

Raymarine®



AXIOM™ PRO

Installation instructions

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Chapter 1: Important information



Warning: Product installation and operation

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



Warning: High voltage

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

Disclaimers

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

This product uses digital chart data, and electronic information from Global Navigation Satellite Systems (GNSS) which may contain errors. Raymarine does not warrant the accuracy of such information and you are advised that errors in such information may cause the product to malfunction. Raymarine is not responsible for damages or injuries caused by your use or inability to use the product, by the interaction of the product with products manufactured by others, or by errors in chart data or information utilized by the product and supplied by third parties.

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

RF exposure

This equipment complies with FCC / 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 1 cm (0.39 in) between the device and the body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures.

Compliance Statement (Part 15.19)

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

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

FCC Interference Statement (Part 15.105 (b))

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

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

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

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

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.

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

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.

Chapter 2: Document and product information

Chapter contents

- 2.1 Product documentation on page 14
- 2.2 Applicable products on page 15
- 2.3 Compatible transducers — Axiom™ Pro MFDs on page 16
- 2.4 Parts supplied - Axiom Pro 9 and 12 on page 19
- 2.5 Parts supplied - Axiom Pro 16 on page 20

2.1 Product documentation

The following documentation is applicable to your product:

Documentation

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

User manuals Print Shop

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

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

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
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2.2 Applicable products

This document is applicable to the following products:

Axiom™ Pro Multifunction Displays

Product number	Name	Description
E70371	Axiom™ Pro 9 RVX	9" MFD with built-in RealVision™ 3D and 1kW sonar module.
E70481	Axiom™ Pro 9 S	9" MFD with built-in 600W sonar module.
E70372	Axiom™ Pro 12 RVX	12" MFD with built-in RealVision™ 3D and 1kW sonar module.
E70482	Axiom™ Pro 12 S	12" MFD with built-in 600W sonar module.
E70373	Axiom™ Pro 16 RVX	16" MFD with built-in RealVision™ 3D and 1kW sonar module.
E70483	Axiom™ Pro 16 S	16" MFD with built-in 600W sonar module.

2.3 Compatible transducers — Axiom™ Pro MFDs

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

Axiom Pro S:

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

Axiom Pro RVX — RV connection:

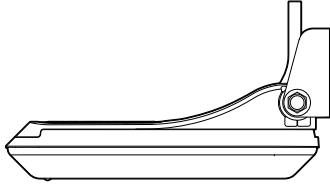
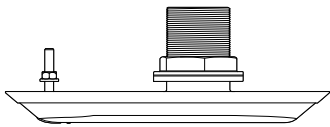
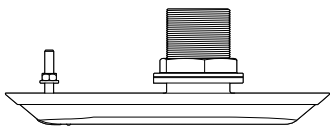
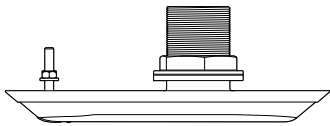
- RealVision™ 3D transducers.
- DownVision™ transducers.
- Non-CHIRP transducers can be connected using available adaptor cables.

Axiom Pro RVX — X connection:

- 1kW transducers. Refer to the Raymarine® website for compatible transducers.
- Other transducers using available adaptor cables.

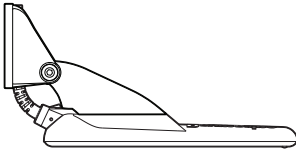
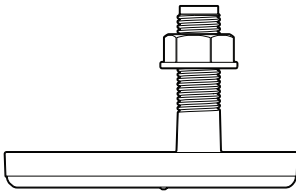
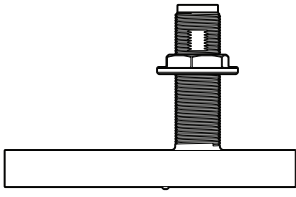
RealVision transducers

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

Product number	Transducer	Mounting	Description
A80464		Transom	RV-100 RealVision™ 3D Plastic Transducer
A80465		Thru-Hull	RV-200 RealVision™ 3D Bronze 0° Single Transducer
A80466		Thru-Hull	RV-212P RealVision™ 3D Bronze 12° Split-pair Port Transducer
A80467		Thru-Hull	RV-212S RealVision™ 3D Bronze 12° Split-pair Starboard Transducer
A80468		Thru-Hull	RV-220P RealVision™ 3D Bronze 20° Split-pair Port Transducer
A80469		Thru-Hull	RV-220S RealVision™ 3D Bronze 20° Split-pair Starboard Transducer

DownVision™ transducers

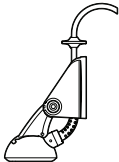
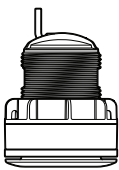
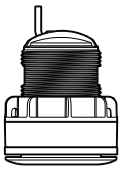
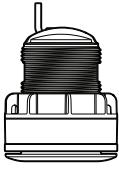
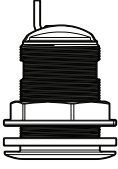
The transducers listed below can be connected directly to DownVision™ (DV) variant MFDs. An adaptor is required for connection to RealVision™ (RV) variant MFDs.

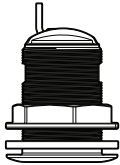
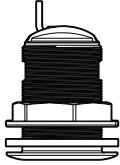
Product number	Transducer	Mounting	Description
A80351		Transom	CPT-100DVS plastic (replacement for A80270 CPT-100)
A80277		Thru-hull	CPT-110 plastic
A80271		Thru-hull	CPT-120 bronze

CHIRP conical beam transducers (using DownVision™ type connector)

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

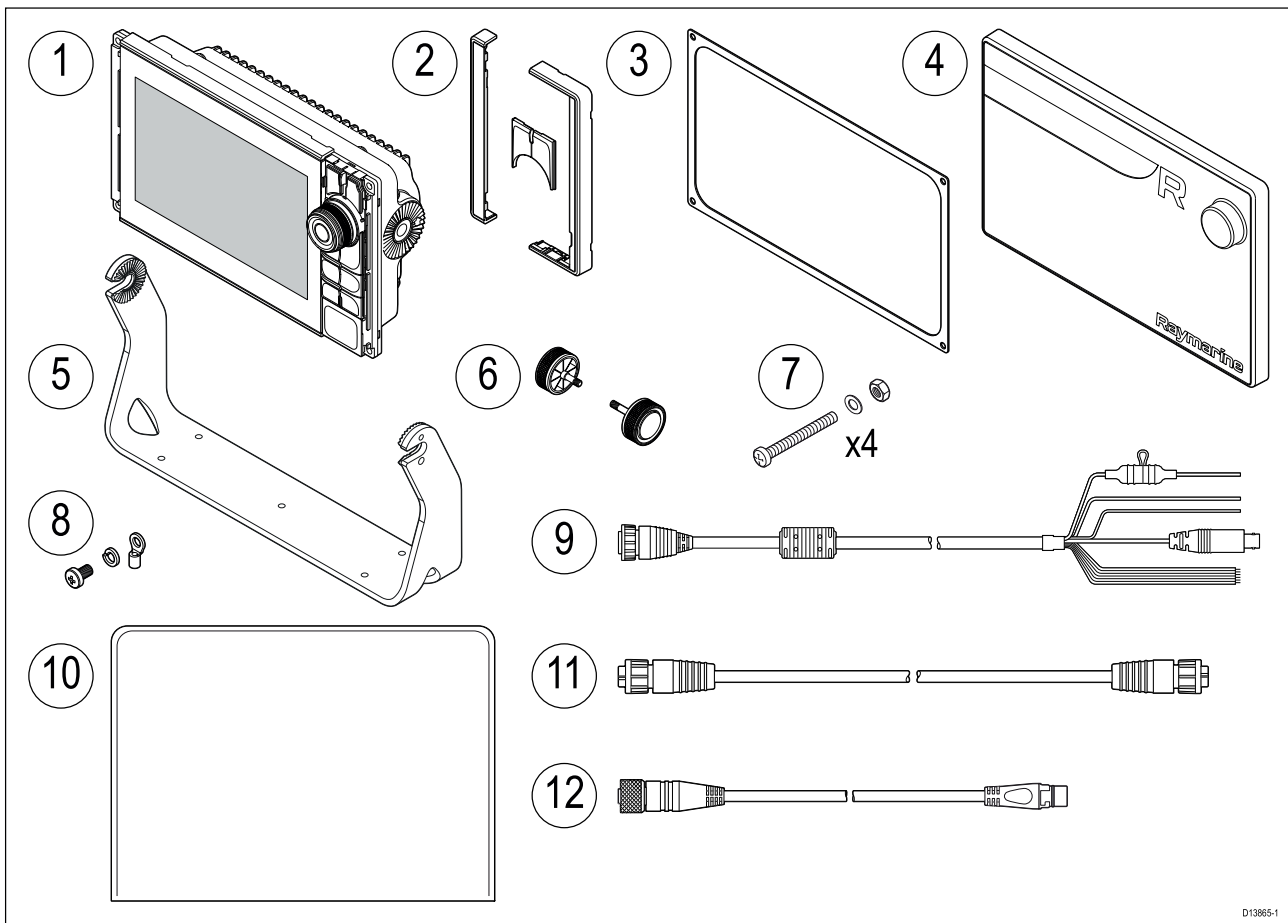
CPT-S transducers use CHIRP sonar technology to produce a conical-shaped sonar beam.

