internal sonar specification on page 69
- 8.3 Internal GNSS (GPS / GLONASS) receiver specification on page 70
- 8.4 NMEA 0183 sentences on page 70
- 8.5 NMEA 2000 PGNs on page 71

8.1 Axiom Pro technical specification

Power

| | Axiom™ Pro 9 | Axiom™ Pro 12 | Axiom™ Pro 16 |
|--|--|--|--|
| Nominal supply voltage: | 12 / 24 V dc | | |
| Operating voltage range: | 8 V dc to 32 V dc | | |
| Current (Maximum): | 5 A | | |
| Off-current (Maximum @ 12 V dc) | 11 mA (0.13 Watts) | | |
| Off-current (Maximum @ 24V dc) | 18 mA (0.43 Watts) | | |
| Fuse requirements: | <ul style="list-style-type: none"> • Inline fuse = 15 Amp, or • Thermal breaker = 15 Amp | | |
| Power consumption: (Maximum @ 12 V dc) | <ul style="list-style-type: none"> • RVX — 33.12 Watts • S — 24.96 Watts | <ul style="list-style-type: none"> • RVX — 29.88 Watts • S — 21.12 Watts | <ul style="list-style-type: none"> • RVX — 42.36 Watts • S — 31.68 Watts |
| Power consumption: (Maximum @ 24 V dc) | <ul style="list-style-type: none"> • RVX — 30.96 Watts • S — 25.2 Watts | <ul style="list-style-type: none"> • RVX — 28.8 Watts • S — 22.56 Watts | <ul style="list-style-type: none"> • RVX — 40.8 Watts • S — 31.44 Watts |

Note:

Power consumption figures for RVX variants were taken using a RealVision™ transducer and S variants using a CPT-S transducer.

Environmental

| | Axiom™ Pro 9 | Axiom™ Pro 12 | Axiom™ Pro 16 |
|------------------------------|---------------------------------|---------------|---------------|
| Operating temperature range: | -25°C (-13°F) to + 55°C (131°F) | | |
| Storage temperature range: | -30°C (-22°F) to + 70°C (158°F) | | |
| Humidity: | up to 93% @ 40°C (104°F) | | |
| Water ingress protection: | IPx6 and IPx7 | | |

LCD specification

| | Axiom™ Pro 9 | Axiom™ Pro 12 | Axiom™ Pro 16 |
|---------------------------------|---|-----------------|-----------------|
| Size (diagonal): | 9.0" | 12.1" | 15.6" |
| Type: | IPS (In-Plane Switching) | | |
| Color depth: | 24 bit | | |
| Resolution: | 1280 x 720 HD | 1280 x 800 WXGA | 1920 x 1080 FHD |
| Ratio: | 16:9 | 16:10 | 16:9 |
| Illumination: | 1200 nits / 1200 cd/m ² | | |
| Viewing angle: | Top 88° / Bottom 88° / Left 88° / Right 88° | | |
| Number of simultaneous touches: | 1 to 16 | | |

Data connections

| | Axiom™ Pro 9 | Axiom™ Pro 12 | Axiom™ Pro 16 |
|--------------------------------|---|---------------|---------------|
| Transducer: | <ul style="list-style-type: none"> • RVX variant <ul style="list-style-type: none"> – 25 pin RealVision™ connector – 11 pin 1kW connector • S variant <ul style="list-style-type: none"> – 25 pin connector (requires adaptor cable) | | |
| NMEA 2000: | 1 x DeviceNet male connector | | |
| NMEA 0183: | 2 x NMEA 0183 ports via Power/Video/NMEA 0183 cable: <ul style="list-style-type: none"> • NMEA port 1: Input and output, 4,800 / 38,400 baud rate • NMEA port 2: Input only, 4,800 / 38,400 baud rate | | |
| External GNSS antenna: | 1 x TNC type external GNSS antenna connection. | | |
| Analog video input: | 1 x Composite female BNC connector via Power/Video/NMEA 0183 cable. | | |
| Accessory: | 1 x USB Micro B | | |
| Network: | 1 x RayNet type SeaTalkhs™ connector (10 / 100 / 1,000 Mbits/s) | | |
| Wi-Fi: | 802.11/b/g/n | | |
| Bluetooth: | Bluetooth V4.0 | | |
| LEN (Load Equivalency Number): | 1 | | |

