

Raymarine®



AXIOM™

Installation instructions

English (en-US)
Date: 04-2017
Document number: 87298-1
© 2017 Raymarine UK Limited

Trademark and patents notice

Raymarine, Tacktick, Clear Pulse, Truzoom, HSB, SeaTalk, SeaTalk^{hs}, SeaTalk^{ng}, Micronet, Raytech, Gear Up, Marine Shield, Seahawk, Autohelm, Automagic, and Visionality are registered or claimed trademarks of Raymarine Belgium.

FLIR, LightHouse, DownVision, SideVision, RealVision, Dragonfly, Quantum, Instalert, Infrared Everywhere, The World's Sixth Sense and ClearCruise are registered or claimed trademarks of FLIR Systems, Inc.

All other trademarks, trade names, or company names referenced herein are used for identification only and are the property of their respective owners.

This product is protected by patents, design patents, patents pending, or design patents pending.

Fair Use Statement

You may print no more than three copies of this manual for your own use. You may not make any further copies or distribute or use the manual in any other way including without limitation exploiting the manual commercially or giving or selling copies to third parties.

Software updates



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

Product documentation



The latest versions of all English and translated documents are available to download in PDF format from the website: www.raymarine.com/manuals.
Please check the website to ensure you have the latest documentation.

Copyright ©2017 Raymarine UK Ltd. All rights reserved.

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
Industry Canada	10
Industry Canada (Français)	10
Japanese approvals	10
Declaration of conformity.....	10
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™ Multifunction Displays	15
2.3 Compatible transducers for Fishfinder variant Axiom™ MFDs	16
RV-100 RealVision™ 3D Transom Mount Transducer	16
DownVision™ transducers	17
DownVision™ type CHIRP conical beam transducers.....	17
2.4 Parts supplied - Axiom 7.....	18
2.5 Parts Supplied - Axiom 7 (DISP).....	19
2.6 Parts supplied - Axiom 9 and 12	20
2.7 Parts supplied - Axiom 9 and 12 (DISP).....	21
Chapter 3 Installation	23
3.1 Selecting a location.....	24
General location requirements	24
EMC installation guidelines.....	24
RF interference	25
Compass safe distance.....	25
GPS location requirements	25
Touchscreen location requirements	27
Wi-Fi location requirements.....	27
Viewing angle considerations.....	28
Product dimensions	28
3.2 Mounting options	31
3.3 Bracket (Trunnion) mounting.....	32
3.4 Axiom 7 flush and surface mounting.....	33

Removing the trunnion adaptor Axiom™ 7	33
Surface or Flush mounting Axiom™ 7 only.....	33
3.5 Surface or flush mounting using the Rear Mount Kit	35
Chapter 4 Connections.....	37
4.1 Connections overview.....	38
Connecting cables.....	40
4.2 Power connection	41
In-line fuse and thermal breaker ratings	41
Power distribution.....	41
Grounding — additional dedicated drain wire required.....	45
4.3 NMEA 2000 (SeaTalkng®) connection	46
4.4 Transducer connection.....	47
RealVision™ 3D transducer extension cable	47
DownVision™ transducer extension cable	47
Axiom transducer adaptor cables.....	47
4.5 Network connection.....	49
4.6 Accessory connection	50
Chapter 5 Maintaining your display	51
5.1 Service and maintenance.....	52
Routine equipment checks	52
5.2 Product cleaning	53
Cleaning the display case.....	53
Cleaning the display screen	53
Cleaning the sun cover.....	53
Chapter 6 Troubleshooting	55
6.1 Troubleshooting	56
6.2 Power up troubleshooting	57
Performing a Power on Reset.....	57
6.3 GNSS troubleshooting.....	58
6.4 Sonar troubleshooting.....	59
6.5 Wi-Fi troubleshooting	62
6.6 Touchscreen troubleshooting	65
6.7 Miscellaneous troubleshooting	66
Chapter 7 Technical support.....	67
7.1 Raymarine product support and servicing	68
Viewing product information	69
7.2 Learning resources	70
Chapter 8 Technical specification.....	71
8.1 Axiom tech spec.....	72
8.2 DownVision™ sonar specification	74

8.3 RealVision™ 3D sonar specification.....	75
8.4 Internal GNSS (GPS / GLONASS) receiver specification	76
Chapter 9 Spares and accessories	77
9.1 AXIOM accessories.....	78
9.2 AXIOM spares.....	79
9.3 RayNet to RayNet cables and connectors	80
RayNet to RJ45 adapter cables	81
9.4 SeaTalk ^{ng} ® cables and accessories.....	83

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.

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 / IC 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 1cm (0.39in) 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.

Industry Canada

This device complies with Industry Canada 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.

Industry Canada (Français)

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

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 (radio 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.

Declaration of conformity

Raymarine UK Ltd. declares that this product is compliant with the essential requirements of R&TTE directive 1999/5/EC.

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

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.

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 for Fishfinder variant Axiom™ MFDs on page 16
- 2.4 Parts supplied - Axiom 7 on page 18
- 2.5 Parts Supplied - Axiom 7 (DISP) on page 19
- 2.6 Parts supplied - Axiom 9 and 12 on page 20
- 2.7 Parts supplied - Axiom 9 and 12 (DISP) on page 21

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)	87298
Surface/Flush mounting template	<ul style="list-style-type: none">• 7" — 87295• 9" — 87296• 12" — 87297
LightHouse™ 3 Basic operation instructions	81369
LightHouse™ 3 Advanced operation instructions	81370
RCR-SDUSB Installation instructions	87292
Front installation kit Installation instructions	87304

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 MFD 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

2.2 Applicable products

This document is applicable to the following products:

Axiom™ Multifunction Displays

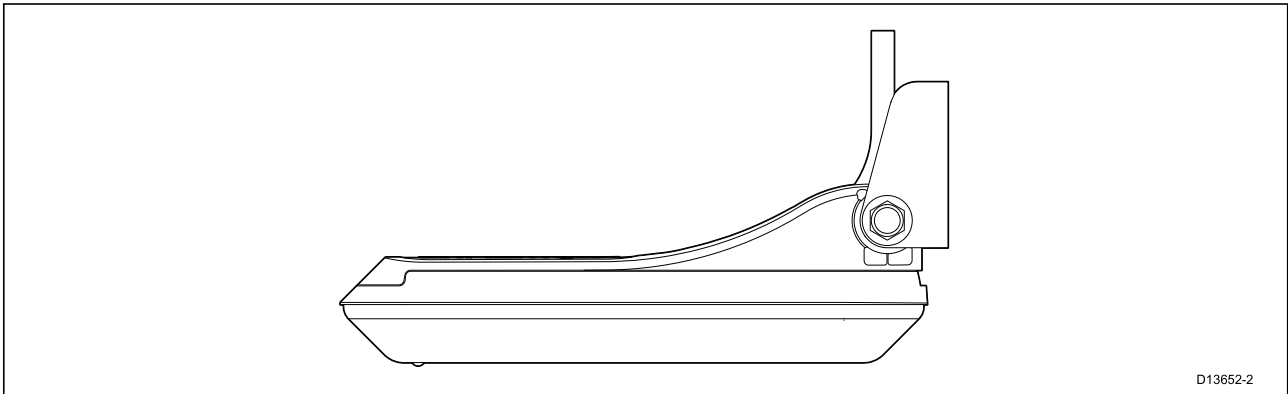
Product number	Name	Description
E70363	Axiom™ 7	7" MFD Chartplotter
E70363-DISP	Axiom™ 7	7" MFD Chartplotter (supplied with Rear mount kit only)
E70364	Axiom™ 7 DV	7" MFD with built-in DownVision™ sonar module
E70364-01	Axiom™ 7 DV (including CPT-S transom transducer)	7" MFD with built-in DownVision™ sonar module
E70364-02	Axiom™ 7 DV (including CPT-100DVS transducer)	7" MFD with built-in DownVision™ sonar module
E70364-DISP	Axiom™ 7 DV	7" MFD with built-in DownVision™ sonar module (supplied with Rear mount kit only)
E70365	Axiom™ 7 RV 3D	7" MFD with built-in RealVision™ 3D sonar module
E70365-03	Axiom™ 7 RV 3D (including RV-100 transom transducer)	7" MFD with built-in RealVision™ 3D sonar module
E70365-DISP	Axiom™ 7 RV 3D	7" MFD with built-in RealVision™ 3D sonar module (supplied with Rear mount kit only)
E70366	Axiom™ 9	9" MFD Chartplotter
E70366-DISP	Axiom™ 9	9" MFD Chartplotter (supplied with Rear mount kit only)
E70367	Axiom™ 9 RV 3D	9" MFD with built-in RealVision™ 3D sonar module
E70367-02	Axiom™ 9 RV 3D (including CPT-100DVS transducer)	9" MFD with built-in RealVision™ 3D sonar module
E70367-03	Axiom™ 9 RV 3D (including RV-100 transom transducer)	9" MFD with built-in RealVision™ 3D sonar module
E70367-DISP	Axiom™ 9 RV 3D	9" MFD with built-in RealVision™ 3D sonar module (supplied with Rear mount kit only)
E70368	Axiom™ 12	12" MFD Chartplotter
E70368-DISP	Axiom™ 12	12" MFD Chartplotter (supplied with Rear mount kit only)
E70369	Axiom™ 12 RV 3D	12" MFD with built-in RealVision™ 3D sonar module
E70369-03	Axiom™ 12 RV 3D (including RV-100 transom transducer)	12" MFD with built-in RealVision™ 3D sonar module
E70369-DISP	Axiom™ 12 RV 3D	12" MFD with built-in RealVision™ 3D sonar module (supplied with Rear mount kit only)

2.3 Compatible transducers for Fishfinder variant Axiom™ MFDs

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

- RealVision™ 3D transducers
- DownVision™ transducers
- CHIRP conical beam transducers that utilize the 9 pin DownVision™ connector.
- Non-CHIRP transducer can be connected using available adaptor cables. Refer to the Raymarine® website for compatible transducers: www.raymarine.com/transducers.

RV-100 RealVision™ 3D Transom Mount Transducer



Part number	Description	Construction
A80464	RV-100 RealVision™ 3D Transom Mount Transducer	Plastic

- The **RV-100** is a RealVision™ 3D transducer, capable of producing 3D sonar images.
- The transducer can be connected to RealVision™ 3D variant MFDs running LightHouse™ 3 software.

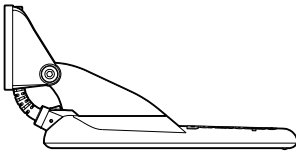
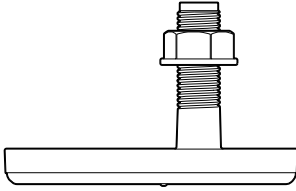
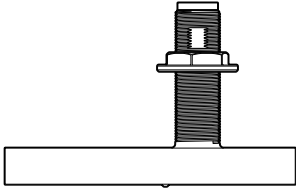
Note: Additional mounting options are available for the RV-100 RealVision™ 3D transducer. These include:

- Part number A80479: RealVision™ 3D Transducer Step Mount
- Part number A80480: RealVision™ 3D Transducer Jack Plate Mount
- Part number A80482: RealVision™ 3D Transducer Jack Plate Spacer Kit

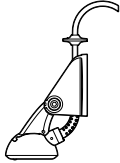
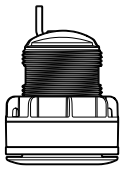
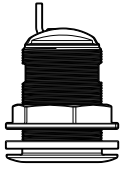
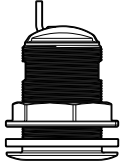
For further mounting information, refer to the documentation supplied with these products.

DownVision™ transducers

The transducers listed below can be connected directly to DownVision™ variant MFDs.

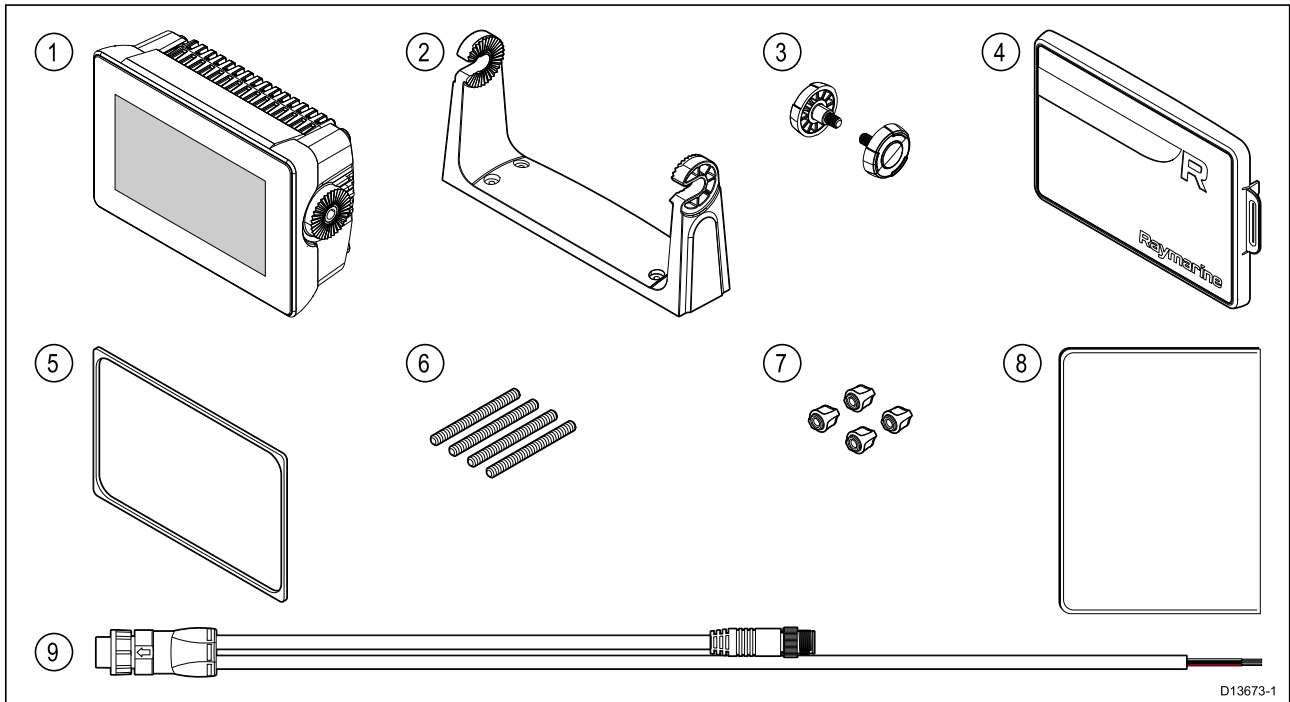
Product number	Transducer	Mounting	Description
A80351		Transom	CPT-100DVS plastic (replacement for A80270 CPT-100)
A80277		Thru-hull	CPT-110 plastic
A80271		Thru-hull	CPT-120 bronze

DownVision™ type CHIRP conical beam transducers

Product number	Transducer	Mounting	Description
E70342		Transom	CPT-S plastic
E70339		Thru-hull	CPT-S 0° angled element plastic
E70340		Thru-hull	CPT-S 12° angled element bronze
E70341		Thru-hull	CPT-S 20° angled element bronze

2.4 Parts supplied - Axiom 7

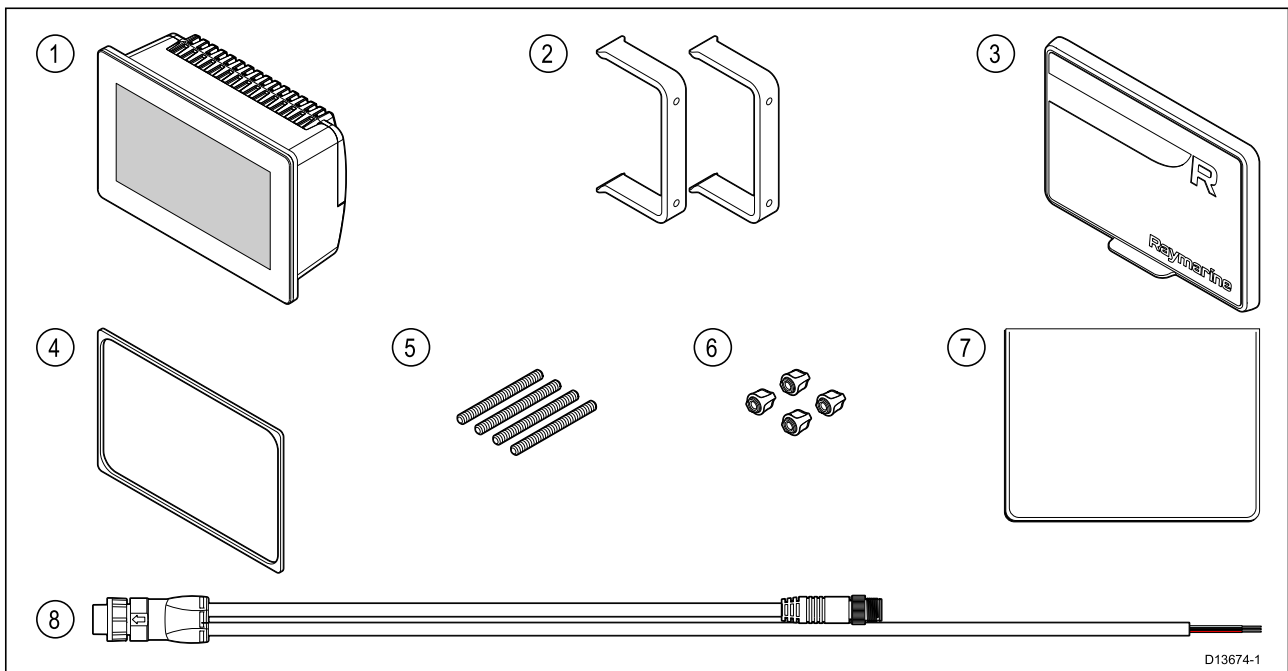
The parts listed are supplied with the following product numbers: E70363, E70364 and E70365.