Note: CPT-S transducers do NOT offer DownVision™ capabilities.			
Product number	Transducer	Mounting	Description
E70342		Transom	CPT-S plastic
E70339		Thru-hull	CPT-S 0° angled element plastic
A80448		Thru-hull	CPT-S 12° angled element plastic
A80447		Thru-hull	CPT-S 20° angled element plastic
A80446		Thru-hull	CPT-S 0° angled element bronze

Product number	Transducer	Mounting	Description
E70340		Thru-hull	CPT-S 12° angled element bronze
E70341		Thru-hull	CPT-S 20° angled element bronze

2.4 Parts supplied - Axiom Pro 9 and 12

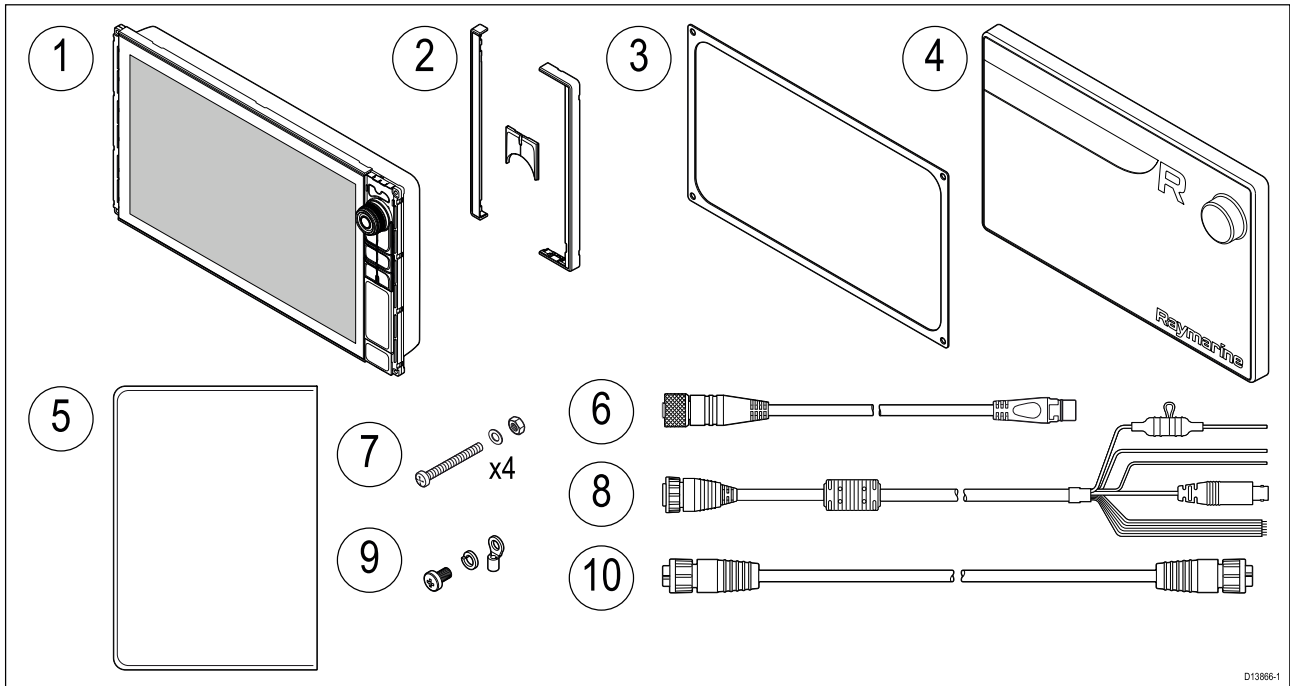
The parts listed are supplied with the following product numbers: E70371, E70481, E70372 and E70482.



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

2.5 Parts supplied - Axiom Pro 16

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



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

Chapter 3: Installation

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- [3.3 Surface mounting on page 29](#)
- [3.4 Bracket \(trunnion\) mounting on page 31](#)

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 1 m (3 ft) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 7 ft (2 m).
 - More than 2 m (7 ft) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The product is supplied from a separate battery from that used for engine start. This is important to prevent erratic behavior and data loss which can occur if the engine start does not have a separate battery.
- Raymarine specified cables are used.
- Cables are not cut or extended, unless doing so is detailed in the installation manual.

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

RF interference

Certain third-party external electrical equipment can cause Radio Frequency (RF) interference with 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.

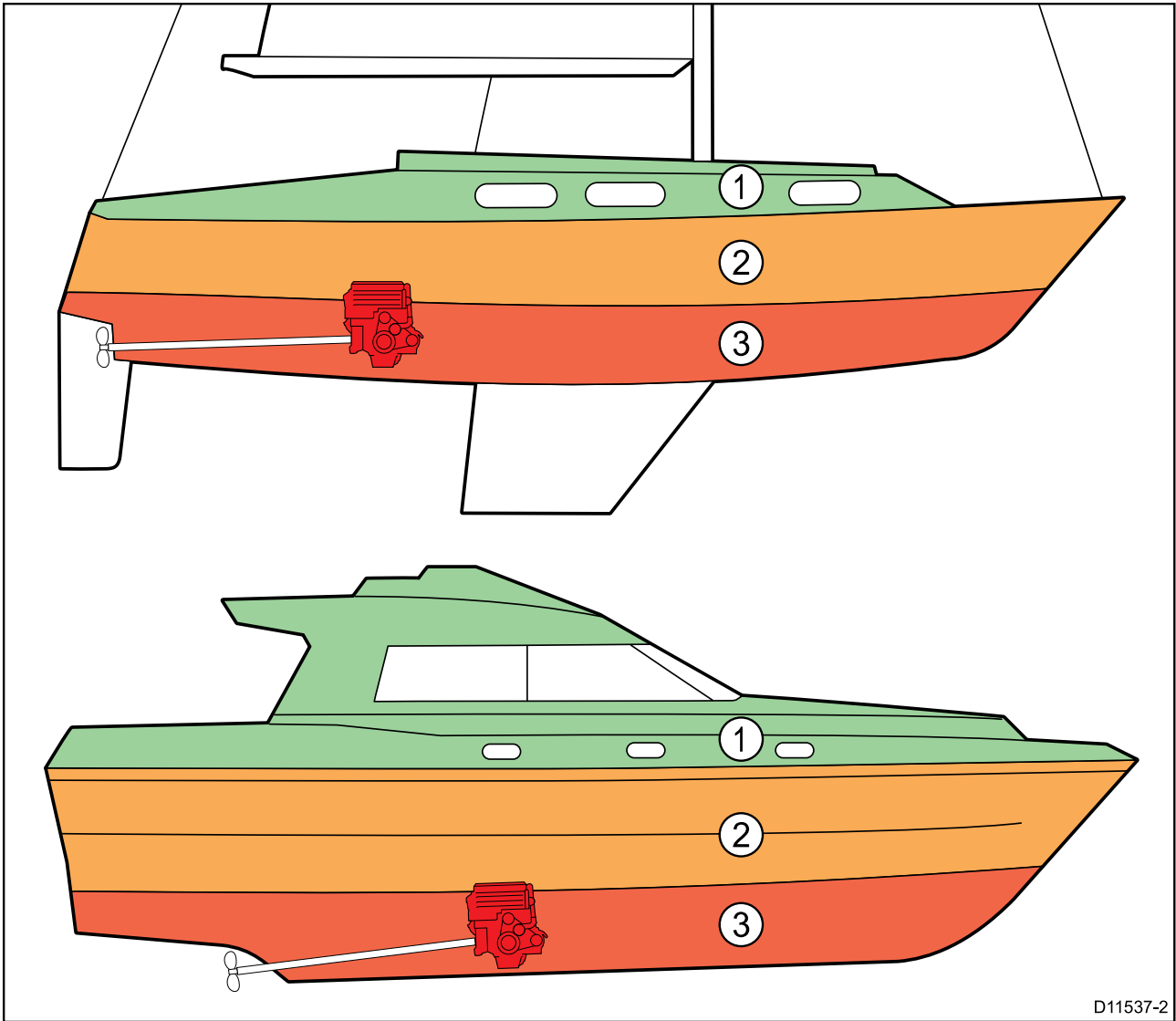
When choosing a suitable location for the product you should aim to maintain the maximum possible distance from any compasses. Typically this distance should be at least 1 m (3 ft) in all directions. However for some smaller vessels it may not be possible to locate the product this far away from a compass.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

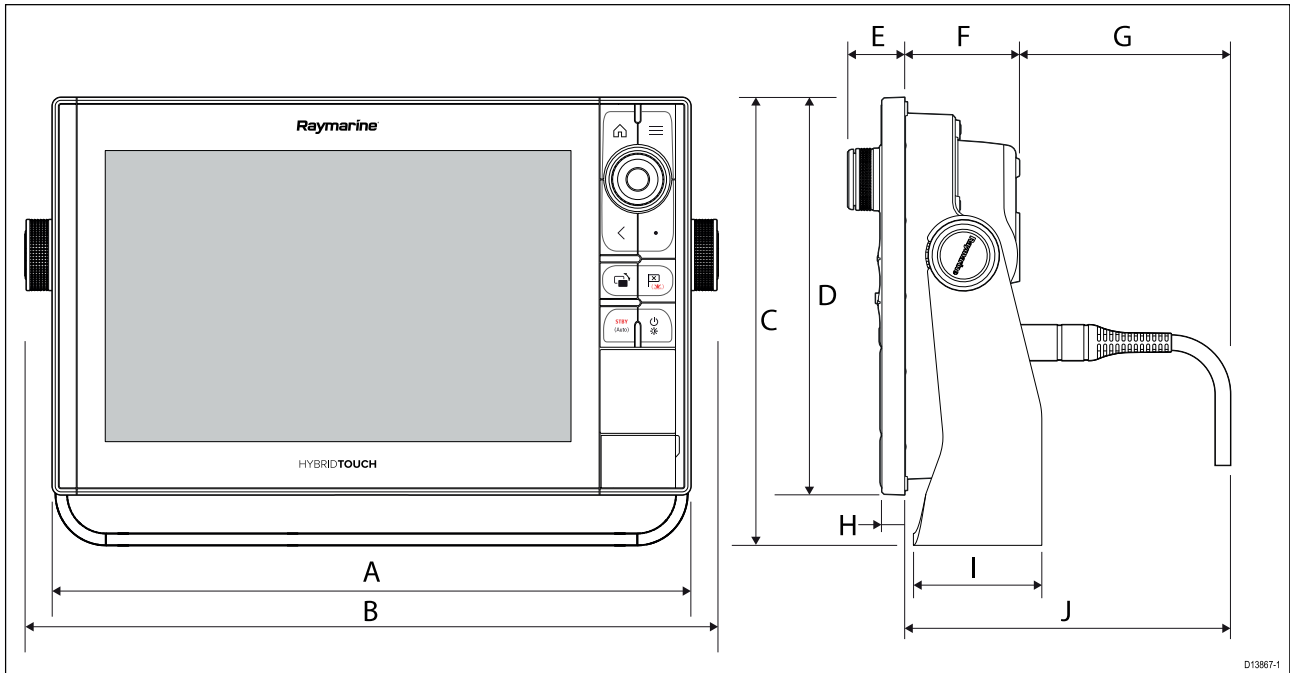
Viewing angle considerations

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.

