



Raymarine®

AXIOM 2 PRO

Installation Instructions

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CONTENTS

CHAPTER 1 IMPORTANT INFORMATION..... 10

Safety warnings.....	10
Product warnings.....	10
Regulatory notices.....	11
Regulatory e-Label	11
Declaration of Conformity	11
Network interfaces and services	12
PSTI Compliance.....	12
RF exposure	12
Compliance Statement (Part 15.19)	12
FCC Interference Statement (Part 15.105 (b))	12
Innovation, Science and Economic Development Canada (ISED)	13
Innovation, Sciences et Développement économique Canada (Français).....	13
Disclaimer	13
Electronic chart data	13
Warranty policy and registration.....	13
Product disposal	14
IMO and SOLAS.....	14
Technical accuracy	14
Publication copyright.....	14

CHAPTER 2 DOCUMENT INFORMATION..... 15

2.1 Applicable products	16
2.2 Document information.....	16
2.3 Document conventions.....	16
2.4 Document illustrations.....	16

2.5 Product documentation	16
2.6 Operation instructions	17
Multifunction display software version	17
Software update considerations.....	17

CHAPTER 3 PRODUCT AND SYSTEM OVERVIEW..... 18

3.1 Product overview	19
3.2 Typical systems	20

CHAPTER 4 COMPATIBLE TRANSDUCERS..... 22

4.1 Axiom 2 Pro RVM variant — compatible transducers	23
RealVision Max 3D transducers.....	23
RealVision 3D transducers	23
SideVision transducers	24
DownVision transducers.....	24
CPT-S-Series conical beam transducers	25
CHIRP transducers.....	25
Traditional transducers.....	27
4.2 Axiom 2 Pro S variant - compatible transducers	28
CPT-S conical beam transducers.....	28

CHAPTER 5 PARTS SUPPLIED..... 30

5.1 Parts supplied - Axiom 2 Pro 9 / 12	31
5.2 Parts supplied - Axiom 2 Pro 16.....	32

CHAPTER 6 PRODUCT DIMENSIONS 33

6.1 Axiom 2 Pro dimensions.....	34
---------------------------------	----

CHAPTER 7 LOCATION REQUIREMENTS 35

7.1 Warnings and cautions	36
7.2 General location requirements	36
Rear access requirements	36
7.3 GNSS (GPS) location requirements	36
7.4 Touchscreen location requirements	38
7.5 Wireless location requirements for optimum performance	38
7.6 Viewing angle considerations	39
7.7 EMC installation guidelines	39
RF interference	40
Compass safe distance	40

CHAPTER 8 INSTALLATION 41

8.1 Replacing the lower keypad	42
8.2 Mounting options	42
8.3 Trunnion mounting — Axiom® 2 Pro 9 and Axiom® 2 Pro 12	43
Tools required (trunnion mount installations)	43
Trunnion bracket mounting	43
8.4 Trunnion mounting — Axiom® 2 Pro 16	43
Axiom 2 Pro 16 trunnion kit modification	43
Tools required (trunnion mount installations)	44
Display trunnion mounting preparation	44
Trunnion bracket mounting	46
8.5 Flush mounting	46
Tools required (flush mount installations)	46
Rear access requirements	47

Preparing the mounting surface — flush mounting	47
Breather hole	48
Flush mounting	48
8.6 Surface mounting	49
Tools required (surface mount installations)	49
Rear access requirements	49
Preparing the mounting surface — surface mounting	50
Breather hole	50
Surface mounting	51
8.7 Protective film	51

CHAPTER 9 CABLES AND CONNECTIONS — GENERAL INFORMATION 52

9.1 General cabling guidance	53
Cable types and length	53
Cable routing and bend radius	53
Strain relief	53
Circuit isolation	53
Cable shielding	54
9.2 Connections overview — RVM variant displays	54
9.3 Connections overview — S variant displays	55
9.4 Connecting cables	55
9.5 Bare-ended wire connections	55

CHAPTER 10 POWER CONNECTIONS 57

10.1 Power connection	58
Inline fuse and thermal breaker ratings	58

10.2 Power distribution	58
10.3 Grounding — optional grounding point.....	61
CHAPTER 11 NETWORK CONNECTIONS.....	62
11.1 Networking constraints	63
11.2 NMEA 2000 / SeaTalk NG connection	64
11.3 NMEA 0183 connection	64
11.4 Network connection.....	65
Cable suppression ferrites	66
11.5 Internet connection.....	66
YachtSense Link network connection	67
Connecting to the internet using Wi-Fi.....	67
Wi-Fi settings — Axiom 2 displays	67
CHAPTER 12 TRANSDUCER CONNECTIONS - AXIOM 2 PRO RVM.....	69
12.1 RealVision transducer connection	70
RealVision transducer extension cables	70
12.2 SideVision, DownVision and CPT-S-Series transducer connection	71
DownVision™ transducer extension cable	71
12.3 CHIRP transducer connection.....	71
12.4 Traditional transducer connection.....	72
CHAPTER 13 TRANSDUCER CONNECTIONS - AXIOM 2 PRO S.....	73
13.1 CPT-S-Series transducer connection.....	74
CHAPTER 14 VIDEO CONNECTIONS	75
14.1 Analog video connection.....	76
14.2 HDMI Out connection	76
CHAPTER 15 AUDIO CONNECTIONS	78
15.1 Analog audio (RCA) output connections	79
CHAPTER 16 USB CONNECTIONS.....	80
16.1 Accessory connection	81
Fitting suppression ferrites	81
CHAPTER 17 GPS ANTENNA CONNECTION.....	82
17.1 GNSS (GPS) antenna connection	83
CHAPTER 18 MAINTAINING YOUR DISPLAY	84
18.1 Service and maintenance	85
Routine equipment checks	85
18.2 Product cleaning	85
Cleaning the display case.....	85
Cleaning the display screen.....	85
Cleaning the sun cover	85
CHAPTER 19 OPERATION.....	86
19.1 Operation instructions	87
CHAPTER 20 TROUBLESHOOTING	88
20.1 Troubleshooting	89
20.2 Miscellaneous troubleshooting	89
20.3 Power up troubleshooting	89
Performing a power-on reset on an Axiom 2 Pro display	90
20.4 GNSS (GPS) troubleshooting	91
20.5 Sonar troubleshooting	91
20.6 Wi-Fi troubleshooting	94
20.7 Touchscreen troubleshooting	97
CHAPTER 21 TECHNICAL SUPPORT	98

21.1 Raymarine technical support and servicing	99	Sonar channels	110
Viewing product information	100	Sonar range	110
Remote Support via AnyDesk	100	Traditional sonar range	111
21.2 Learning resources	101	23.8 S variant sonar specification	111
CHAPTER 22 AXIOM 2 PRO 9 TECHNICAL SPECIFICATION	102	23.9 Conformance/approvals	111
22.1 Power specification	103	23.10 Product markings	111
22.2 Environmental specification	103	CHAPTER 24 AXIOM 2 PRO 16 TECHNICAL SPECIFICATION	112
22.3 LCD specification	103	24.1 Power specification	113
22.4 Physical specification	103	24.2 Environmental specification	113
22.5 Internal GNSS (GPS) receiver specification	104	24.3 LCD specification	113
22.6 Connections specification	104	24.4 Physical specification	113
22.7 RVM variant sonar specification	105	24.5 Connections specification	114
Sonar channels	105	24.6 Internal GNSS (GPS) receiver specification	114
Sonar range	105	24.7 RVM variant sonar specification	115
Traditional sonar range	105	Sonar channels	115
22.8 S variant sonar specification	106	Sonar range	115
22.9 Conformance/approvals	106	Traditional sonar range	116
22.10 Product markings	106	24.8 S variant sonar specification	116
CHAPTER 23 AXIOM 2 PRO 12 TECHNICAL SPECIFICATION	107	24.9 Conformance/approvals	116
23.1 Power specification	108	24.10 Product markings	116
23.2 Environmental specification	108	CHAPTER 25 SPARES AND ACCESSORIES	117
23.3 LCD specification	108	25.1 Compatible transducers	118
23.4 Physical specification	108	25.2 Spares	118
23.5 Connections specification	109	25.3 Accessories	118
23.6 Internal GNSS (GPS) receiver specification	109	Transducer cables	119
23.7 RVM variant sonar specification	110	Legacy adapter plates	119
		25.4 RayNet to RayNet cables and connectors	120

25.5 RayNet to RJ45, and RJ45 (SeaTalk HS) adapter cables.....	122
25.6 SeaTalk NG cables and accessories	124
APPENDIX A REPLACING THE NAME PLAQUE	129
APPENDIX B REPLACING THE CARD READER DOOR	130
APPENDIX C ORIGINAL TRUNNION KIT MOUNTING — AXIOM® 2 PRO 16	131
APPENDIX D NMEA 2000 PGNS	133
APPENDIX E LEGACY ES AND GS SERIES COMPATIBILITY WITH AXIOM DISPLAYS.....	134
APPENDIX F ETHERNET (IPV4) NETWORKING OF RAYMARINE DEVICES WITH THIRD-PARTY PRODUCTS	135
APPENDIX G DOCUMENT CHANGE HISTORY	138

CHAPTER 1: IMPORTANT INFORMATION

Safety warnings



Warning: Product installation and operation

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



Warning: High voltage

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



Warning: Switch off power supply

Ensure that 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 to do so 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).

Product warnings



Warning: FCC Warning (Part 15.21)

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



Warning: Positive ground systems

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



Warning: Power supply voltage

Connecting this product to a voltage supply greater than the specified maximum rating may cause permanent damage to the unit. For the correct voltage, refer to the information label affixed to the product.



Warning: Marine-grade sealant

Only use marine-grade neutral cure polyurethane sealants. Do NOT use sealants containing acetate or silicone, which can cause damage to plastic parts.



Warning: Product grounding

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



Warning: Anti-virus protection

This product does not include protection against computer viruses. Before inserting any memory device, ensure it is free from computer viruses by scanning the device with a suitable anti-virus application with up to date virus definitions.

Caution: Product weight

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

Caution: Power supply protection

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

Caution: Sun covers

- Sun covers are used to protect the display screen against the damaging effects of ultraviolet (UV) light. If your product is supplied with a sun cover always ensure it is fitted when the product is not in use.
- To avoid potential loss of the sun cover, ensure that the sun cover is removed when travelling at high speed, whether in the water or when the vessel is being towed.
- To avoid potential screen damage, ensure that the rear surface of the sun cover and the display screen are clean and free from debris before placing the sun cover on the screen.

Caution: Service and maintenance

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

Regulatory notices

Regulatory e-Label

All the applicable regulatory and compliance standards for your product are listed in electronic format in a regulatory “e-label” document, which can be viewed on your product’s display.

To access the Regulatory e-Label for your product:

From the Homescreen: *[Settings > Getting Started > Regulatory Approvals]*

Declaration of Conformity

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

- Axiom® 2 Pro 9 S multifunction display, part number E70653
- Axiom® 2 Pro 9 RVM multifunction display, part number E70654
- Axiom® 2 Pro 12 S multifunction display, part number E70655
- Axiom® 2 Pro 12 RVM multifunction display, part number E70656
- Axiom® 2 Pro 16 S multifunction display, part number E70657
- Axiom® 2 Pro 16 RVM multifunction display, part number E70658

Region	Standard	Mark
UK	EMC Regulations 2016	UK CA
EU	Radio Equipment Directive 2014/53/EU	CE

The original Declaration of Conformity certificates may be obtained via the documentation page at www.bit.ly/axiom2-pro-docs

Network interfaces and services

Declaration of Network Interfaces and Services used by this product.

Devices connected to the product using a RayNet (Ethernet) cable or via Wi-Fi use the following network interfaces and services. These interfaces and services are required for proper product operation, and cannot be disabled.

Interfaces

- RayNet (Ethernet)
- Wi-Fi

Services

Services	RayNet (Ethernet)	Wi-Fi
Raymarine proprietary services	Yes	Yes
DHCP	Yes	Yes
HTTP	Yes	Yes
LLDP	Yes	Yes
NFS	Yes	Yes
RPC Bind	Yes	Yes
SSH	Yes	Yes
Telnet	Yes	Yes
Websocket	Yes	Yes
Protocol Buffers	Yes	Yes

Note:

When you connect a new MFD / chartplotter to the network, private information is synchronized with the newly-added device.

PSTI Compliance

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

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

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

RF exposure

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

Compliance Statement (Part 15.19)

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

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

FCC Interference Statement (Part 15.105 (b))

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

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio / TV technician for help.

Innovation, Science and Economic Development Canada (ISED)

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

Operation is subject to the following two conditions:

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

This Class B digital apparatus complies with Canadian ICES-003(B) / NMB-003(B).

Innovation, Sciences et Développement économique Canada (Français)

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

Son fonctionnement est soumis aux deux conditions suivantes:

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

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

Disclaimer

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

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

Third-party hardware, such as converters, adapters, routers, switches, Access Points etc., provided by third parties, may be made available directly to you by other companies or individuals under

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Electronic chart data

Raymarine does not warrant the accuracy of such information, and is not responsible for damages or injuries caused by errors in chart data or information utilized by the product and supplied by third parties. Use of electronic charts provided by third parties is subject to the supplier's End-User License Agreement (EULA).

Warranty policy and registration

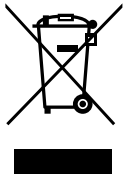
Visit the Raymarine website to **read the latest warranty policy**, and **register** your product's warranty online: www.bit.ly/rym-warranty

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

Product disposal

Dispose of this product in accordance with the WEEE Directive.

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



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

IMO and SOLAS

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

Technical accuracy

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

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CHAPTER 2: DOCUMENT INFORMATION

CHAPTER CONTENTS

- 2.1 Applicable products — page 16
- 2.2 Document information — page 16
- 2.3 Document conventions — page 16
- 2.4 Document illustrations — page 16
- 2.5 Product documentation — page 16
- 2.6 Operation instructions — page 17

2.1 Applicable products

This document is applicable to the following products:

- Axiom® 2 Pro 9 S multifunction display, part number E70653
- Axiom® 2 Pro 9 RVM multifunction display, part number E70654
- Axiom® 2 Pro 12 S multifunction display, part number E70655
- Axiom® 2 Pro 12 RVM multifunction display, part number E70656
- Axiom® 2 Pro 16 S multifunction display, part number E70657
- Axiom® 2 Pro 16 RVM multifunction display, part number E70658

2.2 Document information

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

The document includes information to help you:

- Plan your installation and ensure you have all the necessary equipment.
- Install and connect your product as part of a wider system of connected marine electronics.
- Troubleshoot problems and obtain technical support if required.

This and other Raymarine product documents are available to download in PDF format from www.bit.ly/rym-docs

2.3 Document conventions

The following conventions are used throughout this document.

Formatting of user interface menus and settings.

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

Examples:

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

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

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

- Touchscreen control — using your finger to select a menu option or item on the screen.
- Physical buttons — Highlighting an item using the navigational controls and confirming the selection by pressing the *[OK]* button.

Examples:

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

Procedures for navigating menu hierarchies.

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

Examples:

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

2.4 Document illustrations

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

All images are provided for illustration purposes only.

2.5 Product documentation

The following documentation is applicable to your product:

Applicable documents

- **87443** — Axiom® 2 Pro Installation Instructions (This document)
- **81406** — LightHouse™ 4 Operation Instructions
- **87429** — Axiom® 2 Pro 9 Mounting Template

- **87430** — Axiom® 2 Pro 12 Mounting Template
- **87431** — Axiom® 2 Pro 16 Mounting Template

Related documents

- **81367** — RMK-10 Remote Keypad Installation and Operation Instructions
- **87317** — RCR-SD/USB card reader Installation Instructions
- **87321** — Legacy MFD to Axiom Pro / Axiom 2 Pro adaptor plates installation instructions

These and other Raymarine product documents are available to download in PDF format from <https://bit.ly/rym-docs>

2.6 Operation instructions

For instructions on how to operate your product, refer to the separate *Operation Instructions* document.

Please check the website to ensure you have the latest documentation:

Document	Number	Link
<i>LightHouse 4 Operation Instructions</i>	81406	https://bit.ly/LH4-docs

Multifunction display software version

To ensure optimum performance and compatibility with external devices, your multifunction display must be using the latest software version.

Visit <https://bit.ly/rym-software> to download the latest software.

Software update considerations

Important:

- Axiom 2 Pro displays running LightHouse 4 **v4.3.54** MUST first be upgraded to **v4.4.70**, before future software releases can be installed (i.e. versions later than **v4.4.70**).
- Once upgraded to LightHouse 4 **v4.4.70** or later, Axiom 2 Pro displays **cannot** be downgraded to versions *earlier than v4.4.70*.

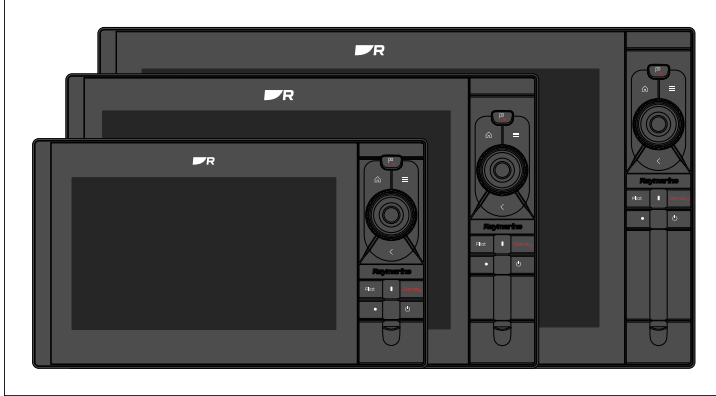
CHAPTER 3: PRODUCT AND SYSTEM OVERVIEW

CHAPTER CONTENTS

- [3.1 Product overview — page 19](#)
- [3.2 Typical systems — page 20](#)

3.1 Product overview

Axiom® 2 Pro is a range of HybridTouch™ multifunction displays.



Features include:

- Full range of navigation, sonar, radar, data, entertainment and other apps available via the embedded LightHouse operating system.
- Available in 9, 12 and 16 inch screen sizes.
- Hexacore (6-core) processor.
- 64 GByte internal solid state storage, for user data.
- HybridTouch™ technology (physical buttons and multi-point touchscreen).
- Bright Hydrotough™ full HD IPS displays with nano-coated, impact-resistant glass repel water, oil, and smudges. Wide viewing angles and accurate touch controls.
- Ambient light sensor for automatic brightness adjustment.
- HDMI output (via Micro HDMI adapter cable, A80723).
- Analog audio output (via RCA connectors on supplied power/video/audio cable connected to external third-party amplifier/entertainment system).
- Wireless digital audio output (via Bluetooth connection to external third-party Bluetooth speaker / sound system).
- Analog video input (via BNC connector on supplied power/video/audio cable).
- 2 x Gigabit ethernet (RayNet) connections.
- NMEA 2000 DeviceNet connection (or SeaTalk NG, via the supplied adapter cable).
- NMEA 0183 connection available, via optional NMEA 0183 to NMEA 2000 convertor (part number: A80721).
- RVM variants include an Internal RealVision™ Max 3D and 1 kW CHIRP sonar module. (Backwards compatible with existing RealVision™ 3D transducers). RealVision™ Max 3D technology provides improved ping rates and tighter beamwidths, resulting in sharper sonar images, detailed wrecks, and distinct fish targets.
- S variants include an Internal 100 W CHIRP conical beam sonar module.
- Dual slot internal MicroSD card reader.
- Configurable lower keypad (pilot controls or user-programmable favorite buttons).
- Optional external SD card reader connection, via RCR-SDUSB card reader (part number: A80440).
- Optional external GNSS (GPS) passive antenna connection.
- Waterproof to IPx6 and IPx7 (suitable for above or below decks installation).

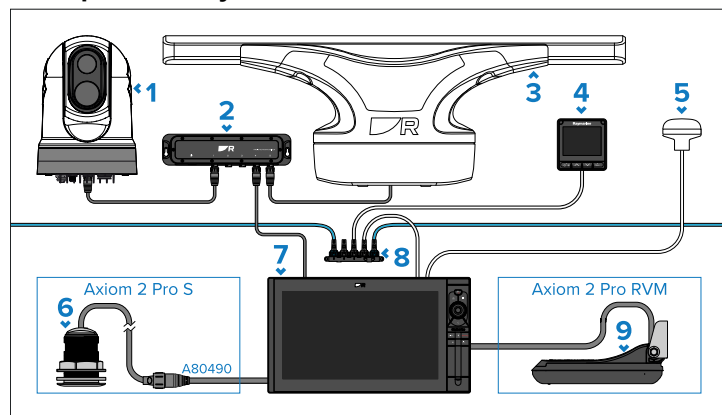
3.2 Typical systems

Examples of typical systems.

Note:

Power supply connections are not shown in the following example. For details on how to connect power to your devices, refer to the power connection details in the applicable device instructions.