Storage

| | Axiom™ Pro 9 | Axiom™ Pro 12 | Axiom™ Pro 16 |
|-------------------------------------|---|---------------|---------------|
| Internal: | 16 GB Solid State (14 GB usable) | | |
| MicroSD card reader: | 2 x MicroSDXC card slot | | |
| External (via RCR-SDUSB accessory): | <ul style="list-style-type: none"> • 1 x SD card slot • 1 x USB A | | |
| External (via RCR-2 accessory): | 2 x MicroSDHC card slots | | |

8.2 Internal sonar specification

RealVision™ 3D sonar specification

The following specification only applies to RealVision™ 3D products.

- **Channels:**
 - 1 x CHIRP sonar
 - 1 x DownVision™
 - 1 x SideVision™
 - 1 x RealVision™ 3D
- **Range:**
 - CHIRP sonar = 0.6 M (2 ft) to 274 m (900 ft)
 - DownVision™ = 0.6 M (2 ft) to 183 m (600 ft)
 - SideVision™ = 0.6 M (2 ft) to 91 m (300 ft)
 - RealVision™ 3D = 0.6 M (2 ft) to 91 m (300 ft)

1kW sonar specification

The following specification only applies to Axiom™ Pro RVX products.

| | |
|----------|---|
| Channels | Channels <ul style="list-style-type: none"> • 1 x 50 kHz Low CHIRP • 1 x 200 kHz High CHIRP |
| Range | 0.9 m (3 ft) to 914.4 m (3,000 ft) (In optimum conditions using a 1kW transducer.) |

8.3 Internal GNSS (GPS / GLONASS) receiver specification

| | |
|--------------------------|--|
| Channels: | Multiple — ability to simultaneously track up to 28 satellites |
| Cold start: | <2 minutes |
| Receiver IC Sensitivity: | <ul style="list-style-type: none"> • 165 dBm (Tracking) • 160 dBm (Acquisition) • 148 dBm (Cold start) |
| GNSS compatibility: | <ul style="list-style-type: none"> • GPS • GLONASS • Beidou* • Galileo* |
| SBAS compatibility: | <ul style="list-style-type: none"> • EGNOS • GAGAN • MSAS • QZSS • WAAS |
| Operating frequency: | 1574 MHz to 1605 MHz |
| Signal Acquisition: | Automatic |
| Almanac Update: | Automatic |
| Geodetic Datum: | WGS-84 (alternatives can be selected on the MFD) |
| Refresh Rate: | 10 Hz (10 times per second) |
| Antenna: | <ul style="list-style-type: none"> • Internal — Ceramic chip mounted near top of unit |
| Position Accuracy: | <ul style="list-style-type: none"> • Without SBAS: <= 15 metres 95% of the time • With SBAS: <= 5 metres 95% of the time |

Note:

* Supported in future software update.

8.4 NMEA 0183 sentences

For a list of supported NMEA 0183 sentences, please refer to the LightHouse 3 Advanced Operations manual.

To obtain the latest version of the manual, visit: www.raymarine.com/manuals

8.5 NMEA 2000 PGNs

For a list of supported NMEA 2000 PGNs, please refer to the LightHouse 3 Advanced Operations manual.