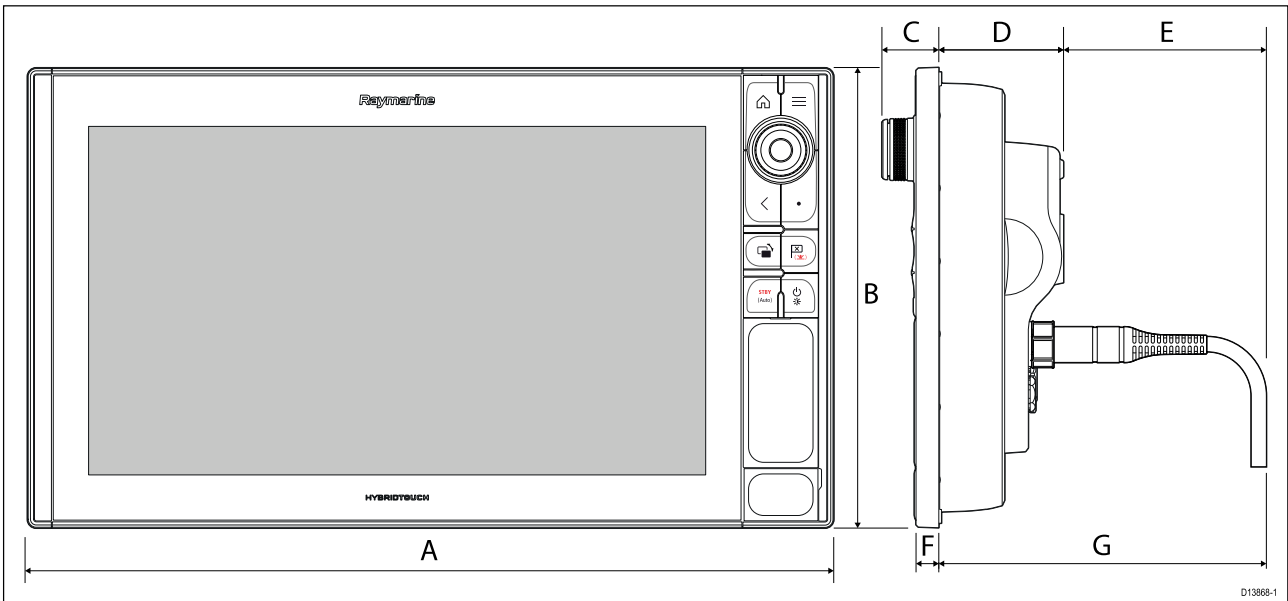
Product dimensions

Axiom Pro 9 and 12 dimensions



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

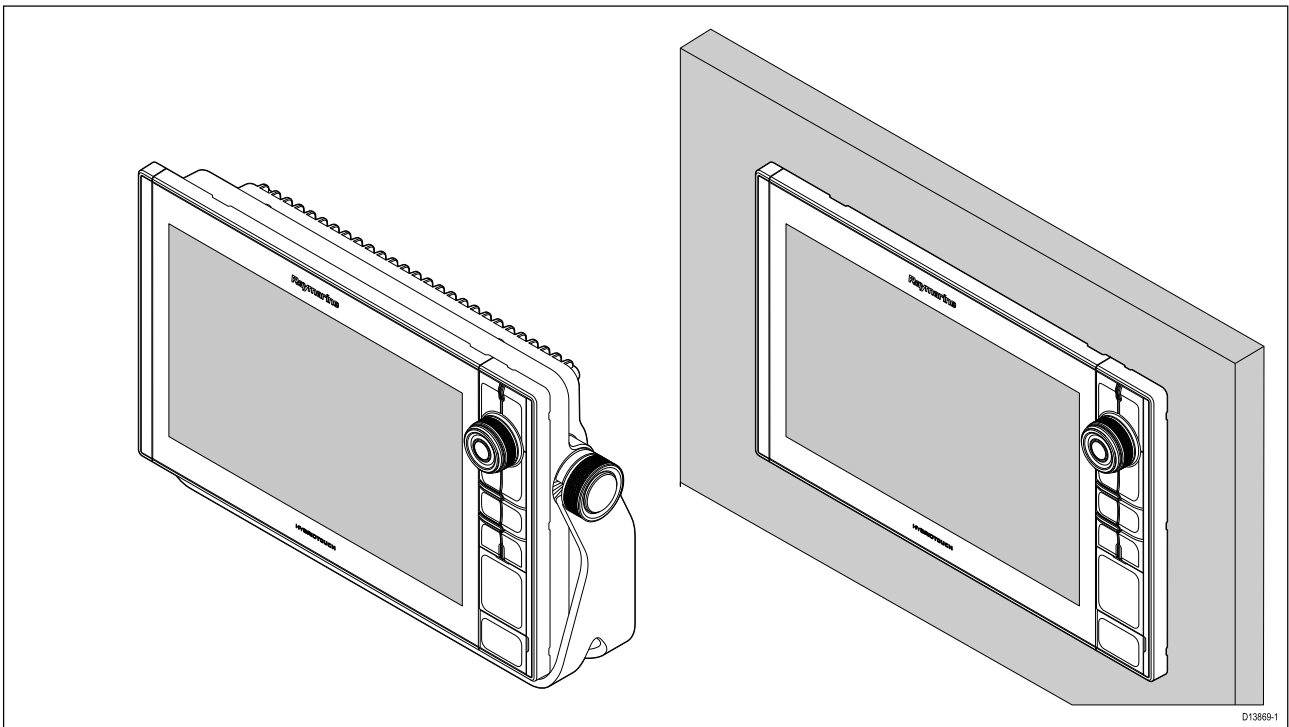
Axiom Pro 16 dimensions



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

3.2 Mounting options

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



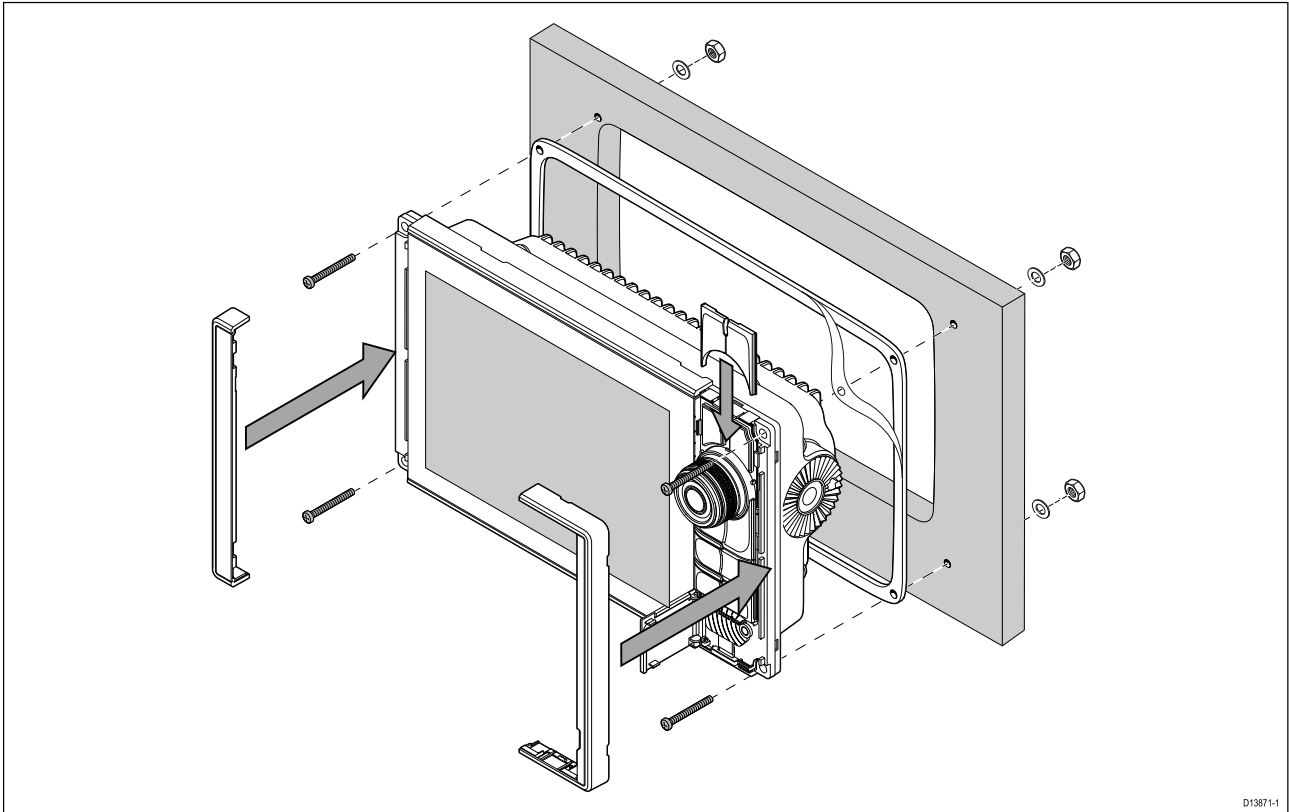
Legacy MFD adaptor plates are also available to enable you to easily swap out older MFDs for new Axiom Pro MFDs, please refer to [Chapter 9 Spares and accessories](#) for a list of available adaptors.

3.3 Surface mounting

The MFD can be surface mounted.

Before mounting the unit, ensure that you have:

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

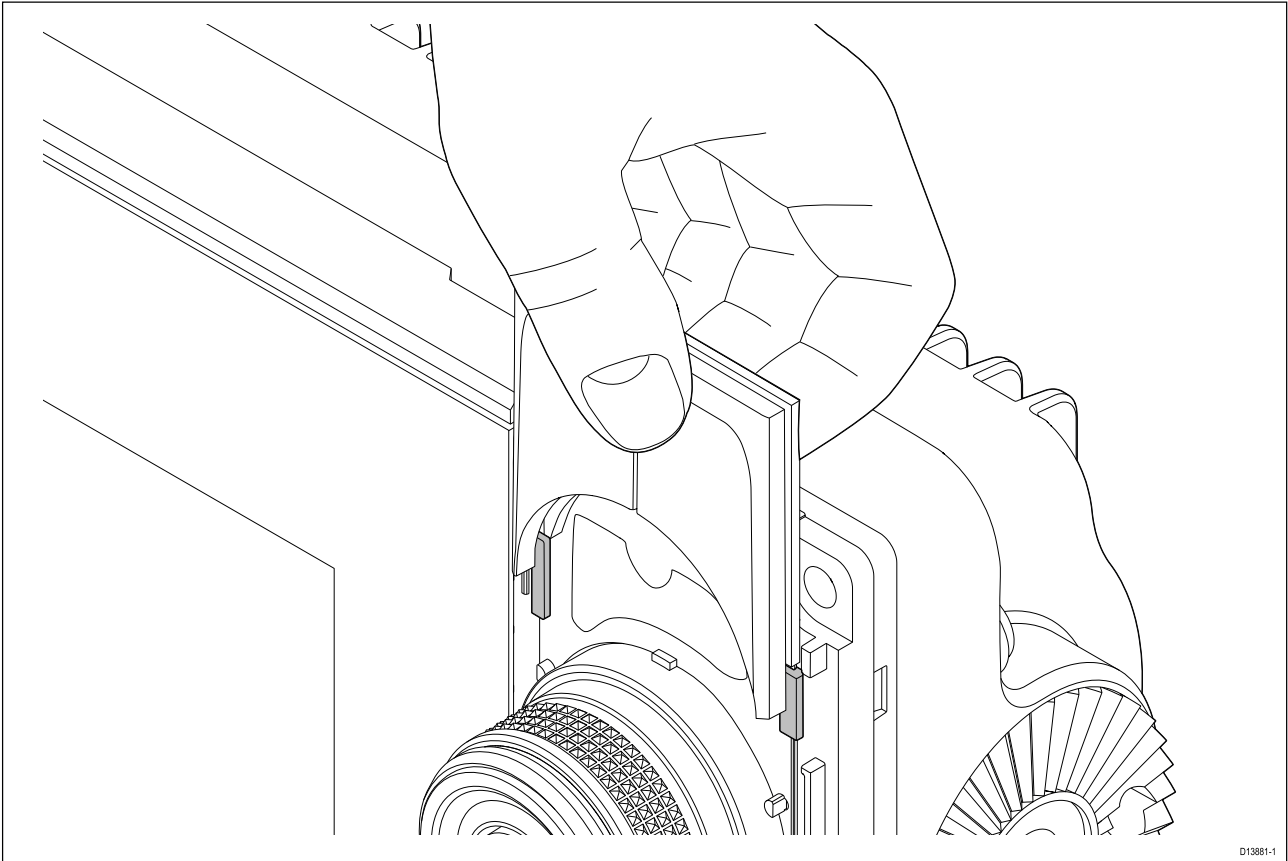


1. Check the chosen mounting location. A clear, flat area with suitable clearance behind the panel is required.
2. Fix the supplied mounting template to the chosen location using masking or self-adhesive tape.
3. Using a suitable hole saw (the size is indicated on the template), make a hole in each corner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