Example basic system

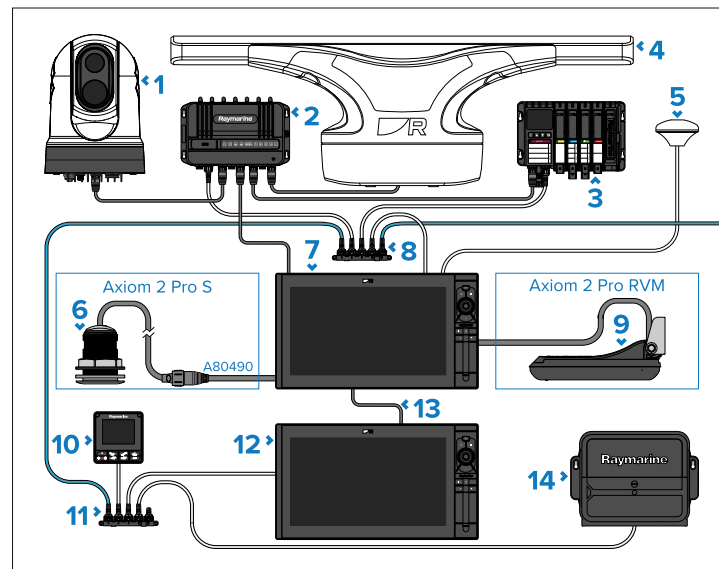


1. Raymarine thermal camera (M300 illustrated).
2. Raymarine network switch (RNS-5 illustrated).
3. Raymarine radar scanner (Cyclone™ illustrated).
4. SeaTalk NG® instrument (i70s illustrated).
5. External GNSS antenna (e.g.: GA200, part number A80589).
6. Example Raymarine CHIRP sonar transducer, compatible with the Axiom 2 Pro S variant (CPT-S illustrated, connected via A80490 adaptor cable).
7. Axiom® 2 Pro display.
8. SeaTalk NG® 5-way block (terminated SeaTalk NG® CAN bus network).
9. Example Raymarine RealVision™ Max sonar transducer, compatible with the Axiom® 2 Pro RVM variant (RVM-100 illustrated).

Note:

Power supply connections are not shown in the following example. For details on how to connect power to your devices, refer to the power connection details in the applicable device instructions.

Example expanded system



1. Raymarine thermal camera (M300 illustrated).
2. YachtSense™ Link Marine Router.
3. YachtSense™ Digital Control System (Master module assembly illustrated).
4. Raymarine radar scanner (Cyclone™ illustrated).
5. External GNSS antenna (e.g.: GA200, part number A80589).
6. Example Raymarine CHIRP sonar transducer, compatible with the Axiom 2 Pro S variant (CPT-S illustrated, connected via A80490 adaptor cable).
7. Axiom® 2 Pro display.
8. SeaTalk NG® 5-way block (terminated SeaTalk NG® CAN bus network).

9. Example Raymarine RealVision™ Max sonar transducer, compatible with the Axiom 2 Pro RVM variant (RVM-100 illustrated).
10. Autopilot controller (p70s illustrated).
11. SeaTalk NG® 5-way block (terminated SeaTalk NG® CAN bus network).
12. (Additional) Axiom® 2 Pro display.
13. RayNet network connection between Raymarine displays.
14. ACU Evolution autopilot (drive and EV sensor not shown).

Note:

Only the Datamaster MFD/Chartplotter requires a connection to the NMEA 2000/SeaTalk NG® network. Other MFDs/Chartplotters can be connected for data redundancy; however only the Datamaster MFD/Chartplotter will receive data from NMEA 2000/SeaTalk NG® devices. The Datamaster MFD/Chartplotter can bridge the data over the ethernet network to other MFDs/Chartplotters in the system.

CHAPTER 4: COMPATIBLE TRANSDUCERS

CHAPTER CONTENTS

- [4.1 Axiom 2 Pro RVM variant — compatible transducers — page 23](#)
- [4.2 Axiom 2 Pro S variant - compatible transducers — page 28](#)

4.1 Axiom 2 Pro RVM variant — compatible transducers

The following transducer types can be connected to the transducer connections on Axiom 2 Pro RVM variant MFDs:

RV/RVM connection:

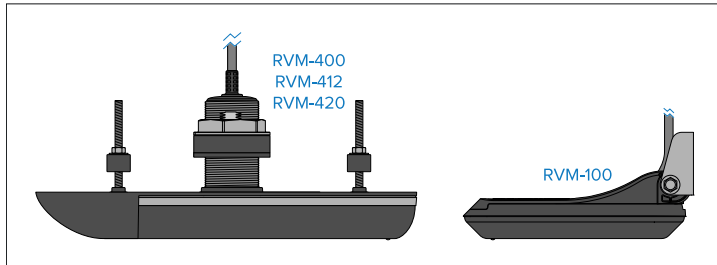
- [p.23 — RealVision Max transducers](#)
- [p.23 — RealVision transducers](#)
- [p.24 — SideVision transducers](#)
- [p.24 — DownVision transducers](#)
- [p.25 — CPT-S-Series conical beam transducers](#)

1 kW connection:

- [p.25 — CHIRP transducers](#)
- [p.27 — Traditional transducers](#)

RealVision Max 3D transducers

- RealVision Max transducers connect directly to the product's 25-pin transducer connector.
- RealVision Max split-pair transducers are supplied with a Y-cable (part number: A80478) and extension cable (part number: A80477) to connect both transducers to the product's 25-pin transducer connector.



Transom mount transducers

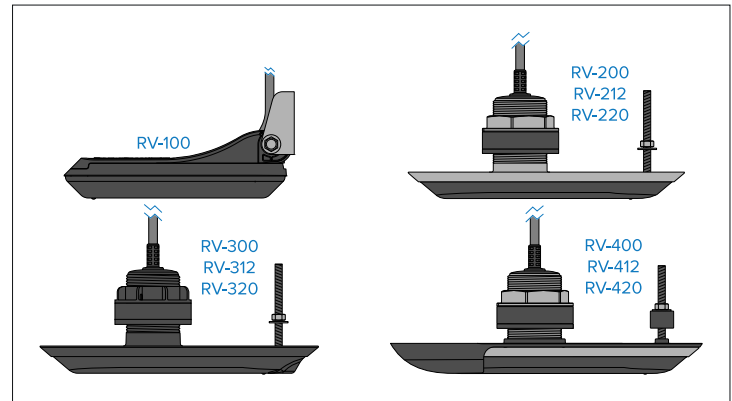
Part	Description
A80703	RVM-100 RealVision Max plastic transducer

Thru-hull mount transducers

Part	Description
A80704	RVM-400 RealVision Max stainless steel 0° transducer
T70543: A80705 A80706	RVM-412P / RVM-412S RealVision Max stainless steel 12° split-pair transducers
T70544: A80707 A80708	RVM-420P / RVM-420S RealVision Max stainless steel 20° split-pair transducers

RealVision 3D transducers

- RealVision transducers connect directly to the product's 25-pin transducer connector.
- RealVision split-pair transducers are supplied with a Y-cable (part number: A80478) and extension cable (part number: A80477) to connect both transducers to the product's 25-pin transducer connector.



Transom mount transducers

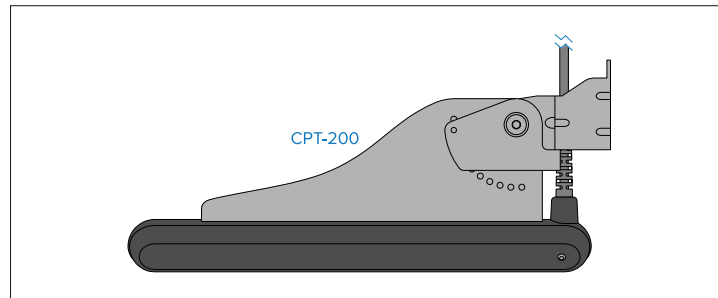
Part	Description
A80464	RV-100 RealVision plastic transducer

Thru-hull mount transducers

Part	Description
A80465	RV-200 RealVision bronze 0° transducer
T70318: A80466 A80467	RV-212P / RV-212S RealVision bronze 12° split-pair transducers
T70319: A80468 A80469	RV-220P / RV-220S RealVision bronze 20° split-pair transducers
A80470	RV-300 RealVision plastic 0° transducer
T70320: A80471 A80472	RV-312P / RV-312S RealVision plastic 12° split-pair transducers
T70321: A80473 A80474	RV-320P / RV-320S RealVision plastic 20° split-pair transducers
A80615	RV-400 RealVision stainless steel 0° transducer
T70450: A80616 A80617	RV-412P / RV-412S RealVision stainless steel 12° split-pair transducers
T70451: A80618 A80619	RV-420P / RV-420S RealVision stainless steel 20° split-pair transducers

SideVision transducers

SideVision transducers require an adapter cable (part number: A80490), and connect to the product's 25-pin transducer connector.

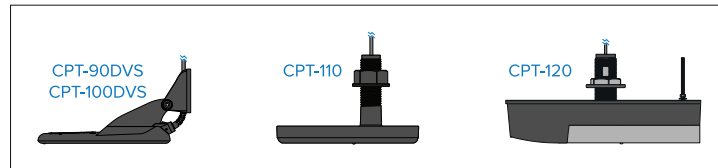


Transom mount transducers

Part	Description
A80281	CPT-200 SideVision stainless steel transducer

DownVision transducers

DownVision transducers require an adapter cable (part number: A80490), and connect to the product's 25-pin transducer connector.



Transom mount transducers

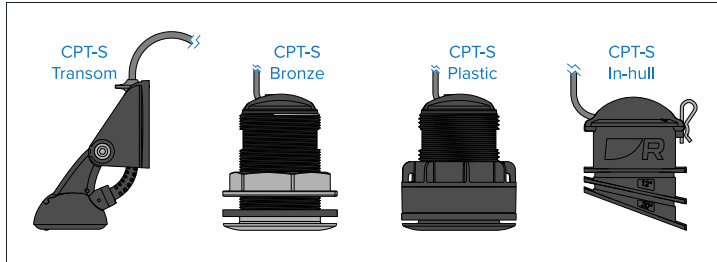
Part	Description
A80507	CPT-90DVS DownVision plastic transducer
A80351	CPT-100DVS DownVision plastic transducer

Thru-hull mount transducers

Part	Description
A80277	CPT-110 plastic transducer
A80350	CPT-120 bronze transducer

CPT-S-Series conical beam transducers

- CPT-S-Series transducers require an adapter cable (part number: A80490), and connect to the product's 25-pin transducer connector.
- CPT-S-Series transducers do **NOT** offer DownVision capabilities.



Transom mount transducers

Part	Description
E70342	CPT-S Transom plastic transducer

Thru-hull mount transducers

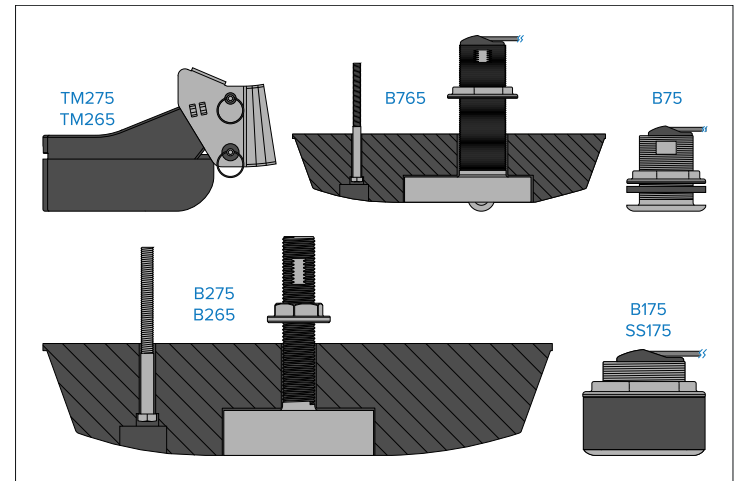
Part	Description
E70339	CPT-S Thru-Hull 0° Angled element plastic transducer
A80448	CPT-S Thru-Hull 12° Angled element plastic transducer
A80447	CPT-S Thru-Hull 20° Angled element plastic transducer
A80446	CPT-S Thru-Hull 0° Angled element bronze transducer
E70340	CPT-S Thru-Hull 12° Angled element bronze transducer
E70341	CPT-S Thru-Hull 20° Angled element bronze transducer

In-hull mount transducers

Part	Description
A80691	CPT-S In-Hull plastic transducer

CHIRP transducers

- CHIRP transducers connect directly to the product's 11-pin transducer connector.
- CHIRP split-pair transducers require a Y-cable (part number: A102146).
- B75 & B175 transducers require an operation cable (part number: A80328).



Transom mount transducers

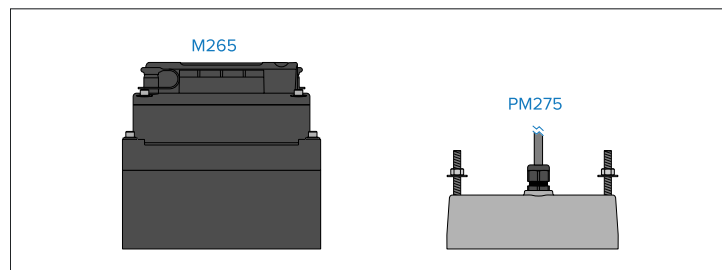
Part	Description
A80318	TM275LH-W plastic transducer
A80013	TM265LH plastic transducer
A80041	TM265LM plastic transducer

Thru-hull mount transducers

Part	Description
A80319	B175H-W 0° angled element bronze transducer
A80320	B175H-W 12° angled element bronze transducer
A80321	B175H-W 20° angled element bronze transducer
A80506	SS175H-W 20° angled element stainless steel transducer
A80322	B275LH-W 20° bronze thru-hull mount transducer
A80016	B75L 0° angled element bronze transducer
A80017	B75M 0° angled element bronze transducer
A80018	B75H 0° angled element bronze transducer
T70060	B75LH 0° angled element bronze split-pair transducers
T70061	B75LM 0° angled element bronze split-pair transducers
T70062	B75MH 0° angled element bronze split-pair transducers
A80033	B75L 12° angled element bronze transducer
A80034	B75M 12° angled element bronze transducer
A80035	B75H 12° angled element bronze transducer
T70063	B75LH 12° angled element bronze split pair transducers
T70064	B75LM 12° angled element bronze split pair transducers
T70065	B75MH 12° angled element bronze split pair transducers
A80036	B75M 20° angled element bronze transducer
A80037	B75H 20° angled element bronze transducer
T70068	B75MH 20° angled element bronze split pair transducers

Part	Description
A80042	B175L 0° angled element bronze transducer
A80043	B175M 0° angled element bronze transducer
A80044	B175H 0° angled element bronze transducer
T70069	B175LH 0° angled element bronze split-pair transducers
T70070	B175LM 0° angled element bronze split-pair transducers
T70071	B175MH 0° angled element bronze split-pair transducers
A80045	B175L 12° angled element bronze transducer
A80046	B175M 12° angled element bronze transducer
A80047	B175H 12° angled element bronze transducer
T70072	B175LH 12° angled element bronze split-pair transducers
T70073	B175LM 12° angled element bronze split-pair transducers
T70074	B175MH 12° angled element bronze split-pair transducers
A80048	B175L 20° angled element bronze transducer
A80049	B175M 20° angled element bronze transducer
A80050	B175H 20° angled element bronze transducer
T70075	B175LH 20° angled element bronze split-pair transducers
T70076	B175LM 20° angled element bronze split-pair transducers
T70077	B175MH 20° angled element bronze split-pair transducers
A80504	SS175L 20° angled element stainless steel transducer

Part	Description
A80505	SS175M 20° angled element stainless steel transducer
A80014	B765LH bronze transducer
A80015	B765LM bronze transducer
A80010	B265LH bronze transducer
A80011	B265LM bronze transducer



In-hull mount transducers

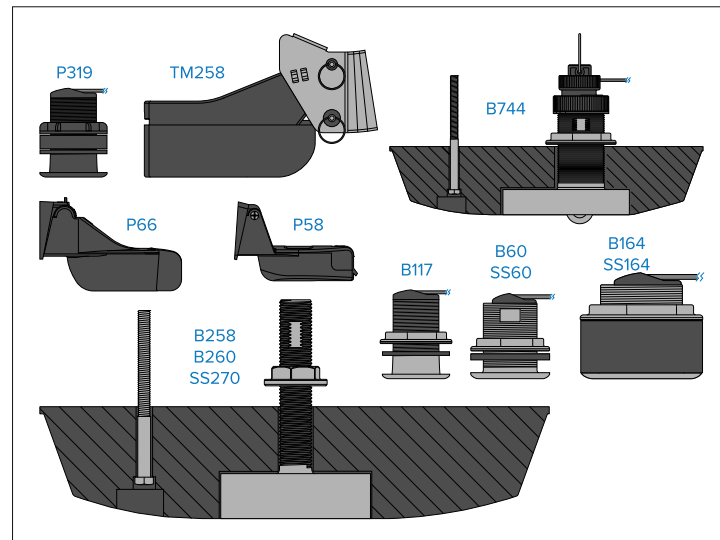
Part	Description
A80012	M265LH plastic transducer
A80038	M265LM plastic transducer

Pocket / keel mount transducers

Part	Description
A80325	PM275LH-W bronze transducer

Traditional transducers

Traditional transducers require an adapter cable (part number: A80496), and connect to the product's 11-pin transducer connector.



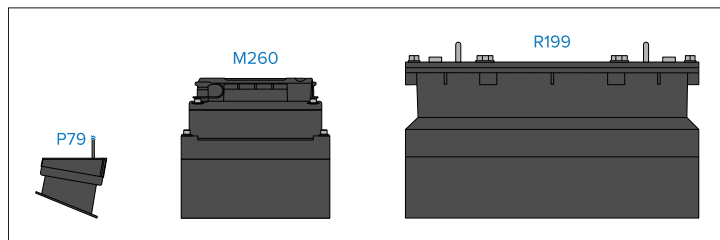
Transom mount transducers

Part	Description
E66084	TM258 plastic transducer
A80566	P58 plastic transducer
E66054	P66 plastic transducer

Thru-hull mount transducers

Part	Description
E66013	P319 plastic transducer
E66014	B117 bronze transducer
E66086	B60 12° angled element bronze transducer
E66085	B60 20° angled element bronze transducer

Part	Description
A80568	SS60 0° angled element stainless steel transducer
A80569	SS60 12° angled element stainless steel transducer
A80570	SS60 20° angled element stainless steel transducer
A102137	B164 0° angled element bronze transducer
A102112	B164 12° angled element bronze transducer
A102113	B164 20° angled element bronze transducer
A80451	SS164 0° angled element stainless steel transducer
A66098	SS164 12° angled element stainless steel transducer
A66099	SS164 20° angled element stainless steel transducer
A66091	B744V bronze transducer
A66092	B744VL bronze transducer
E66082	B258 bronze transducer
A102121	SS270W bronze transducer
E66079	B260 bronze transducer



In-hull mount transducers

Part	Description
E66008	P79 plastic transducer
A66089	M260 plastic transducer
E66076	R199 plastic transducer

4.2 Axiom 2 Pro S variant - compatible transducers

The following transducer types can be connected to the transducer connection on Axiom® 2 Pro S variant MFDs:

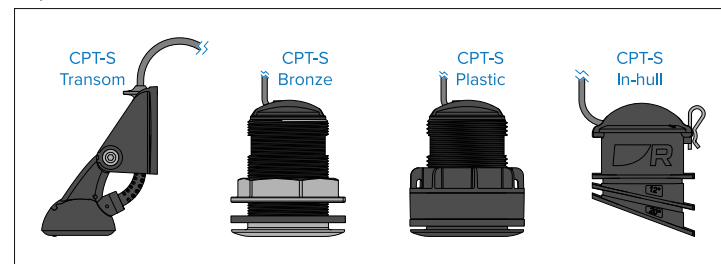
- [p.28 — CPT-S conical beam transducers](#)

Note:

You cannot connect RealVision 3D or RealVision Max 3D transducers to S variant Axiom 2 Pro MFDs.

CPT-S conical beam transducers

All transducer connections require the 25-pin to 9-pin transducer adapter cable accessory (part number: A80490) and connect to the transducer connector. CPT-S transducers do **NOT** offer DownVision™ capabilities.



Transom mount transducers

Part number	Transducer description
E70342	CPT-S plastic transducer

Thru-hull mount transducers

Part number	Transducer description
E70339	CPT-S 0° Angled element plastic transducer
A80448	CPT-S 12° Angled element plastic transducer
A80447	CPT-S 20° Angled element plastic transducer

Part number	Transducer description
A80446	CPT-S 0° Angled element bronze transducer
E70340	CPT-S 12° Angled element bronze transducer
E70341	CPT-S 20° Angled element bronze transducer

In-hull mount transducers

Part number	Transducer description
A80691	CPT-S plastic transducer

CHAPTER 5: PARTS SUPPLIED

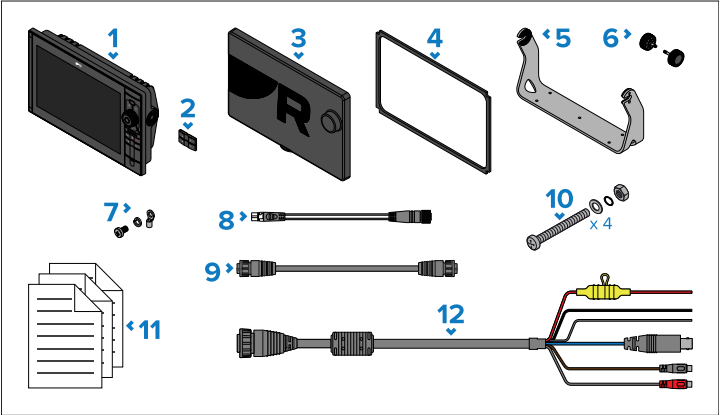
CHAPTER CONTENTS

- 5.1 Parts supplied - Axiom 2 Pro 9 / 12 — page 31
- 5.2 Parts supplied - Axiom 2 Pro 16 — page 32

5.1 Parts supplied - Axiom 2 Pro 9 / 12

The following parts are supplied in the box.