To obtain the latest version of the manual, visit: www.raymarine.com/manuals

Chapter 9: Spares and accessories

Chapter contents

- [9.1 AXIOM Pro accessories on page 74](#)
- [9.2 AXIOM Pro spares on page 75](#)
- [9.3 RayNet to RayNet cables and connectors on page 76](#)
- [9.4 SeaTalkng[®] cables and accessories on page 78](#)

9.1 AXIOM Pro accessories

| Item | Part numbers | | |
|--|-----------------|---------------|---------------|
| | Axiom™ Pro 9 | Axiom™ Pro 12 | Axiom™ Pro 16 |
| RCR-SDUSB — External MicroSD and USB reader | A80440 | | |
| RMK-10 — MFD remote control | A80438 / T70293 | | |
| GA150 | A80288 | | |
| Suncover | A80534 | A80535 | A80536 |
| Axiom Pro Bracket/Ball mount plate | N/A | N/A | A80537 |
| Right angled RV transducer adaptor cable (adaptor cable length: 45 mm (1.77 in.)). | A80515 | | |

Axiom transducer adaptor cables

The following adaptor cable are available to enable connection of a wider selection of transducers.

Axiom DV adaptor cables

| | |
|--------|---|
| A80484 | Axiom DV to 7-pin Embedded Transducer Adapter |
| A80485 | Axiom DV to 7-pin CP370 Transducer Adapter |
| A80486 | Axiom DV to 9-pin DV & 7-Pin Embedded Transducers Y-Cable |
| A80487 | Axiom DV to 9-pin DV & 7-Pin CP370 Transducers Y-Cable |

Axiom RV adaptor cables

| | |
|--------|--|
| A80488 | Axiom RV to 7-pin Embedded Transducer Adapter |
| A80489 | Axiom RV to 7-pin CP370 Transducer Adapter |
| A80490 | Axiom RV to 9-pin DV Transducer Adapter |
| A80491 | Axiom RV to 25-pin RV & 7-pin Embedded Transducers Y-Cable |
| A80492 | Axiom RV to 25-pin RV & 7-pin CP370 Transducers Y-Cable |
| A80493 | Axiom RV to 7-pin Embedded & 9-pin DV Transducers Y-Cable |
| A80494 | Axiom RV to 7-pin CP370 & 9-pin DV Transducers Y-Cable |

Legacy MFD adaptor plates

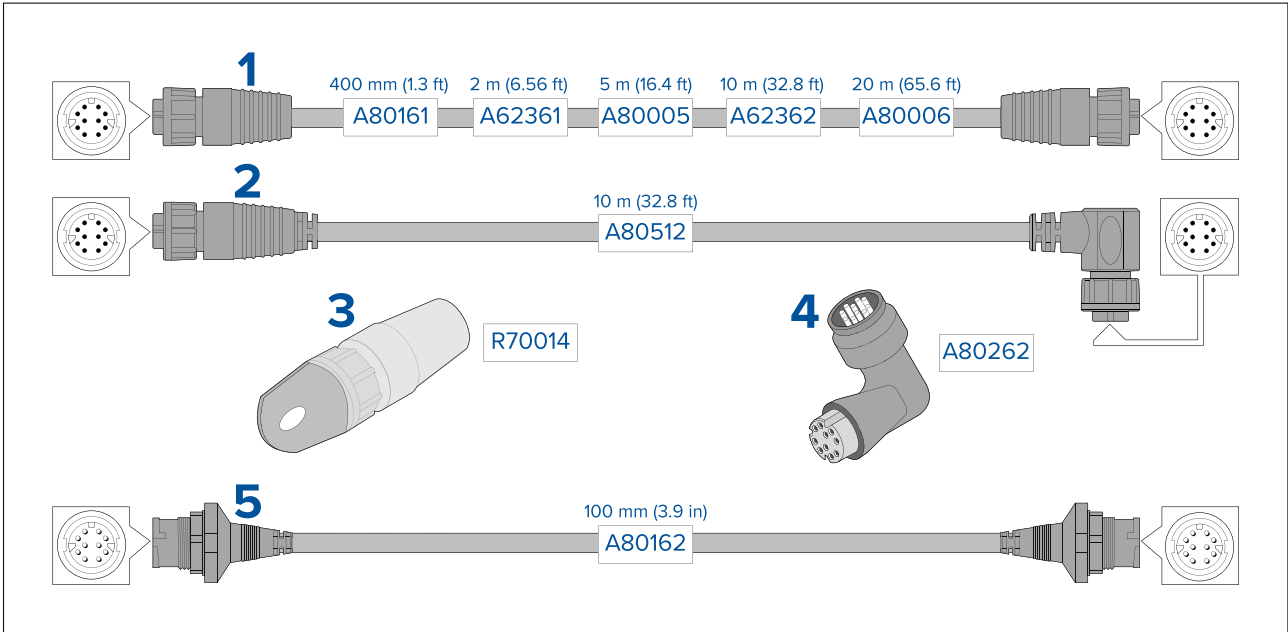
Adaptor plates are available to enable installation of Axiom Pro MFDs in the place of a Legacy MFDs.