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

Fitting the Menu-Home button

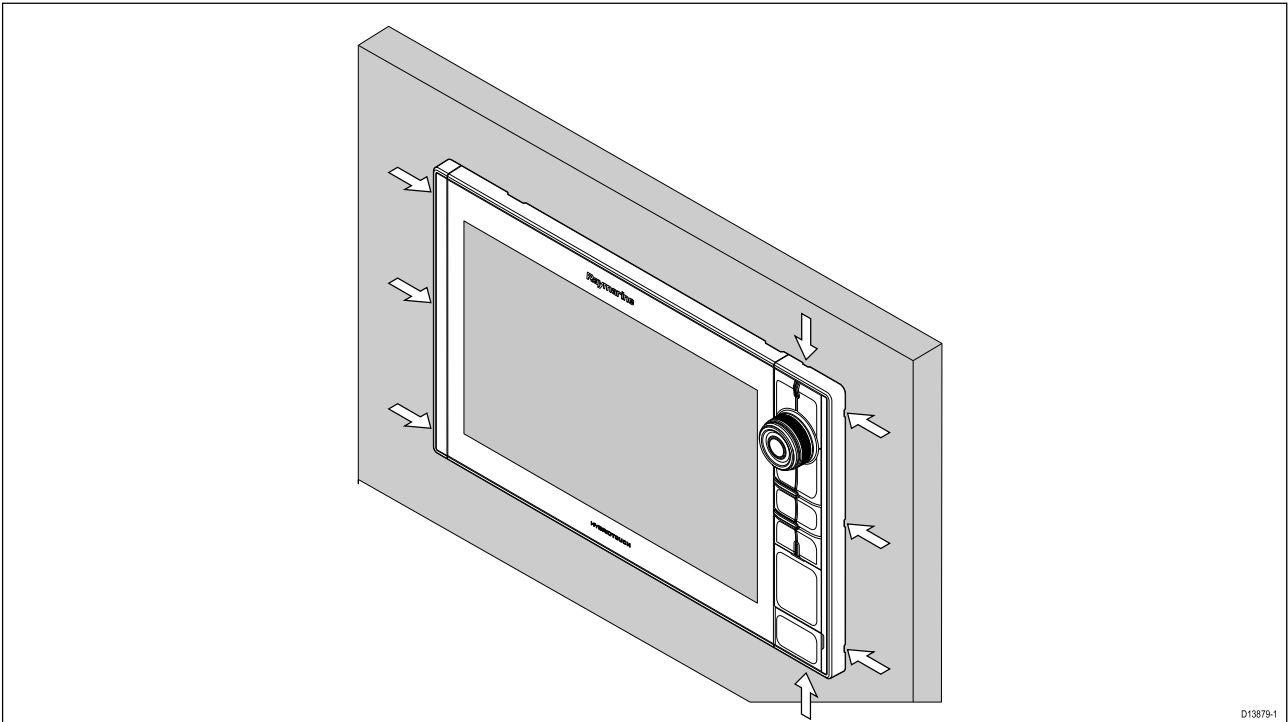
Follow the steps below to fit the Menu/Home button.



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

Removing the bezel pieces

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



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

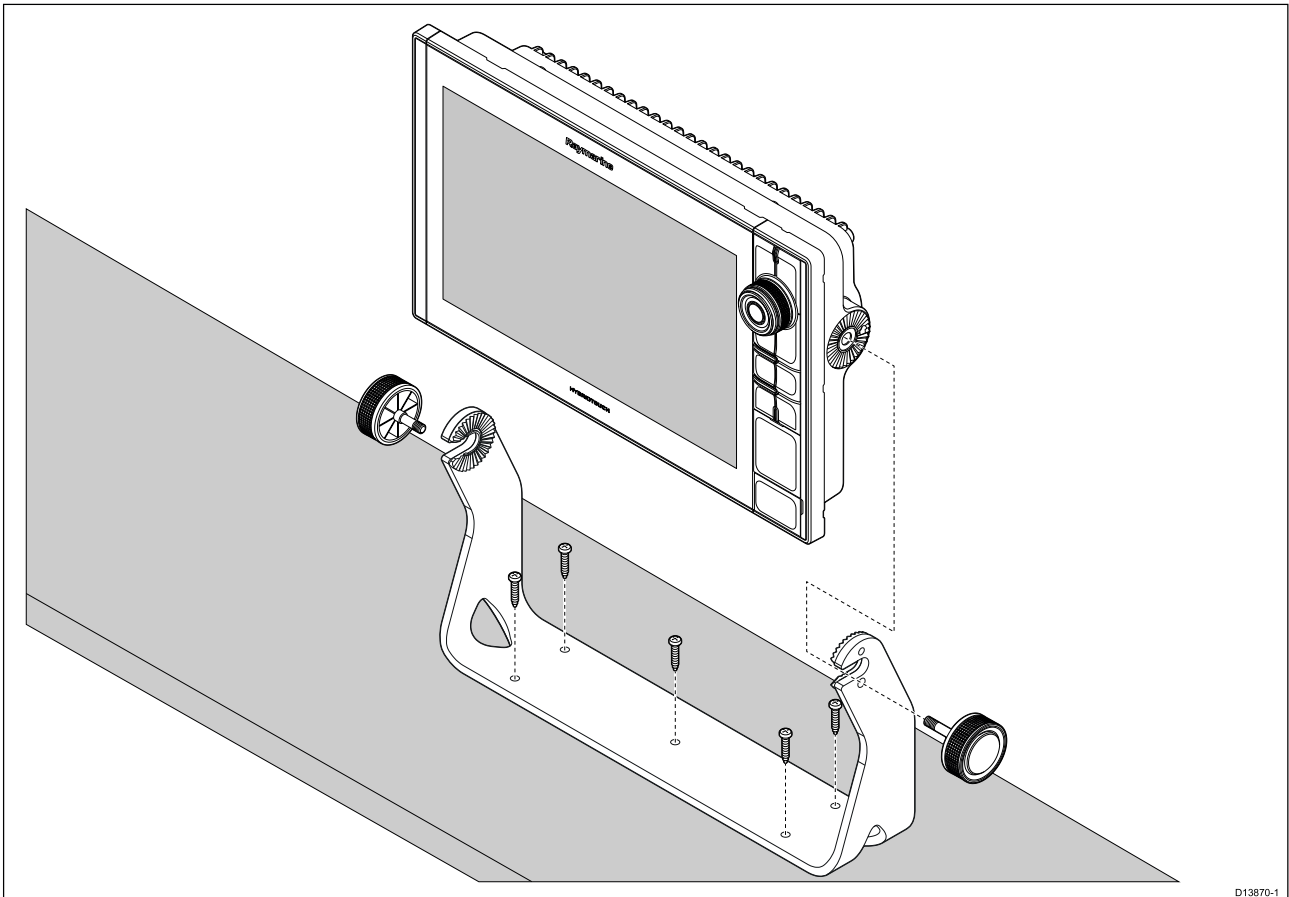
3.4 Bracket (trunnion) mounting

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

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

Before mounting the unit ensure that you have:

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



D13870-1

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

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

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

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

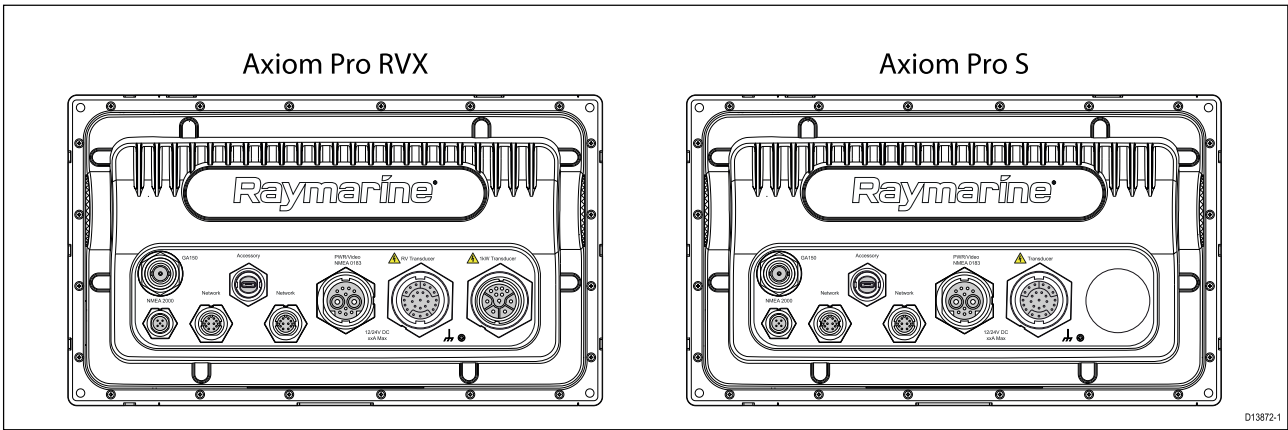
4. Route and connect necessary cables.