Unpack your product carefully to prevent damage or loss of parts. Check the box contents against the list below. Retain the packaging and documentation for future reference.



Description	
1	Axiom® 2 Pro display
2	User-configurable lower keypad
3	Suncover
4	Mounting gasket
5	*Trunnion mounting bracket
6	Trunnion knobs
7	M3 x 5 screw, M3 spring washer and M3 crimp terminal (for optional grounding connection)
8	SeaTalk NG to DeviceNet adaptor cable, 1 m (3.3 ft)
9	RayNet network cable, 2 m (6.6 ft)
10	Mounting fixings x 4 (including M4 x 40 bolts, M4 plain washers, M4 nuts)

Description	
11	Documentation
12	Power/video/audio cable, 1.5 m (4.92 ft)

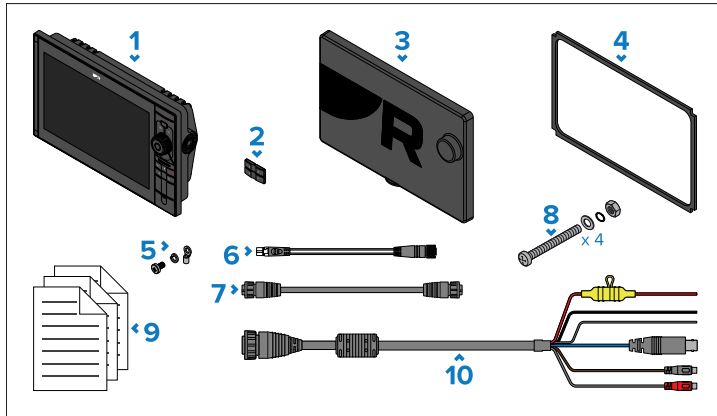
Note:

*Fixings to secure the trunnion bracket to a mounting surface are not provided. 5 x self-tapping screws are required. The screws should be suitable for the mounting surface material and the 5.75 mm (0.23 in) diameter mounting holes in the trunnion bracket.

5.2 Parts supplied - Axiom 2 Pro 16

The following parts are supplied in the box.

Unpack your product carefully to prevent damage or loss of parts. Check the box contents against the list below. Retain the packaging and documentation for future reference.



Description	
1	Axiom® 2 Pro display
2	User-configurable lower keypad
3	Suncover
4	Mounting gasket
5	M3 x 5 screw, M3 spring washer and M3 crimp terminal (for optional grounding connection)
6	SeaTalk NG to DeviceNet adaptor cable, 1 m (3.3 ft)
7	RayNet network cable, 2 m (6.6 ft)
8	Mounting fixings x 4 (including M4 x 40 bolts, M4 plain washers, M4 nuts)
9	Documentation
10	Power/video/audio cable, 1.5 m (4.92 ft)

CHAPTER 6: PRODUCT DIMENSIONS

CHAPTER CONTENTS

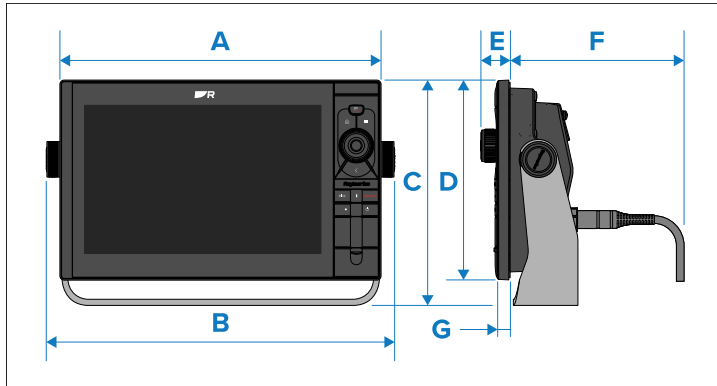
- [6.1 Axiom 2 Pro dimensions — page 34](#)

6.1 Axiom 2 Pro dimensions

Display dimensions and cable allowances. Dimensions provided are approximations only; actual dimensions required may differ.

Note:

A trunnion bracket is included with the Axiom® 2 Pro 9 and Axiom® 2 Pro 12 displays. For the Axiom® 2 Pro 16 the trunnion bracket is a separate accessory (part number: A80722).



	Axiom 2 Pro 9	Axiom 2 Pro 12	Axiom 2 Pro 16
A	299.30 mm (11.78 in)	358.10 mm (14.10 in)	452.10 mm (17.80 in)
B	329.50 mm (12.97 in)	388.50 mm (15.3 in)	482.50 mm (19.00 in)
C	186.2 mm (7.33 in)	246.10 mm 9.69 in)	281.20 mm (11.10 in)
D	173.80 mm (6.84 in)	222.80 mm (8.77 in)	258.00 mm (10.16 in)
E	34.66 mm (1.36 in)	34.66 mm (1.36 in)	34.66 mm (1.36 in)

	Axiom 2 Pro 9	Axiom 2 Pro 12	Axiom 2 Pro 16
F	86.01 mm (3.39 in) to 201.40 mm (7.93 in) See 'Dimension F' table below for examples.	85.86 mm 3.38 in) to 201.30 mm (7.93 in) See 'Dimension F' table below for examples.	91.60 mm (3.61 in) to 208.50 mm (8.21 in) See 'Dimension F' table below for examples.
G	14.25 mm (0.56 in)	14.25 mm (0.56 in)	14.25 mm (0.56 in)

Note:

- *Dimension F* is the depth required for surface mounting the display, when allowing for the space needed by connectors and their cable bend requirements. This depth requirement is variable, based on the cable connections required and the types of cable used in the installation.
- The minimum possible depth requirement reflects an installation with **only** a right-angled power cable connected.
- The maximum depth requirement reflects an installation with a straight RealVision transducer cable connected.

Dimension F (cable bend allowances) — examples

	Axiom 2 Pro 9	Axiom 2 Pro 12	Axiom 2 Pro 16
<i>Straight RealVision transducer cable connected</i>	201.40 mm (7.93 in)	201.30 mm (7.93 in)	208.5 0 mm (8.21 in)
<i>Right-angled RealVision transducer cable connected</i>	86.01 mm (3.39 in)	85.86 mm 3.38 in)	91.60 mm (3.61 in)
<i>Axiom 25-pin to CPT-S 9-pin adaptor cable connected</i>	201.40 mm (7.93 in)	201.30 mm (7.93 in)	208.5 0 mm (8.21 in)
<i>Straight power cable connected</i>	169.46 mm (6.67 in)	169.32 mm (6.67 in)	175.06 mm (6.89 in)
<i>Right-angled power cable connected</i>	97.49 mm (3.84 in)	97.35 mm (3.83 in)	103.09 mm (4.06 in)

CHAPTER 7: LOCATION REQUIREMENTS

CHAPTER CONTENTS

- [7.1 Warnings and cautions — page 36](#)
- [7.2 General location requirements — page 36](#)
- [7.3 GNSS \(GPS\) location requirements — page 36](#)
- [7.4 Touchscreen location requirements — page 38](#)
- [7.5 Wireless location requirements for optimum performance — page 38](#)
- [7.6 Viewing angle considerations — page 39](#)
- [7.7 EMC installation guidelines — page 39](#)

7.1 Warnings and cautions

Important:

Before proceeding, ensure that you have read and understood the warnings and cautions provided in the following section of this document:

- [p.10 — Important information](#)



Warning: Potential ignition source

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

7.2 General location requirements

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

Factors for consideration:

- **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.

Caution: Product weight

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

Rear access requirements

Access to the rear of the display and mounting surface is required to surface and flush mount the display.

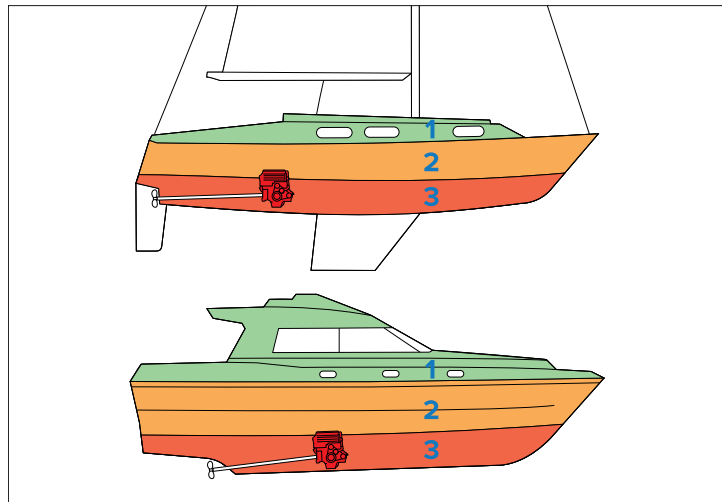
Ensure there is sufficient access and space behind the mounting surface to attach and tighten the fixings and also to connect the cables.

7.3 GNSS (GPS) location requirements

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

Mounting location

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



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

Vessel construction

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

Prevailing conditions

The weather and location of the vessel can affect performance. Typically calm clear conditions provide a more accurate position

fix. Vessels at extreme northerly or southerly latitudes may also receive a weaker signal. An antenna mounted below decks will be more susceptible to performance issues related to the prevailing conditions.

7.4 Touchscreen location requirements

Note:

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

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

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

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

7.5 Wireless location requirements for optimum performance

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

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

Vessel construction and materials

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

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

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

In installations with conductive materials, if available, mount the wireless product using an accessory pole mount or deck mounting kit. A clearance of at least 10 cm (3.9 in) is required to minimize the ground effect from conductive materials. This applies to transmitters as well as displays. If moving the product fixes the problem, consider cutting an antenna clearance hole behind the unit (once the product position and mounting have been finalized).

Wireless performance can also be degraded in locations where the wireless signal passes through a bulkhead containing power cables. Crew members (especially when wet) can also be obstructive to wireless signals, if their bodies pass through the signal area between wireless sensor and any associated displays.

Checking and optimizing signal strength

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

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

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

For best results, the wireless product should have a clear, direct line-of-sight to the product it will be connected to. Any physical obstructions can degrade or even block the wireless signal. Some wireless products feature a signal strength indicator to assist in the process of determining the location with the best wireless performance. Choose the location with the highest and most consistently strong direct signal reading, during a 5 minute monitoring period. Try alternative locations for the transmitter to maximize the signal strength to the displays; e.g. try locations below a hatch or skylight or near to a window. A small change in product position can result in a significant change in the signal strength.

Note:

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

Interference and other equipment

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

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

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

Software updates

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

7.6 Viewing angle considerations

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

For viewing angles for your product refer to the *Technical specification*.

7.7 EMC installation guidelines

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

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

Note:

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

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

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

- Cables are not cut or extended, unless doing so is detailed in the installation manual.

Note:

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

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

RF interference

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

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

To minimize interference from such equipment:

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

Compass safe distance

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

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

CHAPTER 8: INSTALLATION

CHAPTER CONTENTS

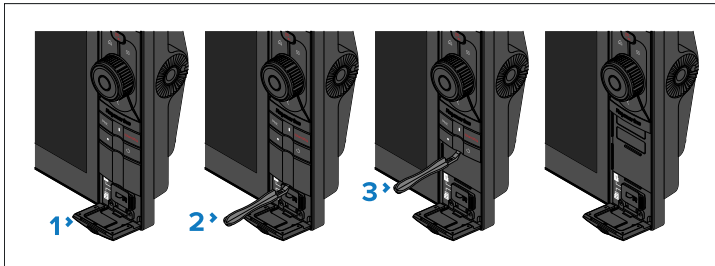
- 8.1 Replacing the lower keypad — page 42
- 8.2 Mounting options — page 42
- 8.3 Trunnion mounting — Axiom® 2 Pro 9 and Axiom® 2 Pro 12 — page 43
- 8.4 Trunnion mounting — Axiom® 2 Pro 16 — page 43
- 8.5 Flush mounting — page 46
- 8.6 Surface mounting — page 49
- 8.7 Protective film — page 51

8.1 Replacing the lower keypad

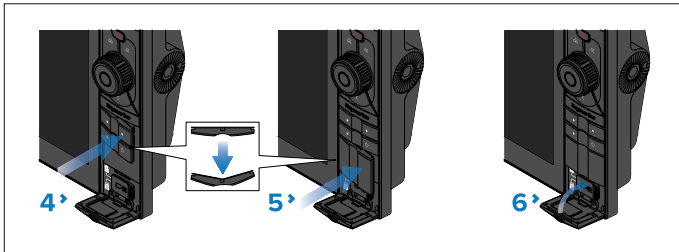
The display is supplied with the **pilot control** lower keypad fitted. If you will not be using the display as an autopilot controller, you can swap the pilot control keypad with the **user-configurable** lower keypad supplied with the display.

Important:

Do NOT use metallic or sharp objects to remove the keypad or infill piece, as this could damage the keypad and/or display.



1. Open the card reader door.
2. Axiom 2 Pro 12 and Axiom 2 Pro 16 only — Using a plastic pry tool, lever the infill piece located below the lower keypad against the small plastic protrusion to release it from the display.
3. Using a plastic pry tool, lever the bottom of the keypad against the small plastic protrusion to release the keypad from the display.

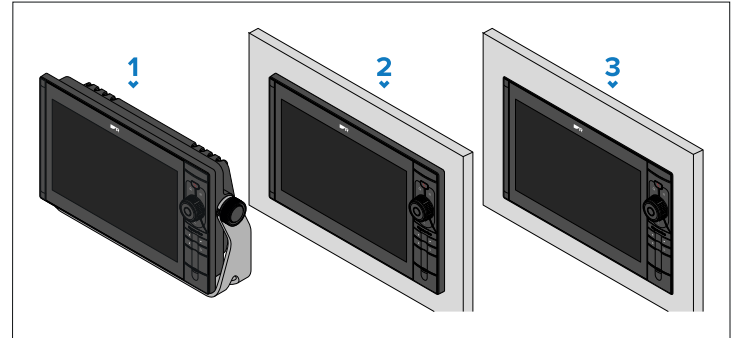


4. Insert one edge of the replacement keypad and then bend the keypad slightly in the middle to allow the other edge to be inserted into the opposite side.

5. Axiom 2 Pro 12 and Axiom 2 Pro 16 only — Insert one edge of the infill piece and then bend the infill piece slightly in the middle to allow the other edge to be inserted into the opposite side.
6. Close the card reader door.

8.2 Mounting options

Axiom® 2 Pro displays can be surface, flush, or bracket mounted.



1. Trunnion bracket mounting (used for mounting upright on a surface, or can be used for mounting overhead). For installation details, refer to: [p.43 — Trunnion mounting](#)
2. Surface mounting (when surface mounted, the display bezel will protrude from the mounting surface). For installation details, refer to: [p.49 — Surface mounting](#)
3. Flush mounting (when flush mounted, the front glass of the display will sit flush with the mounting surface). For installation details, refer to: [p.46 — Flush mounting](#)

Legacy MFD adaptor plates are also available to enable you to easily swap out older displays for new Axiom® 2 Pro displays. For a list of available adaptors, refer to: [p.119 — Legacy adaptor plates](#)

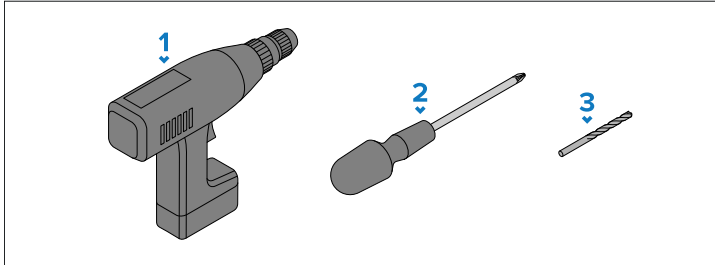
Note:

Replacing a trunnion-mounted or surface-mounted Axiom® Pro display with a new Axiom® 2 Pro display, is a straight swap (**with the exception of the power cable**), with no hole drilling or cutting required.

8.3 Trunnion mounting — Axiom® 2 Pro 9 and Axiom® 2 Pro 12

Tools required (trunnion mount installations)

The following tools are recommended for mounting using a trunnion bracket:



1. Power drill.
2. Screwdriver (appropriate for your fixings).
3. Drill bit (suitable for the material of the mounting surface and the 5.75 mm (0.23 in) diameter mounting holes in the trunnion bracket).

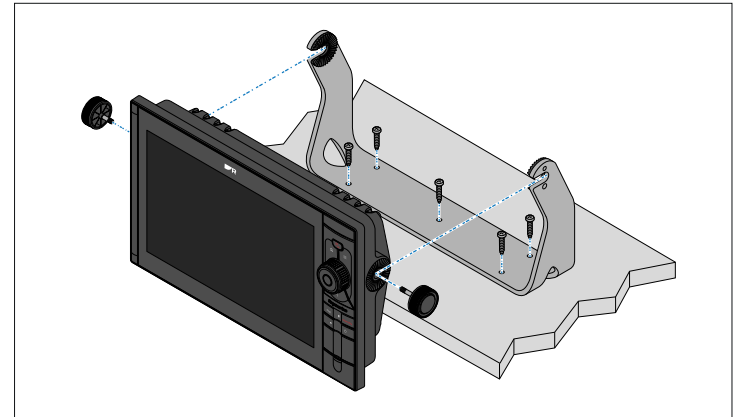
Trunnion bracket mounting

Axiom® 2 Pro displays can be mounted on a trunnion bracket. Axiom® 2 Pro 9 and Axiom® 2 Pro 12 displays are supplied with a trunnion bracket. An optional trunnion bracket kit is available for the Axiom® 2 Pro 16 (part number: A80722).

Note:

Fixings to secure the trunnion bracket to a mounting surface are not provided. 5 x self tapping screws are required. The screws should be suitable for the mounting surface material and the 5.75 mm (0.23 in) diameter mounting holes in the trunnion bracket.

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



1. Check the underside of the mounting surface to ensure no damage will be caused by drilling.
2. Check the thickness of the mounting surface to ensure it is sufficient to support the display.
3. Using the Trunnion bracket as a template, mark and drill the 5 x pilot holes on the mounting surface.
4. Secure the trunnion bracket to the mounting surface using your self tapping screws and an appropriate screwdriver.
5. Insert the trunnion knobs into the sides of the display and tighten 3 to 4 turns.
6. Slide the display into the trunnion bracket so that the trunnion knob threads are slotted into the recesses in the trunnion bracket.
7. Secure the display by fully tightening the trunnion knobs, ensuring that the ratchet teeth are correctly engaged.
The knobs should be tightened by hand, sufficiently to prevent the display from moving whilst your vessel is underway.
8. Route and connect necessary cables.

8.4 Trunnion mounting — Axiom® 2 Pro 16

Axiom 2 Pro 16 trunnion kit modification

The Axiom® 2 Pro 16 trunnion kit has been modified to improve installation efficiency.

The following improvements have been made:

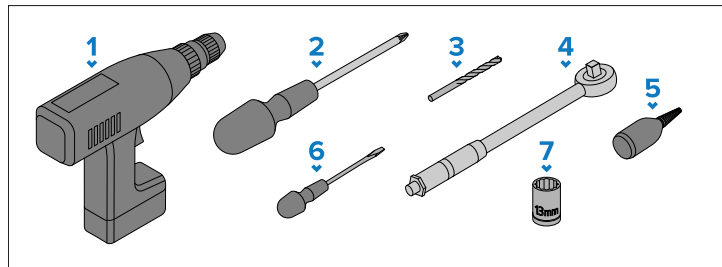
- The ratchet plates have been modified to be full circle plates which improves the security of the display in the trunnion bracket.
- The spacer piece now comes with the ratchet plate already attached to the spacer, reducing the steps required for assembly.
- The washer is no longer required, further reducing the assembly steps.

Note:

- If your trunnion kit includes full circle ratchet plates that are already attached to the spacer, use the instructions in this section for assembly and installation.
- If your trunnion kit includes 'C' shaped ratchet plates which are separate from the spacer, for assembly and installation instructions please refer to: [p.131 — Original trunnion kit mounting — Axiom® 2 Pro 16](#)

Tools required (trunnion mount installations)

The following tools are recommended for mounting using a trunnion bracket:



1. Power drill.
2. Screwdriver (appropriate for your fixings).
3. Drill bit (suitable for the mounting surface material and the 5.75 mm (0.23 in) diameter holes in the trunnion bracket).
4. Torque wrench.
5. Loctite® 243, or equivalent threadlocker.
6. Small flat blade screwdriver (or plastic pry tool).
7. 13 mm (1/2") socket.