| Existing legacy MFD | Adaptor part number | New MFD |
|---------------------|---------------------|---------------|
| C90W / E90W | A80530 | Axiom Pro 9" |
| C120W / E120W | A80531 | Axiom Pro 12" |
| e165 / E140W | A80533 | Axiom Pro 16" |

9.2 AXIOM Pro spares

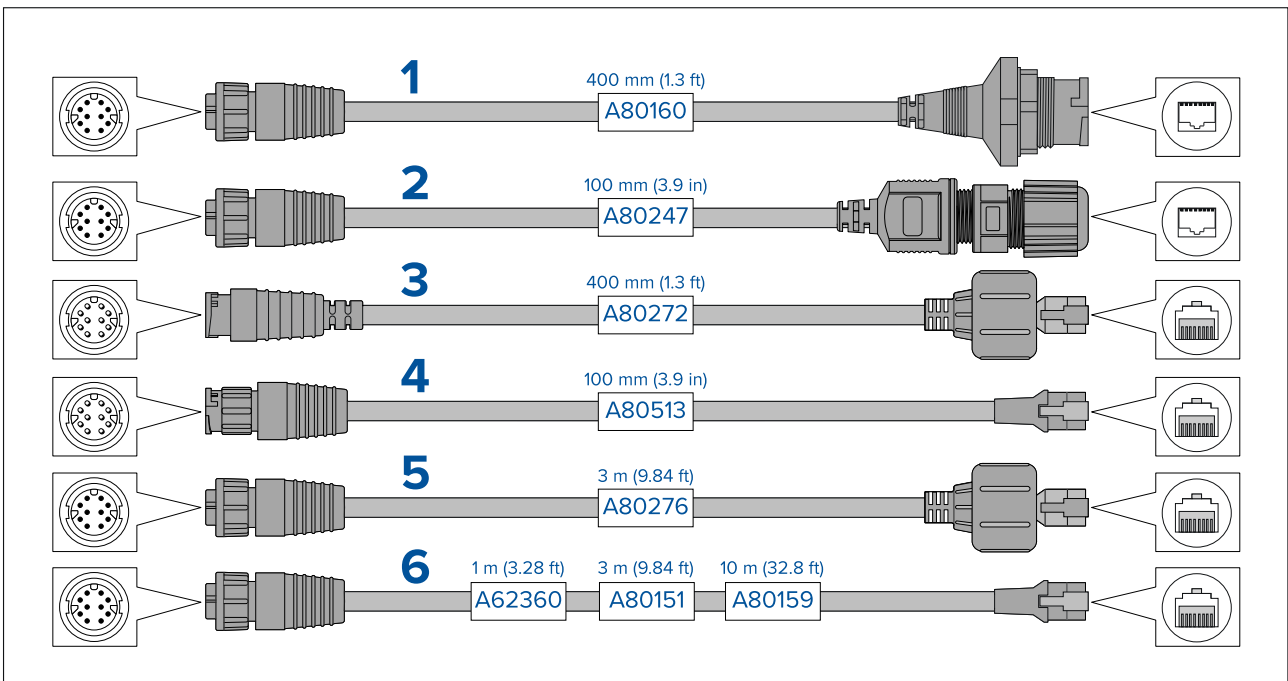
| Item | Part numbers | | |
|---|--------------|---------------|---------------|
| | Axiom™ Pro 9 | Axiom™ Pro 12 | Axiom™ Pro 16 |
| Power/Video/NMEA 0183 cable 1.5 m (4.9 ft) | R62379 | | |
| Angled Power/Video/NMEA 0183 cable 1.5 m (4.9 ft) with right angled connector | R70029 | | |
| Keypad assembly | R70600 | | |
| Trim kit — Replacement bezel pieces | R70383 | R70387 | R70598 |
| Mounting seal kit | R70385 | R70388 | R70599 |
| Trunnion kit | R70384 | R70389 | N/A |