Chapter 4: Connections

Chapter contents

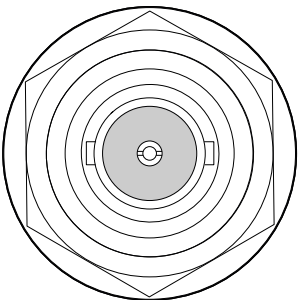
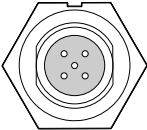
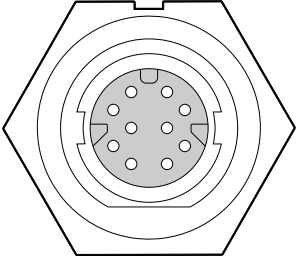
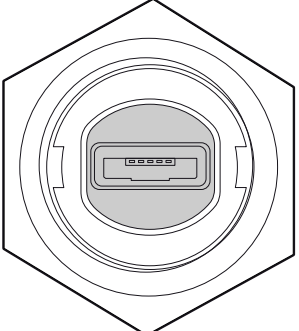
- 4.1 Connections overview on page 34
- 4.2 Power connection on page 37
- 4.3 NMEA 2000 (SeaTalkng[®]) connection on page 42
- 4.4 NMEA 0183 connection on page 43
- 4.5 Transducer connection on page 44
- 4.6 Network connection on page 46
- 4.7 GA150 connection on page 47
- 4.8 Accessory connection on page 48
- 4.9 Analog video connection on page 49

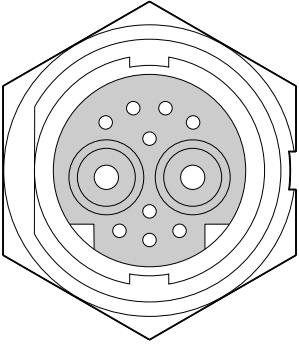

4.1 Connections overview



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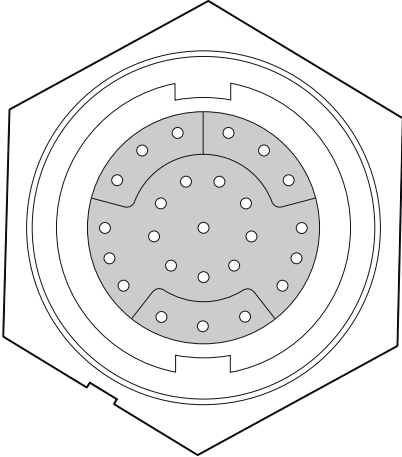
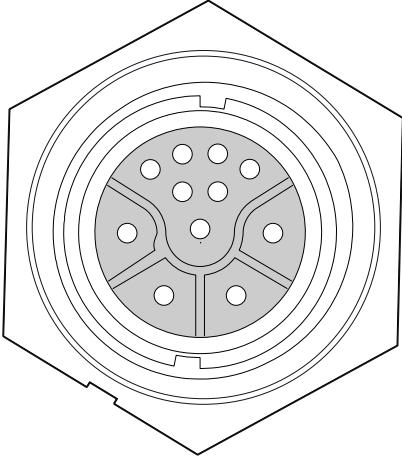
Axiom Pro connection options

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

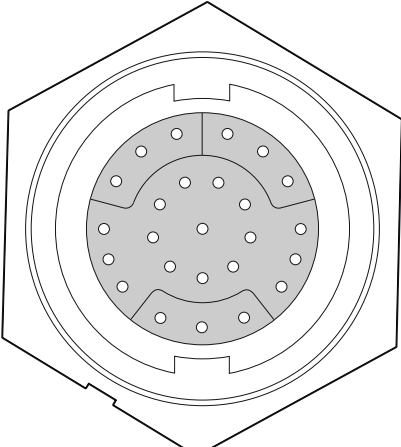
Connector	Connector	Connects to:	Suitable cables
	Power / Video out / NMEA 0183 connection	12/24 V DC power supply / Video input / NMEA 0183	Power/Video/0183 cable
	Optional grounding point	Vessel RF ground, or negative battery terminal	Refer to Grounding – optional dedicated drain wire section for details

Depending on MFD variant different transducer connections are available

Axiom Pro RVX – transducer connection options

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

Axiom Pro S – transducer connection options

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

Note:

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

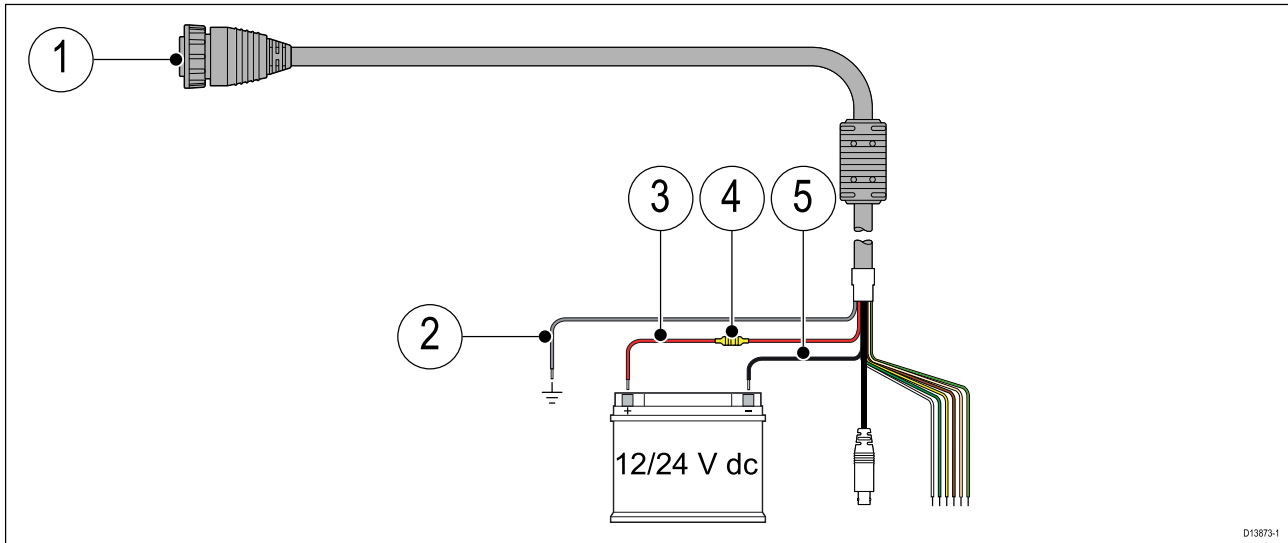
Connecting cables

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

1. Ensure that the vessel's power supply is switched off.
2. Ensure that the device being connected has been installed in accordance with the installation instructions supplied with that device.
3. Ensuring correct orientation, push cable connectors fully onto the corresponding connectors.
4. 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 or 24 V dc power supply, this can be achieved by connecting directly to a battery, or via a distribution panel. The product is protected against reverse polarity.



1. Power/Video/NMEA 0183 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. Fuse.
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
15 A	15 A (if only connecting one device)

Note:

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

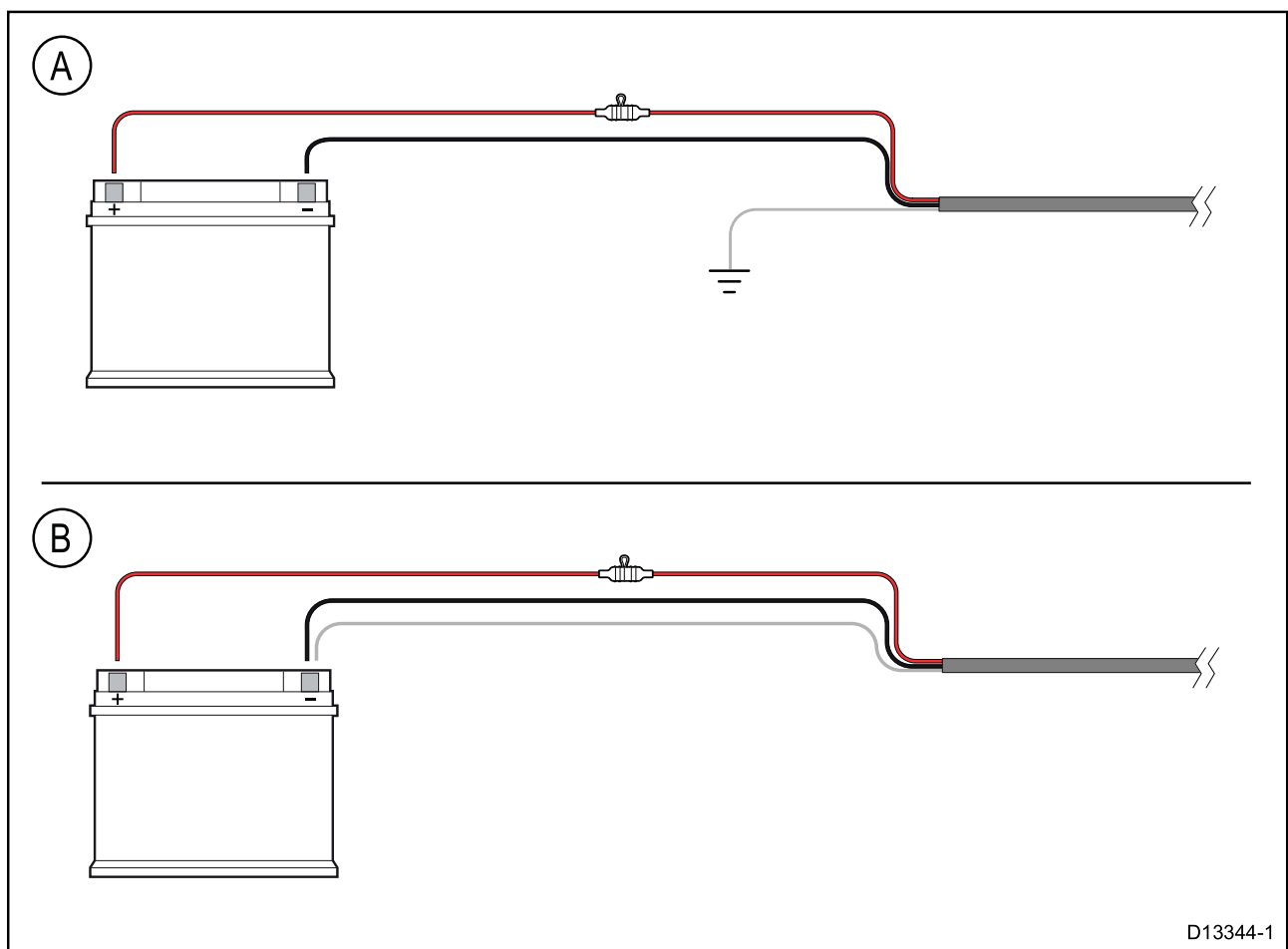
When planning and wiring, take into consideration other products in your system, some of which (e.g. sonar modules) may place large power demand peaks on the vessel's electrical system.

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.