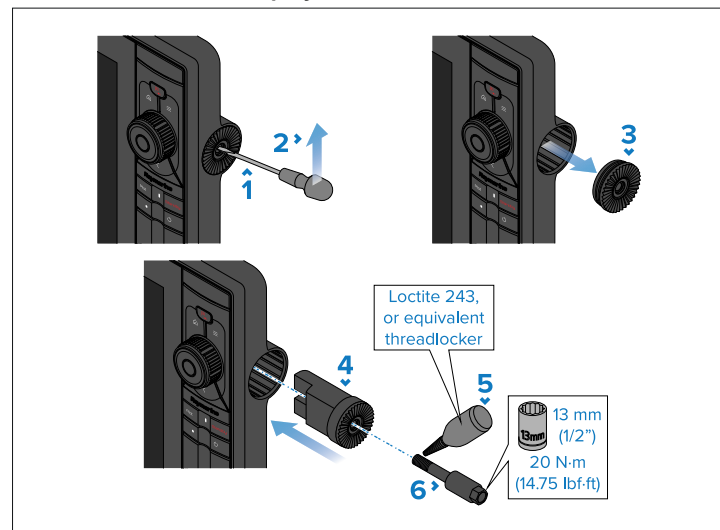
Display trunnion mounting preparation

Axiom® 2 Pro 16 displays are intended to be either surface or flush mounted. An optional Trunnion bracket kit (part number: A80722) is available if trunnion mounting is desired. For trunnion mounting, the display needs to be prepared using the parts supplied in the A80722 kit.

Important:

The display is supplied with rubber trunnion bungs fitted, which must be removed before the display is trunnion mounted. Do NOT attempt to trunnion mount the display using the trunnion bungs.

To prepare the display for trunnion mounting, follow the steps below, **for both sides of the display:**



1. Insert a small flat blade screwdriver or plastic pry tool into the center hole of the Trunnion bung.
2. Lever the tool up or down to release the Trunnion bung.
3. Remove the Trunnion bung.
4. Insert the Spacer piece into the display with the flat edge facing forward.
5. Apply Loctite® 243 (or equivalent threadlocker) to the thread of the M8 standoff bolt.

6. Insert the M8 standoff bolt and tighten to 20 N·m (14.75 lbf·ft).

Note:

Overtightening may cause damage.

The display can now be trunnion mounted.

Trunnion bracket mounting

Once the display has been prepared using the instructions and parts supplied, it can be mounted using the trunnion bracket as follows:

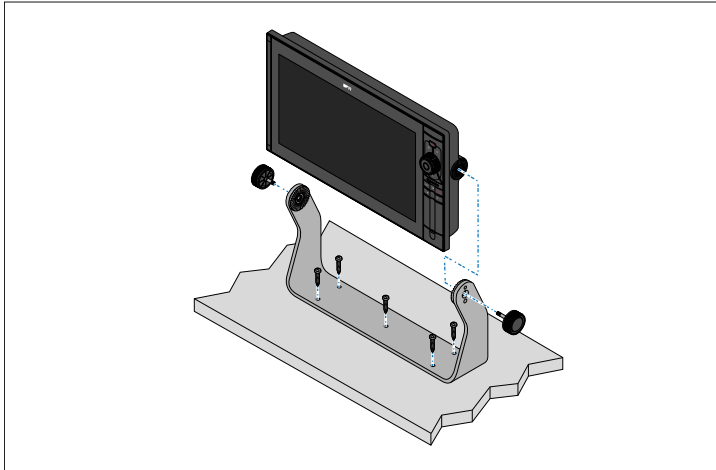
Note:

Fixings to secure the trunnion bracket to a mounting surface are not provided. 5 x self-tapping screws are required. The screws should be suitable for the mounting surface material and the 5.75 mm (0.23 in) diameter mounting holes in the trunnion bracket.

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

Important:

2 person installation is required.



1. Check the underside of the mounting surface to ensure no damage will be caused by drilling.
2. Check the thickness of the mounting surface to ensure it is sufficient to support the display.

3. Using the Trunnion bracket as a template, mark and drill the 5 x pilot holes on the mounting surface.
4. Secure the Trunnion bracket to the mounting surface using your self-tapping screws and an appropriate screwdriver.
5. One person should align the trunnion holes in the side of the display with the holes in the trunnion bracket.
6. The second person should secure the display to the trunnion bracket by inserting and tightening the trunnion knobs, ensuring that the ratchet teeth are correctly engaged.

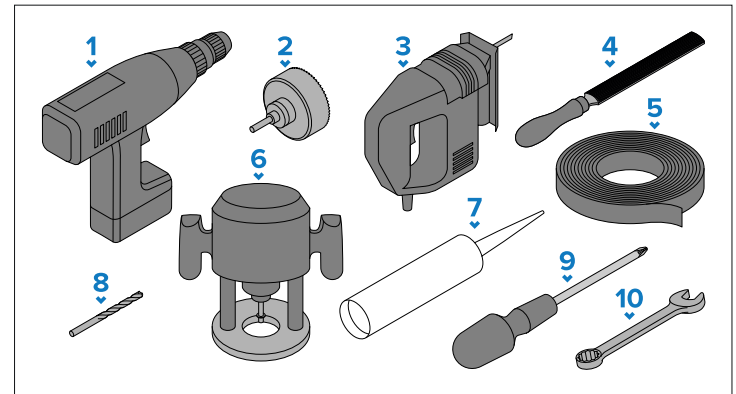
The knobs should be tightened by hand, sufficiently to prevent the display from moving whilst your vessel is underway.

7. Route and connect necessary cables.

8.5 Flush mounting

Tools required (flush mount installations)

The following tools are recommended for flush mount installations:



1. Power drill.
2. Hole cutter (appropriate size for corner diameters of the **Cutout** line identified on the supplied mounting template):
 - 33.00 mm (1.30 in) — Axiom® 2 Pro 9.
 - 37.00 mm (1.47 in) — Axiom® 2 Pro 12 / Axiom® 2 Pro 16.
3. Jigsaw.
4. Half round file (or sandpaper).

5. Masking/self adhesive tape.
6. Hand router with a router bit an appropriate size for the 9.00 mm (0.35 in) corner diameter required for the **flush mount rebate**.
7. Marine grade sealant.
8. Drill bit 3.7 mm ($\frac{5}{32}$ ") for fixing holes.
9. Pozi-drive screwdriver.
10. 7 mm wrench or small adjustable wrench.

Rear access requirements

Access to the rear of the display and mounting surface is required to surface and flush mount the display.

Ensure there is sufficient access and space behind the mounting surface to attach and tighten the fixings and also to connect the cables.

Preparing the mounting surface — flush mounting

When the display is flush mounted, the glass/bezel will be flush with the mounting surface. Flush mounting requires the same cutout hole as surface mounting, plus an additional rebate around the edge of the cutout to recess the display fully in the mounting surface.

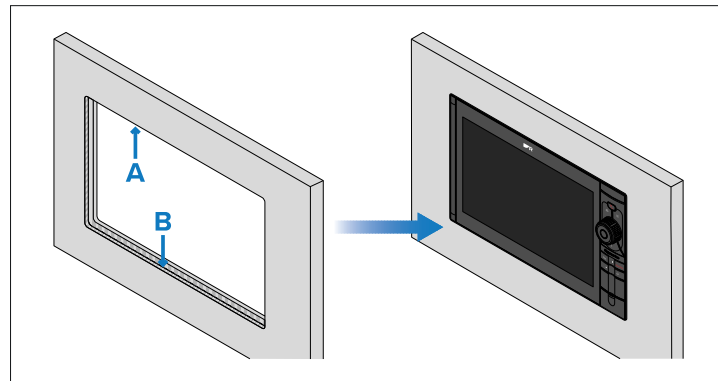
Note:

The following procedure is for preparing the mounting surface for flush mount installations. For surface mounting details refer to: [p.50 — Preparing the mounting surface — surface mounting](#)

Note:

Before preparing the mounting surface, ensure that:

- your selected location meets the location requirements. For details refer to: [p.35 — Location requirements](#)
- you have identified cable connections and the route that the cables will take.



- **A** — Cutout (when flush mounting, the cutout will be the same dimensions as the cutout used for surface mounting).
- **B** — Flush mounting requires an extra rebate to recess the display fully in the mounting surface.

Important:

When flush mounting, the fixings go through holes drilled in the rebated, and therefore thinnest, part of the mounting surface. **Before preparing the mounting surface, ensure that sufficient surface thickness will remain (once rebated) to take the weight of the display.** The final rebated area must be **at least** as thick as the display's bezel (15.00 mm (0.59 in)), in order to ensure that the display sits entirely flush with the mounting surface. Due to these requirements, not all mounting surface types and materials are suitable for flush mounting the display. *It is the installer's responsibility to ensure that the mounting surface is suitable for flush mounting.* **If the mounting surface is not suitable, the display must be surface or trunnion mounted instead.**

1. Mark the **Cutout** line on the mounting surface, as identified on the supplied mounting template
2. Mark on the mounting surface the locations for the **4 holes for fixing screws**, as identified on the supplied mounting template.
3. Mark on the mounting surface the **Flush mount rebate** line, as identified on the supplied mounting template.
4. Use a drill and an appropriate size drill bit or hole cutter to cut out the corners of the **Cutout** line.

The corner diameter for each display is:

- 33.00 mm (1.30 in) — Axiom® 2 Pro 9.
 - 37.00 mm (1.46 in) — Axiom® 2 Pro 12.
 - 37.00 mm (1.46 in) — Axiom® 2 Pro 16.
5. Use a jigsaw or similar cutting tool to cut out the remainder of the **Cutout** area.
 6. Drill the 4 fixings holes at the marked location using a 3.7 mm (5/32") drill bit.
 7. Use a router hand tool to recess the marked **Flush mount rebate** area, to a depth of 15.00 mm (0.59 in).
 8. Carefully (and temporarily) fit the display to the cutout area, to check for a good fit. **Do not use any fixings at this time.** If the fit is very tight, it may be necessary to remove the display and file the edges of the cutout to achieve a better fit, using a half round file and/or sandpaper. Alternatively, if the fit is loose and there is a visible gap between the display's outer bezel and the cutout, this will need to be filled with marine-grade sealant or suitable packing material to fill the gap. *This should only be done once the display has been secured to the surface using the fixings, as described in the next mounting procedure.*

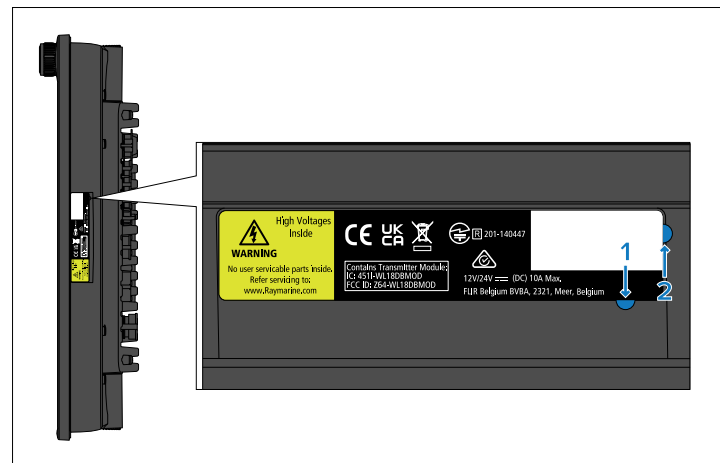
Breather hole

The chartplotter has a breather hole located on the bottom of the unit next to the product label.

Important:

When the chartplotter is being surface or flush mounted the breather hole must not become blocked by sealant or other materials used to seal around the edge of the chartplotter.

Breather hole locations



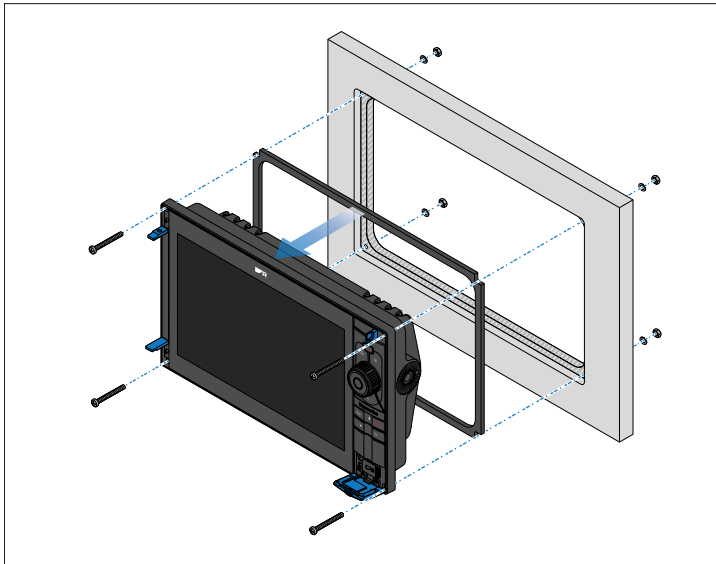
1. Axiom Pro 16 / Axiom 2 Pro 16 breather hole location.
2. Axiom Pro 9 and 12 / Axiom 2 Pro 9 and 12 breather hole location.

Flush mounting

Follow the steps below to flush mount the display.

Important:

- The supplied gasket provides a seal between the display and a suitably flat and rigid 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/or has a rough surface finish.
- In above decks installations, marine-grade sealant should always be used to seal the gap between the edge of the mounting surface and the edge of the display.
- Take care not to block the breather hole with sealant. The breather hole is located on the bottom of the display, next to the product label.

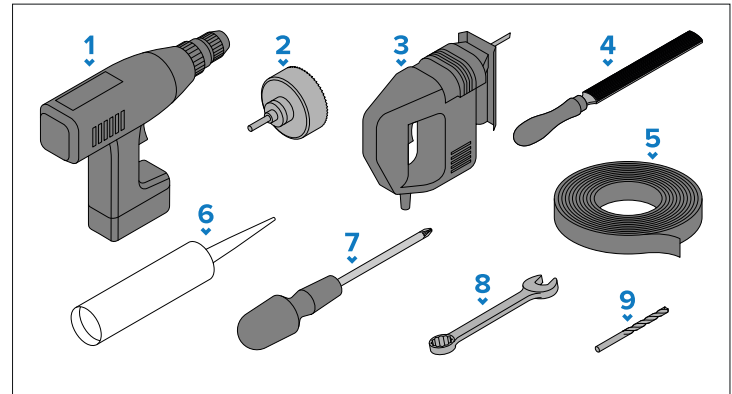


1. Ensure you have followed the instructions for preparing the mounting surface for flush mounting: [p.47 — Preparing the mounting surface — flush mounting](#)
2. Route the relevant cables to the area behind the mounting surface cutout.
This may be difficult or not possible once the display has been mounted.
3. Remove the backing from the supplied gasket and place the sticky side of the gasket onto the flange on the rear of the display. Press firmly onto the flange.
4. Connect the relevant cables to the rear of the display.
5. Slide the display into the cutout area.
6. Pull back the 3 corner bungs and open the card reader door.
7. Insert the fixing bolts, attach the washers and nuts from the rear, and then tighten.
8. Close the 3 corner bungs and the card reader door.

8.6 Surface mounting

Tools required (surface mount installations)

The following tools are recommended for surface mount installations:



1. Power drill.
2. Hole cutter (appropriate size for corner diameters of the **Cutout** line identified on the supplied mounting template):
 - 33.00 mm (1.30 in) — Axiom® 2 Pro 9.
 - 37.00 mm (1.47 in) — Axiom® 2 Pro 12 / Axiom® 2 Pro 16.
3. Jigsaw.
4. Half round file (or sandpaper).
5. Masking/self adhesive tape.
6. Marine grade sealant.
7. Pozi-drive screwdriver.
8. 7 mm wrench or small adjustable wrench.
9. Drill bit 3.7 mm ($\frac{5}{32}$ ") for fixing holes.

Rear access requirements

Access to the rear of the display and mounting surface is required to surface and flush mount the display.

Ensure there is sufficient access and space behind the mounting surface to attach and tighten the fixings and also to connect the cables.

Preparing the mounting surface — surface mounting

Surface mounting requires one cutout hole. When the display is surface mounted, the glass/bezel will protrude from the mounting surface.

Note:

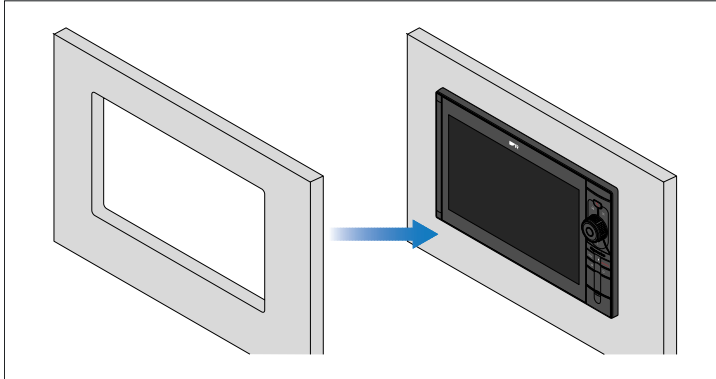
The following procedure is for preparing the mounting surface for surface mount installations. For flush mounting details, refer to:

[p.46 — Preparing the mounting surface — flush mounting](#)

Note:

Before preparing the mounting surface, ensure that:

- your selected location meets the location requirements. For details refer to: [p.35 — Location requirements](#)
- you have identified cable connections and the route that the cables will take.



1. On the mounting surface, mark the **Cutout** line identified on the supplied mounting template.
2. On the mounting surface, mark the 4 **fixing screw hole** locations identified on the supplied mounting template.
3. Use a drill and an appropriate size drill bit or hole cutter to cut out the corners of the **Cutout** line.

The corner diameters for the displays are:

- 33.00 mm (1.30 in) — Axiom® 2 Pro 9.
- 37.00 mm (1.46 in) — Axiom® 2 Pro 12.
- 37.00 mm (1.46 in) — Axiom® 2 Pro 16.

4. Use a jigsaw or similar cutting tool to cut out the remainder of the cutout area.
5. Drill the 4 fixing holes at the marked location, using a 3.7 mm ($\frac{5}{32}$ ") drill bit.
6. Use a half round file and/or sandpaper to smooth out rough edges or burs on the cutout hole.

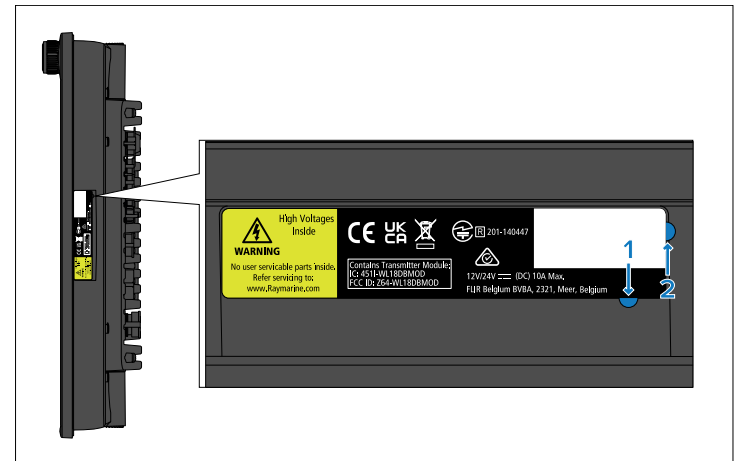
Breather hole

The chartplotter has a breather hole located on the bottom of the unit next to the product label.

Important:

When the chartplotter is being surface or flush mounted the breather hole must not become blocked by sealant or other materials used to seal around the edge of the chartplotter.

Breather hole locations



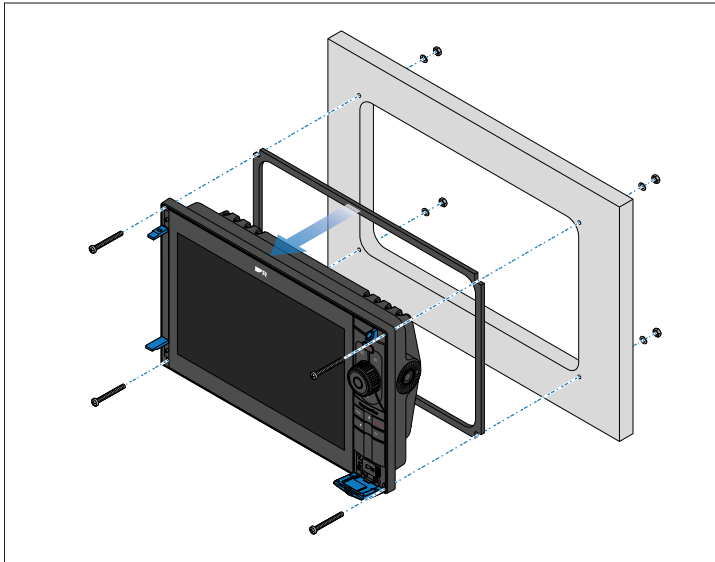
1. Axiom Pro 16 / Axiom 2 Pro 16 breather hole location.
2. Axiom Pro 9 and 12 / Axiom 2 Pro 9 and 12 breather hole location.

Surface mounting

Follow the steps below to surface mount the display.

Important:

- The supplied gasket provides a seal between the display and a suitably flat and rigid 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/or has a rough surface finish.
- In above decks installations, marine-grade sealant should always be used to seal the gap between the edge of the mounting surface and the edge of the display.
- Take care not to block the breather hole with sealant. The breather hole is located on the bottom of the display, next to the product label.