1. MFD (supplied with Trunnion adaptor fitted)
 2. Trunnion bracket
 3. Trunnion knobs x 2
 4. Suncover — Trunnion mount
 5. Panel mount gasket for surface/flush mounting
 6. M5x58 Threaded studs x 4
 7. M5 Thumb nuts x 4
 8. Documentation pack
 9. Power/NMEA 2000 cable (with 1.5 m (4.92 ft) power lead and 0.5 m (1.64 ft) NMEA 2000 lead).
- E70364–01 is also supplied with a CPT-S transom transducer and associated fittings.
E70364–02 is also supplied with a DownVision™ CPT-100DVS transducer and associated fittings.
E70365–03 is also supplied with a RealVision™ 3D RV-100 transducer and associated fittings.

2.5 Parts Supplied - Axiom 7 (DISP)

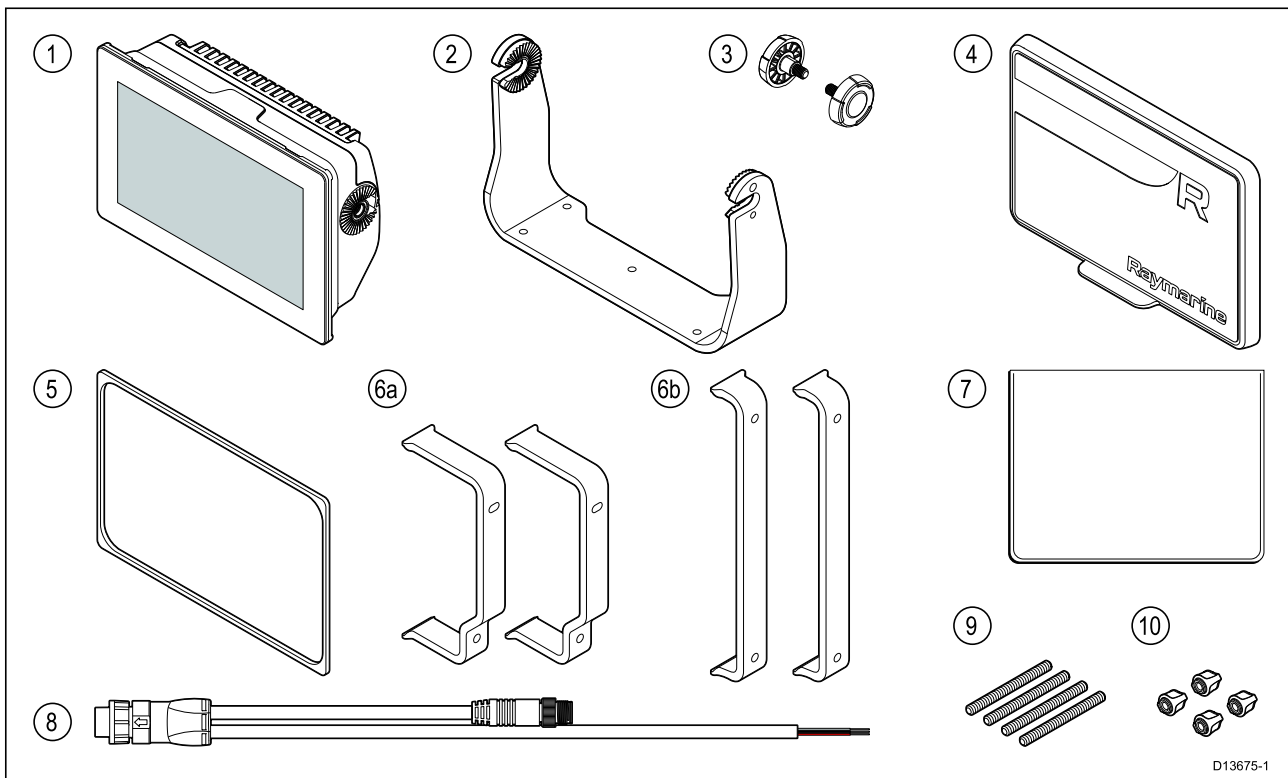
The parts listed are supplied with the following product numbers: E70363–DISP, E70364–DISP and E70365–DISP.



1. MFD
2. Rear mount brackets x 2
3. Suncover — Surface mount
4. Panel mount gasket for surface/flush mounting
5. M5x58 Threaded studs x 4
6. M5 Thumb nuts x 4
7. Documentation pack
8. Right angled power/NMEA 2000 cable (with 1.5 m (4.92 ft) power lead and 0.5 m (1.64 ft) NMEA 2000 lead).

2.6 Parts supplied - Axiom 9 and 12

The parts listed are supplied with the following product numbers: E70366, E70367, E70368 and E70369.



1. MFD
2. Trunnion bracket
3. Trunnion knobs x 2
4. Suncover
5. Panel mount gasket for surface/flush mounting
6. Rear mounting brackets:
 - a. supplied with 9" MFD
 - b. supplied with 12" MFD
7. Documentation pack
8. Power / NMEA 2000 cable (with 1.5 m (4.92 ft) power lead and 0.5 m (1.64 ft) NMEA 2000 lead).
9. M5x58 Threaded studs x 4
10. M5 Thumb nuts x 4

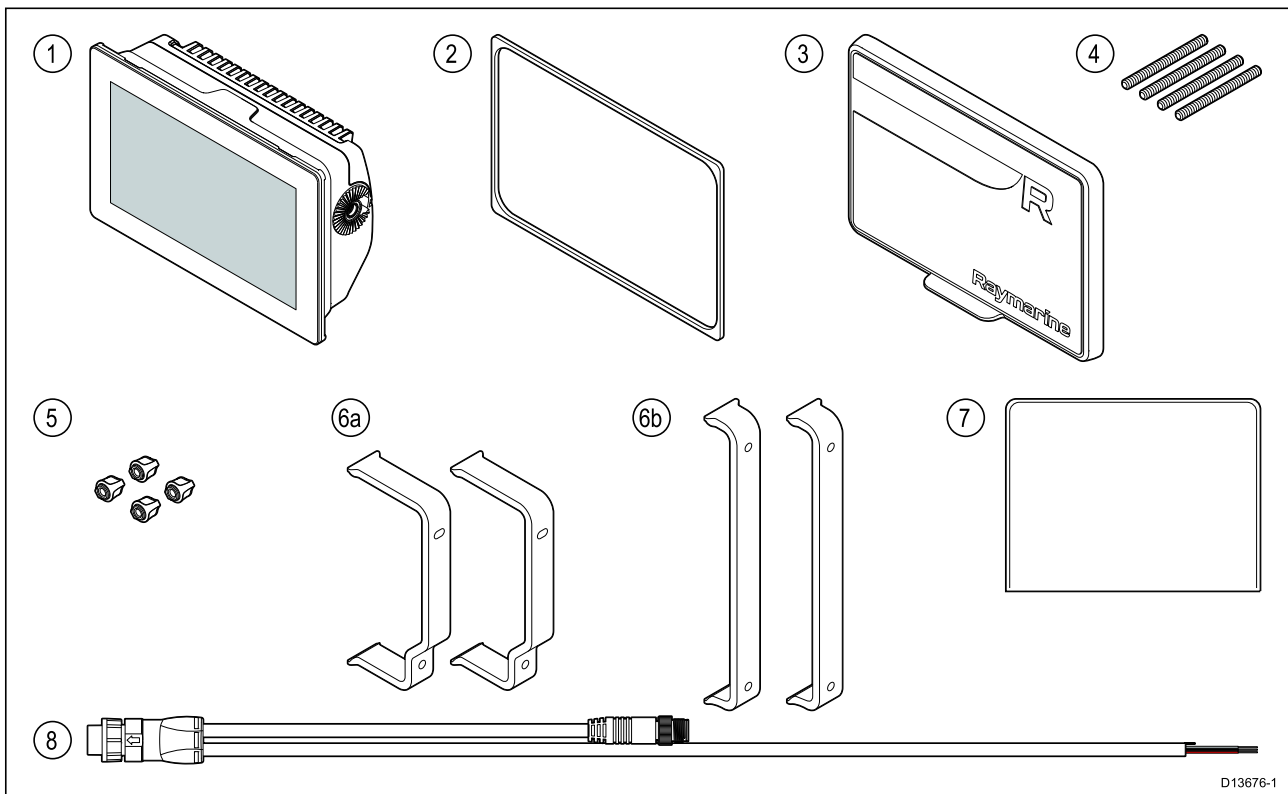
E70367-02 is also supplied with a DownVision™ CPT-100DVS transducer and associated fittings.

E70367-03 is also supplied with a RealVision™ 3D RV-100 transducer and associated fittings.

E70369-03 is also supplied with a RealVision™ 3D RV-100 transducer and associated fittings.

2.7 Parts supplied - Axiom 9 and 12 (DISP)

The parts listed are supplied with the following product numbers: E70366–DISP, E70367–DISP, E70368–DISP and E70369–DISP.



1. MFD
2. Panel mount gasket for surface / flush mounting
3. Suncover
4. M5x58 Threaded studs x 4
5. M5 Thumb nuts x 4
6. Rear mounting brackets:
 - a. supplied with 9" MFD
 - b. supplied with 12" MFD
7. Documentation pack
8. Right angled power / NMEA 2000 cable (with 1.5 m (4.92 ft) power lead and 0.5 m (1.64 ft) NMEA 2000 lead).

Chapter 3: Installation

Chapter contents

- 3.1 Selecting a location on page 24
- 3.2 Mounting options on page 31
- 3.3 Bracket (Trunnion) mounting on page 32
- 3.4 Axiom 7 flush and surface mounting on page 33
- 3.5 Surface or flush mounting using the Rear Mount Kit on page 35

3.1 Selecting a location

Caution: Mounting surface requirements

This product is heavy. To prevent potential damage to the product and / or your vessel, observe the following BEFORE installing the product:

- Refer to the weight information provided in the technical specification for this product and ensure that the intended mounting surface is suitable for bearing the weight.
- If the mounting surface is not suitable for the product weight, you may need to reinforce the mounting surface.
- If in doubt, refer to a professional marine equipment installer for further guidance.



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 1m (3ft) 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 7 ft (2 m).
 - More than 2m (7ft) 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 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 spot or strip lights, and terrestrial TV tuners.

To minimize interference from such equipment:

- Keep it as far away from GPS, AIS or VHF devices as possible.
- Ensure that any power cables for external equipment are not entangled with the power or data cables for GPS, AIS or VHF 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.

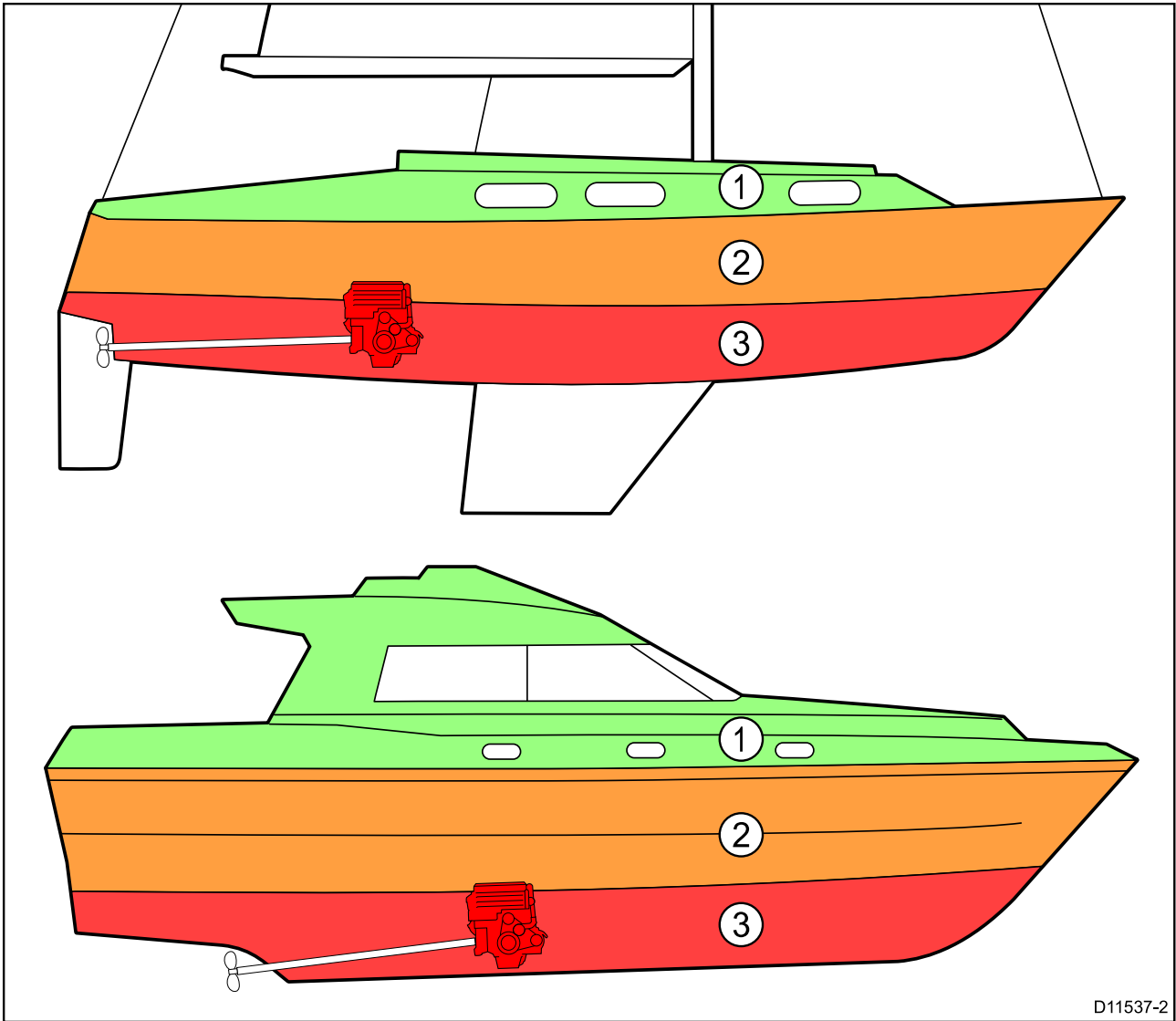
When choosing a suitable location for the product you should aim to maintain the maximum possible distance from any compasses. Typically this distance should be at least 1 m (3 ft) in all directions. However for some smaller vessels it may not be possible to locate the product this far away from a compass. 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.

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 GPS antenna.

Mounting location

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



D11537-2

1.	■	This location provides optimal GPS performance (above decks).
2.	■	In this location, GPS performance may be less effective.
3.	■	This location is NOT recommended for GPS antenna.

Vessel construction

The construction of your vessel can have an impact on GPS performance. For example, the proximity of heavy structures such as a structural bulkhead, or the interior of larger vessels may result in a reduced GPS signal. The construction materials can also have an impact. In particular, steel, aluminium or carbon surfaces can impact GPS performance. Before locating equipment with an internal GPS 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 the GPS performance. Typically calm clear conditions provide for a more accurate GPS fix. Vessels at extreme northerly or southerly latitudes may also receive a weaker GPS signal. GPS antenna mounted below decks will be more susceptible to performance issues related to the prevailing conditions.

Touchscreen location requirements

Touchscreens offer an alternative to using physical buttons to control your display. Full product functionality can be achieved using the Touchscreen.