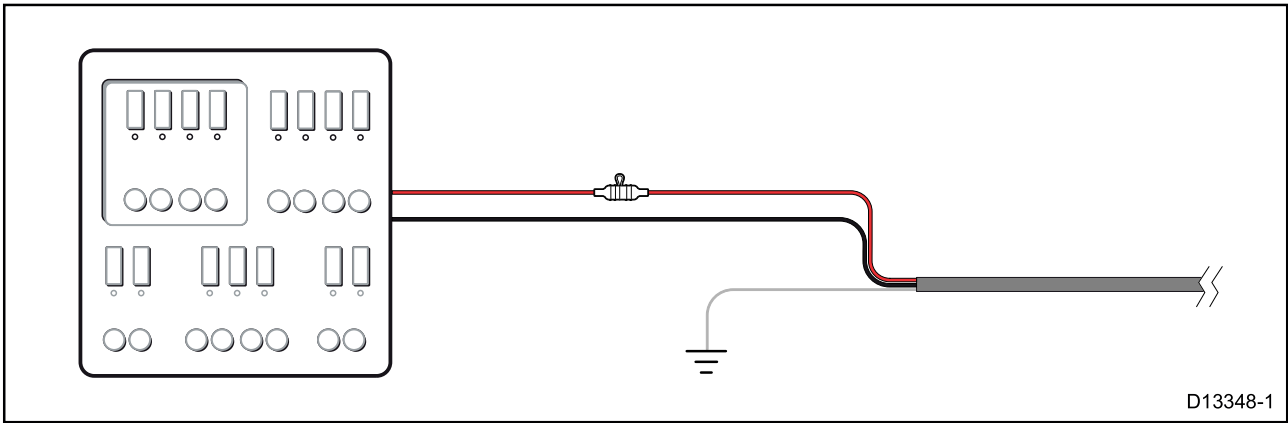
Implementation — direct connection to battery

- 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.

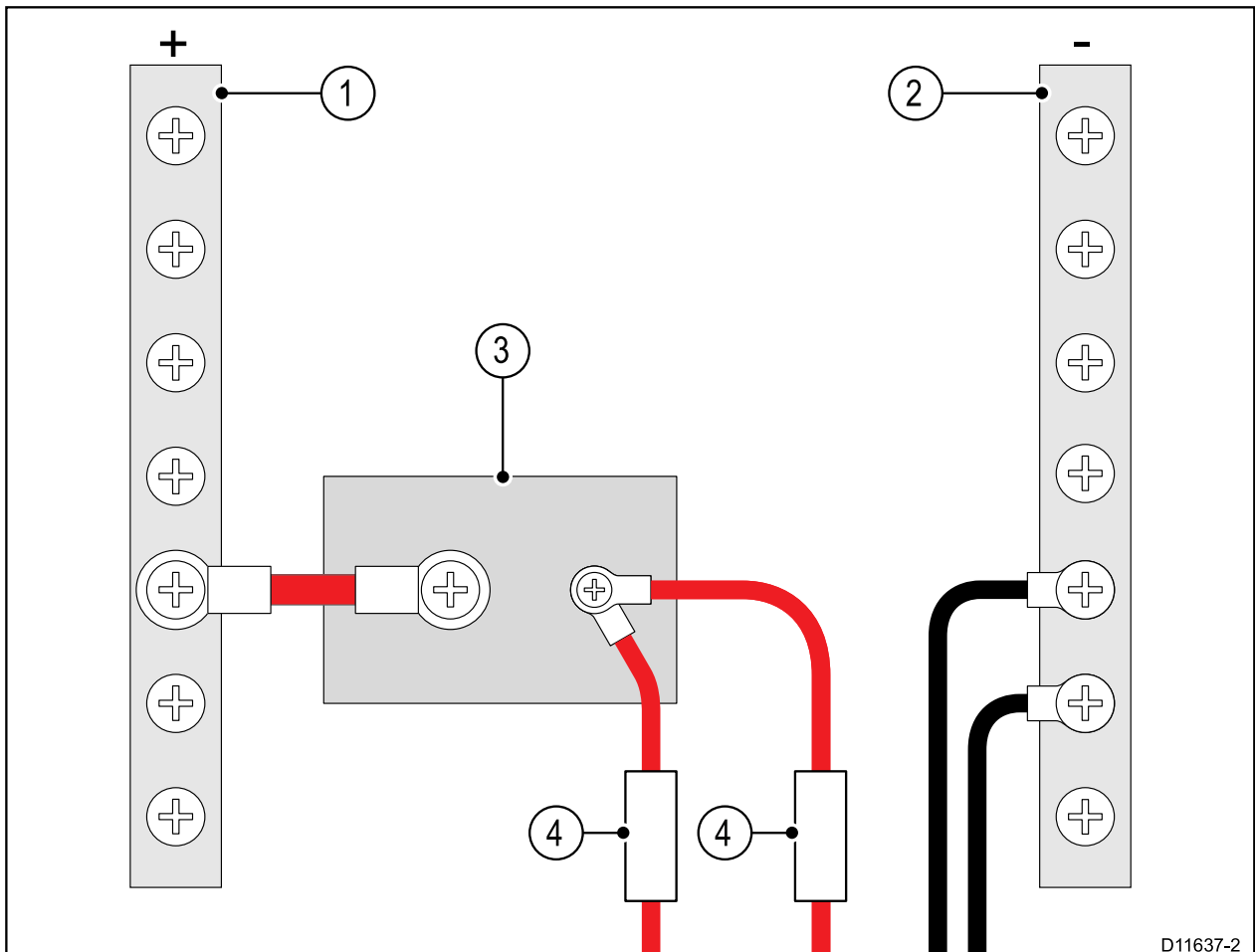


A	Battery connection scenario A: suitable for a vessel with a common RF ground point. In this scenario, if your product's power cable is supplied with a separate drain wire then it should be connected to the vessel's common ground point.
B	Battery connection scenario B: suitable for a vessel without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

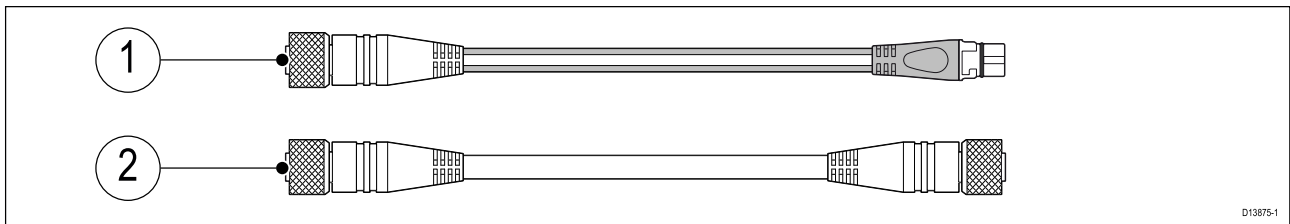
Before applying power to this product, ensure it has been correctly grounded, in accordance with the instructions provided.

**Warning: Positive ground systems**

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

4.3 NMEA 2000 (SeaTalkng®) connection

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



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

Note:

1. SeaTalkng® and NMEA 2000 devices must be connected to a correctly terminated backbone that the MFD is also connected to. Devices cannot be connected directly to the MFD.
2. Refer to the instructions supplied with your SeaTalkng® / NMEA 2000 device for details on creating a backbone.

4.4 NMEA 0183 connection

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

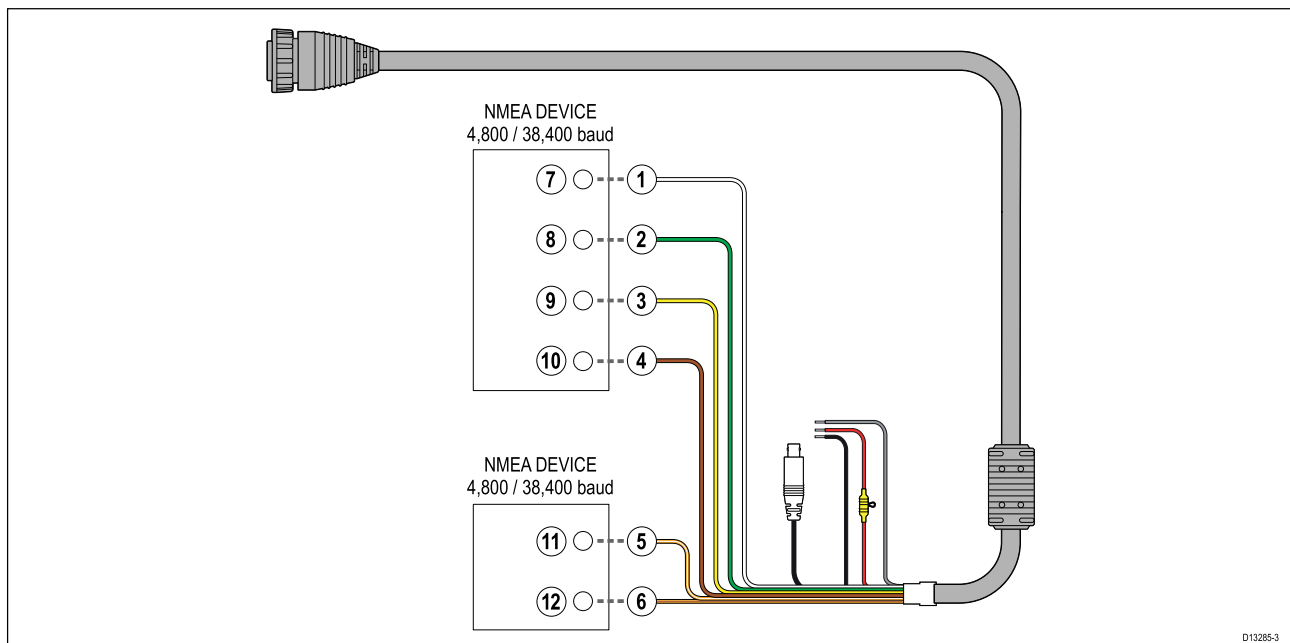
2 NMEA 0183 ports are available:

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

Note:

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

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



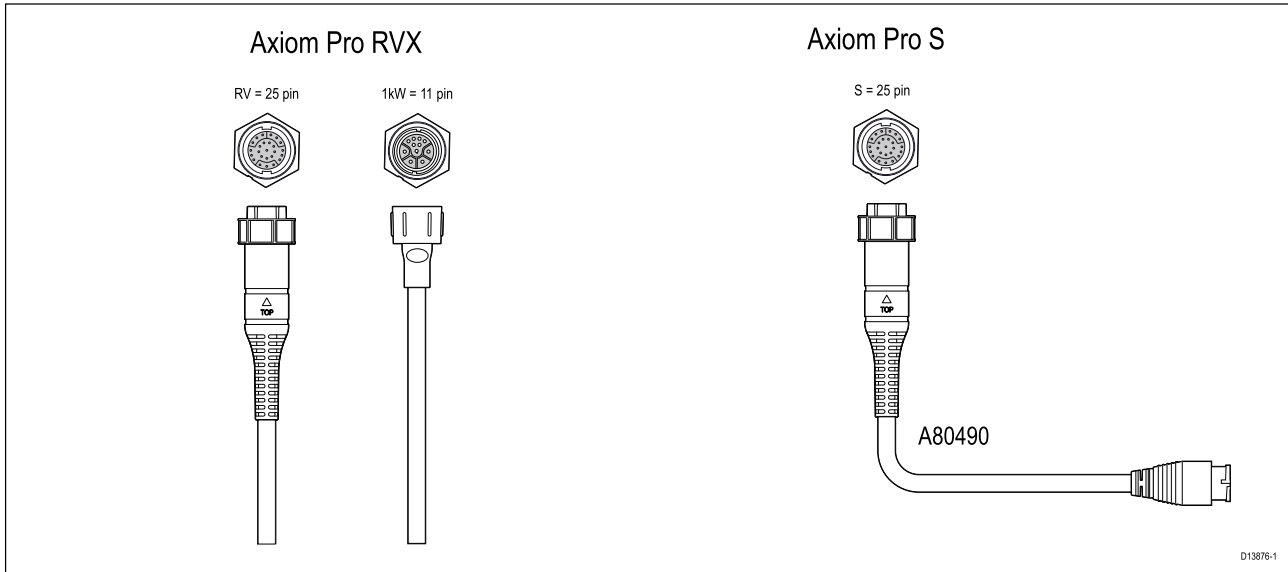
Item	Device	Cable color	Port	Input / output	Positive (+) / negative (-)
1	MFD	White	1	Input	Positive
2		Green	1	Input	Negative
3		Yellow	1	Output	Positive
4		Brown	1	Output	Negative
5		Orange / White	2	Input	Positive
6		Orange / Green	2	Input	Negative
7	NMEA device	*	*	Output	Positive
8		*	*	Output	Negative
9		*	*	Input	Positive
10		*	*	Input	Negative
11	NMEA device	*	*	Output	Positive
12		*	*	Output	Negative

Note:

* Refer to instructions provided with your NMEA 0183 device for connection details.

4.5 Transducer connection

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



- Axiom Pro RVX:
 - 1 x 25 pin connector — connect to RealVision™ 3D transducers
 - 1 x 11 pin connector — connect to 1kW transducers.
- Axiom Pro S
 - 1 x 25 pin connector — connect to transducer adaptor cable A80490, the adaptor cable then connects to a CPT-S series transducer.

Note:

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

RealVision™ 3D transducer extension cable

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

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

Axiom transducer adaptor cables

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

Axiom DV adaptor cables

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

Axiom RV adaptor cables

A80488	Axiom RV to 7-pin Embedded Transducer Adapter
A80489	Axiom RV to 7-pin CP370 Transducer Adapter

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

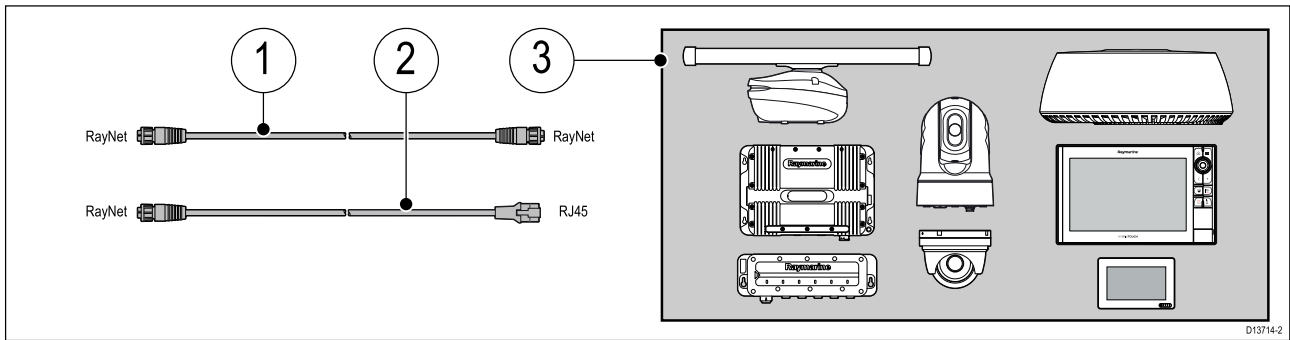
Caution: Transducer cable

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

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

4.6 Network connection

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

Note:

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

4.7 GA150 connection

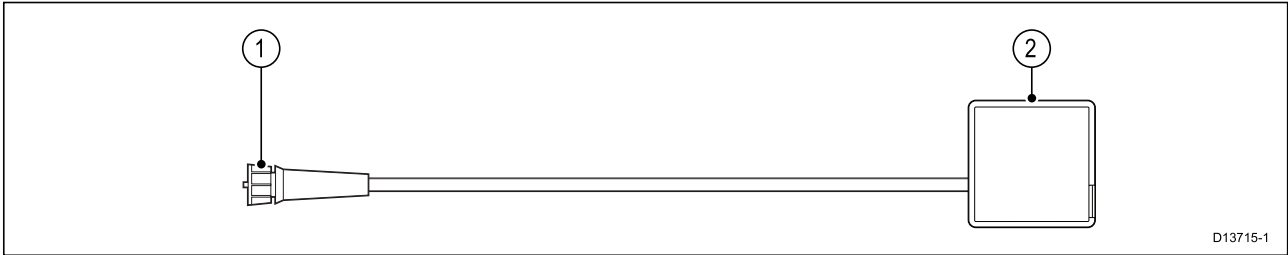
The GA150 (A80288) can be used to improve your MFD's GNSS receiver's reception.



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

4.8 Accessory connection

The RCR-SDUSB or RCR-2 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.

The RCR-2 accessory can provide your MFD with 2 x extra MicroSDHC card slots.

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

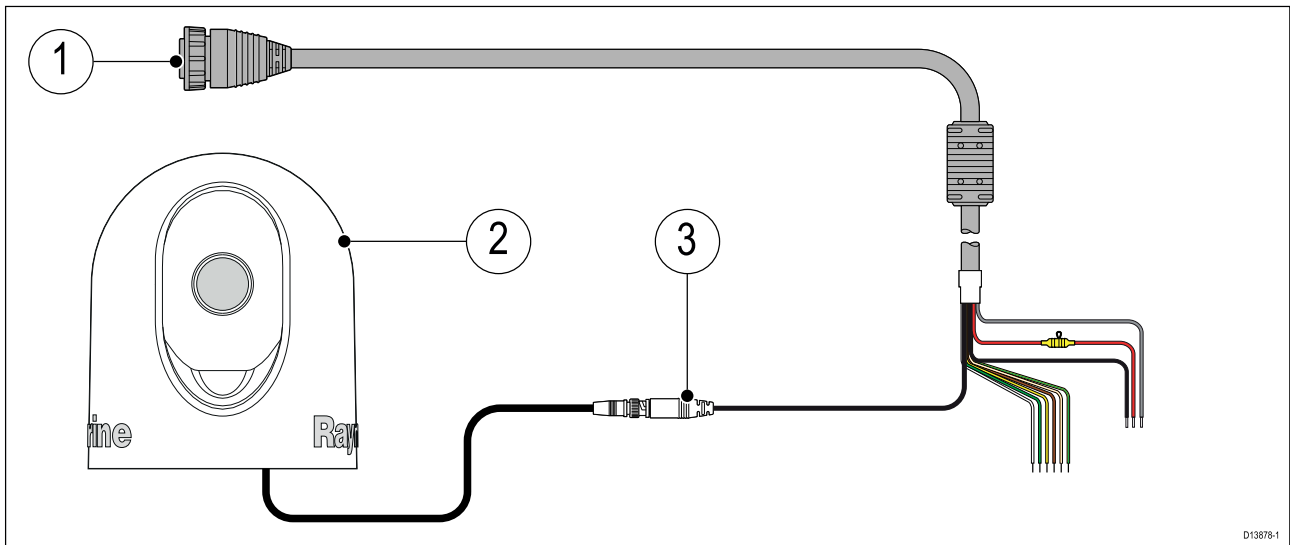


Warning: USB device power

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

4.9 Analog video connection

Analog video sources such as a Thermal or security camera can be connected to your MFD using the BNC connector on the supplied Power/Video/NMEA 0183 cable.



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

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

Chapter 5: Maintaining your display

Chapter contents

- [5.1 Service and maintenance on page 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.

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

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6.1 Troubleshooting

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

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

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

6.2 Power up troubleshooting

Product does not turn on or keeps turning off

Possible causes	Possible solutions
Blown fuse / tripped breaker	<ol style="list-style-type: none"> 1. Check condition of relevant fuses and breakers and connections, replace if necessary. (Refer to the <i>Technical Specification</i> section of your product's installation instructions for fuse ratings.) 2. If fuse keeps blowing check for cable damage, broken connector pins or incorrect wiring.
Poor / damaged / insecure power supply cable / connections	<ol style="list-style-type: none"> 1. Check that the power cable connector is fully inserted into the unit and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, and replace if necessary. 3. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to restart or lose power; replace if necessary. 4. Check the vessel's battery voltage and the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion. Replace if necessary. 5. With the product under load, using a multi-meter, check for high voltage drop across all connectors / fuses etc, and replace if necessary.
Incorrect power connection	The power supply may be wired incorrectly, ensure the installation instructions have been followed.
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 start up (restart loop)

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

Performing a Power on Reset

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

No depth reading / lost bottom lock

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

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

Poor / problematic image

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

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

6.5 Wi-Fi troubleshooting

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

Cannot find network

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

Cannot connect to network

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

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

Connection extremely slow and or keeps dropping out

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

Network connection established but no data

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

Mobile application running slowly or not at all

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

6.6 Touchscreen troubleshooting

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

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

6.7 Miscellaneous troubleshooting

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

Problem	Possible causes	Possible solutions
Display behaves erratically: <ul style="list-style-type: none"> • Frequent unexpected resets. • System crashes or other erratic behavior. 	Intermittent problem with power to the display.	Check relevant fuses and breakers. Check that the power supply cable is sound and that all connections are tight and free from corrosion. Check that the power source is of the correct voltage and sufficient current.
	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

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- [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.