1. Ensure you have followed the instructions for preparing the mounting surface for surface mounting.
2. Route the relevant cables to the area behind the mounting surface cutout.

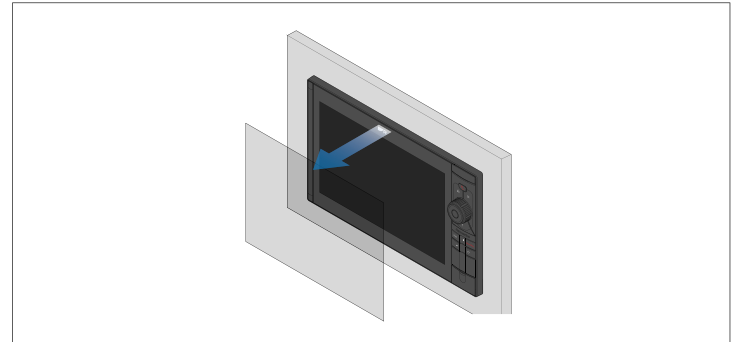
This may be difficult or not possible once the display has been mounted.

3. Remove the backing from the supplied gasket and place the sticky side of the gasket onto the flange on the rear of the display. Then press firmly onto the flange.
4. Connect the relevant cables to the rear of the display.
5. Slide the display into the cutout area.
6. Pull back the 3 corner bungs and open the card reader door.
7. Insert the fixing bolts, attach the washers and nuts from the rear, and then tighten.
8. Close the 3 corner bungs and the card reader door.

8.7 Protective film

Displays are supplied with a protective film covering the LCD screen, to protect the display during transit and installation.

Once the display has been successfully installed, the protective film should be removed, to ensure optimum touchscreen performance.



CHAPTER 9: CABLES AND CONNECTIONS — GENERAL INFORMATION

CHAPTER CONTENTS

- [9.1 General cabling guidance — page 53](#)
- [9.2 Connections overview — RVM variant displays — page 54](#)
- [9.3 Connections overview — S variant displays — page 55](#)
- [9.4 Connecting cables — page 55](#)
- [9.5 Bare-ended wire connections — page 55](#)

9.1 General cabling guidance

Cable types and length

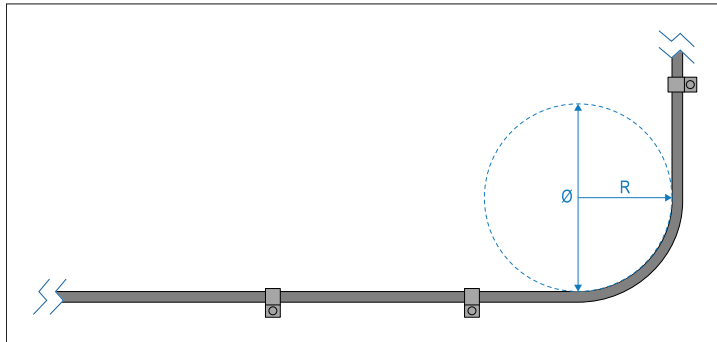
It is important to use cables of the appropriate type and length.

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

Cable routing and bend radius

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

Minimum cable bend radius



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

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

Note:

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

Cable routing — best practices

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

Strain relief

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

Circuit isolation

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

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

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

Cable shielding

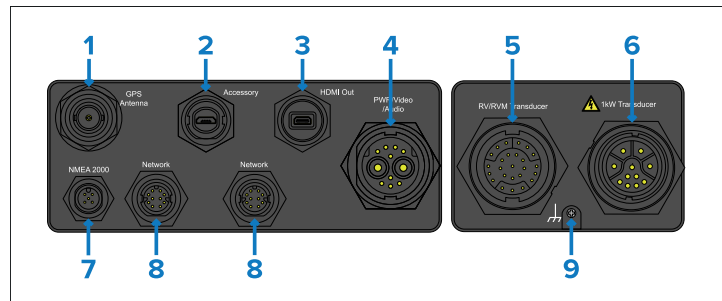
Ensure that cable shielding is not damaged during installation and that all cables are properly shielded.

Important:

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

9.2 Connections overview — RVM variant displays

The following connections are available on Axiom® 2 Pro **RVM** variant displays:



1. **GPS Antenna** — Enables connection of an optional external passive GNSS (GPS) antenna (e.g.: GA200, part number A80589).
2. **Accessory** — Enables connection of an external card reader, such as the RCR-SD/USB (part number A80440).
3. **HDMI Out** — Enables connection of an external HDMI monitor or HDTV, using the Micro HDMI (Type D) to HDMI cable (part

number A80723). The external monitor mirrors the display's screen.

4. **PWR/Video/Audio** — The power/video/audio connector provides a connection to a 12 / 24 V dc power supply, an analog video input via BNC connector, and analog audio output via RCA connectors.

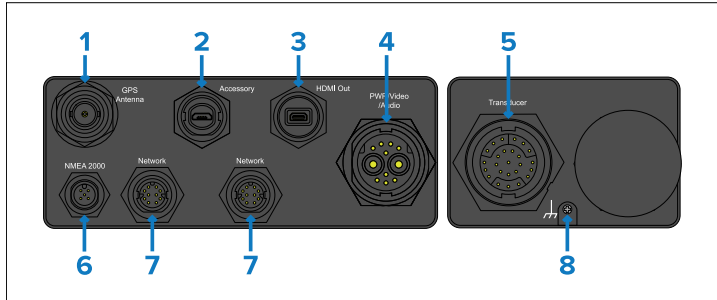
Note:

- Axiom® 2 Pro displays are supplied with a Power/video/audio cable that has a straight connector. A right angled connector cable is also available (part number: A80745).
- The original Axiom® Power/Video/NMEA 0183 cables cannot be used with Axiom® 2 Pro displays.

5. **RV/RVM Transducer** — Used to connect RealVision™ Max 3D or RealVision™ 3D transducers. Also allows connection of DownVision™, SideVision™ or CPT-S CHIRP conical beam transducers, via an adapter cable.
6. **1kW Transducer** — Enables the connection of CHIRP / Traditional (up to 1kW) transducers.
7. **NMEA 2000** — Enables connection to a SeaTalk NG or NMEA 2000 network, using the supplied SeaTalk NG to DeviceNet adaptor cable, or a suitable DeviceNet cable.
8. **Network** — The 2 x network connectors enable connection of RayNet devices.
9. **Ground** — The optional grounding point should **only** be used when the display experiences touchscreen interference from nearby equipment. The grounding point should be connected to the same RF ground point as the interfering equipment, or the vessel's negative battery terminal.

9.3 Connections overview — S variant displays

The following connections are available on Axiom® 2 Pro **S** variant displays:



1. **GPS Antenna** — Enables connection of an optional external passive GNSS (GPS) antenna (e.g.: GA200, part number A80589).
2. **Accessory** — Enables connection of an external card reader, such as the RCR-SD/USB (part number A80440).
3. **HDMI Out** — Enables connection of an external HDMI monitor or HDTV, using the Micro HDMI (Type D) to HDMI cable (part number A80723). The external monitor mirrors the display's screen.
4. **PWR/Video/Audio** — The power/video/audio connector provides a connection to a 12 / 24 V dc power supply, an analog video input via BNC connector, and analog audio output via RCA connectors.

Note:

- Axiom® 2 Pro displays are supplied with a Power/video/audio cable that has a straight connector. A right angled connector cable is also available (part number: A80745).
- The original Axiom® Power/Video/NMEA 0183 cables cannot be used with Axiom® 2 Pro displays.

5. **Transducer** — Enables the connection of a CPT-S CHIRP conical beam transducer, via an adapter cable.

Note:

You can NOT connect RealVision™ Max 3D, RealVision™ 3D, DownVision™ or SideVision™ transducers to an **S** variant display.

6. **NMEA 2000** — Enables connection to a SeaTalk NG or NMEA 2000 network, using the supplied SeaTalk NG to DeviceNet adaptor cable, or a suitable DeviceNet cable.
7. **Network** — The 2 x network connectors enable connection of RayNet devices.
8. **Ground** — The optional grounding point should **only** be used when the display experiences touchscreen interference from nearby equipment. The grounding point should be connected to the same RF ground point as the interfering equipment, or the vessel's negative battery terminal.

9.4 Connecting cables

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

1. Ensure that the vessel's power supply is switched off.
2. Ensure that the device being connected has been installed in accordance with the installation instructions supplied with that device.
3. Ensuring correct orientation, push cable connectors fully onto the corresponding connectors.
4. Engage any locking mechanism to ensure a secure connection (e.g.: turn locking collars clockwise until tight, or in the locked position).
5. Ensure any bare ended wire connections are suitably insulated to prevent shorting and corrosion due to water ingress.

9.5 Bare-ended wire connections

You must ensure that any bare-ended wires are adequately protected from short circuit and water ingress.

Bare-ended wire connections

It is recommended that bare-ended wire connections are made by soldering or using crimp connectors, and then protected by wrapping the connection in electrical insulation tape.

Unused bare-ended wires

Any unused bare-ended wires should be folded back and wrapped in electrical insulation tape.

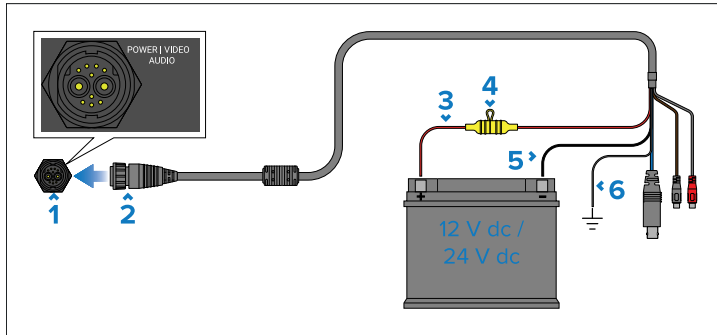
CHAPTER 10: POWER CONNECTIONS

CHAPTER CONTENTS

- 10.1 Power connection — page 58
- 10.2 Power distribution — page 58
- 10.3 Grounding — optional grounding point — page 61

10.1 Power connection

The supplied power cable is connected to the **PWR/Video/Audio** connector located on the rear of the display. The power cable must then be connected to a 12 V dc or 24 V dc power supply; this can be achieved by connecting to a distribution panel, or directly to a battery. The product is protected against reverse polarity.



1. Display's **PWR/Video/Audio** connector.
2. Power/video/audio cable 1.5 m (4.9 ft).
3. Positive (Red) wire connects to the power supply's positive (+) terminal.
4. Fuse.
5. Negative wire connects to the power supply's negative (-) terminal.
6. Drain wire connects to RF ground point, if no ground point is available connect to the battery negative (-) terminal.

Note:

- Axiom® 2 Pro displays are supplied with a Power/video/audio cable that has a straight connector. A right angled connector cable is also available (part number: A80745).
- The original Axiom® Power/Video/NMEA 0183 cables cannot be used with Axiom® 2 Pro displays.

Inline fuse and thermal breaker ratings

The following inline fuse and thermal breaker ratings apply to your product:

Inline 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 Raymarine technical support.
- Your product's power cable may have a fitted inline fuse. If not, you must fit an inline fuse to the positive wire of your product's power connection.

Caution: Power supply protection

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

10.2 Power distribution

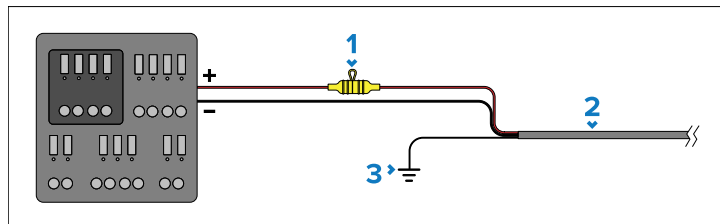
Recommendations and best practice for the power connection of products supplied with a drain wire as part of the supplied power cable.

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

Important:

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

Implementation — connection to distribution panel (Recommended)



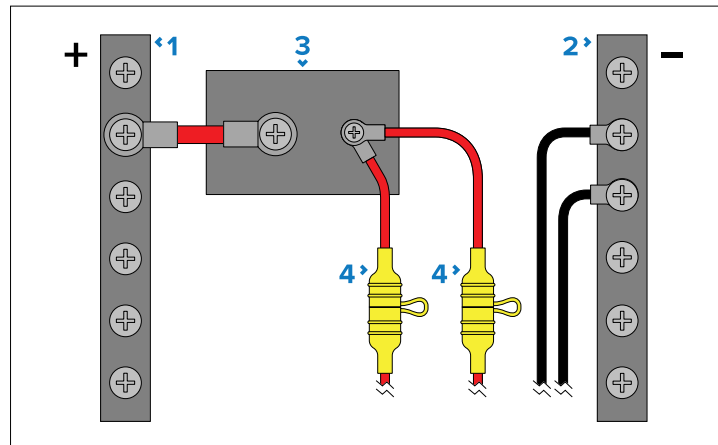
Description

- 1** Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: *Inline fuse and thermal breaker ratings*.
- 2** Product power cable.
- 3** Drain wire connection point.

- It is recommended that the supplied power cable is connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point.
- The distribution point should be fed from the vessel's primary power source by 8 AWG (8.36 mm²) cable.
- Ideally, all equipment should be wired to individual suitably-rated thermal breakers or fuses, with appropriate circuit protection.

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

- The power cable supplied with your product includes a drain wire, which must be connected to the vessel's common RF ground.



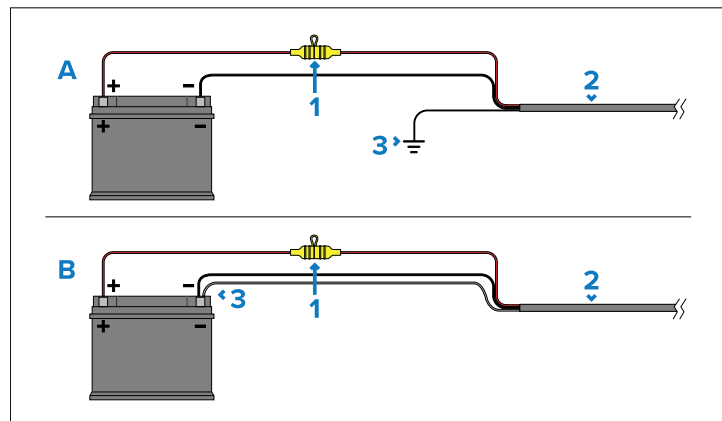
Description

- 1** Positive (+) bar
- 2** Negative (-) bar
- 3** Circuit breaker
- 4** Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: *Inline fuse and thermal breaker ratings*.

Important:

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

Implementation — direct connection to battery



- Where connection to a power distribution panel is not possible, the power cable supplied with your product may be connected directly to the vessel's battery, via a suitably rated fuse or breaker.
- If the power cable is NOT supplied with a fitted inline fuse, you **MUST** fit a suitably rated fuse or breaker between the red wire and the battery's positive terminal.
- Refer to the inline fuse ratings provided in the product's documentation.
- If you need to extend the length of the power cable supplied with your product, ensure you observe the dedicated *Power cable extensions* advice provided in the product's documentation.

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

Battery connection scenario A:

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

Battery connection scenario B:

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

Grounding

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

More information

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

- BMEA Code of Practice for Electrical and Electronic Installations in Boats
- NMEA 0400 Installation Standard
- ISO 13297: Small craft — Electrical systems — Alternating and direct current installations
- ISO 10133: Small craft — Electrical systems — Extra-low-voltage d.c. installations
- ABYC E-11 AC & DC Electrical Systems on Boats
- ABYC A-31 Battery chargers and Inverters
- ABYC TE-4 Lightning Protection



Warning: Product grounding

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



Warning: Positive ground systems

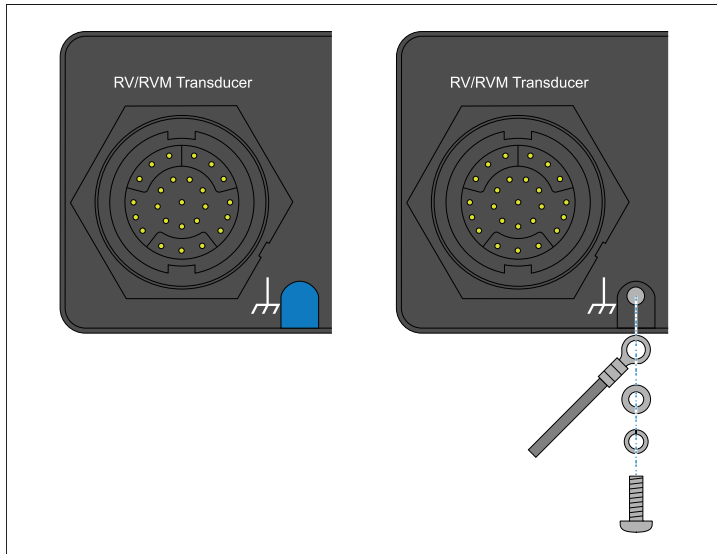
Do **NOT** connect this unit to a system which has positive grounding.

10.3 Grounding — optional grounding point

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

Important:

The ground point should **ONLY** be connected when touchscreen interference is observed.



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

Connect one end of the ground wire (not supplied) to your display using the supplied crimp, washer and screw.

Connect the other end of the ground wire to 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

CHAPTER 11: NETWORK CONNECTIONS

CHAPTER CONTENTS

- 11.1 Networking constraints — page 63
- 11.2 NMEA 2000 / SeaTalk NG connection — page 64
- 11.3 NMEA 0183 connection — page 64
- 11.4 Network connection — page 65
- 11.5 Internet connection — page 66

11.1 Networking constraints

In systems that include more than one MFD/Chartplotter, the MFDs/Chartplotters must be networked together using an ethernet network. The ethernet network can be either a direct RayNet cable connection or connection via a network switch such as the RNS-5. The following constraints apply when networking MFDs/Chartplotters:

Ethernet networks

- Any network including more than one MFD/Chartplotter must have a designated **Datamaster**.
- The Datamaster MFD/Chartplotter is the primary display in the system and will receive data from NMEA 2000 / SeaTalk NG and, if applicable, NMEA 0183 devices. The data received by the Datamaster will be bridged over the ethernet network to other networked MFDs/Chartplotters.
- Up to 10 MFDs/Chartplotters can be connected to the same network.
- All networked MFDs/Chartplotters should have the same software version.
- In mixed Axiom-Series and Axiom 2-Series display networks an Axiom 2-Series display must be the Datamaster.
- Other ethernet devices connected directly to an MFD/Chartplotter will be shared with networked MFDs/Chartplotters.
- Networked MFDs/Chartplotters will share the Datamaster's Homescreen. Changes made to the Homescreen on any MFD/Chartplotter will be reflected on all networked MFDs/Chartplotters.
- Electronic cartography stored on internal or external memory on any MFD/Chartplotter can be shared by all MFDs/Chartplotters on the same network.
- Up to 2 Radar scanners can be connected to the same network and used simultaneously.
- Multiple Sonar modules can be connected to the same network and used simultaneously.
- MFDs/Chartplotters with an internal sonar module can share sonar data with networked MFDs/Chartplotters.

For details regarding internet connections, refer to:

[p.66 — Internet connection](#)

For details regarding networking third-party ethernet products, refer to: [p.135 — Ethernet \(IPv4\) networking of Raymarine devices with third-party products](#)

Wi-Fi networks

- MFDs/Chartplotters cannot share data over a Wi-Fi connection.
- MFD/Chartplotter Wi-Fi connection can be used to provide internet connection via an access point.
- MFDs/Chartplotters that have an internet connection using Wi-Fi will share the internet connection with ethernet networked MFDs/Chartplotters.
- An internet connection over ethernet will take precedence over an internet connection over Wi-Fi.
- Data from ethernet networked devices is not bridged over a Wi-Fi connection.
- Data from NMEA 2000 / SeaTalk NG devices is not bridged over a Wi-Fi connection.

NMEA 2000 / SeaTalk NG networks

- Only the Datamaster MFD/Chartplotter needs to be connected to the NMEA 2000 / SeaTalk NG backbone.
- If more than one MFD/Chartplotter is connected to the backbone, only the Datamaster MFD/Chartplotter will receive data from other devices on the backbone.
- The Datamaster MFD/Chartplotter will bridge NMEA 2000 / SeaTalk NG data over the ethernet network to other MFDs/Chartplotters.
- More than one MFD/Chartplotter can be connected to the same backbone for data redundancy purposes. If the **Datamaster** MFD/Chartplotter fails, another networked MFD/Chartplotter can take its place as the Datamaster. All MFDs/Chartplotters on the same backbone should have the same software version.

Networking with legacy MFDs/Chartplotters

- Axiom 2 Pro MFDs/Chartplotters cannot be networked to legacy MFDs/Chartplotters running LightHouse 2.
- Axiom MFDs/Chartplotters running earlier versions of LightHouse 3 can be networked to legacy MFDs/Chartplotters. For further details on networking legacy MFDs/Chartplotters, refer to: [p.134 — Legacy eS and gS Series compatibility with Axiom displays](#)

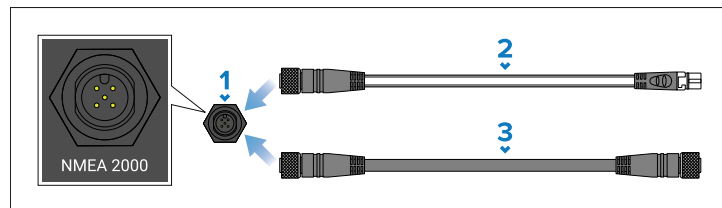
- Alpha Performance displays cannot be networked to legacy displays running LightHouse 2.