9.3 RayNet to RayNet cables and connectors



1. Standard RayNet connection cable with a RayNet (female) socket on both ends.
2. Right-angle RayNet connection cable with a straight RayNet (female) socket on one end, and a right-angle RayNet (female) socket on the other end. Suitable for connecting at 90° (right angle) to a device, for installations where space is limited.
3. RayNet cable puller (5 pack).
4. RayNet to RayNet right-angle coupler / adapter. Suitable for connecting RayNet cables at 90° (right angle) to devices, for installations where space is limited.
5. Adapter cable with a RayNet (male) plug on both ends. Suitable for joining (female) RayNet cables together for longer cable runs.

RayNet to RJ45 adapter cables



| | Description |
|---|--|
| 1 | <p>Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) socket on the other end accepting the following cables with an RJ45 SeaTalkhs[®] waterproof locking (male) plug:</p> <ul style="list-style-type: none"> • A62245 (1.5 m). • A62246 (15 m). |
| 2 | Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 socket on the other end, along with a locking gland for a watertight fit. |
| 3 | Adapter cable with a RayNet (male) plug on one end, and an RJ45 SeaTalkhs [®] waterproof (male) plug on the other end. |
| 4 | Adapter cable with a RayNet (male) plug on one end, and an RJ45 SeaTalkhs [®] (male) plug on the other end. |
| 5 | Adapter cable with a RayNet (female) socket on one end, and an RJ45 SeaTalkhs [®] waterproof (male) plug on the other end. |
| 6 | Adapter cable with a RayNet (female) socket on one end, and an RJ45 SeaTalkhs [®] (male) socket on the other end. |

9.4 SeaTalkng[®] cables and accessories

SeaTalkng[®] cables and accessories for use with compatible products.

| Part Number | Description | Details |
|-------------|---|---|
| T70134 | Starter kit | Includes: <ul style="list-style-type: none"> • 1 x 5 Way connector (A06064) • 2 x Backbone terminator (A06031) • 1 x 3 m (9.8 ft) spur cable (A06040) • 1 x Power cable (A06049) |
| A25062 | Backbone Kit | Includes: <ul style="list-style-type: none"> • 2 x 5 m (16.4 ft) Backbone cable (A06036) • 1 x 20 m (65.6 ft) Backbone cable (A06037) • 4 x T-piece (A06028) • 2 x Backbone terminator (A06031) • 1 x Power cable (A06049) |
| A06038 | Spur cable 0.4 m (1.3 ft) | |
| A06039 | Spur cable 1 m (3.3 ft) | |
| A06040 | Spur cable 3 m (9.8 ft) | |
| A06041 | Spur cable 5 m (16.4 ft) | |
| A06042 | Elbow spur cable 0.4 m (1.3 ft) | |
| A06033 | Backbone cable 0.4 m (1.3 ft) | |
| A06034 | Backbone cable 1 m (3.3 ft) | |
| A06035 | Backbone cable 3 m (9.8 ft) | |
| A06036 | Backbone cable 5 m (16.4 ft) | |
| A06068 | Backbone cable 9 m (29.5 ft) | |
| A06037 | Backbone cable 20 m (65.6 ft) | |
| A06043 | SeaTalkng [®] to bare wire spur cable 1 m (3.3 ft) | |
| A06044 | SeaTalkng [®] to bare wire spur cable 3 m (9.8 ft) | |
| A06049 | Power cable 1 m (3.3 ft) | |
| A06077 | Right angled connector | 90° right angle spur connector. |
| A06031 | Terminator | |
| A06028 | T-piece | Provides 1 x spur connection |
| A06064 | 5-way connector block | Provides 3 x spur connections |
| A06030 | Backbone extender | |
| E22158 | SeaTalk to SeaTalkng [®] converter kit | Allows the connection of SeaTalk devices to a SeaTalkng [®] system. |
| A80001 | Inline terminator | Provides direct connection of a spur cable to the end of a backbone cable. No T-piece required. |
| A06032 | Spur blanking plug | |
| R12112 | ACU / SPX SeaTalkng [®] spur cable 0.3 m (1.0 ft) | Connects an SPX course computer or an ACU to a SeaTalkng [®] backbone. |