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 get very 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:

- 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.
- installing a remote keypad such as the RMK-9 and operating the display remotely — Touch-only displays
- upgrading to a HybridTouch display and using the physical buttons instead — Touch-only displays

Wi-Fi location requirements

A number of factors can influence Wi-Fi performance, it is important to ensure you test the Wi-Fi performance, at the desired location before installing Wi-Fi enabled products.

Distance and signal strength

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

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

Line of sight and obstacles

For best results the Wi-Fi 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 Wi-Fi signal.

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

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

Reflective surfaces such as metal surfaces, some types of glass and even mirrors can drastically effect performance or even block the Wi-Fi signal.

Interference and other equipment

Wi-Fi products should be installed at least 1m (3 ft) away from:

- other Wi-Fi 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 peoples Wi-Fi products can also cause interference with your products. You can use a Wi-Fi analyzer tool to assess the best Wi-Fi channel (channel not in use or used by least amount of devices) for you to use.

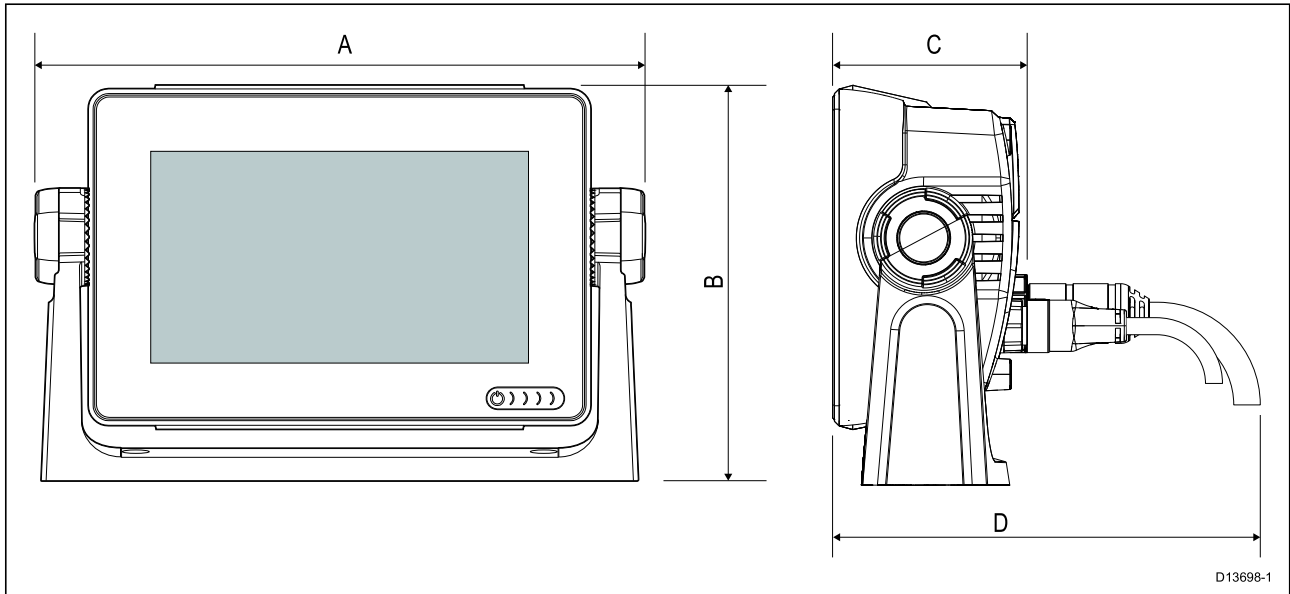
Viewing angle considerations

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.

Refer to [Chapter 8 Technical specification](#) for viewing angles for your product.

Product dimensions

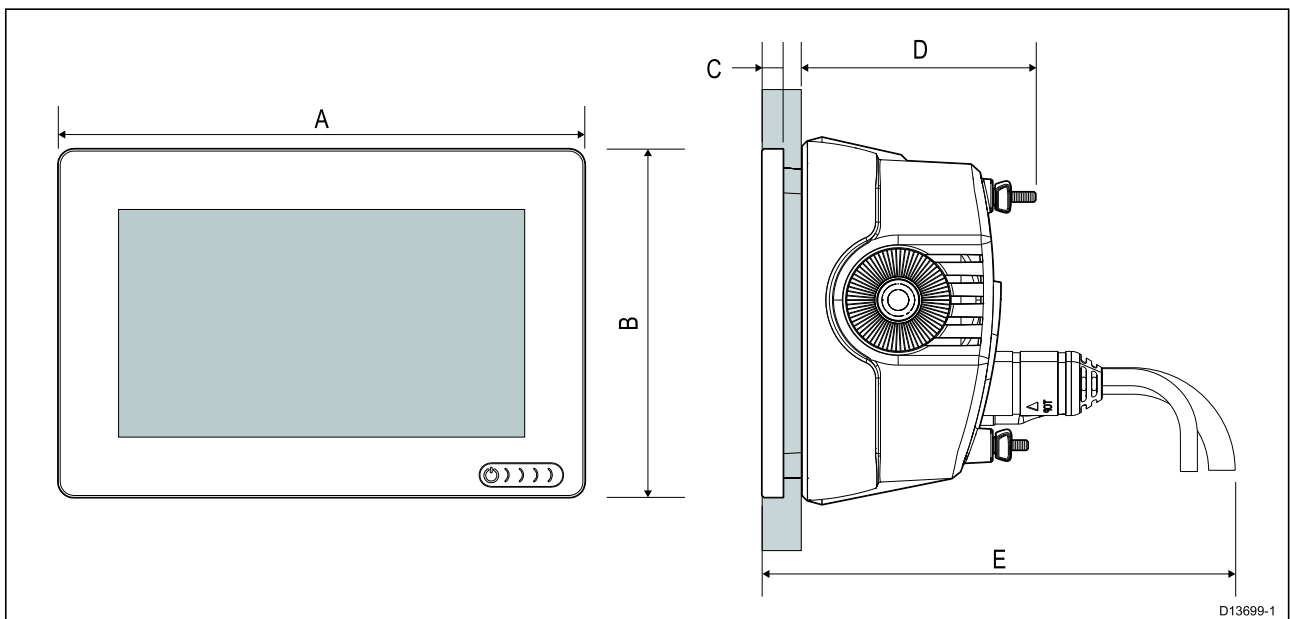
Axiom 7 trunnion mount dimensions



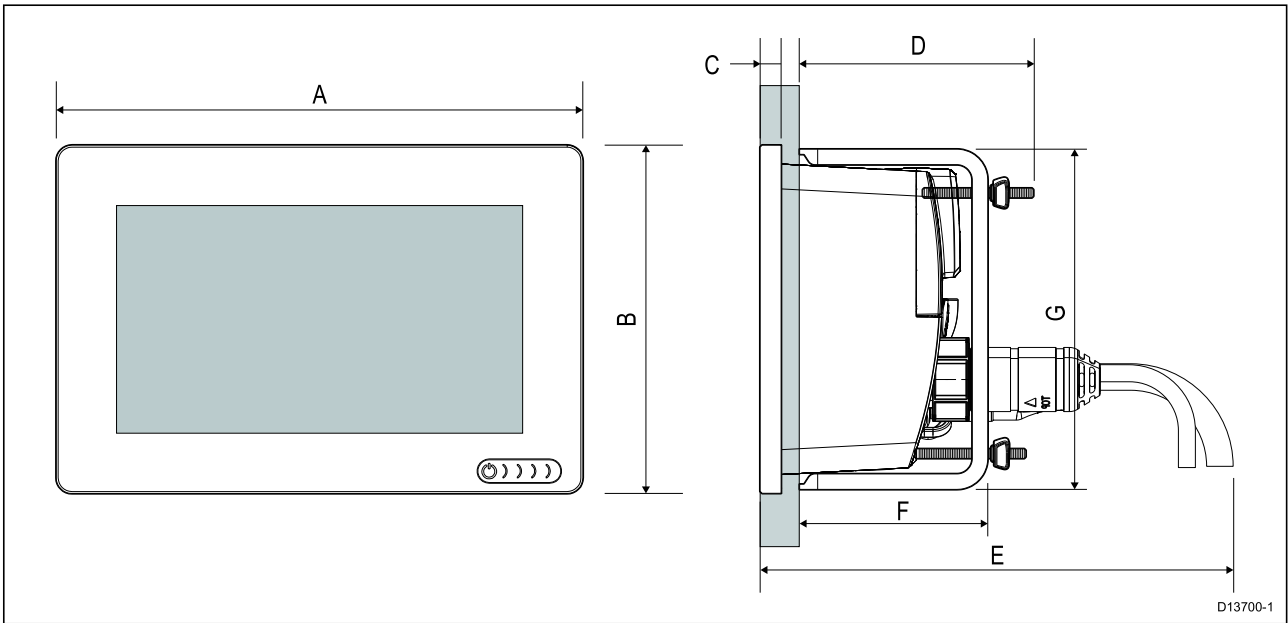
A	250.4 mm (9.86 in)
B	162.5 mm (6.4 in)
C	76.4 mm (3 in)
D	<ul style="list-style-type: none"> • Straight connectors = 218 mm (8.58 in) • Right-angled connectors = 198 mm (7.79 in)

Axiom 7 surface and flush mount dimensions

Using adaptor bracket

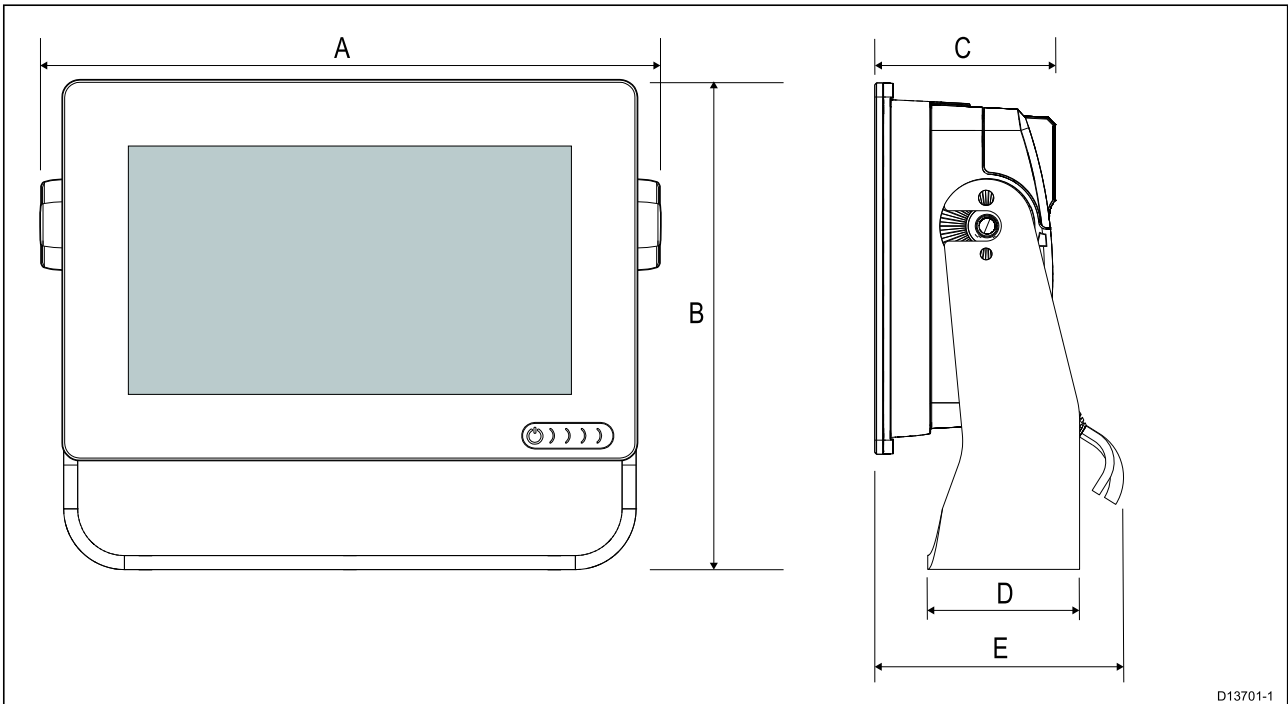


Using Rear mount kit



A	201.1 mm (7.92 in)
B	133 mm (5.24 in)
C	8 mm (0.32 in)
D	93.1 mm (3.67 in)
E	<ul style="list-style-type: none"> • Straight connectors = 218 mm (8.58 in) • Right-angled connectors = 198 mm (7.79 in)
F	73 mm (2.87 in)
G	132 mm (5.2 in)

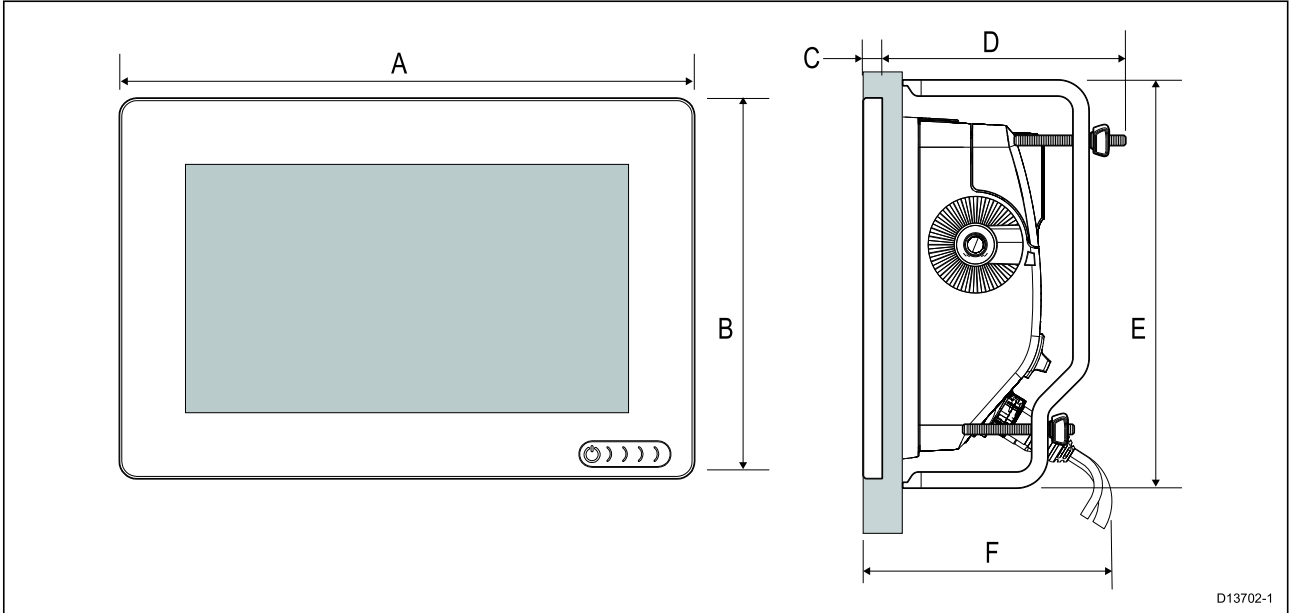
Axiom 9 and 12 trunnion mount dimensions



	Axiom™ 9	Axiom™ 12
A	265.03 mm (10.43 in)	314 mm (12.36 in)
B	187.81 (7.39 in)	226.72 mm (8.93 in)
C	76.71 mm (3.02 in)	76.2 mm (3 in)

	Axiom™ 9	Axiom™ 12
D	65 mm (2.56 in)	65 mm (2.56 in)
E	<ul style="list-style-type: none"> • Straight connectors = 178 mm (7.01 in) • Right-angled connectors = 158 mm (6.22 in) 	<ul style="list-style-type: none"> • Straight connectors = 178 mm (7.01 in) • Right-angled connectors = 158 mm (6.22 in)