11.2 NMEA 2000 / SeaTalk NG connection

The MFD/Chartplotter can be connected to a NMEA 2000 / SeaTalk NG network by connecting a spur cable to the NMEA 2000 (DeviceNet) connector located on the rear of the MFD/Chartplotter.

Note:

Only the **Datamaster** MFD/Chartplotter requires a connection to the NMEA 2000 / SeaTalk NG network. Other MFDs/Chartplotters can be connected for data redundancy; however only the **Datamaster** MFD/Chartplotter will receive data from NMEA 2000 / SeaTalk NG devices. The Datamaster MFD/Chartplotter can bridge the data over the ethernet network to other MFDs/Chartplotters in the system.



1. MFD/Chartplotter's NMEA 2000 (DeviceNet) connector.
2. Use the supplied DeviceNet to SeaTalk NG adaptor cable to connect to a SeaTalk NG network backbone.
3. Alternatively, you can connect to a NMEA 2000 backbone using a standard DeviceNet cable (not supplied).

Note:

1. NMEA 2000 / SeaTalk NG devices must be connected to a correctly terminated backbone.
2. NMEA 2000 / SeaTalk NG devices can NOT be connected directly to the MFD/Chartplotter.
3. Refer to the instructions supplied with your NMEA 2000 / SeaTalk NG device for details on creating a backbone.

Refer to [p.117 — Spares and accessories](#) for a list of available SeaTalk NG cables.

11.3 NMEA 0183 connection

The display can transmit and receive NMEA 0183 data when using a compatible NMEA 2000 to NMEA 0183 converter, such as the Actisense® NGW-1 converter (part number: A80721), connected to the same NMEA 2000 / SeaTalk NG network as the display.

Important:

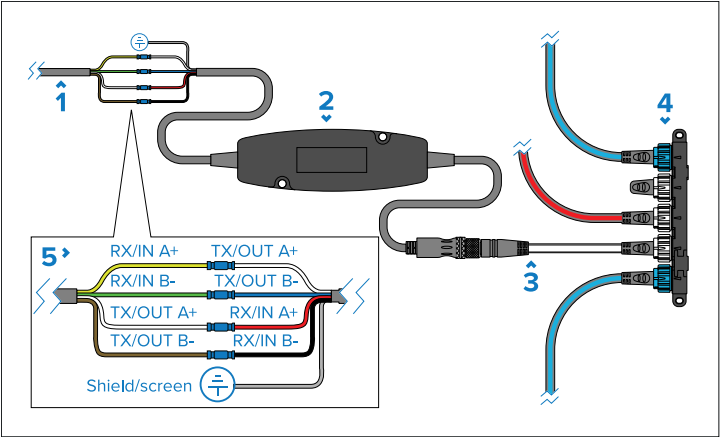
Ensure all devices are powered off before making connections.

Connect the converter to your NMEA 2000 or SeaTalk NG network, using either a DeviceNet to SeaTalk NG adaptor cable, or a DeviceNet cable as appropriate. Then, connect the converter's NMEA 0183 bare wires to the relevant wires on your NMEA 0183 device, and crimp and insulate the wires.

Note:

The details below are provided as an example of how to connect a device using the Actisense® NGW-1 converter (A80721). Depending on your NMEA 0183 device, you may require a different converter. The converter and device wire colors may also vary from those shown. Refer to the instructions supplied with your NMEA 0183 device and your converter to identify correct signal connections.

Example NMEA 0183 version 2 / 3 device connection using the Actisense® NGW-1 converter



1. Device NMEA 0183 wires.
2. NMEA 2000 to NMEA 0183 converter (e.g. Actisense® NGW-1 converter, A80721).
3. SeaTalk NG (female) to DeviceNet (female) adaptor cable (e.g. A06045 or A06075).
4. SeaTalk NG network (requires dedicated 12 V dc power supply).
5. NMEA 0183 wire connections. It is recommended that wire connections are made using crimps and then insulated using insulation tape.

Example NMEA 0183 version 2 / 3 device connections

Converter signal (wire color)	NMEA 0183 device signal
TX/OUT A+ (White)	RX/IN A+
TX/OUT B- (Blue)	RX/IN B-
RX/IN A+ (Red)	TX/OUT A+
RX/IN B- (Black)	TX/OUT B-
Shield/Screen	Vessel Ground

If your NMEA 0183 device is a version 1 device (i.e.: it only has 3 NMEA 0183 wires), the connection will differ from that described above. Please see below for alternative wiring:

Example NMEA 0183 version 1 receiving device connections

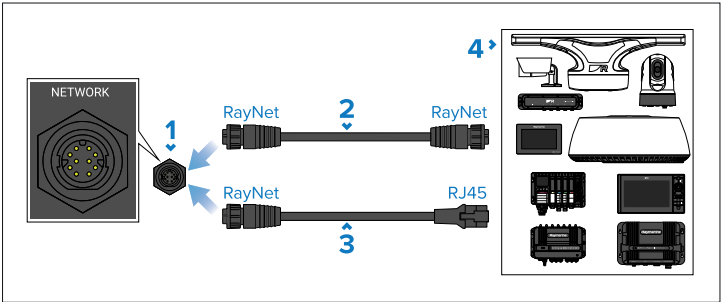
Converter signal (wire color)	Receiving NMEA 0183 device signal
TX/OUT A+ (White)	RX/IN
TX/OUT B- (Blue)	NOT CONNECTED
Shield/Screen	Vessel Ground

Example NMEA 0183 version 1 transmitting device connections

Converter signal (wire color)	Transmitting NMEA 0183 device signal
RX/IN A+ (Red)	TX/OUT
RX/IN B- (Black)	Vessel Ground
Shield/Screen	Vessel Ground

11.4 Network connection

The display can be connected to compatible network products by connecting a network cable from the product to a **NETWORK** connector located on the rear of the display. Alternatively, the display can be connected to a network switch, e.g.: RNS-5, or the YachtSense Link marine router.



1. Display's **NETWORK** connector.

2. RayNet to RayNet cable — Connect one end of the RayNet cable to your display, and the opposite end to a RayNet device or RayNet network switch.
3. RayNet to RJ45 adapter cable — Connect the RayNet end of the cable to your display, and the opposite end to a network device with an RJ45 connector, or an RJ45 coupler.
4. Examples of compatible network devices with RayNet or RJ45 connectors (e.g.: Radar scanners, Sonar modules, Displays, Network switches, Cameras etc).

For a list of available network cables, refer to:

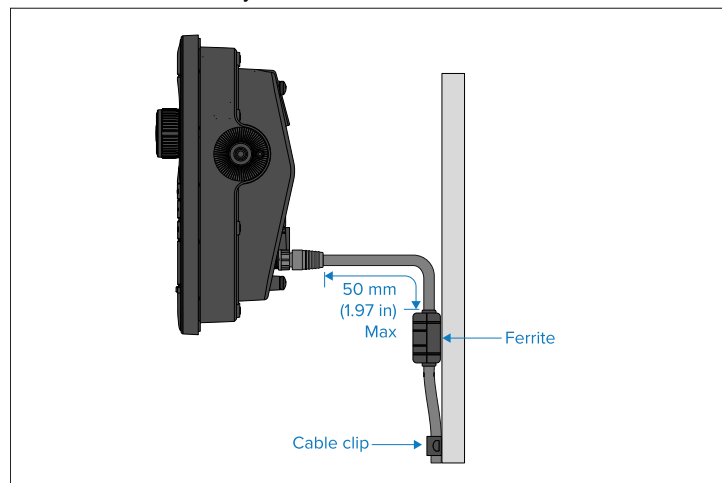
[p.117 — Spares and accessories](#)

Cable suppression ferrites

To ensure optimum EMC performance and to comply with applicable EMC regulations all RayNet cables connected to this product must have a suppression ferrite fitted.

Three suppression ferrites are included with your product, one for each RayNet connection.

Fit a ferrite to each RayNet cable as shown below:



- Cable clips (not supplied) should be used to support the cable and ferrite.
- If you need to remove a ferrite for any reason, ensure it is replaced in its original location before using the product.

- If the ferrite moves freely once fitted, use cable ties (not supplied) above and below the ferrite to secure it in place.

11.5 Internet connection

Some features require the display to have a connection to the internet.

Note:

In versions of the YachtSense™ Link router software *later than v4.20*, the display cannot connect to the router's Wi-Fi access point.

The display can be connected to the internet using the following methods:

- Connecting the display's Wi-Fi connection to a Wi-Fi access point which has an internet connection, such as marina Wi-Fi or mobile device. For connection details, refer to: [p.67 — Connecting to the internet using Wi-Fi](#)
- Connecting the display's RayNet Ethernet connection to a YachtSense™ Link router which has internet access. Requires YachtSense™ Link router software **v4.20** or above
- Connecting the display's Wi-Fi connection to a YachtSense™ Link router which has internet access. Requires YachtSense™ Link router software **v4.17** or earlier.
- Connecting the display's Wi-Fi or RayNet Ethernet connection to a third-party router which has internet access

Note:

- When connecting to a YachtSense™ Link router, follow the instructions provided with the router to set up an internet connection.
- When using a third-party router, follow the instructions provided with it to set up an internet connection and then follow the guidance in the appendix of this document to help you configure internet access: [p.135 — IP Networking of Raymarine devices with Third-party products](#)

YachtSense Link network connection

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

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

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

Connecting to the internet using Wi-Fi

The display can be connected directly to an access point that has an internet connection.

From the Homescreen:

1. Select the *[Apps]* icon from the Homescreen.
The app launcher is displayed.
2. Select the connection status button, located on the top right of the app launcher page.
The Wi-Fi settings page is displayed and will scan for available networks.

Note:

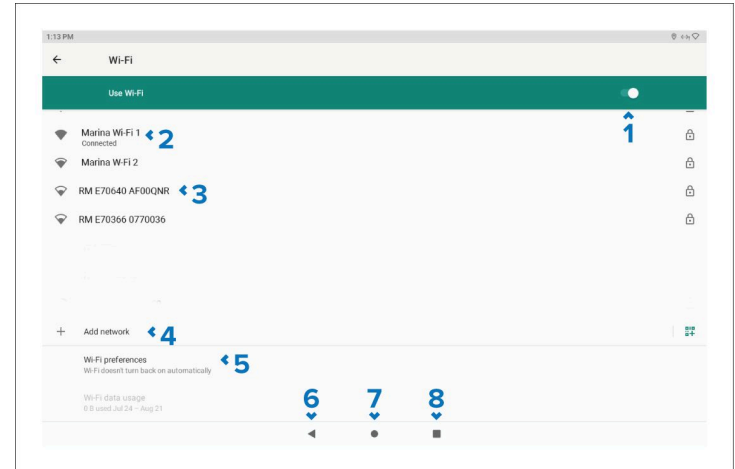
If there is a YachtSense™ Link router connected to your system selecting this button will display the router's web interface.

3. Select the relevant Wi-Fi access point.
4. Enter the password for the network and select *[Connect]*.
Your display will now connect to the access point.
5. Select the *[Back]* triangle symbol or the *[Home]* circle symbol at the bottom of the screen.

Your display should now have an internet connection.

Wi-Fi settings — Axiom 2 displays

The Wi-Fi settings menu provides settings to connect the display to a Wi-Fi access point or hotspot.



1. **Enable/Disable Wi-Fi.**
2. **Connected Access Point (AP).**
3. **Available Access Points (AP).**
4. **Add network** — Manually add a network.
5. **Wi-Fi preferences** — Provides Wi-Fi connection options.
6. **Back button** — Go back to the previous menu.
7. **Home button** — Go back to the previous menu.

8. **View open apps** — Go back to an open LightHouse apk app.

CHAPTER 12: TRANSDUCER CONNECTIONS - AXIOM 2 PRO RVM

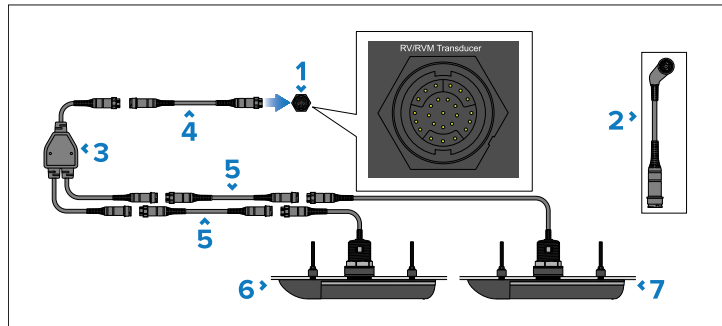
CHAPTER CONTENTS

- 12.1 RealVision transducer connection — page 70
- 12.2 SideVision, DownVision and CPT-S-Series transducer connection — page 71
- 12.3 CHIRP transducer connection — page 71
- 12.4 Traditional transducer connection — page 72

12.1 RealVision transducer connection

RealVision 3D and RealVision Max 3D transducers can be connected directly to the display's 25-pin **RV/RVM Transducer** connection using the cable(s) supplied with the transducers.

Example — RealVision Max 3D split pair transducer connections



1. Display's **RV/RVM Transducer** 25-pin connector.
2. Optional right angled adaptor (part number: A80515) supplied separately (used to reduce the space required behind display).
3. 'Y' cable (supplied with split pair transducer packs)
4. 8 m (26.2 ft) extension cable (supplied with split pair transducer packs)
5. Optional extension cables can be fitted between the transducer and 'Y' cable if required, or between supplied extension cable and display.
6. Transducer, e.g.: RVM-412P.
7. Transducer, e.g.: RVM-412S.

For a list of compatible RealVision Max 3D transducers refer to:

[p.23 — RealVision Max transducers](#)

For a list of compatible RealVision 3D transducers refer to:

[p.23 — RealVision 3D transducers](#)



Warning: Transducer cables

Do not remove the transducer cable whilst the product is powered on, doing so can cause sparks. If the transducer cable is accidentally removed whilst the product is powered on, switch the product's power off, replace the cable and then switch the power back on.

Caution: Do not cut transducer cables

- Cutting the transducer cable severely reduces sonar performance. If the cable is cut, it must be replaced, it cannot be repaired.
- Cutting the transducer cable will void the warranty and invalidate the European CE mark.



Warning: Maximum transducer cable length

The maximum length of cable between a RealVision™ Max 3D transducer and a MFD/sonar module (including the transducer's captive cable) must NOT exceed 18 m (59 ft). Cable lengths greater than this may cause damage to the RealVision™ Max 3D transducer and MFD/sonar module.

RealVision transducer extension cables

Transducers are supplied with a fitted cable, for some installations (including all split-pair transducer installations) it may be necessary to extend the length of the transducer cable.

Note:

- For best performance, cable runs should be kept to a minimum.
- Only use Raymarine® transducer extension cables.

Raymarine® offers the following optional extension cables are available:

- RealVision™ transducer extension cable 3 m (9.8 ft) (part number A80475)

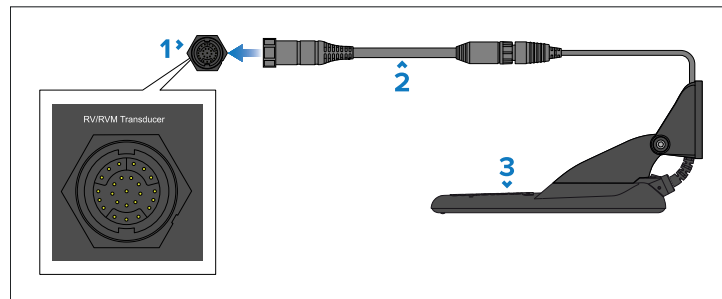
- RealVision™ transducer extension cable 5 m (16.4 ft) (part number A80476)
- RealVision™ transducer extension cable 8 m (26.2 ft) (part number A80477)

Split pair transducers: Extension cables fitted between the transducer and the 'Y' cable must be fitted in equal length pairs (i.e.: each transducer's final cable length must be the same).

12.2 SideVision, DownVision and CPT-S-Series transducer connection

SideVision, DownVision and CPT-S-Series transducers can be connected to the display's **RV/RVM Transducer** connection using the RV 25-pin to DV 9-pin adaptor cable (part number: A80490).

Example DownVision transducer connection



1. Display's **RV/RVM Transducer** 25-pin connector.
2. RV 25-pin to DV 9-pin adaptor cable (part number: A80490).
3. Transducer (DownVision transducer illustrated).

For a list of compatible SideVision transducers refer to:
[p.24 — SideVision transducers](#)

For a list of compatible DownVision transducers refer to:
[p.24 — DownVision transducers](#)

For a list of compatible CPT-S-Series transducers refer to:
[p.25 — CPT-S-Series conical beam transducers](#)

DownVision™ transducer extension cable

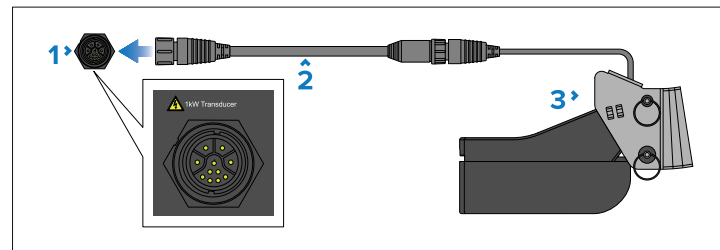
For best performance, cable runs should be kept to a minimum. However, for some installations it may be necessary to extend the transducer cable.

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

12.3 CHIRP transducer connection

CHIRP transducers can be connected directly to the display's 11-pin **1kW Transducer** connection. B75 & B175 transducers require an operation cable (part number: A80328).

Example CHIRP transducer connection

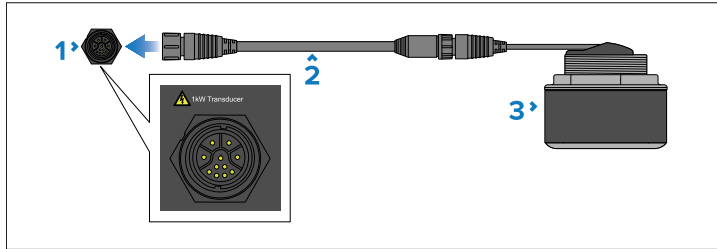


1. Display's **1kW Transducer** 11-pin connector.
2. Operation cable (part number: A80328) is required for B75 & B175 transducers.
3. CHIRP transducer.

For a list of compatible CHIRP transducers refer to:
[p.25 — CHIRP transducers](#)

12.4 Traditional transducer connection

Traditional transducers can be connected to the display's 11-pin **1kW Transducer** connection using the 11-pin to 8-pin adaptor cable (part number: A80496).



1. Display's **1kW Transducer** 11-pin connector.
2. 11-pin to 8-pin adaptor cable (part number: A80496).
3. Traditional transducer.

For a list of compatible traditional transducers refer to:
[p.27 — Traditional transducers](#)

CHAPTER 13: TRANSDUCER CONNECTIONS - AXIOM 2 PRO S

CHAPTER CONTENTS

- [13.1 CPT-S-Series transducer connection — page 74](#)

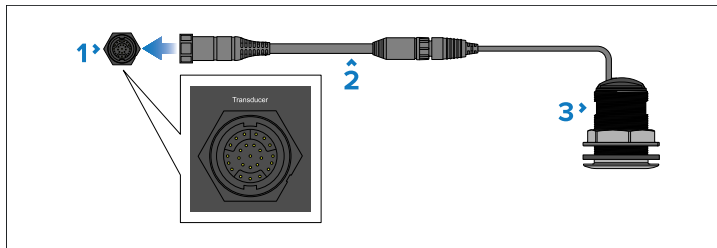
13.1 CPT-S-Series transducer connection

CPT-S-Series transducers can be connected to the display's **Transducer** connection using the RV 25-pin to DV 9-pin adaptor cable (part number: A80490).

Note:

You **CANNOT** connect RealVision Max 3D, RealVision 3D, DownVision or SideVision transducers to an **S** variant display.

Example CPT-S-Series transducer connection



1. Display's **Transducer** 25-pin connector.
2. RV 25-pin to DV 9-pin adaptor cable (part number: A80490).
3. CPT-S-Series transducer.

For a list of compatible CPT-S-Series transducers refer to:

[p.25 — CPT-S-Series conical beam transducers](#)

CHAPTER 14: VIDEO CONNECTIONS

CHAPTER CONTENTS

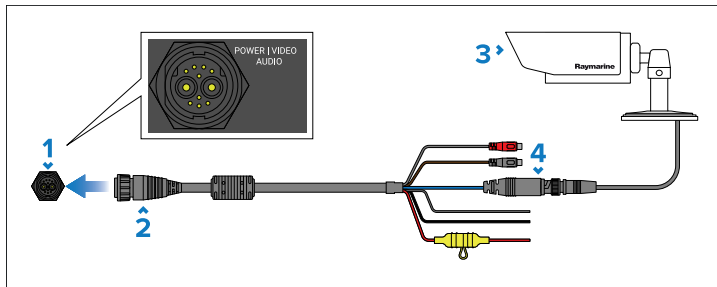
- [14.1 Analog video connection — page 76](#)
- [14.2 HDMI Out connection — page 76](#)

14.1 Analog video connection

Analog video feeds from sources such as a Thermal camera or Security camera can be connected to your display by connecting the device to the BNC connector on the display's power/video/audio cable. The video feed can be viewed using the Video app.