| Part Number | Description | Details |
|--------------------|---|--|
| A06047 | SeaTalk (3 pin) to SeaTalkng [®] adaptor cable 0.4 m (1.3 ft) | |
| A22164 | SeaTalk to SeaTalkng [®] spur cable 1 m (3.3 ft) | |
| A06048 | SeaTalk2 (5 pin) to SeaTalkng [®] adaptor cable 0.4 m (1.3 ft) | |
| A06045 | SeaTalkng [®] to DeviceNet (Female) adaptor cable 0.4 m (1.3 ft) | Allows the connection of NMEA 2000 devices to a SeaTalkng [®] system. |
| A06075 | SeaTalkng [®] to DeviceNet (Female) adaptor cable 1 m (3.3 ft) | Allows the connection of NMEA 2000 devices to a SeaTalkng [®] system. |
| A06046 | SeaTalkng [®] to DeviceNet (Male) adaptor cable 1.5 m (4.92 ft) | Allows the connection of NMEA 2000 devices to a SeaTalkng [®] system. |
| A06076 | SeaTalkng [®] to DeviceNet (Male) adaptor cable 1 m (3.3 ft) | Allows the connection of NMEA 2000 devices to a SeaTalkng [®] system. |
| A06078 | SeaTalkng [®] to DeviceNet (Male) adaptor cable 0.1 m (0.33 ft) | Allows the connection of NMEA 2000 devices to a SeaTalkng [®] system. |
| E05026 | DeviceNet (Female) to bare wires adaptor cable (0.4 m (1.3 ft) | Allows the connection of NMEA 2000 devices to a SeaTalkng [®] system. |
| E05027 | DeviceNet (Male) to bare wires adaptor cable (0.4 m (1.3 ft) | Allows the connection of NMEA 2000 devices to a SeaTalkng [®] system. |

Index

A

| | |
|------------------------------|----|
| Accessories | |
| Network adapter cables | 76 |
| Network cables | 76 |
| RayNet cables | 76 |
| SeaTalkng cables | 78 |
| Accessory connection | 43 |
| Axiom™ Pro MFDs | 15 |

C

| | |
|--------------------------------|--------|
| Cable extension | 42 |
| Card reader connection | 43 |
| CHIRP transducers | 18 |
| Cleaning | 48 |
| Screen | 49 |
| Compass safe distance | 23 |
| Conical beam transducers | 18 |
| Connecting cables | 34 |
| Connection | |
| Transducer | 41 |
| Connections | 32 |
| Accessory | 32, 43 |
| Analog camera | 45 |
| Analog video | 45 |
| Battery | 37 |
| Card reader | 43 |
| Distribution panel | 36 |
| Ethernet | 43 |
| External storage | 43 |
| GA150 | 32, 43 |
| Ground | 32 |
| Network | 43 |
| NMEA 0183 | 32, 40 |
| NMEA 2000 | 32, 40 |
| Power | 32, 35 |
| RayNet | 32, 43 |
| RCR | 43 |
| SeaTalkhs | 43 |
| SeaTalkng | 40 |
| Transducer | 33 |
| USB (via RCR-SDUSB) | 43 |
| Video | 32 |
| Connectors | 32 |
| Contact details | 64 |