Axiom 9 and 12 surface and flush mount dimensions

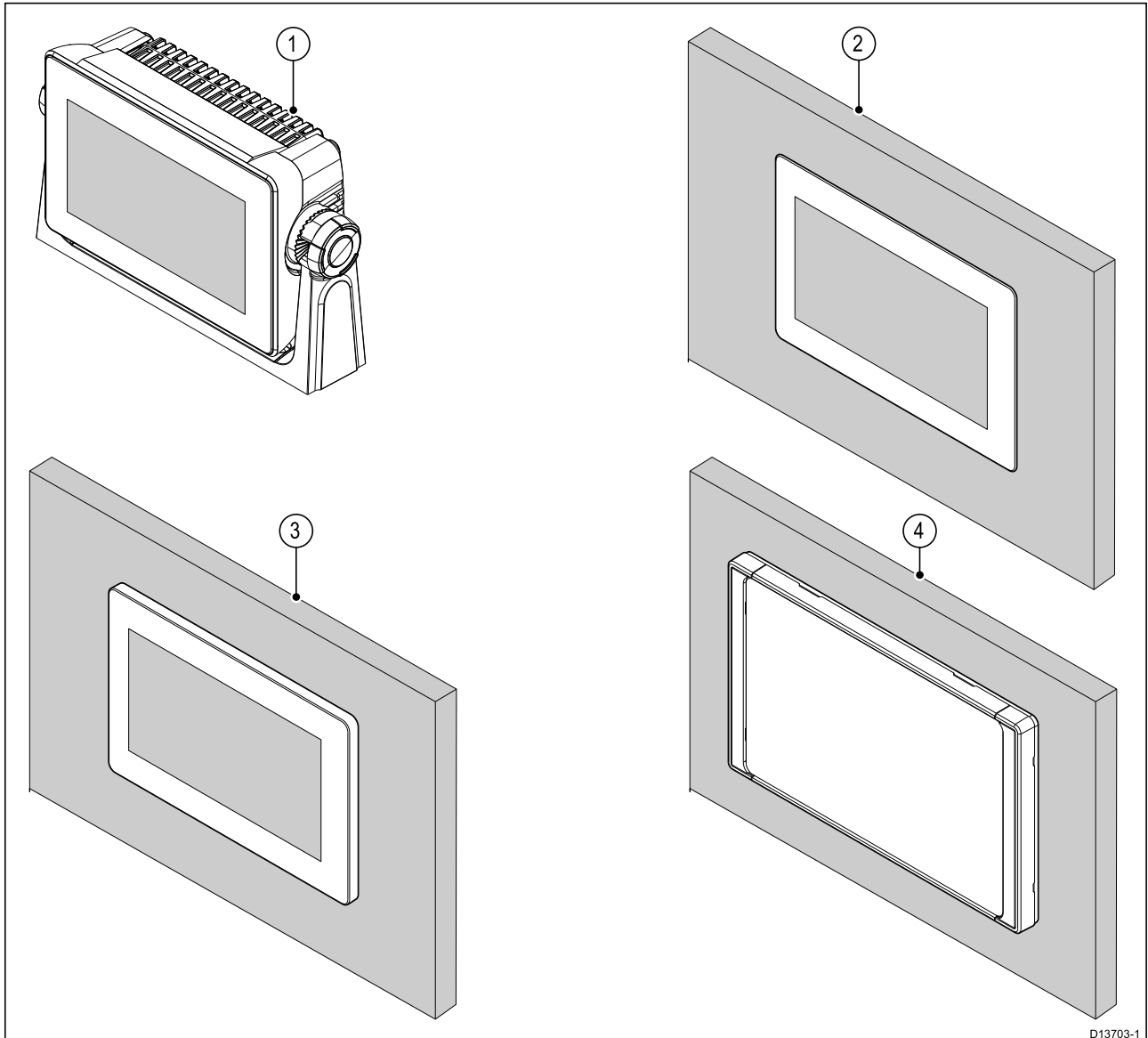


	Axiom™ 9	Axiom™ 12
A	244.08 mm (9.64 in)	314 mm (12.36 in)
B	157.78 mm (6.21 in)	226.72 mm (8.93 in)
C	8 mm (0.31 in)	8 mm (0.31 in)
D	100.8 mm (3.97 in)	79.3 mm (3.12 in)
E	157 mm (6.18 in)	222 mm (8.74 in)
F	<ul style="list-style-type: none"> • Straight connectors = 178 mm (7.01 in) • Right-angled connectors = 158 mm (6.22 in) 	<ul style="list-style-type: none"> • Straight connectors = 178 mm (7.01 in) • Right-angled connectors = 158 mm (6.22 in)

Note: The Rear mount brackets shown in the illustration are for the Axiom™ 9, The brackets for the Axiom™ 12 will look different.

3.2 Mounting options

Your product can be mounted in various ways to suit any installation requirements.



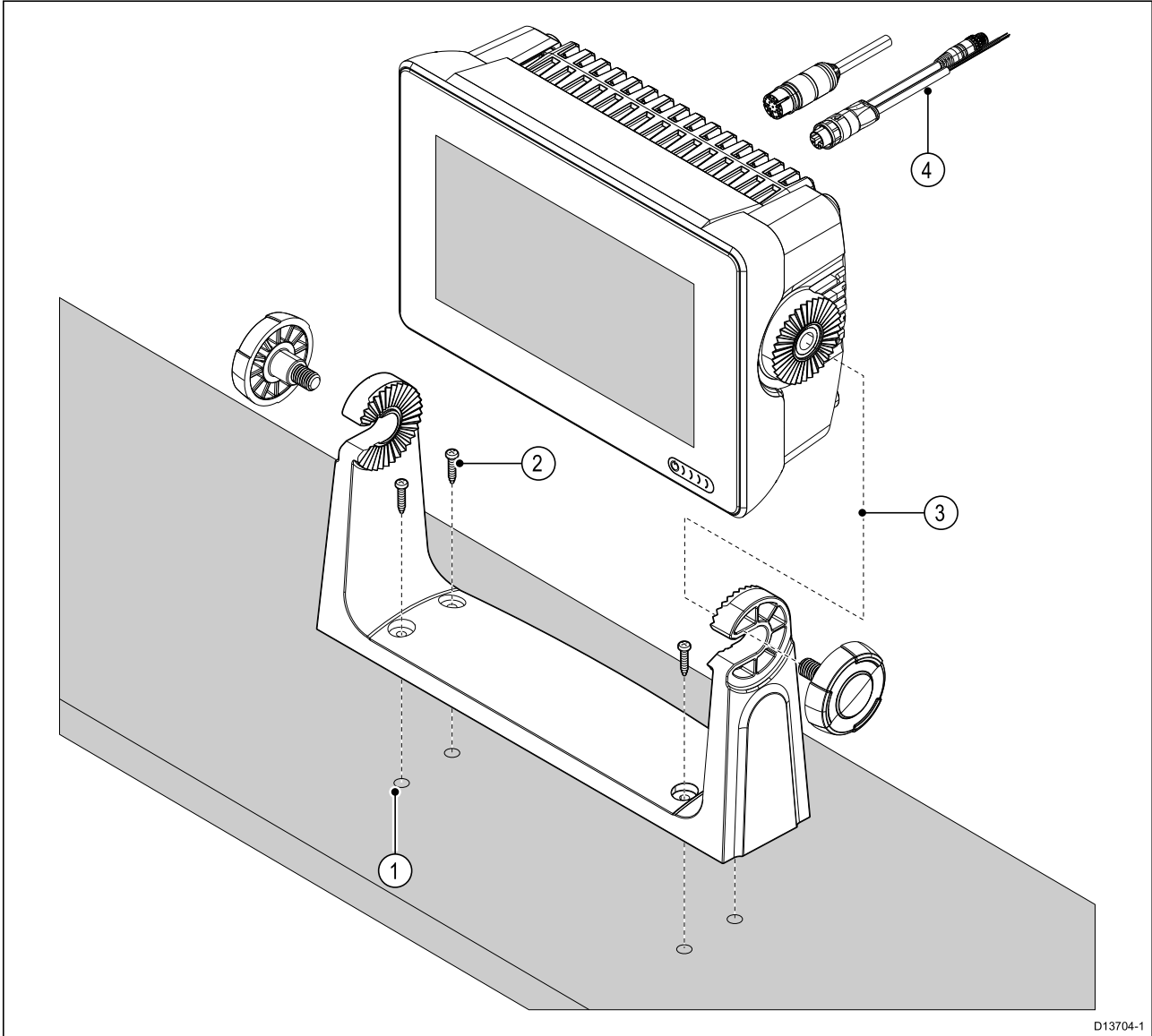
D13703-1

1. Trunnion mount
2. Flush mount (Mounting surface and MFD screen a level))
3. Surface mount (MFD screen protrudes slightly form mounting surface)
4. Front mount (using the Front Installation Kit accessory: 7": A80498, 9": A80500, 12": A80502)

3.3 Bracket (Trunnion) mounting

The bracket can be used to mount your MFD on a horizontal surface, the bracket can also be used to mount the MFD in an above head installation.

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.



Note: The illustration depicts an Axiom™ 7 being mounted on a plastic trunnion bracket. The trunnion bracket supplied with the Axiom™ 9 and Axiom™ 12 are made from metal and so look different than the trunnion shown. A metal trunnion bracket is also available for the Axiom™ 7 as an accessory; Part number: R70528.

1. Using the Bracket as a template, Mark and drill 4 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.

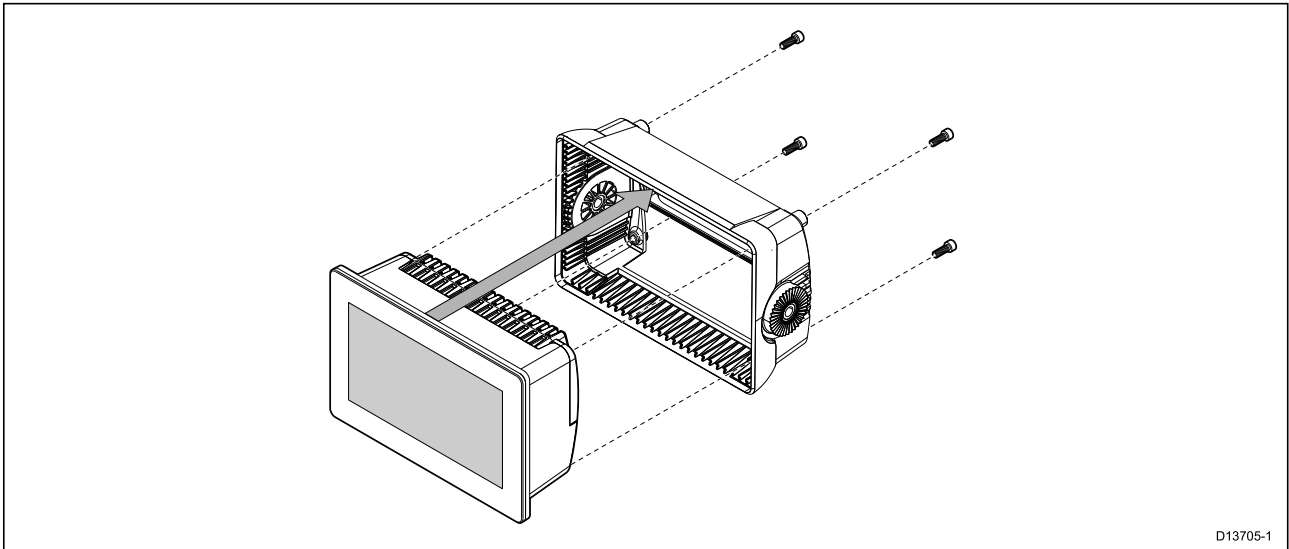
The knobs should be tightened by hand, sufficiently to prevent the MFD from moving whilst your vessel is underway.

4. Route and connect necessary cables.

3.4 Axiom 7 flush and surface mounting

Removing the trunnion adaptor Axiom™ 7

The trunnion adaptor supplied fitted to the Axiom™ 7 can be removed to enable the adaptor to be used as a clamp for surface and flush mount installations, the adaptor must also be removed before installation the unit using the Rear mount brackets or Front Installation kit.

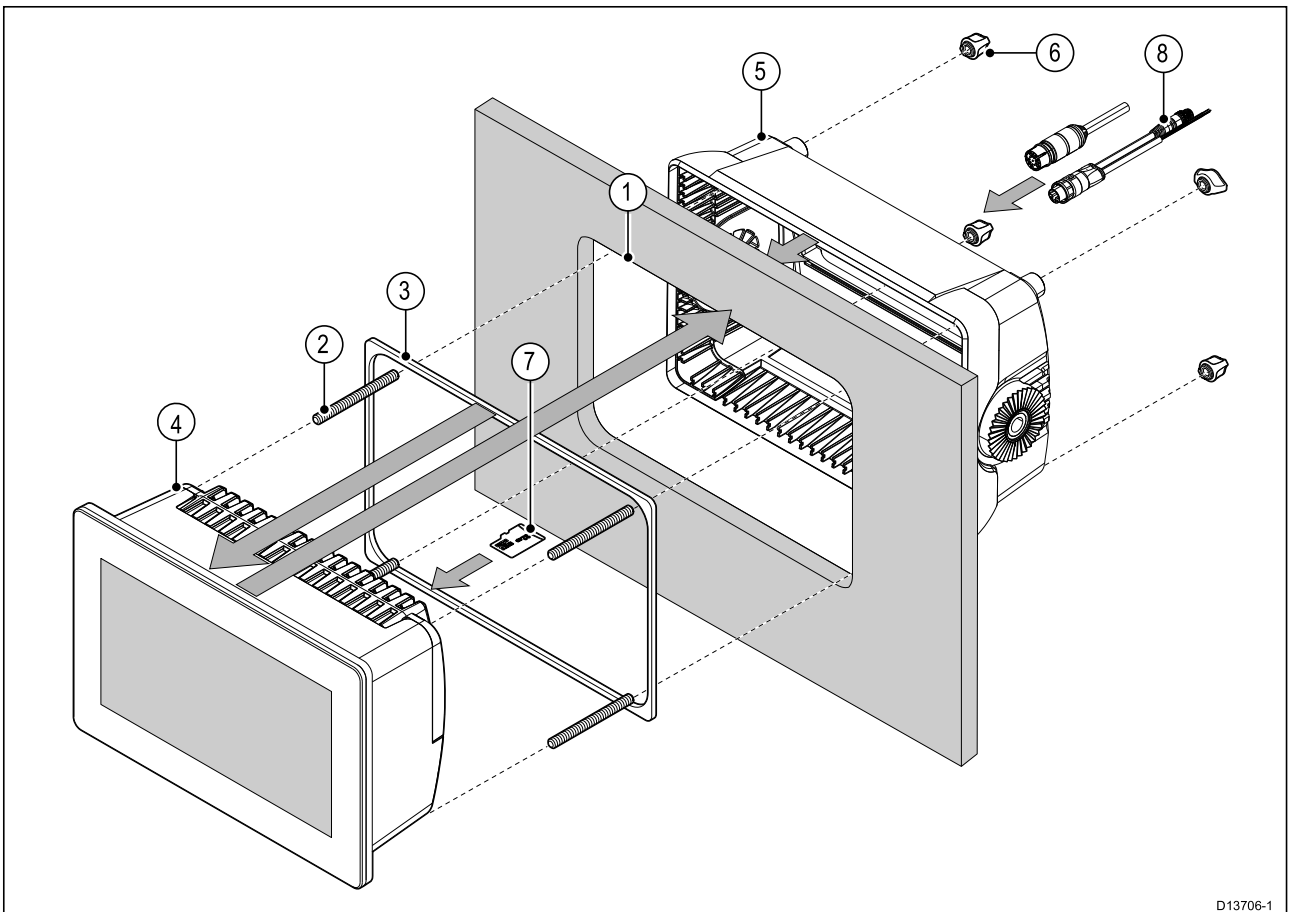


1. Unscrew the 4 x M5x16 screws using a 4 mm hex wrench (Allen key).
2. Pull the trunnion adaptor away from the MFD.

Surface or Flush mounting Axiom™ 7 only

When suitable access is available behind the desired mounting surface then the MFD can be surface or flush mounted.

First, ensure you have removed the Trunnion adaptor from the rear of the MFD.



1. Using the Surface/Flush mounting template as a guide, cut the relevant cut out hole in the mounting surface, if you are Flush mounting the MFD, also follow the rebate information on the mounting template.
2. Screw the 4 x studs into the rear of the MFD.
3. Remove the backing from the gasket and attach it to the rear of the MFD, ensuring that the black, soft side is against the rear of the MFD.
4. Insert the MFD into the cut out hole.

Important: In above decks, flush mount installations, marine grade silicone should be used to seal the gap between the edge of the mounting surface and the edge of the MFD.