Note:

The connected video is encoded as RTSP and streamed over ethernet to networked displays.



1. Display's **PWR/Video/Audio** connector.
2. Power/Video/Audio cable (supplied with your display).
3. Analog video device.
4. Analog video BNC connector.

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

Note:

- Axiom® 2 Pro displays are supplied with a Power/video/audio cable that has a straight connector. A right angled connector cable is also available (part number: A80745).
- The original Axiom® Power/Video/NMEA 0183 cables cannot be used with Axiom® 2 Pro displays.

14.2 HDMI Out connection

You can mirror the Raymarine® display's screen and output its audio to an external third-party High Definition (HD) display, such as an HD TV or computer monitor.

Your Raymarine® display can be connected via the separately available *Micro HDMI (Type D) to HDMI accessory cable* (part number A80723). This cable connects to the Micro **HDMI Out** connector located on the rear of the Raymarine® display, and to an available HDMI input on the third-party display. The Raymarine® display screen can then be viewed by switching the third-party display's *input source* to the HDMI input that you connected your Raymarine® display to.

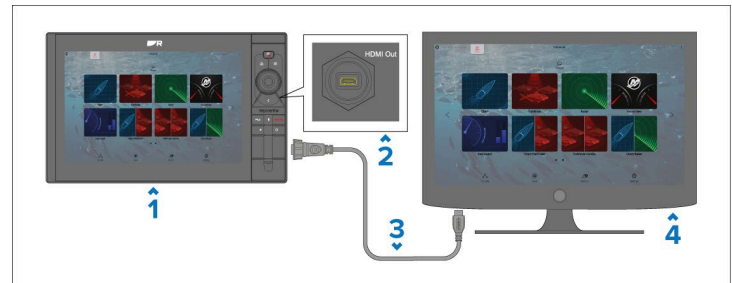
Alternatively, you can connect the Raymarine® display's HDMI out connection to a sound system that has an HDMI input connection. Depending on the connected device, this may support audio only.

The supported screen resolutions for the Raymarine® display's HDMI output are:

- 720 x 480p @ 60 Hz
- 720 x 576p @ 50 Hz
- 1280 x 720p @ 50 Hz / 60 Hz
- 1920 x 1080p @ 50 Hz / 60 Hz

Note:

- The maximum supported HDMI cable length is 20 m (65.6 ft). If longer cable runs are needed, an HDMI extender (signal amplifier) is also required, available separately from suitable retailers.
- Ensure that the HDMI cable's locking collar is used to secure the cable to the Raymarine® display.



1. Raymarine® Display.
2. Raymarine® Display's **HDMI Out** connector.
3. Micro HDMI (Type D) to HDMI accessory cable (part number A80723) — Not supplied.
4. Third-party display.

CHAPTER 15: AUDIO CONNECTIONS

CHAPTER CONTENTS

- [15.1 Analog audio \(RCA\) output connections — page 79](#)

15.1 Analog audio (RCA) output connections

The display can output audio from installed third-party apps, such as Netflix® or Spotify®, by connecting the **RCA Analog Audio** connectors on the display's Power/audio/video cable to an analog audio input on an audio amplifier or entertainment system.

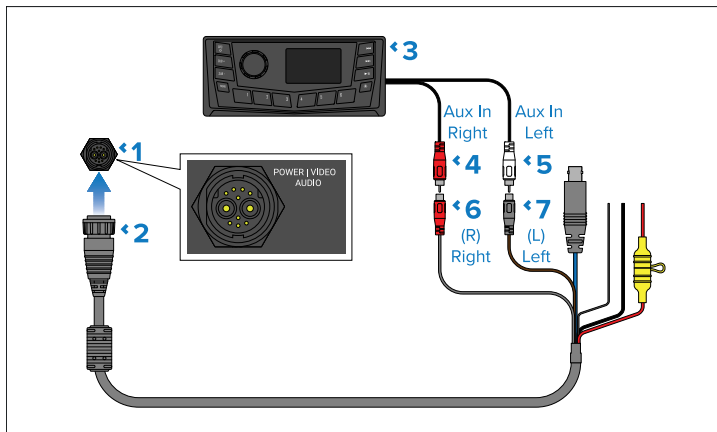
Note:

Analog audio output from the display requires an external audio amplifier or entertainment system with an analog audio input.

Note:

Optionally, digital audio may be output from the display wirelessly, by connecting a Bluetooth speaker. For instructions on pairing a Bluetooth speaker, refer to the operations instructions for your display (Document number: 81406).

A Bluetooth speaker will take priority over RCA analog audio (i.e.: if both are connected, audio will only be output from the Bluetooth speaker. In this scenario, to output from RCA audio instead, switch the Bluetooth speaker off).



1. Display's **PWR/Video/Audio** connector.
2. Display's Power/video/audio cable, 1.5 m (4.9 ft).
3. Entertainment system with built-in amplifier.
4. Entertainment system's Right auxiliary analog audio input (RCA; usually red male connector).
5. Entertainment system's Left auxiliary analog audio input (RCA; usually white or black male connector).
6. Display's Right channel analog audio output (red female RCA connector).
7. Display's Left channel analog audio output (black female RCA connector).

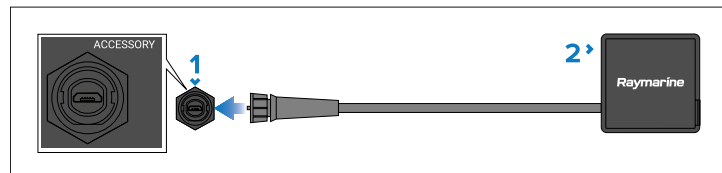
CHAPTER 16: USB CONNECTIONS

CHAPTER CONTENTS

- [16.1 Accessory connection — page 81](#)

16.1 Accessory connection

The display includes a built in dual slot MicroSD card reader. The **Accessory** connector can be used to expand storage capabilities by connecting an external memory card reader or external storage device to the display.

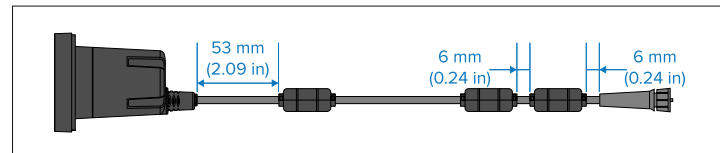


1. **ACCESSORY** connector.
2. Accessory device:
 - **RCR-SDUSB** (part number: A80440) — Includes 1x SD card slot (or MicroSD card when using an SD card adaptor) and 1x USB (Type A connector) (e.g. for connection of an external USB hard drive or pen / flash drive). The USB slot on the RCR-SDUSB can also supply 0.5A of current to charge mobile devices.
 - **RCR-1** (part number A80585) — Includes 1x MicroSD card slot.
 - **Bulkhead Mount Micro USB Socket** (part number: A80630) — Includes 1x Micro USB (Type Micro A connector) (e.g. for connection of an external USB hard drive or pen / flash drive; an additional adaptor may be required for the connection of some USB devices).
- To save screenshots (.png files), *[External SD]* or *[External USB]* must be selected as the *[Screenshot File]* location on the *[This display]* tab in the main display settings menu (accessible from Homescreen).
- To save video (.mov files), *[External SD]* or *[External USB]* must be selected as the *[Save Files]* location on the *[Photo & Video recording]* tab in the Video app settings menu.

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

Fitting suppression ferrites

In certain installation scenarios interference may be experienced in the form of data corruption when reading and writing to external storage via the card reader. Under these circumstances the supplied suppression ferrites should be fitted to the card reader's cable, as described below.



Two of the suppression ferrites should be fitted at 6 mm (0.24 in) intervals from the connector end of the cable and the third ferrite at a distance of 53 mm (2.09 in) from the rear of the card reader. Cable ties are also supplied to help secure each ferrite in place.



Warning: USB device power

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

CHAPTER 17: GPS ANTENNA CONNECTION

CHAPTER CONTENTS

- [17.1 GNSS \(GPS\) antenna connection — page 83](#)

17.1 GNSS (GPS) antenna connection

For installations where the display does not have a clear view of the sky, or where a position fix is not possible or unreliable due to structure or other obstacles, a passive antenna (such as the GA200, part number A80589) can be connected to improve the performance of the display's internal GNSS (GPS) receiver. The antenna is connected to the **GPS Antenna** connector located on the rear of the display.



1. Passive GNSS (GPS) antenna:
 - **GA200** (part number: A80589); or:
 - **GA150** (part number: A80288)
2. **GPS Antenna** connector.

For installation details, refer to the documentation provided with your GNSS (GPS) antenna.

CHAPTER 18: MAINTAINING YOUR DISPLAY

CHAPTER CONTENTS

- 18.1 Service and maintenance — page 85
- 18.2 Product cleaning — page 85

18.1 Service and maintenance

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



Warning: High voltage

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



Warning: FCC Warning (Part 15.21)

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

Caution: Sun covers

- Sun covers are used to protect the display screen against the damaging effects of ultraviolet (UV) light. If your product is supplied with a sun cover always ensure it is fitted when the product is not in use.
- To avoid potential loss of the sun cover, ensure that the sun cover is removed when travelling at high speed, whether in the water or when the vessel is being towed.
- To avoid potential screen damage, ensure that the rear surface of the sun cover and the display screen are clean and free from debris before placing the sun cover on the screen.

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.

Maintaining your display

- Check that all cables are securely connected.

18.2 Product cleaning

Best cleaning practices.

When cleaning products:

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

Cleaning the display case

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

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

Cleaning the display screen

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

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

Cleaning the sun cover

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

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

CHAPTER 19: OPERATION

CHAPTER CONTENTS

- [19.1 Operation instructions — page 87](#)

19.1 Operation instructions

For instructions on how to operate your product, refer to the separate *Operation Instructions* document.

Please check the website to ensure you have the latest documentation:

Document	Number	Link
<i>LightHouse 4 Operation Instructions</i>	81406	https://bit.ly/LH4-docs

CHAPTER 20: TROUBLESHOOTING

CHAPTER CONTENTS

- [20.1 Troubleshooting — page 89](#)
- [20.2 Miscellaneous troubleshooting — page 89](#)
- [20.3 Power up troubleshooting — page 89](#)
- [20.4 GNSS \(GPS\) troubleshooting — page 91](#)
- [20.5 Sonar troubleshooting — page 91](#)
- [20.6 Wi-Fi troubleshooting — page 94](#)
- [20.7 Touchscreen troubleshooting — page 97](#)

20.1 Troubleshooting

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

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

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

20.2 Miscellaneous troubleshooting

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

Product behaves erratically (frequent unexpected resets / system crashes, or other erratic behavior):

Possible causes	Possible solutions
Intermittent problem with power to the product.	• 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 that sufficient current is being provided to the product.
Software mismatch on system (upgrade required):	Go to https://bit.ly/rym-software for the latest software downloads.
Corrupt data / other unknown issue:	Perform a factory reset — refer to the relevant <i>Installation Instructions</i> document.

Important:
This will result in the loss of any settings and user data stored on the product. Save any important data to a memory card before resetting.

20.3 Power up troubleshooting

Troubleshooting assistance with typical causes of power-related issues, and their solutions.

Product does not power up, or keeps switching off

Possible causes	Possible solutions
Blown fuse / tripped breaker:	1. Check condition of relevant fuses and breakers and connections, replace if necessary. (Refer to the <i>Power Connections</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:	1. Check that the power cable connector is correctly orientated and fully inserted into the product's <i>Power</i> connector, and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, and replace if necessary. 3. With the product switched on, try carefully flexing the power cable near to the product's <i>Power</i> 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 vessel's power supply may be wired incorrectly. Ensure that the product's <i>Installation Instructions</i> have been followed completely.

Product will not start up (restart loop)

Possible causes	Possible solutions
Power supply and connection:	See possible solutions from the table above, entitled ' <i>Product does not power up, or keeps switching off</i> '.
Software corruption:	1. In the unlikely event that the product's software has become corrupted, try downloading and installing the latest software from: www.bit.ly/rym-software 2. If your product includes a display: as a last resort, attempt to perform a 'Power on Reset'. Be aware that this will delete all settings / presets and user data, and revert the unit back to factory default settings.

Performing a power-on reset on an Axiom 2 Pro display

Important:

Before performing a power on reset, ensure that you have backed up your settings and user data to a memory card.

1. Switch off power at the breaker to ensure that the display is completely powered off, and not in Standby mode. Alternatively, remove the power cable from the display.
2. Plug the power cable back in, or switch the breaker back on.
3. If the display was previously in Standby, press the power button to power up the display, otherwise the display will power up when the power supply is re-connected.
4. Within approximately 10 seconds of powering on your display, press and hold the *[Back]* and *[Menu]* buttons until the screen goes black and the Raymarine logo appears.
The display will re-start into Recovery mode.
5. Use the directional controls to highlight *[Wipe data / factory reset]*.
6. Press *[Ok]*.
7. Use the directional controls to highlight *[Factory data reset]*.
8. Press *[Ok]*.

9. When 'Data wipe complete' is displayed, select *[Reboot system now]*.
10. Press *[Ok]*.

20.4 GNSS (GPS) troubleshooting

Problems with the GNSS (GPS) and their possible causes and solutions are described here. Your position fix coordinates are displayed in the status area located in the top left corner of the Homescreen.

No position fix

Possible causes	Possible solutions
Display installation location (e.g.: installed below decks or in close proximity to equipment which may cause interference).	Connect an external passive GNSS (GPS) antenna such as the GA200 to the display GPS antenna connection.
Internal GNSS (GPS) receiver disabled.	When using your product's internal GNSS (GPS) receiver, ensure that it is enabled in the relevant settings menu. To access the relevant menu, select the status area located in the top left corner of the Homescreen and select <i>[Satellites]</i> and then select the <i>[Settings]</i> tab, locate the Internal GPS option and ensure it is enabled.
External GNSS (GPS) receiver connection fault.	When using an external GNSS (GPS) receiver, ensure that connections are secure and that the cabling is free from damage.

Possible causes	Possible solutions
External GNSS (GPS) receiver or antenna location (e.g.: installed below decks or in close proximity to equipment which may cause interference).	Ensure the GNSS (GPS) receiver or antenna has a clear unobstructed view of the sky. Refer to the documentation supplied with your external receiver / antenna and ensure location requirements have been adhered to.
Geographic location or prevailing conditions preventing satellite fix.	Check periodically to see if a fix is obtained in better conditions or another geographic location.

20.5 Sonar troubleshooting

Problems that can be encountered with your sonar module and possible causes and solutions are described here.

Note:

This troubleshooting guide assumes that you have a compatible transducer connected to either your MFD / Chartplotter display directly (for Sonar-variant displays only) or an external sonar module, which is correctly networked to your display.

Scrolling image is not being displayed:

Possible causes	Possible solutions
Sonar disabled	Select <i>[Ping Enable]</i> from the Sonar app's Sounder menu.
Incorrect transducer selected	Check that the correct transducer is selected in the Sonar app's Transducer menu.

Possible causes	Possible solutions
Damaged cables	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 restart or lose power. Replace if necessary. 4. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 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 or switch off). Replace if necessary.
Damaged or fouled transducer	Check the condition of the transducer, ensuring that it is not damaged and is free from debris / fouling. Clean or replace as necessary.
Wrong transducer fitted	Ensure that the transducer is compatible with your system.

Possible causes	Possible solutions
External sonar module: / RayNet network problem.	• 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 that they are secure, clean, and free from corrosion. Replace if necessary.
External sonar module: Software mismatch between equipment may prevent communication.	Ensure that all Raymarine products contain the latest available software. Check the Raymarine website for software version information: https://bit.ly/rym-software

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 the transducer angle and re-check.
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 that it is not damaged and is free from debris / fouling.

Possible causes	Possible solutions
Damaged cables	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 switched 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. 5. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring that 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. (Voltage drops can cause the Sonar applications to stop scrolling or the unit to reset or switch off.) Replace if necessary.
Vessel speed too high	Slow the vessel speed and re-check.
Bottom too shallow or too deep	The bottom depth may be outside of the transducer's depth range. Move vessel to shallower or deeper waters as relevant, and re-check.

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	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 switched 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. 5. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring that 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. (Voltage drops can cause the Sonar applications to stop scrolling or the unit to reset or switch off.) Replace if necessary.

Possible causes	Possible solutions
Transducer location	- 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 that 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 the vessel speed and recheck.
Interference from another transducer	- Switch off the transducer causing the interference. - Re-position the transducers so that they are further apart.
Unit power supply fault	Check the voltage from the power supply, if this is too low it can affect the unit's transmitting power.

20.6 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 have also performed a power cycle / restart of the devices that you are experiencing problems with.

Cannot find network

Possible causes	Possible solutions
Wi-Fi not currently enabled on devices.	Ensure that Wi-Fi is enabled on both Wi-Fi devices, and then re-scan available networks.
Some devices may automatically turn off Wi-Fi when not in use to save power.	Power cycle / restart devices, and then re-scan available networks.
Device not broadcasting.	- Enable broadcasting of the device's network using the Wi-Fi settings on the device you are trying to connect to. - You may still be able to connect to the device even 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 to.
Devices out of range or signal being blocked.	Move devices physically closer together or, if possible, remove the obstructions and then re-scan available networks.

Cannot connect to network

Possible causes	Possible solutions
Some devices may automatically turn off Wi-Fi when not in use to save power.	Power cycle / restart devices, and then retry the connection.
Trying to connect to the wrong Wi-Fi network	Ensure that 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 that 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	1. Try repositioning the devices so that structure is removed from the direct line of sight between the devices, or: 2. If possible, use a wired connection instead.

Possible causes	Possible solutions
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.)	1. Change the Wi-Fi Channel of the device you are trying to connect to, and then retry the connection. You can use a free Wi-Fi analyzer app on your mobile or tablet device to help you choose a better channel (i.e. a channel with the least amount of traffic). 2. Temporarily disable each wireless device in turn until you have identified the device causing the interference.
Interference caused by other devices that use the 2.4GHz frequency band. The following common devices use the 2.4GHz frequency band: • Microwave ovens • Fluorescent lighting • Cordless phones / baby monitors • Motion sensors	Temporarily switch off each device in turn until you have identified the device causing the interference, then remove or re-position the offending device(s).
Interference caused by electrical and electronic devices and associated cabling could generate an electromagnetic field which may interfere with the Wi-Fi signal.	Temporarily switch off each item in turn until you have identified the device causing the interference, then remove or re-position the offending device(s).

Connection extremely slow and / or keeps dropping out

Possible causes	Possible solutions
Wi-Fi performance degrades over distance, resulting in products farther away receiving 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.	• Move devices physically closer together. • For fixed installations such as a Quantum Radar, enable the Wi-Fi connection on a display installed closer to the device.
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 band; some older Bluetooth devices may interfere with Wi-Fi signals.)	1. Change the Wi-Fi Channel of the device you are trying to connect to, and then retry the connection. You can use a free Wi-Fi analyzer app on your mobile or tablet device to help you choose a better channel (i.e. a channel with the least amount of traffic). 2. Temporarily switch off each device in turn until you have identified the device causing the interference, then remove or re-position the offending device(s).
Interference from devices on other vessels. When in close proximity to other vessels, such as when moored up in a marina, many other Wi-Fi signals may be present.	1. Change the Wi-Fi Channel of the device you are trying to connect to, and then retry the connection. You can use a free Wi-Fi analyzer app on your mobile or tablet device to help you choose a better channel (i.e. a channel with the least amount of traffic). 2. If possible, move your vessel to a location with less Wi-Fi traffic.

Network connection established, but no data

Possible causes	Possible solutions
Connected to the wrong network	Ensure that your device is connected to the correct network.
Device software incompatibility	Ensure both devices are running the latest available software.
The device may be defective	1. Try updating software to a later version, or: 2. Re-install the software. 3. Obtain new replacement device.

Mobile application running slowly, or not at all

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

20.7 Touchscreen troubleshooting

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

Touchscreen does not operate as expected:

Possible causes	Possible solutions
TouchLock is enabled.	Swipe your finger from left to right across the <i>[Power]</i> 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.

CHAPTER 21: TECHNICAL SUPPORT

CHAPTER CONTENTS

- 21.1 Raymarine technical support and servicing — page 99
- 21.2 Learning resources — page 101

21.1 Raymarine technical support and servicing

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

Product information

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

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

Servicing and warranty

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

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

- www.bit.ly/rym-warranty

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

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

United States (US):

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

Web support

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

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

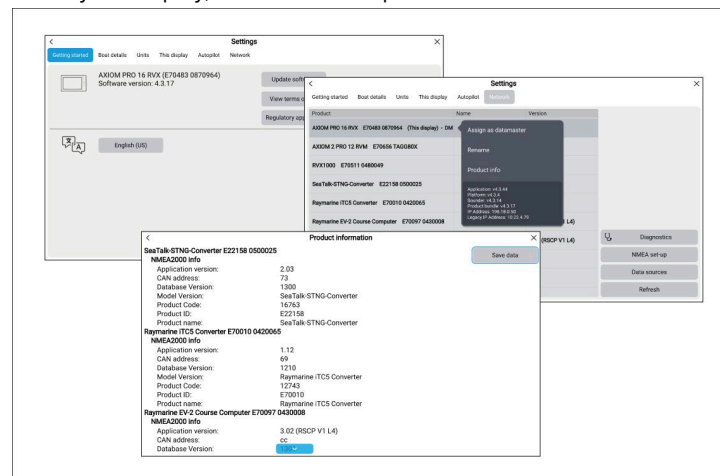
Telephone and online support

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

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

Viewing product information

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



1. Select *[Settings]* from the Homescreen.
The *[Getting started]* menu contains hardware and software information for your display.
2. You can view further information about your display, or view information about products networked using SeaTalk HS and SeaTalk NG / NMEA 2000, by selecting the *[Network]* tab, then:
 - i. to display detailed software information and your display's network IP address, select your display from the list.
 - ii. to display detailed diagnostics information for all products, select *[Product info]* from the *[Diagnostics]* pop over menu.