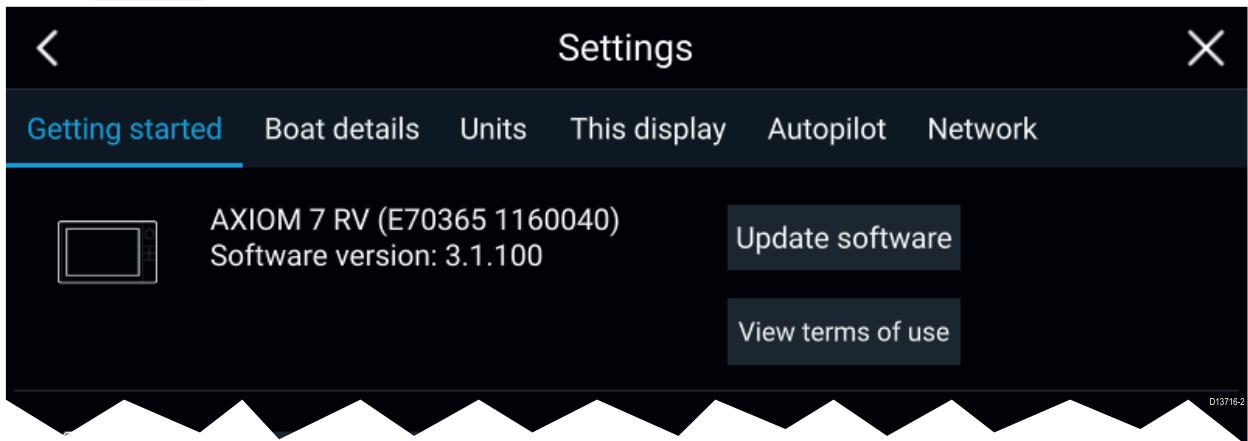
Servicing and warranty

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

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.

Note:

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

Training courses

Raymarine regularly runs a range of in-depth training courses to help you make the most of your products.

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.

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.

Chapter 8: Technical specification

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- [8.1 Axiom Pro technical specification on page 72](#)
- [8.2 Internal sonar specification on page 74](#)
- [8.3 Internal GNSS \(GPS / GLONASS\) receiver specification on page 75](#)

8.1 Axiom Pro technical specification

Power

	Axiom™ Pro 9	Axiom™ Pro 12	Axiom™ Pro 16
Nominal supply voltage	12/24 V dc		
Operating voltage range	8 V dc to 32V dc		
Fuse requirements	<ul style="list-style-type: none"> • Inline fuse = 15 Amp, or • Thermal breaker = 15 Amp 		
Maximum current	6A		
LEN	1		

Environmental

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

Data connections

	Axiom™ Pro 9	Axiom™ Pro 12	Axiom™ Pro 16
Transducer	<ul style="list-style-type: none"> • RVX variant <ul style="list-style-type: none"> – 25 pin RealVision™ connector – 11 pin 1kW connector • S variant <ul style="list-style-type: none"> – 25 pin connector (requires adaptor cable) 		
NMEA 2000	1 x DeviceNet male connector		
NMEA 0183	2 x NMEA 0183 ports via Power/Video/NMEA 0183 cable: <ul style="list-style-type: none"> • NMEA port 1: Input and output, 4,800 / 38,400 baud rate • NMEA port 2: Input only, 4,800 / 38,400 baud rate 		
GA150	1 x TNC type external GNSS antenna connection		
Analog video input	1 x Composite female BNC connector via Power/Video/NMEA 0183 cable.		

	Axiom™ Pro 9	Axiom™ Pro 12	Axiom™ Pro 16
Accessory	1 x USB Micro B connection		
Network	2 x RayNet type SeaTalkhs™ connector 10/100 Mbits/s		
Wi-Fi	802.11/b/g/n		
Bluetooth	Bluetooth V4.0		

Storage

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

8.2 Internal sonar specification

RealVision™ 3D sonar specification

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

Channels	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)

1kW sonar specification

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

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

8.3 Internal GNSS (GPS / GLONASS) receiver specification

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

Note: * Supported in future software update.

Chapter 9: Spares and accessories

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- 9.1 AXIOM Pro accessories on page 78
- 9.2 AXIOM Pro 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 Pro accessories

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

Axiom transducer adaptor cables

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

Axiom DV adaptor cables

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

Axiom RV adaptor cables

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

Legacy MFD adaptor plates

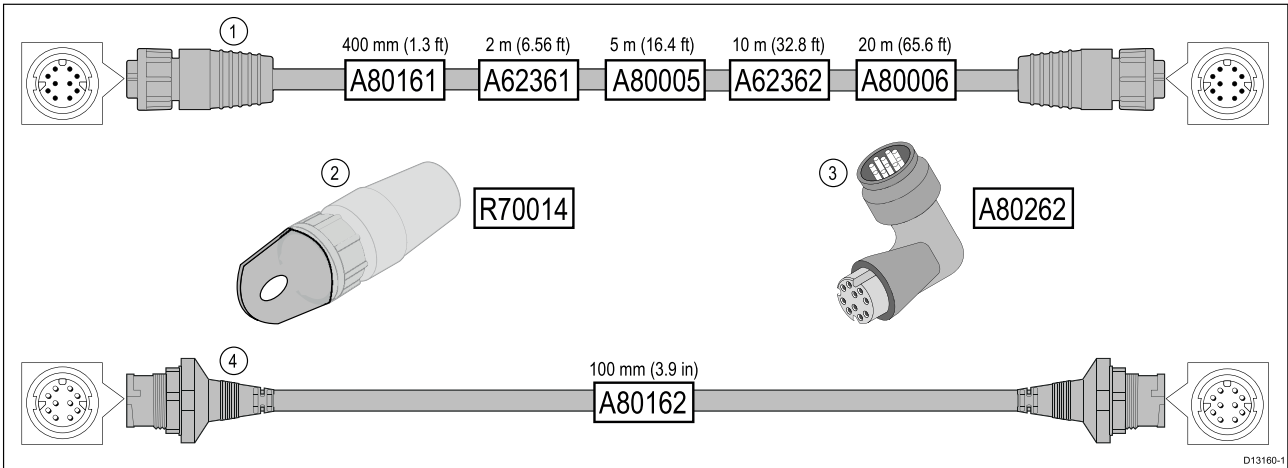
Adaptor plates are available to enable installation of Axiom Pro MFDs in the place of a Legacy MFDs.

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

9.2 AXIOM Pro spares

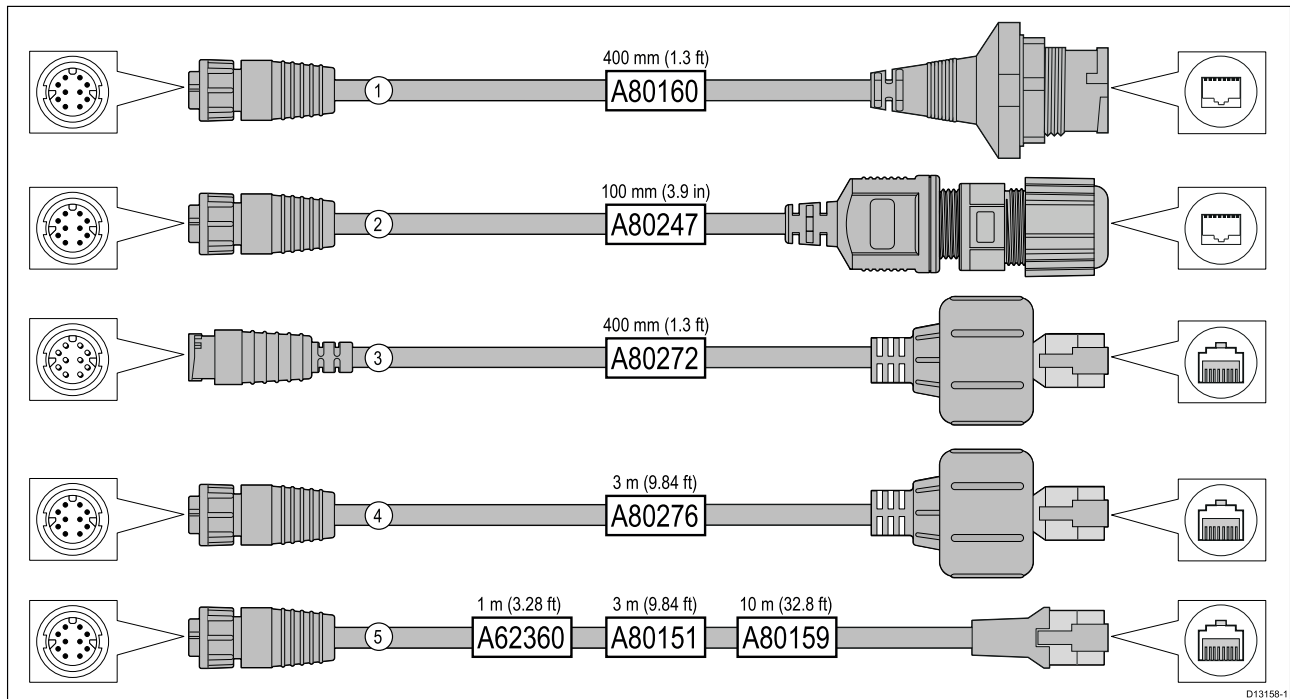
Item	Part numbers		
	Axiom™ Pro 9	Axiom™ Pro 12	Axiom™ Pro 16
Power/Video/NMEA 0183 cable 1.5 m (4.9 ft)	R62379		
Angled Power/Video/NMEA 0183 cable 1.5 m (4.9 ft) with right angled connector	R70029		
Keypad assembly	R70600		
Trim kit — Replacement bezel pieces	R70383	R70387	R70598
Mounting seal kit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

9.3 RayNet to RayNet cables and connectors



	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 (1.5 m). • A62246 (15 m). 	<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 (1.5 m). • E55050 (5 m). • E55051 (10 m). • A62135 (15 m). • E55052 (20 m). 	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.

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

Part No	Description	Notes
A06032	SeaTalk ^{ng} Blanking plug	
R12112	ACU / SPX SeaTalk ^{ng} spur cable 0.3 m (1.0 ft)	Connects an SPX course computer or an ACU to a SeaTalk ^{ng} backbone.
A06047	SeaTalk (3 pin) to SeaTalk ^{ng} adaptor cable 0.4 m (1.3 ft)	
A22164	SeaTalk to SeaTalk ^{ng} spur 1 m (3.3 ft) spur	
A06048	SeaTalk2 (5 pin) to SeaTalk ^{ng} adaptor cable 0.4 m (1.3 ft)	
A06045	DeviceNet adaptor cable (Female)	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.
A06046	DeviceNet adaptor cable (Male)	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.
E05026	DeviceNet adaptor cable (Female) to bare ends.	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.
E05027	DeviceNet adaptor cable (Male) to bare ends.	Allows the connection of NMEA 2000 devices to a SeaTalk ^{ng} system.

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