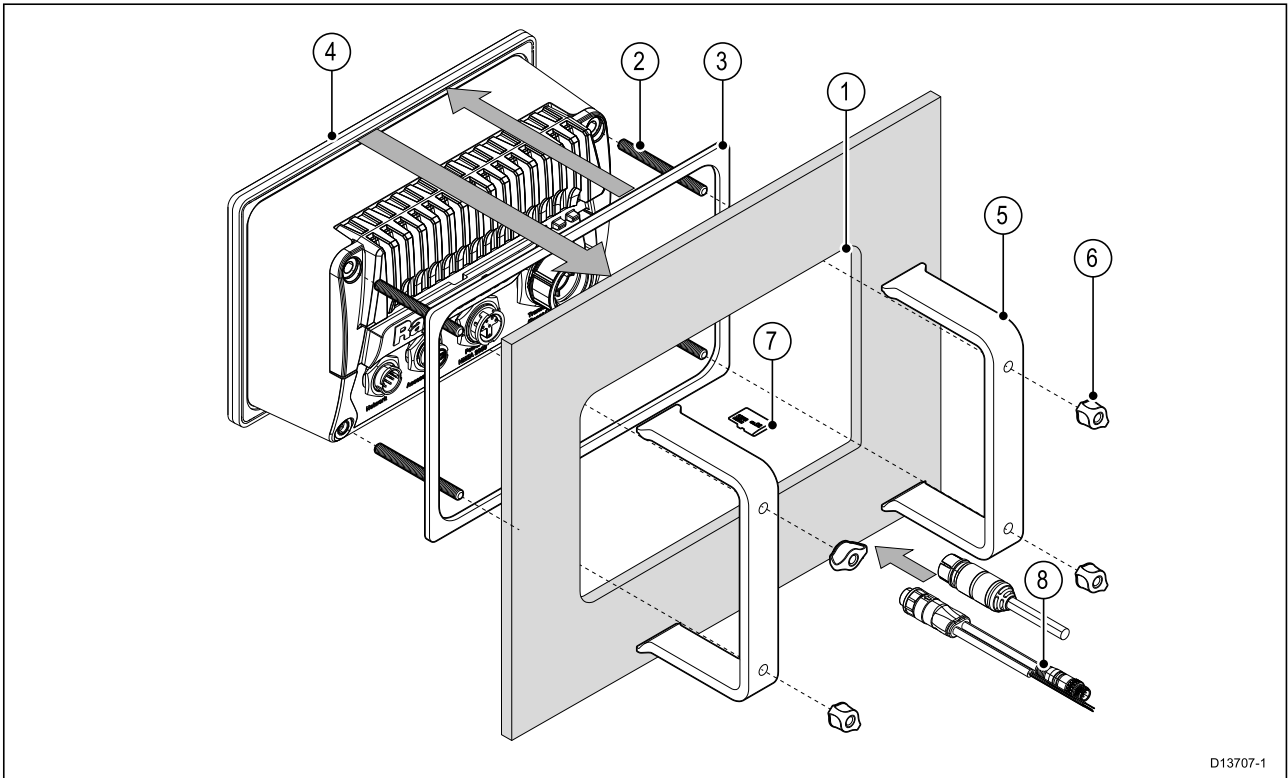
5. Place the Trunnion adaptor over the back of the MFD.
6. Secure the MFD in position by tightening the thumb nuts onto the studs.
7. If required insert your MicroSD card into the MFD card reader located behind the company logo on the rear of the MFD.
8. Route and connect necessary cables.

Note: The suncover provided in the box is for use in Trunnion bracket installations, when Surface mounting the product accessory suncover R70527 is required. No suncover is available for Flush mount installations.

3.5 Surface or flush mounting using the Rear Mount Kit

When suitable access is available behind the desired mounting surface then the MFD can be surface or flush mounted using the Rear Mount Kit.

For Axiom™ 7 MFD, supplied with the trunnion adaptor fitted, first remove the Trunnion adaptor from the rear of the MFD.

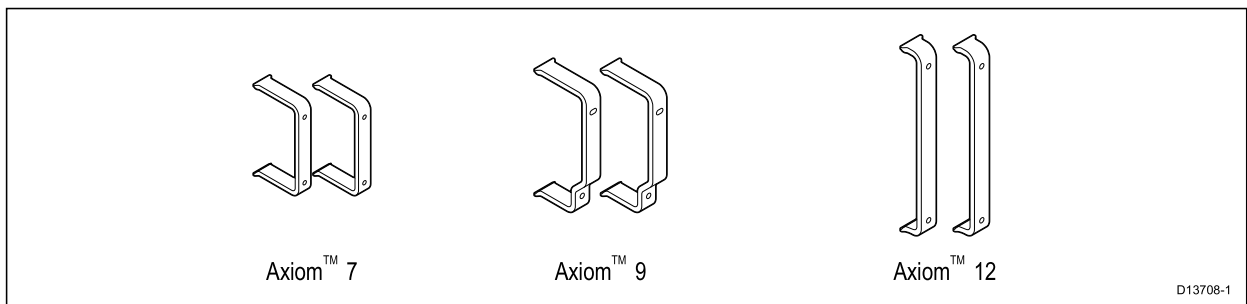


1. Using the Surface/Flush mounting template as a guide, cut the relevant cut out hole in the mounting surface, if you are Flush mounting the MFD, also follow the rebate information on the mounting template.
2. Screw the 4 x studs into the rear of the MFD.
3. Remove the backing from the gasket and attach it to the rear of the MFD, ensuring that the black, soft side is against the rear of the MFD.
4. Insert the MFD into the cut out hole.

Important: In above decks, flush mount installations, marine grade silicone should be used to seal the gap between the edge of the mounting surface and the edge of the MFD.

5. Place the Rear Mount Brackets over the studs.

Depending on the size of your MFD, the brackets will look different, however the installation procedure remains the same.



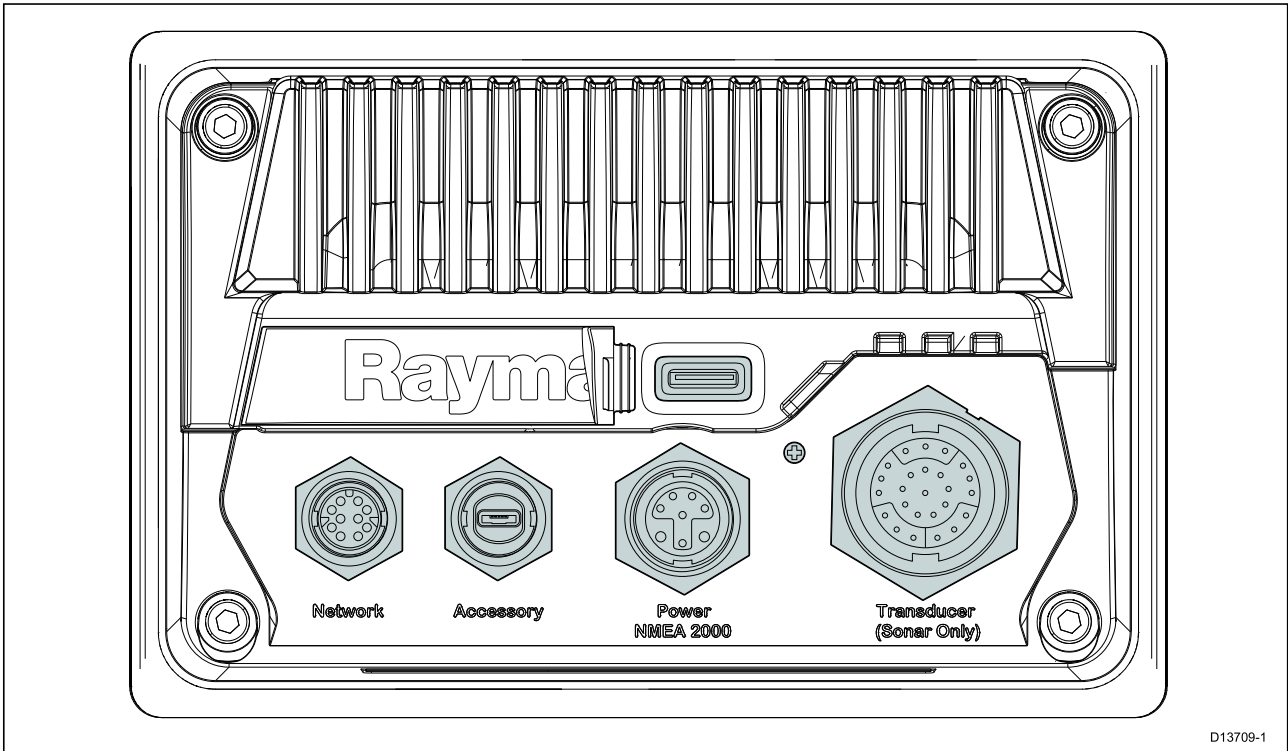
6. Secure the MFD in position by tightening the thumb nuts onto the studs.
7. If required insert your MicroSD card into the MFD card reader located behind the company logo on the rear of the MFD.
8. Route and connect necessary cables.

Chapter 4: Connections

Chapter contents

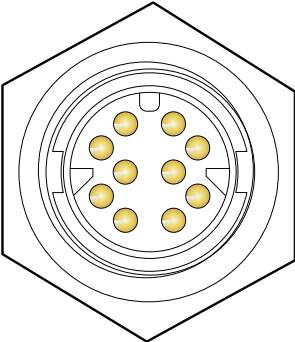
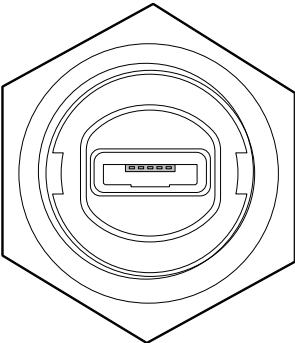
- [4.1 Connections overview on page 38](#)
- [4.2 Power connection on page 41](#)
- [4.3 NMEA 2000 \(SeaTalkng[®]\) connection on page 46](#)
- [4.4 Transducer connection on page 47](#)
- [4.5 Network connection on page 49](#)
- [4.6 Accessory connection on page 50](#)

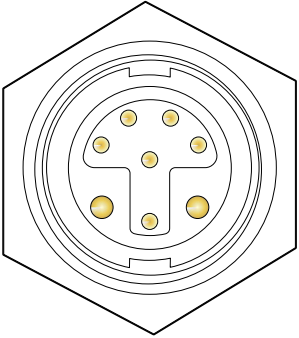

4.1 Connections overview



D13709-1

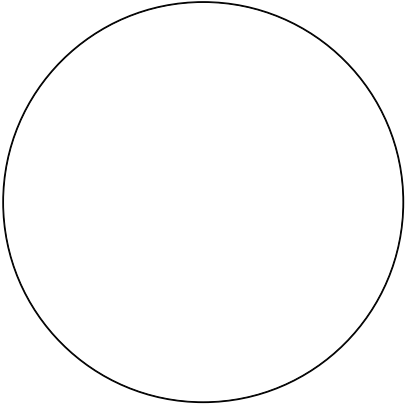
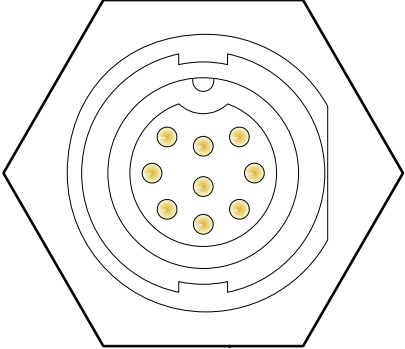
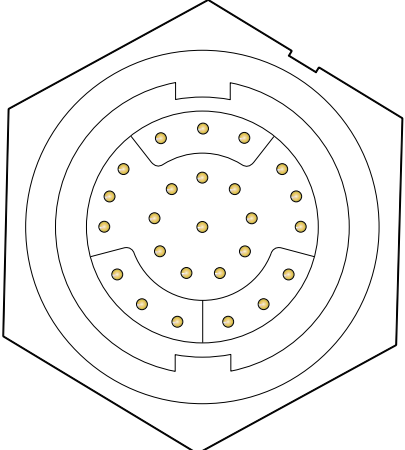
MFD connectors

Connector	Connector	Connects to:	Suitable cables
	Network connection	RayNet network or device	Refer to chapter Chapter 9 Spares and accessories for available cables.
	Accessory connection	RCR-SDUSB memory card reader	Supplied fitted to the RCR-SDUSB

Connector	Connector	Connects to:	Suitable cables
	Power / NMEA 2000 connection	12 V DC power supply / NMEA 2000 or SeaTalkng® backbone	Supplied with your product
	Dedicated grounding point	Vessel RF ground, or negative battery terminal	Refer to the Grounding – additional dedicated drain wire required section for details

Depending on MFD variant different transducer connections are available

Transducer connection options

Connector	Connects to:	Suitable cables
	An external sonar module is required for transducer connections.	Not applicable
	DownVision™ transducers	Transducer's cable or transducer extension cable
	RealVision™ 3D transducers	Transducer's cable or transducer extension cable

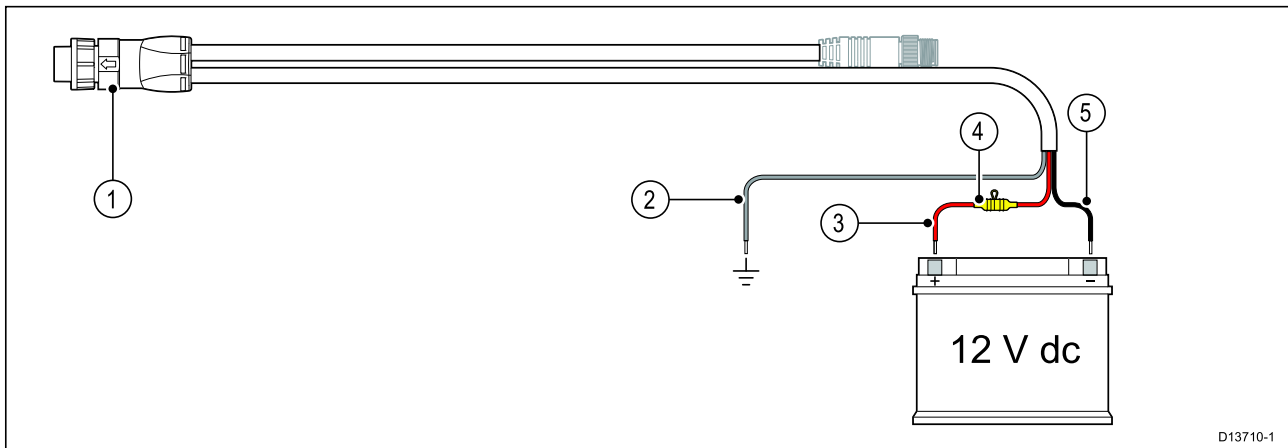
Connecting cables

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. If applicable, engage any locking mechanism to ensure a secure connection.
5. Ensure any bare ended wire connections are suitably insulated to prevent corrosion due to water ingress.

4.2 Power connection

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



1. Power/NMEA 2000 cable connects to the rear of the MFD.
2. Ground wire connects to RF ground point, if no ground point is available connect to the battery negative (-) terminal.
3. Positive (Red) wire connects to battery positive (+) terminal.
4. Waterproof fuse holder with 7 A fuse must be fitted (not supplied)
5. Negative wire connects to 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
7 A	7 A

Note:

- The suitable fuse rating for the thermal breaker is dependent on the number of devices you are connecting. If in doubt consult an authorized Raymarine dealer.
- Your product's power cable may have an in-line fuse fitted, if not then you must add an in-line fuse / breaker 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 automatic circuit breaker.

Power distribution

Recommendations and best practice.