D

| | |
|---------------------------------|----|
| Declaration of Conformity | 11 |
| Dedicated grounding | 39 |
| DeviceNet cables | 79 |
| Diagnostics | 65 |
| Dimensions | |
| Axiom Pro 12 | 26 |
| Axiom Pro 16 | 27 |
| Axiom Pro 9 | 26 |
| DownVision™ transducers | 18 |

E

| | |
|-------------------------------------|----|
| Electromagnetic Compatibility | 22 |
|-------------------------------------|----|

| | |
|---|----|
| EMC, <i>See</i> Electromagnetic Compatibility | |
| Ethernet connection | 43 |
| External storage connection | 43 |

F

| | |
|---------------------|----|
| Factory reset | 53 |
| Fuse rating | 35 |

G

| | |
|-------------------------------|----|
| GA150 connection | 43 |
| GNSS antenna connection | 43 |
| GPS antenna connection | 43 |

I

| | |
|---------------------------------------|----|
| Installation | |
| Best practice | 38 |
| Mounting options | 27 |
| Surface mounting | 28 |
| Trunnion mounting | 30 |
| Interference | 23 |
| <i>See also</i> Compass safe distance | |
| RF | 23 |
| IP address | 65 |

L

| | |
|-----------------------|----|
| Legacy adaptor | 14 |
| LightHouse 3 | 14 |
| LightHouse™ 3 | |
| Tips and Tricks | 66 |
| Location requirements | |
| General | 22 |
| GNSS | 23 |
| GPS | 23 |
| Touchscreen | 25 |
| Viewing angle | 25 |
| Wireless | 25 |

M

| | |
|-------------------|----|
| Maintenance | 48 |
|-------------------|----|

N

| | |
|----------------------------|----|
| Network connection | 43 |
| NMEA 0183 | |
| Baud rate | 40 |
| NMEA 0183 connection | 40 |
| NMEA 2000 connection | 40 |

O

| | |
|--|----|
| Operation instructions, LightHouse 3 | 14 |
|--|----|

P

| | |
|--------------------|----|
| Parts supplied | |
| Axiom Pro 12 | 19 |

| | |
|--------------------------------|----|
| Axiom Pro 16 | 19 |
| Axiom Pro 9 | 19 |
| Power | |
| Battery connection..... | 37 |
| Distribution | 35 |
| Distribution panel..... | 36 |
| Grounding..... | 38 |
| Sharing a breaker | 36 |
| Power cable extension | 38 |
| Power connection | 35 |
| Power troubleshooting | 53 |
| Product information | 65 |
| Product recycling (WEEE) | 11 |
| Product support..... | 64 |
| Product variants..... | 15 |

R

| | |
|--|----|
| Radio Frequency (RF) interference..... | 23 |
| RayNet | |
| cables | 76 |
| RayNet connection | 43 |
| RCR-SDUSB..... | 14 |
| RealVision™ transducers | 16 |
| Recovery mode | 53 |
| Routine checks | 48 |

S

| | |
|----------------------------|----|
| SeaTalkhs connection | 43 |
| SeaTalkng cables | 78 |
| SeaTalkng connection..... | 40 |
| Service Center..... | 64 |
| Servicing..... | 48 |
| Support forum | 66 |

T

| | |
|-------------------------------|--------|
| Technical specification | 67 |
| GNSS receiver | 70 |
| Technical Specification | |
| RealVision 3D Sonar | 69 |
| Technical support..... | 64, 66 |
| Training courses | 66 |
| Transducer connections..... | 33 |
| TransducersRealVision™ | 16 |
| Troubleshooting | 52 |
| GNSS (GPS)..... | 54 |

V

| | |
|------------------------|----|
| Ventilation | 22 |
| Video connection | 45 |
| Video Gallery..... | 66 |

W

| | |
|---------------------|----|
| Warranty | 64 |
| WEEE Directive..... | 11 |
| Wireless | |
| Interference | 25 |



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