- The product is supplied with a power cable. 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:

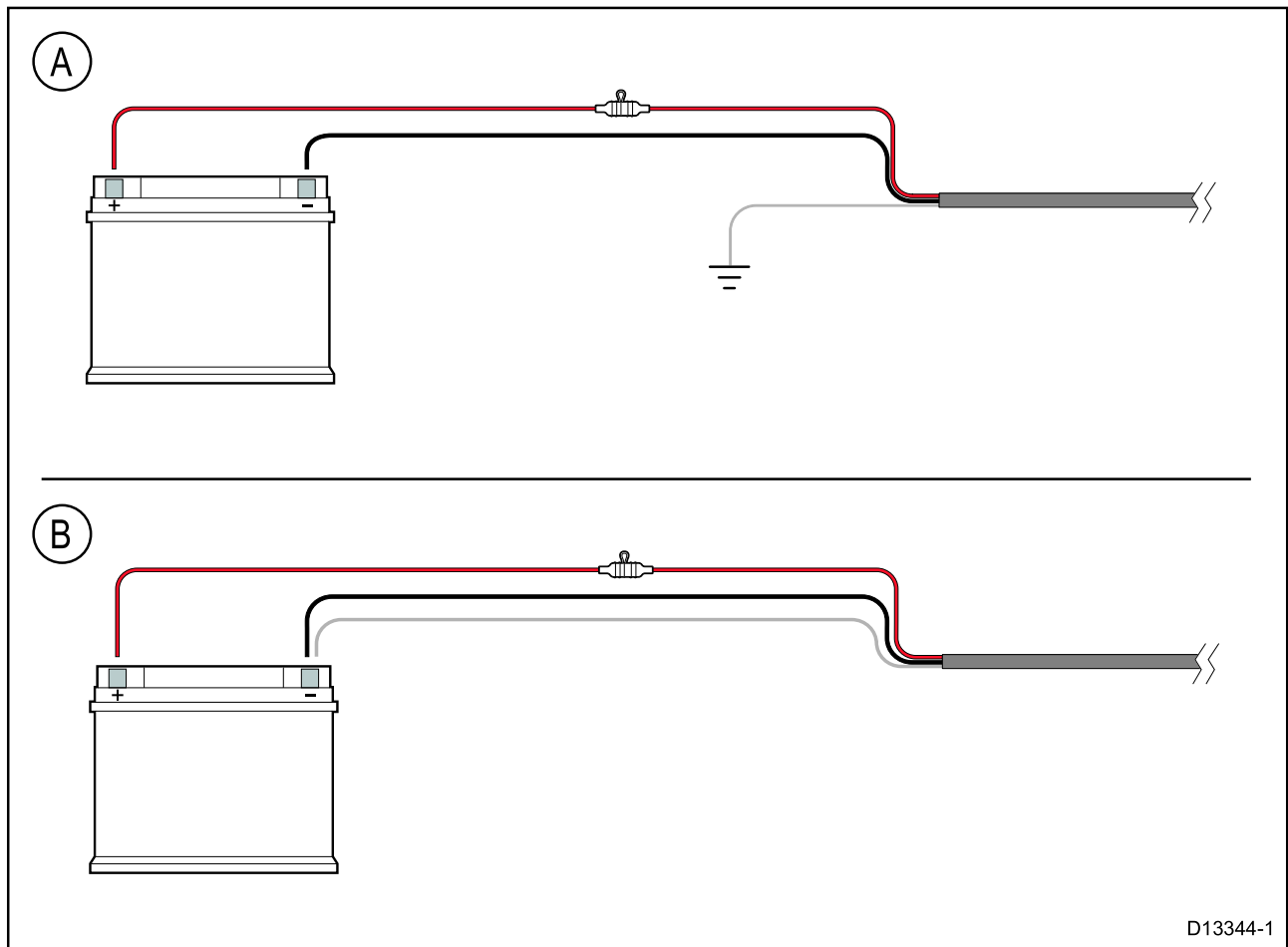
When planning and wiring, take into consideration other products in your system, some of which (e.g. sonar modules) may place large power demand peaks on the vessel's electrical system.

Note:

The information provided below is for guidance only, to help protect your product. It covers common vessel power arrangements, but does NOT cover every scenario. If you are unsure how to provide the correct level of protection, please consult an authorized Raymarine dealer or a suitably qualified professional marine electrician.

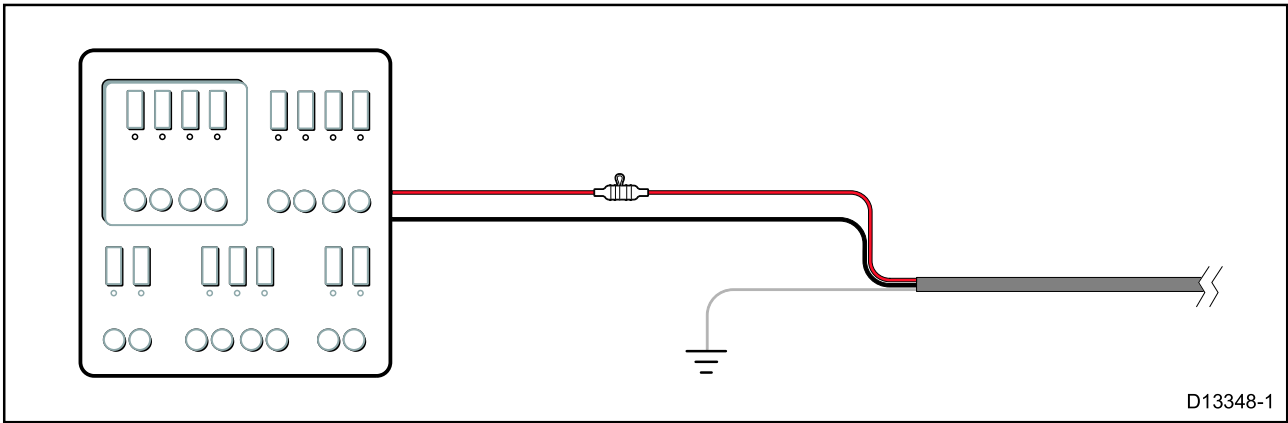
Implementation — direct connection to battery

- 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 supplied power cable is NOT fitted with an 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.

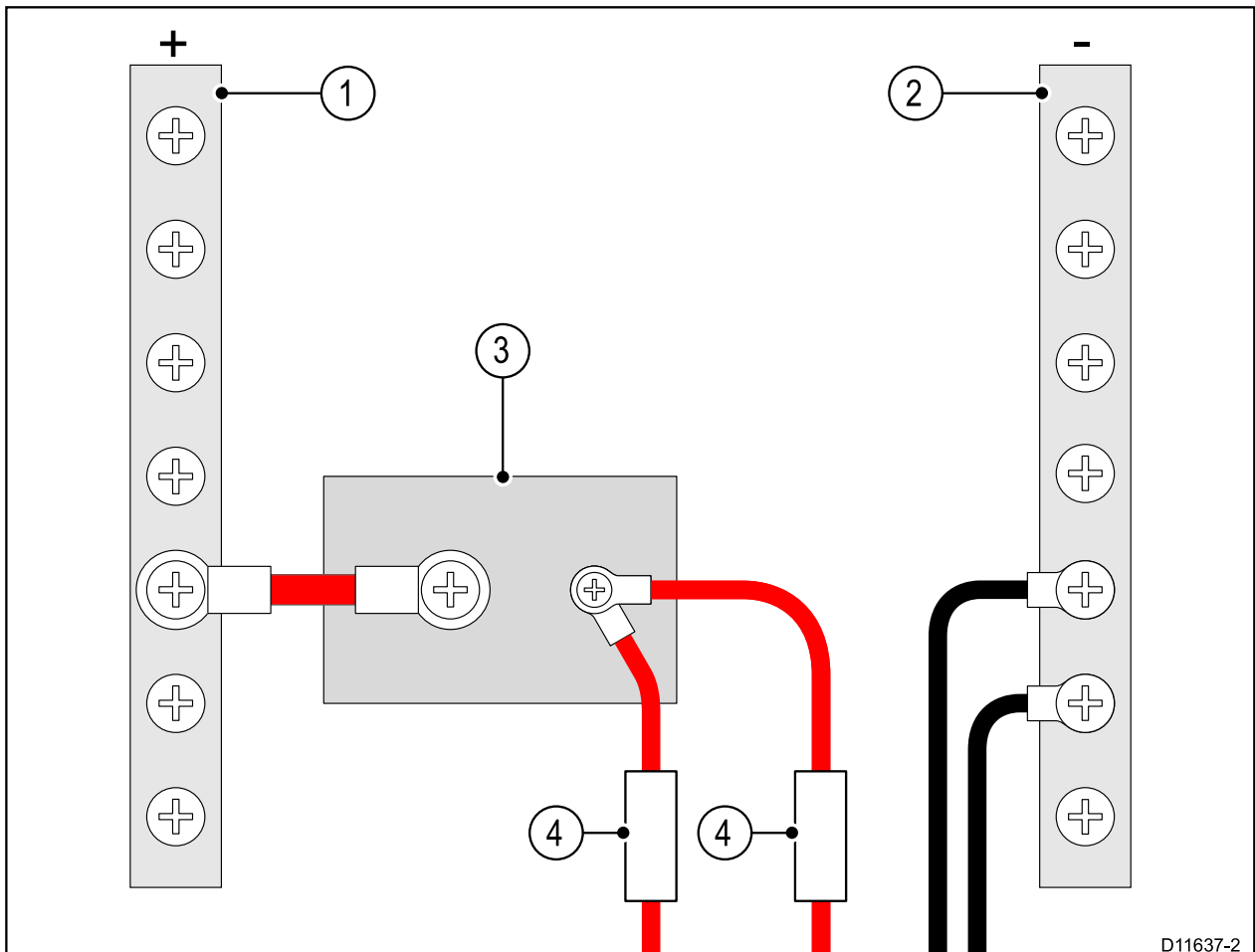


A	Battery connection scenario A: suitable for a vessel with a common RF ground point. In this scenario, if your product's power cable is supplied with a separate drain wire then it should be connected to the vessel's common ground point.
B	Battery connection scenario B: suitable for a vessel without 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.

Implementation – connection to distribution panel



- Alternatively, the supplied power cable may be 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	Fuse

- In all cases, observe the recommended breaker / fuse ratings provided in the product's documentation.

Important:

Be aware that the suitable fuse rating for the thermal breaker or fuse is dependent on the number of devices you are connecting.

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.
- For power cable extensions, it is recommended that a **minimum** wire gauge of 16 AWG (1.31 mm²). For cable runs longer than 15 meters, you may need to consider a thicker wire gauge (e.g. 14 AWG (2.08 mm²), or 12 AWG (3.31 mm²)).
- An important requirement for all lengths of power cable (including any extension) is to ensure that there is a continuous **minimum** voltage of 10.8 V at the product's power connector, with a fully flat battery at 11 V.

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.

Grounding

Ensure that you observe the separate 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**

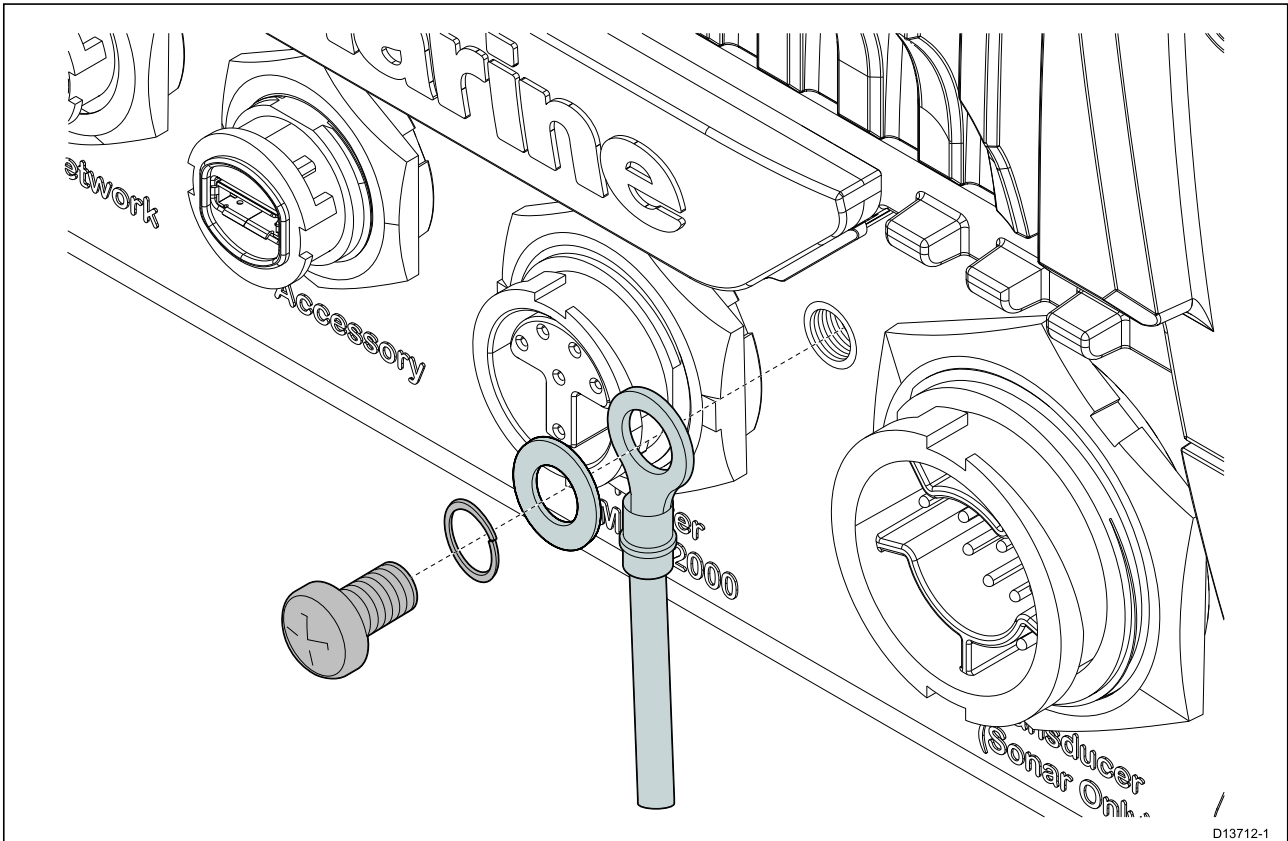
Before applying power to this product, ensure it has been correctly grounded, in accordance with the instructions provided.

**Warning: Positive ground systems**

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

Grounding — additional dedicated drain wire required

Your product requires an additional dedicated drain wire. This wire supplements the drain wire (shield) that is part of the product's power cable.



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.

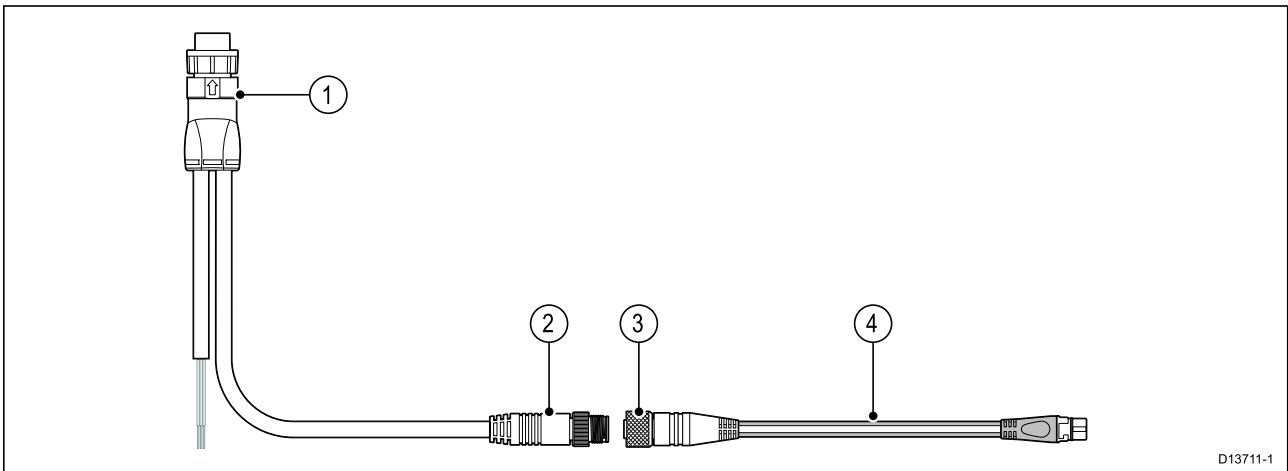
In any grounding system, always keep the length of connecting braid or wires as short as possible.

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 that the MFD is also connected to. The MFD is connected to the backbone using the DeviceNet connector on the Power/NMEA 2000 cable.



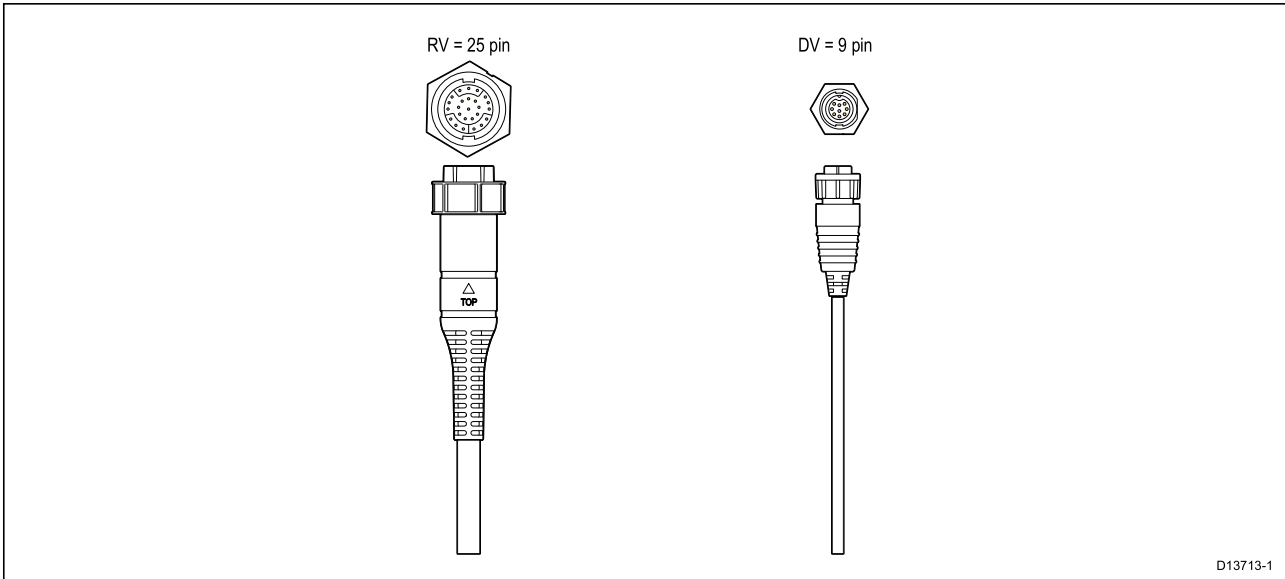
1. Power/NMEA 2000 cable connects to the rear of the MFD.
2. DeviceNet (Micro-C 5 pin male) connector connects to NMEA 2000 network or SeaTalkng[®] via adaptor cable.
3. DeviceNet (5 pin female) connector.
4. Adaptor cable connects to SeaTalkng[®] backbone or DeviceNet spur cable connects to NMEA 2000 network. Available cables
 - A06045 — Female DeviceNet to SeaTalkng[®] cable, shown.
 - E05026 — Female DeviceNet to bare end wires.

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.

4.4 Transducer connection

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



- RV variant MFDs can connect to RealVision™ 3D transducers
- DV variant MFDs can connect to DownVision™ transducers
- DV variant MFDs can also connect directly to CHIRP conical beam transducers that use the DownVision™ 9 pin connector.
- Adaptor cables are also available that enable connection of non-CHIRP transducers to DV and RV variant MFDs.

Note:

1. Transducer extension cables are available.
2. MFDs that do not have a built-in sonar module can be connected to a transducer via an external CPxxx series sonar module.

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.

DownVision™ 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.

- A 4 m (13.1 ft.) Transducer extension cable (A80273) is available.
- It is recommended that only one cable extension is used.

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

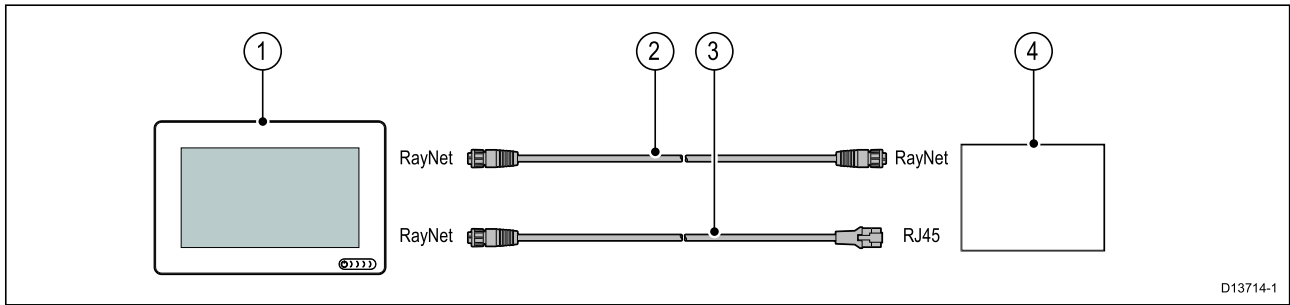
Caution: Transducer cable

- Do NOT 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.

4.5 Network connection

Your MFD can be directly connected to a compatible product using the RayNet network connection. Your MFD can also be connected to a network of products when using a suitable network switch.



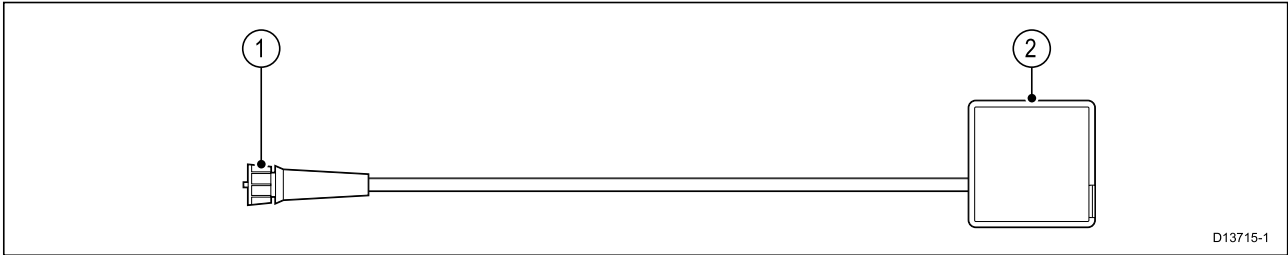
1. MFD
2. RayNet to RayNet cable — Connect one end of the RayNet cable to your MFD and the opposite end to a RayNet device or RayNet network switch.
3. RayNet to RJ45 cable — Connect the RayNet end of the cable to your MFD and the opposite end to a RJ45 device or RJ45 network switch.
4. Compatible network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

Note:

Refer to the instructions supplied with your network product for specific connection information.

4.6 Accessory connection

The RCR-SDUSB remote card reader can be connected to your MFD using the Accessory connection.



The RCR-SDUSB accessory can provide your MFD with extra storage by connecting external storage devices i.e.:

- SD card (or MicroSD card when using a SD card adaptor)
- external hard disk drive (HDD) or pen/flash drive

The HDD/flash drive slot can also supply 0.5A of current to charge mobile devices.

For installation details please refer to the instructions provided with your accessory.



Warning: Do NOT connect a USB device with an AC power source

The following information only applies to Raymarine products which include a USB data connection. To prevent potential grounding problems and possible damage to equipment:

- Do NOT connect a device with an AC power source via USB to your Raymarine product.
- If you need to connect external equipment to your Raymarine product via USB, ensure that the external equipment is powered only by a DC power source.
- Disconnect any AC power source from the external equipment before attempting to connect it via USB to your Raymarine product.

Chapter 5: Maintaining your display

Chapter contents

- [5.1 Service and maintenance on page 52](#)
- [5.2 Product cleaning on page 53](#)

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 voltages

This product may contain high voltages. Do NOT remove any covers or otherwise 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.
- 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:

- Lightly rinse or flush with clean, cool fresh water.
- If your product has a display screen, do NOT wipe the screen with a dry cloth, as this could scratch the screen coating.
- Do NOT use: abrasive, acidic, ammonia, solvent or chemical based cleaning products.
- Do NOT use a jet wash.

Cleaning the display case

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

1. Switch off the power to the display.
2. Wipe the display with a clean, soft cloth (a microfibre cloth is ideal).
3. If necessary, use a mild detergent to remove grease marks.

Note: Do NOT use solvents or detergents on the screen itself.

Note: In certain conditions, condensation may appear inside the display screen. This will not harm the unit, and can be cleared by powering on the display for a short time.

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 (available from an opticians).

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 56](#)
- [6.2 Power up troubleshooting on page 57](#)
- [6.3 GNSS troubleshooting on page 58](#)
- [6.4 Sonar troubleshooting on page 59](#)
- [6.5 Wi-Fi troubleshooting on page 62](#)
- [6.6 Touchscreen troubleshooting on page 65](#)
- [6.7 Miscellaneous troubleshooting on page 66](#)

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

Problems at power up and their possible causes and solutions are described here.

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 fully inserted into the unit and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 3. With the unit turned on, try flexing the power cable near to the 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, replace if necessary.
Incorrect power connection	The power supply may be wired incorrectly, ensure the installation instructions have been followed.
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. (Refer to the <i>Technical Specification</i> section of your product's installation instructions for power supply requirements.)

Product will not boot up (re-boot loop)

Possible causes	Possible solutions
Power supply and connection	See possible solutions from 'Products does not turn on or keeps turning off' above.
Software corruption	<ol style="list-style-type: none"> 1. In the unlikely event that the products software has become corrupted please try re-flashing the latest software from the Raymarine website. 2. On display products, as a last resort, you can try to perform a 'Power on Reset', however 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

1. Within 60 seconds of powering on your MFD, swipe your finger from right to left (opposite direction to powering on) across the **Power** button swipe area 5 times.
Recovery options are displayed.
2. Swipe your finger from right to left twice to highlight **Wipe data/factory reset**.
3. Swipe your finger from left to right once to accept.
4. Swipe your finger from right to left once to highlight **Yes**.
5. Swipe your finger from left to right once to perform the factory reset.
6. When **Data wipe complete** is displayed, swipe your finger from left to right to reboot your MFD.

6.3 GNSS troubleshooting

Problems with the GNSS and their 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 connection fault.	Ensure that external GNSS connections and cabling are correct and fault free.
	External GNSS 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 receiver has a clear view of the sky.
	GNSS 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 Fishfinder app's Sounder menu.
Incorrect transducer selected	Check that the correct transducer is selected in the Fishfinder 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 Fishfinder 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 Fishfinder 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 Fishfinder 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 68](#)
- [7.2 Learning resources on page 70](#)

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 the menus within your product.

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>.

Region	Telephone	E-mail
United Kingdom (UK), EMEA, and Asia Pacific	+44 (0)1329 246 932	emea.service@raymarine.com
United States (US)	+1 (603) 324 7900	rm-usrepair@flir.com

Web support

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

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

Telephone and e-mail support

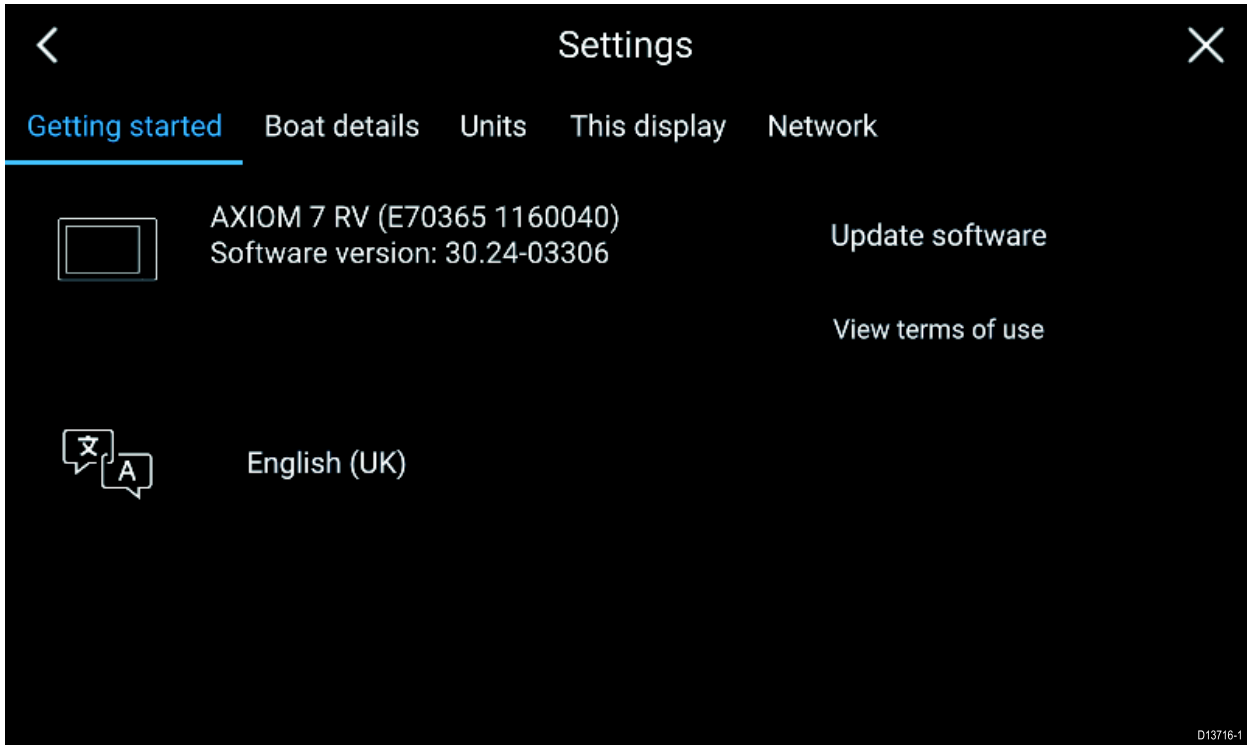
Region	Telephone	E-mail
United Kingdom (UK), EMEA, and Asia Pacific	+44 (0)1329 246 777	support.uk@raymarine.com
United States (US)	+1 (603) 324 7900 (Toll-free: +800 539 5539)	support@raymarine.com
Australia and New Zealand	+61 2 8977 0300	aus.support@raymarine.com (Raymarine subsidiary)
France	+33 (0)1 46 49 72 30	support.fr@raymarine.com (Raymarine subsidiary)
Germany	+49 (0)40 237 808 0	support.de@raymarine.com (Raymarine subsidiary)
Italy	+39 02 9945 1001	support.it@raymarine.com (Raymarine subsidiary)
Spain	+34 96 2965 102	sat@azimut.es (Authorized Raymarine distributor)
Netherlands	+31 (0)26 3614 905	support.nl@raymarine.com (Raymarine subsidiary)
Sweden	+46 (0)317 633 670	support.se@raymarine.com (Raymarine subsidiary)
Finland	+358 (0)207 619 937	support.fi@raymarine.com (Raymarine subsidiary)

Region	Telephone	E-mail
Norway	+47 692 64 600	support.no@raymarine.com (Raymarine subsidiary)
Denmark	+45 437 164 64	support.dk@raymarine.com (Raymarine subsidiary)
Russia	+7 495 788 0508	info@mikstmarine.ru (Authorized Raymarine distributor)

Viewing product information

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




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



7.2 Learning resources

Raymarine has produced a range of learning resources to help you get the most out of your products.

Video tutorials

	<p>Raymarine official channel on YouTube:</p> <ul style="list-style-type: none">• http://www.youtube.com/user/RaymarineInc
	<p>Video Gallery:</p> <ul style="list-style-type: none">• http://www.raymarine.co.uk/view/?id=2679
	<p>Product Support videos:</p> <ul style="list-style-type: none">• http://www.raymarine.co.uk/view/?id=4952
<p>Note:</p> <ul style="list-style-type: none">• 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>

FAQs and Knowledge Base

Raymarine has produced an extensive set of FAQs and a Knowledge Base to help you find more information and troubleshoot any issues.

- <http://www.raymarine.co.uk/knowledgebase/>

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 tech spec on page 72](#)
- [8.2 DownVision™ sonar specification on page 74](#)
- [8.3 RealVision™ 3D sonar specification on page 75](#)
- [8.4 Internal GNSS \(GPS / GLONASS\) receiver specification on page 76](#)

8.1 Axiom tech spec

Power

	Axiom™ 7	Axiom™ 9	Axiom™ 12
Nominal supply voltage	12 V dc		
Operating voltage range	8 V dc to 16 V dc		
Fuse requirements	<ul style="list-style-type: none"> • Inline fuse = 7 Amp, or • Thermal breaker = 7 Amp 		
Max current	<ul style="list-style-type: none"> • Chartplotter — 2.5A • RV & DV — 5.5A 	<ul style="list-style-type: none"> • Chartplotter — 3A • RV — 6A 	
LEN	1		

Environmental

	Axiom™ 7	Axiom™ 9	Axiom™ 12
Operating temperature range	-25°C to + 55°C		
Storage temperature range	-30°C to + 70°C		
Humidity	up to 93% @ 40°C		
Water ingress protection	IPx6 and IPx7		

LCD specification

	Axiom™ 7	Axiom™ 9	Axiom™ 12
Size (diagonal)	7.0"	9.0"	12.1"
Type	TN (Twisted Nematic)		IPS (In-Plane Switching)
Color depth	24 bit		
Resolution	WVGA 800 x 480		WXGA 1280 x 800
Ratio	5:3		16:10
Illumination	1200 nits / 1200 cd/m ²		
Viewing angle (T/B/L/R)	60/70/70/70		88/88/88/88
Maximum allowable wrongly illuminated pixels	0		1
Number of simultaneous touches	2		1 to 16

Data connections

	Axiom™ 7	Axiom™ 9	Axiom™ 12
Transducer	<ul style="list-style-type: none"> • DV variant = 9 pin DownVision™ type connector • RV variant = 25 pin RealVision™ type connector 	25 pin RealVision™ type connector	
NMEA 2000	1 x DeviceNet female connector built into power cable		
Accessory connection	1 x USB Micro AB connection		
Network	1 x RayNet type SeaTalkhs™ connector 10/100 Mbits/s		

	Axiom™ 7	Axiom™ 9	Axiom™ 12
Wi-Fi	1 x 802.11/b/g/n		
Bluetooth	1 x Bluetooth V4.0		

Storage

	Axiom™ 7	Axiom™ 9	Axiom™ 12
Internal	4GB Solid State (2 GB usable)		
External microSD card	1 x MicroSDXC card slot		
External (via Accessory connection)	<ul style="list-style-type: none"> • 1 x SD card slot • 1 x USB A 		

8.2 DownVision™ sonar specification

The following specification only applies to DownVision™ products.

Channels	2 channels <ul style="list-style-type: none">• 1 x CHIRP sonar• 1 x DownVision™
Beam coverage	<ul style="list-style-type: none">• CHIRP sonar — conical beam• DownVision™ — Wide (port / starboard) and thin (fore / aft) fan beam.
Range	<ul style="list-style-type: none">• CHIRP sonar = 0.6 M (2 ft) to 274 m (900 ft)• DownVision™ = 0.6 M (2 ft) to 183 m (600 ft)

8.3 RealVision™ 3D sonar specification

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

Channels	Channels <ul style="list-style-type: none">• 1 x CHIRP sonar• 1 x DownVision™• 1 x SideVision™• 1 x RealVision™ 3D
Range	<ul style="list-style-type: none">• 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)

8.4 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 available through 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

Chapter 9: Spares and accessories

Chapter contents

- 9.1 AXIOM accessories on page 78
- 9.2 AXIOM spares on page 79
- 9.3 **RayNet** to **RayNet** cables and connectors on page 80
- 9.4 SeaTalk^{ng}® cables and accessories on page 83

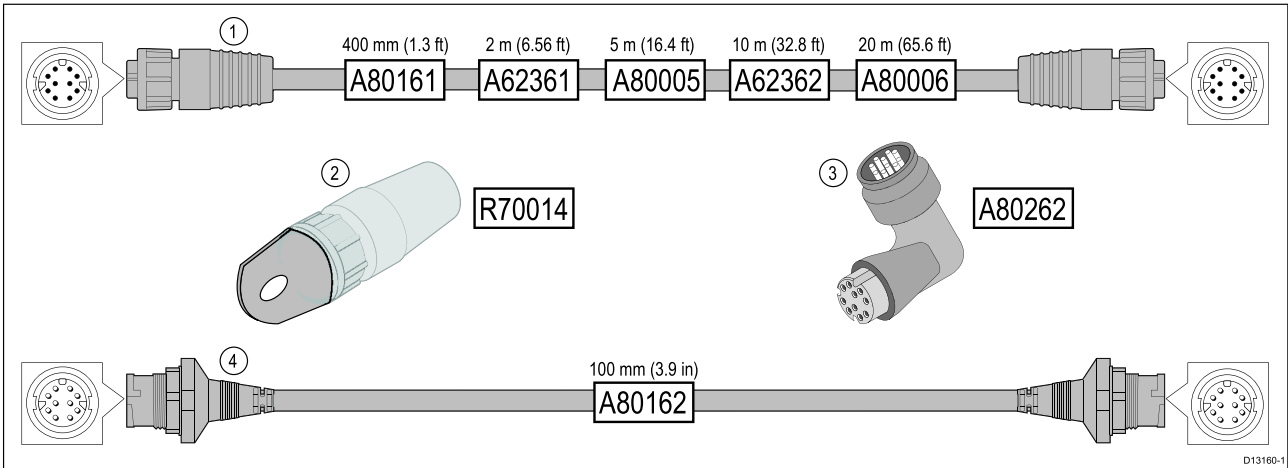
9.1 AXIOM accessories

Part number	Name	Details
A80440	RCR-SDUSB	External MicroSD and USB reader
A80515	Right angled RV transducer adaptor cable	
A80498	7" Front installation kit	Includes: <ul style="list-style-type: none"> • Front mount adaptor • 2 x bezel pieces • 4 x self-tapping screws • Front mount suncover
A80499	7" Front mount suncover	
A80500	9" Front installation kit	Includes: <ul style="list-style-type: none"> • Front mount adaptor • 2 x bezel pieces • 4 x self-tapping screws • Front mount suncover
A80501	9" Front mount suncover	
A80502	12" Front installation kit	Includes: <ul style="list-style-type: none"> • Front mount adaptor • 2 x bezel pieces • 4 x self-tapping screws • Front mount suncover
A80503	12" Front mount suncover	

9.2 AXIOM spares

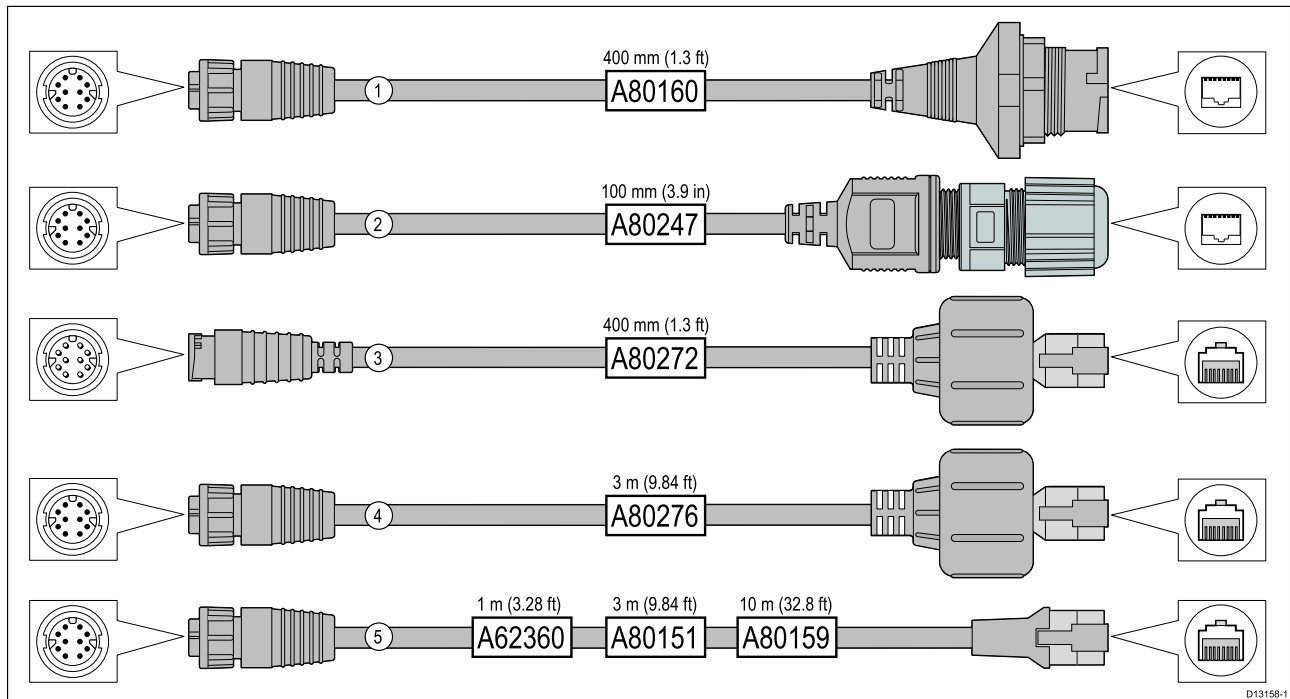
Part number	Name	Details
R70523	Power/DeviceNet combined cable 1.5m (4.92 ft)	
R70561	Right angled Power/DeviceNet combined cable 1.5m (4.92 ft)	
R70525	7" Trunnion mount suncover	
R70526	7" Rear mounting kit	Includes 2 x metal brackets, 4 x studs and 4 x thumb nuts
R70527	7" Surface mount suncover	
R70528	7" Metal trunnion mounting kit	Includes trunnion and 2 knobs
R70524	9" Plastic trunnion mounting kit	Includes trunnion and 2 knobs
R70529	9" Metal trunnion mounting kit	Includes trunnion and 2 knobs
R70530	9" Trunnion mount suncover	
R70531	9" Rear mounting kit	Includes 2 x metal brackets, 4 x studs and 4 x thumb nuts
R70532	12" Metal trunnion mounting kit	Includes trunnion and 2 knobs
R70533	12" Trunnion mount suncover	
R70534	12" Rear mounting kit	Includes 2 x metal brackets, 4 x studs and 4 x thumb nuts

9.3 RayNet to RayNet cables and connectors



	Description	Typical use	Quantity
1	Standard RayNet connection cable with a RayNet (female) socket on both ends.	Suitable for connecting all RayNet equipment directly to LightHouse multifunction displays featuring a RayNet connector. Can also be used to connect RayNet equipment via a RayNet network switch (e.g. HS5).	1
2	RayNet cable puller (5 pack).	These “handles” securely attach to the twist-lock on RayNet cables, enabling you to pull the cables through conduits and other obstacles.	5
3	RayNet to RayNet right-angle coupler / adapter.	Suitable for connecting RayNet cables at 90° (right angle) to devices, for installations where space is limited. For example, use this adapter to connect a RayNet cable to a multifunction display when there is not enough space behind the display for the usual cable bend radius required by a standard RayNet cable. This adapter features a RayNet (female) socket at one end, and a RayNet (male) plug at the other end.	1
4	Adapter cable with a RayNet (male) plug on both ends.	Suitable for joining (female) RayNet cables together for longer cable runs.	1

RayNet to RJ45 adapter cables



	Description	Typical use	Quantity
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 SeaTalk^{hs} waterproof locking (male) plug:</p> <ul style="list-style-type: none"> • A62245 (1.5m). • A62246 (15m). 	<p>A typical use for this adapter cable is to connect a DSM300 sonar module to a LightHouse MFD, using all-waterproof cable connections. This adapter cable will also accept the following RJ45 SeaTalk^{hs} cables, although the RJ45 plug that connects at the equipment end (e.g. DSM300) will NOT be waterproof:</p> <ul style="list-style-type: none"> • E55049 (1.5m). • E55050 (5m). • E55051 (10m). • A62135 (15m). • E55052 (20m). 	1
2	<p>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.</p>	<p>Directly connect a Raymarine radar scanner with an RJ45 SeaTalk^{hs} (male) cable to a RayNet network switch (e.g. HS5) or LightHouse MFD.</p>	1
3	<p>Adapter cable with a RayNet (male) plug on one end, and an RJ45 SeaTalk^{hs} waterproof (male) plug on the other end.</p>	<p>Connect a legacy G-Series GPM-400, C-Series Widescreen or E-Series Widescreen MFD to a Raymarine radar scanner supplied with a RayNet power / data cable.</p>	1

	Description	Typical use	Quantity
4	Adapter cable with a RayNet (female) socket on one end, and an RJ45 SeaTalk^{hs} waterproof (male) plug on the other end.	Connect a legacy G-Series GPM-400 , C-Series Widescreen or E-Series Widescreen MFD to a RayNet network switch (e.g. the HS5).	1
5	Adapter cable with a RayNet (female) socket on one end, and an RJ45 SeaTalk^{hs} (female) socket on the other end.	Connect a LightHouse MFD to a legacy SR6 switch / weather receiver or a legacy 8–port SeaTalk^{hs} network switch. Another common use for the cable is in conjunction with a crossover coupler (E55060 or R32142) to connect Raymarine products with an RJ45 connection (e.g. radar scanner, thermal camera or DSM300) to a LightHouse MFD or RayNet network switch (e.g. the HS5).	1

9.4 SeaTalk^{ng}® cables and accessories

SeaTalk^{ng} cables and accessories for use with compatible products.

Description	Part No	Notes
SeaTalk ^{ng} starter kit	T70134	Includes: <ul style="list-style-type: none"> • 1 x 5 Way connector (A06064) • 2 x Backbone terminator (A06031) • 1 x 3 m (9.8ft) spur cable (A06040) • 1 x Power cable (A06049)
SeaTalk ^{ng} Backbone Kit	A25062	Includes: <ul style="list-style-type: none"> • 2 x 5m (16.4ft) Backbone cable (A06036) • 1 x 20m (65.6ft) Backbone cable (A06037) • 4 x T-piece (A06028) • 2 x Backbone terminator (A06031) • 1 x Power cable (A06049)
SeaTalk ^{ng} 0.4m (1.3ft) spur	A06038	
SeaTalk ^{ng} 1 m (3.3ft) spur	A06039	
SeaTalk ^{ng} 3 m (9.8ft) spur	A06040	
SeaTalk ^{ng} 5 m (16.4ft) spur	A06041	
SeaTalk ^{ng} 0.4 m (1.3 ft) elbow spur	A06042	
SeaTalk ^{ng} 0.4m (1.3ft) backbone	A06033	
SeaTalk ^{ng} 1 m (3.3ft) backbone	A06034	
SeaTalk ^{ng} 3 m (9.8ft) backbone	A06035	
SeaTalk ^{ng} 5 m (16.4ft) backbone	A06036	
SeaTalk ^{ng} 9 m (29.5ft) backbone	A06068	
SeaTalk ^{ng} 20 m (65.6ft) backbone	A06037	
SeaTalk ^{ng} to bare ends 1 m (3.3ft) spur	A06043	
SeaTalk ^{ng} to bare ends 3 m (9.8ft) spur	A06044	
SeaTalk ^{ng} Power cable	A06049	
SeaTalk ^{ng} Terminator	A06031	
SeaTalk ^{ng} T-piece	A06028	Provides 1 x spur connection
SeaTalk ^{ng} 5–way connector	A06064	Provides 3 x spur connections
SeaTalk ^{ng} backbone extender	A06030	
SeaTalk to SeaTalk ^{ng} converter kit	E22158	Allows the connection of SeaTalk devices to a SeaTalk ^{ng} system.
SeaTalk ^{ng} Inline terminator	A80001	Provides direct connection of a spur cable to the end of a backbone cable. No T-piece required.
SeaTalk ^{ng} Blanking plug	A06032	
ACU / SPX SeaTalk ^{ng} spur cable 0.3 m (1.0 ft)	R12112	Connects an SPX course computer or an ACU to a SeaTalk ^{ng} backbone.

Description	Part No	Notes
SeaTalk (3 pin) to SeaTalk ^{ng} adaptor cable 0.4m (1.3ft)	A06047	
SeaTalk to SeaTalk ^{ng} spur 1 m (3.3ft) spur	A22164	
SeaTalk2 (5 pin) to SeaTalk ^{ng} adaptor cable 0.4m (1.3ft)	A06048	
DeviceNet adaptor cable (Female)	A06045	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.
DeviceNet adaptor cable (Male)	A06046	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.
DeviceNet adaptor cable (Female) to bare ends.	E05026	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.
DeviceNet adaptor cable (Male) to bare ends.	E05027	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.

Index

A

Axiom™ MFDs..... 15

C

CHIRP transducers 17
Cleaning 53
Compass safe distance 25
Conical beam transducers..... 17
Connecting cables..... 40
Connection
 Accessory 50
 Battery 42
 Distribution panel..... 43
 Ethernet 49
 External storage..... 50
 Network 49
 NMEA 2000 46
 Power..... 41
 RayNet 49
 SeaTalkhs 49
 SeaTalkng 46
 Transducer 47
Connections 38
Connectors 38
Contact details..... 68

D

Dedicated grounding 45
Dimensions
 Axiom 12 flush mount..... 30
 Axiom 12 surface mount..... 30
 Axiom 12 trunnion mount..... 29
 Axiom 7 flush mount 28
 Axiom 7 surface mount 28
 Axiom 7 trunnion mount..... 28
 Axiom 9 flush mount..... 30
 Axiom 9 surface mount..... 30
 Axiom 9 trunnion mount 29
DownVision™ transducers..... 17

E

Electromagnetic Compatibility..... 24
EMC, *See* Electromagnetic Compatibility

F

Fuse rating..... 41

I

Installation
 Flush mounting 35
 Flush mounting — Axiom 7 only..... 33
 Mounting options..... 31
 Rear brackets..... 35
 Surface mounting..... 35
 Surface mounting — Axiom 7 only 33

Trunnion mounting 32
Installation,
 Best practice 44
Interference 25
 See also Compass safe distance

L

Location requirements
 General 24
 GPS 25
 Touchscreen 27
 Viewing angle 28
 Wi-Fi 27

M

Maintenance 52
Mounting options 31
Mounting surface requirements 24

O

Operation instructions, LightHouse 3..... 14

P

Parts supplied
 Axiom 12 20
 Axiom 12 (DISP)..... 21
 Axiom 7 18
 Axiom 7 (DISP) 19
 Axiom 9..... 20
 Axiom 9 (DISP)..... 21
Power cable extension 44
Power connection 41
Power troubleshooting..... 57
Product support..... 68
Product variants..... 15

R

Radio Frequency (RF) interference..... 25
RealVision™ 3D transducer 16
Removing trunnion adaptor..... 33
Routine checks..... 52

S

Service Center..... 68
Servicing..... 52
Sharing a breaker 43

T

Technical support..... 68
Thermal breaker rating..... 41
Transducer connections..... 39
Troubleshooting 56
 GNSS 58

V

Ventilation 24

W

Warranty68



CE 0168 

Raymarine

Marine House, Cartwright Drive, Fareham, Hampshire.
PO15 5RJ. United Kingdom.

Tel: +44 (0)1329 246 700

www.raymarine.com

Raymarine[®]

a brand by  **FLIR**[®]