Remote Support via AnyDesk

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

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

To get started, you will first need to contact Raymarine Product Support. If the representative considers that your support case would benefit from a remote session, you need to first ensure that

your display has an active Internet connection via Wi-Fi. Next, launch the AnyDesk app from your display's homescreen, and then provide the displayed unique ID to the Raymarine Product Support representative. Then follow any further instructions provided to you by the representative.

Attention

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

21.2 Learning resources

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

Video tutorials

Raymarine official channel on YouTube

- <http://www.youtube.com/user/RaymarineInc>

Training courses

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

- www.bit.ly/rym-training

Technical support forum

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

- www.bit.ly/rym-support

CHAPTER 22: AXIOM 2 PRO 9 TECHNICAL SPECIFICATION

CHAPTER CONTENTS

- 22.1 Power specification — page 103
- 22.2 Environmental specification — page 103
- 22.3 LCD specification — page 103
- 22.4 Physical specification — page 103
- 22.5 Internal GNSS (GPS) receiver specification — page 104
- 22.6 Connections specification — page 104
- 22.7 RVM variant sonar specification — page 105
- 22.8 S variant sonar specification — page 106
- 22.9 Conformance/approvals — page 106
- 22.10 Product markings — page 106

22.1 Power specification

Specification	
Nominal supply voltage:	12 V / 24 V dc
Operating voltage range:	8 V dc to 32 V dc
Current (Maximum):	5 A
Off-current (Maximum @ 12 V dc):	11 mA (0.13 Watts)
Off-current (Maximum @ 24 V dc):	18 mA (0.43 Watts)
Fuse requirements:	• Inline fuse = 15 A, or • Thermal breaker = 15 A
Power consumption Max @ 12 V dc:	• RVM: 44.4 Watts • S: 31.2 Watts
Power consumption Max @ 24 V dc:	• RVM: 40.9 Watts • S: 29.6 Watts

Note:

Power consumption figures for RVM variant displays were taken using a RealVision™ Max transducer connected. Power consumption figures for S variant displays were taken using a CPT-S transducer connected.

22.2 Environmental specification

Specification	
Operating temperature range:	-25° C (-13° F) to + 55° C (131° F)
Storage temperature range:	-30°C (-22° F) to + 70° C (158° F)
Humidity:	up to 93% @ 40° C (104° F)

Specification	
Water ingress protection:	IPx6 and IPx7
Installation location:	• Above decks • Below decks

22.3 LCD specification

Specification	
Size (diagonal):	9.0"
Type:	IPS (In-Plane Switching)
Color depth:	24-bit
Resolution:	1280 x 720 (HD)
Aspect ratio:	16:9
Brightness / Luminance:	1300 nits / 1300 cd/m ²
Viewing angle:	Top 88° / Bottom 88° / Left 88° / Right 88°
Number of simultaneous touches:	1 to 16

22.4 Physical specification

Specification	
Gross (boxed) product weight:	• S variant: 5.03 kg (11.09 lbs) • RVM variant: 5.16 kg (11.38 lbs)
Net (unboxed) product weight:	• S variant: 2.82 kg (6.22 lbs) • RVM variant: 2.98 kg (6.57 lbs)
Dimensions (surface / flush mounted):	Height: 173.79 mm (6.84 in), Width: 299.32 mm (11.78 in), Depth (including cables): 234.9 mm (9.25 in)

Specification	
Dimensions (trunnion mounted):	Height: 186.2 mm (7.33 in), Width: 329.5 mm (12.97 in), Depth (including cables): 234.9 mm (9.25 in)
Internal storage:	64 GB solid state.
External storage:	Dual slot MicroSDXC card reader

22.5 Internal GNSS (GPS) receiver specification

Specification	
Almanac Update:	Automatic
Antenna:	Internal antenna, optional external antenna connection.
Channels:	Track up to 28 satellites simultaneously.
Cold start (Time To First Fix):	<2 minutes.
Geodetic Datum:	WGS-84 (alternatives can be selected on the display)
GNSS compatibility:	• GPS • GLONASS • Beidou • Galileo
Operating frequency:	1574 MHz to 1605 MHz.
Position Accuracy:	• Without SBAS: <= 15 meters 95% of the time. • With SBAS: <= 5 meters 95% of the time.
Receiver IC Sensitivity:	• 165 dBm (Tracking) • 160 dBm (Re-acquisition) • 148 dBm (Cold start)

Specification	
Refresh Rate:	10 Hz (10 times per second)
SBAS compatibility:	• EGNOS • GAGAN • MSAS • QZSS • WAAS
Signal Acquisition:	Automatic

22.6 Connections specification

Specification	
Accessory connection:	USB Micro B (for external card reader connection).
Analog video connections:	Composite BNC connectors via Power/Video/Audio cable.
Audio connections:	Left and Right RCA connectors via Power/Video/Audio cable.
Ethernet connections:	RayNet (10/100/1,000 Mbps/s) x 2.
GPS antenna connection:	TNC type connector.
HDMI connections:	Micro HDMI (Type D) (v1.4b) output connector.
NMEA 0183 connection:	NMEA 0183 TO NMEA 2000 convertor required (part number: A80721).
NMEA 2000 connection:	DeviceNet connector (Load Equivalency Number = 1).
Bluetooth connection:	Bluetooth: v4.0 combined with Wi-Fi module.

Specification	
Wi-Fi connection:	Multiband - 2.4 GHz, and 5 GHz 802.11b/g/n - Dual MIMO (Multiple In, Multiple Out) @ 2.4 GHz 1x Antenna is used for Wi-Fi only 1x Antenna is used for both Wi-Fi and Bluetooth 2.4 GHz only (can simultaneously operate as an access point and as a host) - SISO (Single In, Single Out) @ 5 GHz 1x Antenna is used for Wi-Fi only 1x Antenna is used for Bluetooth only
Transducer connections (RVM variants):	25-pin RV / RVM connector. 11-pin 1 kW connector.
Transducer connections (S variants):	25-pin RV / RVM connector (requires adaptor cable for CPT-S only transducers).

22.7 RVM variant sonar specification

Sonar channels

Your product supports the following sonar channels:

RV / RVM transducer connection

CHIRP sonar channels	
3D Vision (RealVision™)	DownVision™
SideVision™	High CHIRP
Sonar (CPT-S transducer)	

1 kW transducer connection

CHIRP / traditional sonar channels	
High CHIRP	Medium CHIRP
Low CHIRP	Low frequency
Conical sonar	Medium frequency
High frequency	

Sonar range

The sonar range is the effective depth or distance that the transducer can operate to, **in optimum weather conditions**.

The following ranges apply to RealVision™ Max 3D sonar channels:

Note:	
The listed sonar channel ranges are indicative only, and may differ depending on the transducer in use, the installation, and the prevailing water conditions.	

Sonar channels	Range
CHIRP sonar:	0.6 m (2 ft) to 366 m (1,200 ft)
DownVision™:	0.6 m (2 ft) to 183 m (600 ft)
SideVision™:	0.6 m (2 ft) to 91 m (300 ft)
RealVision™ Max 3D:	0.6 m (2 ft) to 91 m (300 ft)

Traditional sonar range

The following ranges apply to Traditional sonar channels:

Sonar channel	Range
Traditional sonar:	0.9 m (3 ft) to 1,524 m (5,000 ft) (in optimum conditions, using a 1 kW transducer)

22.8 S variant sonar specification

The sonar range is the effective depth or distance that the transducer can operate to, **in optimum weather conditions**.

CHIRP sonar channel	Range
100 W Sonar (conical beam):	0.6 m (2 ft) to 274 m (900 ft), depending on water conditions

22.9 Conformance/approvals

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

- Radio Equipment Directive 2014/53/EU
- EN 60945:2002 (Europe, Australia New Zealand)
- FCC Part 15C and Part 15E
- ISED ICES-003
- NMEA 2000 certified

22.10 Product markings

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

- UKCA
- CE
- FCC
- ISED
- Japan
- Australian Tick
- Brazil Anatel
- WEEE Directive

CHAPTER 23: AXIOM 2 PRO 12 TECHNICAL SPECIFICATION

CHAPTER CONTENTS

- 23.1 Power specification — page 108
- 23.2 Environmental specification — page 108
- 23.3 LCD specification — page 108
- 23.4 Physical specification — page 108
- 23.5 Connections specification — page 109
- 23.6 Internal GNSS (GPS) receiver specification — page 109
- 23.7 RVM variant sonar specification — page 110
- 23.8 S variant sonar specification — page 111
- 23.9 Conformance/approvals — page 111
- 23.10 Product markings — page 111

23.1 Power specification

Specification	
Nominal supply voltage:	12 V / 24 V dc
Operating voltage range:	8 V dc to 32 V dc
Current (Maximum):	5 A
Off-current (Maximum @ 12 V dc):	11 mA (0.13 Watts)
Off-current (Maximum @ 24 V dc):	18 mA (0.43 Watts)
Fuse requirements:	• Inline fuse = 15 A, or • Thermal breaker = 15 A
Power consumption Max @ 12 V dc:	• RVM: 37.2 Watts • S: 24.6 Watts
Power consumption Max @ 24 V dc:	• RVM: 35.3 Watts • S: 23.6 Watts

Note:

Power consumption figures for RVM variant displays were taken using a RealVision™ Max transducer connected. Power consumption figures for S variant displays were taken using a CPT-S transducer connected.

23.2 Environmental specification

Specification	
Operating temperature range:	-25° C (-13° F) to + 55° C (131° F)
Storage temperature range:	-30°C (-22° F) to + 70° C (158° F)
Humidity:	up to 93% @ 40° C (104° F)

Specification	
Water ingress protection:	IPx6 and IPx7
Installation location:	• Above decks • Below decks

23.3 LCD specification

Specification	
Size (diagonal):	12.1"
Type:	IPS (In-Plane Switching)
Color depth:	24-bit
Resolution:	1280 x 800 (WXGA)
Aspect ratio:	16:10
Brightness / Luminance:	1200 nits / 1200 cd/m ²
Viewing angle:	Top 88° / Bottom 88° / Left 88° / Right 88°
Number of simultaneous touches:	1 to 16

23.4 Physical specification

Specification	
Gross (boxed) product weight:	• S variant: 6.81 kg (15.01 lbs) • RVM variant: 6.92 kg (15.26 lbs)
Net (unboxed) product weight:	• S variant: 4.19 kg (9.24 lbs) • RVM variant: 4.30 kg (9.48 lbs)
Dimensions (surface/flush mounted):	Height: 222.8 mm (8.77 in), Width: 358.03 mm (14.1 in), Depth (including cables): 233.4 mm (9.18 in)

Specification	
Dimensions (trunnion mounted):	Height: 246.13 mm (9.69 in), Width: 388.5 mm (15.3 in), Depth (including cables): 233.4 mm (9.18 in)
Internal storage:	64 GB solid state.
External storage:	Dual slot MicroSDXC card reader

23.5 Connections specification

Specification	
Accessory connection:	USB Micro B (for external card reader connection).
Analog video connections:	Composite BNC connectors via Power/Video/Audio cable.
Audio connections:	Left and Right RCA connectors via Power/Video/Audio cable.
Ethernet connections:	RayNet (10/100/1,000 Mbps/s) x 2.
GPS antenna connection:	TNC type connector.
HDMI connections:	Micro HDMI (Type D) (v1.4b) output connector.
NMEA 0183 connection:	NMEA 0183 TO NMEA 2000 convertor required (part number: A80721).
NMEA 2000 connection:	DeviceNet connector (Load Equivalency Number = 1).
Bluetooth connection:	Bluetooth: v4.0 combined with Wi-Fi module.

Specification	
Wi-Fi connection:	Multiband - 2.4 GHz, and 5 GHz 802.11b/g/n - Dual MIMO (Multiple In, Multiple Out) @ 2.4 GHz 1x Antenna is used for Wi-Fi only 1x Antenna is used for both Wi-Fi and Bluetooth 2.4 GHz only (can simultaneously operate as an access point and as a host) - SISO (Single In, Single Out) @ 5 GHz 1x Antenna is used for Wi-Fi only 1x Antenna is used for Bluetooth only
Transducer connections (RVM variants):	25-pin RV / RVM connector. 11-pin 1 kW connector.
Transducer connections (S variants):	25-pin RV / RVM connector (requires adaptor cable for CPT-S only transducers).

23.6 Internal GNSS (GPS) receiver specification

Specification	
Almanac Update:	Automatic
Antenna:	Internal antenna, optional external antenna connection.
Channels:	Track up to 28 satellites simultaneously.
Cold start (Time To First Fix):	<2 minutes.

Specification	
Geodetic Datum:	WGS-84 (alternatives can be selected on the display)
GNSS compatibility:	• GPS • GLONASS • Beidou • Galileo
Operating frequency:	1574 MHz to 1605 MHz.
Position Accuracy:	• Without SBAS: <= 15 meters 95% of the time. • With SBAS: <= 5 meters 95% of the time.
Receiver IC Sensitivity:	• 165 dBm (Tracking) • 160 dBm (Re-acquisition) • 148 dBm (Cold start)
Refresh Rate:	10 Hz (10 times per second)
SBAS compatibility:	• EGNOS • GAGAN • MSAS • QZSS • WAAS
Signal Acquisition:	Automatic

23.7 RVM variant sonar specification

Sonar channels

Your product supports the following sonar channels:

RV / RVM transducer connection

CHIRP sonar channels	
3D Vision (RealVision™)	DownVision™
SideVision™	High CHIRP
Sonar (CPT-S transducer)	

1 kW transducer connection

CHIRP / traditional sonar channels	
High CHIRP	Medium CHIRP
Low CHIRP	Low frequency
Conical sonar	Medium frequency
High frequency	

Sonar range

The sonar range is the effective depth or distance that the transducer can operate to, **in optimum weather conditions**.

The following ranges apply to RealVision™ Max 3D sonar channels:

Note:	
The listed sonar channel ranges are indicative only, and may differ depending on the transducer in use, the installation, and the prevailing water conditions.	

Sonar channels	Range
CHIRP sonar:	0.6 m (2 ft) to 366 m (1,200 ft)
DownVision™:	0.6 m (2 ft) to 183 m (600 ft)
SideVision™:	0.6 m (2 ft) to 91 m (300 ft)
RealVision™ Max 3D:	0.6 m (2 ft) to 91 m (300 ft)

Traditional sonar range

The following ranges apply to Traditional sonar channels:

Sonar channel	Range
Traditional sonar:	0.9 m (3 ft) to 1,524 m (5,000 ft) (in optimum conditions, using a 1 kW transducer)

- Australian Tick
- Brazil Anatel
- WEEE Directive

23.8 S variant sonar specification

The sonar range is the effective depth or distance that the transducer can operate to, **in optimum weather conditions**.

CHIRP sonar channel	Range
100 W Sonar (conical beam):	0.6 m (2 ft) to 274 m (900 ft), depending on water conditions

23.9 Conformance/approvals

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

- Radio Equipment Directive 2014/53/EU
- EN 60945:2002 (Europe, Australia New Zealand)
- FCC Part 15C and Part 15E
- ISSED ICES-003
- NMEA 2000 certified

23.10 Product markings

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

- UKCA
- CE
- FCC
- ISSED
- Japan

CHAPTER 24: AXIOM 2 PRO 16 TECHNICAL SPECIFICATION

CHAPTER CONTENTS

- 24.1 Power specification — page 113
- 24.2 Environmental specification — page 113
- 24.3 LCD specification — page 113
- 24.4 Physical specification — page 113
- 24.5 Connections specification — page 114
- 24.6 Internal GNSS (GPS) receiver specification — page 114
- 24.7 RVM variant sonar specification — page 115
- 24.8 S variant sonar specification — page 116
- 24.9 Conformance/approvals — page 116
- 24.10 Product markings — page 116

24.1 Power specification

Specification	
Nominal supply voltage:	12 V / 24 V dc
Operating voltage range:	8 V dc to 32 V dc
Current (Maximum):	5 A
Off-current (Maximum @ 12 V dc):	11 mA (0.13 Watts)
Off-current (Maximum @ 24 V dc):	18 mA (0.43 Watts)
Fuse requirements:	• Inline fuse = 15 A, or • Thermal breaker = 15 A
Power consumption Max @ 12 V dc:	• RVM: 50.8 Watts • S: 38.4 Watts
Power consumption Max @ 24 V dc:	• RVM: 47.1 Watts • S: 37.7 Watts

Note:

Power consumption figures for RVM variant displays were taken using a RealVision™ Max transducer connected. Power consumption figures for S variant displays were taken using a CPT-S transducer connected.

24.2 Environmental specification

Specification	
Operating temperature range:	-25° C (-13° F) to + 55° C (131° F)
Storage temperature range:	-30°C (-22° F) to + 70° C (158° F)
Humidity:	up to 93% @ 40° C (104° F)

Specification	
Water ingress protection:	IPx6 and IPx7
Installation location:	• Above decks • Below decks

24.3 LCD specification

Specification	
Size (diagonal):	15.6"
Type:	IPS (In-Plane Switching)
Color depth:	24-bit
Resolution:	1920 x 1080 (Full HD)
Aspect ratio:	16:9
Brightness / Luminance:	1200 nits / 1200 cd/m ²
Viewing angle:	Top 88° / Bottom 88° / Left 88° / Right 88°
Number of simultaneous touches:	1 to 16

24.4 Physical specification

Specification	
Gross (boxed) product weight:	• S variant: 9.02 kg (19.89 lbs) • RVM variant: 9.18 kg (20.24 lbs)
Net (unboxed) product weight:	• S variant: 5.98 kg (13.18 lbs) • RVM variant: 6.02 kg (13.27 lbs)
Dimensions (surface / flush mounted):	Height: 258 mm (10.16 in), Width: 452.02 mm (17.8 in), Depth (including cables): 240.4 mm (9.46 in)

Specification	
Dimensions (trunnion mounted):	Height: 281.20 mm (11.10 in), Width: 482.50 mm (19.00 in), Depth (including cables): 241.40 mm (9.50 in)
Internal storage:	64 GB solid state.
External storage:	Dual slot MicroSDXC card reader

24.5 Connections specification

Specification	
Accessory connection:	USB Micro B (for external card reader connection).
Analog video connections:	Composite BNC connectors via Power/Video/Audio cable.
Audio connections:	Left and Right RCA connectors via Power/Video/Audio cable.
Ethernet connections:	RayNet (10/100/1,000 Mbps/s) x 2.
GPS antenna connection:	TNC type connector.
HDMI connections:	Micro HDMI (Type D) (v1.4b) output connector.
NMEA 0183 connection:	NMEA 0183 TO NMEA 2000 convertor required (part number: A80721).
NMEA 2000 connection:	DeviceNet connector (Load Equivalency Number = 1).
Bluetooth connection:	Bluetooth: v4.0 combined with Wi-Fi module.

Specification	
Wi-Fi connection:	Multiband - 2.4 GHz, and 5 GHz 802.11b/g/n - Dual MIMO (Multiple In, Multiple Out) @ 2.4 GHz 1x Antenna is used for Wi-Fi only 1x Antenna is used for both Wi-Fi and Bluetooth 2.4 GHz only (can simultaneously operate as an access point and as a host) - SISO (Single In, Single Out) @ 5 GHz 1x Antenna is used for Wi-Fi only 1x Antenna is used for Bluetooth only
Transducer connections (RVM variants):	25-pin RV / RVM connector. 11-pin 1 kW connector.
Transducer connections (S variants):	25-pin RV / RVM connector (requires adaptor cable for CPT-S only transducers).

24.6 Internal GNSS (GPS) receiver specification

Specification	
Almanac Update:	Automatic
Antenna:	Internal antenna, optional external antenna connection.
Channels:	Track up to 28 satellites simultaneously.
Cold start (Time To First Fix):	<2 minutes.

Specification	
Geodetic Datum:	WGS-84 (alternatives can be selected on the display)
GNSS compatibility:	• GPS • GLONASS • Beidou • Galileo
Operating frequency:	1574 MHz to 1605 MHz.
Position Accuracy:	• Without SBAS: <= 15 meters 95% of the time. • With SBAS: <= 5 meters 95% of the time.
Receiver IC Sensitivity:	• 165 dBm (Tracking) • 160 dBm (Re-acquisition) • 148 dBm (Cold start)
Refresh Rate:	10 Hz (10 times per second)
SBAS compatibility:	• EGNOS • GAGAN • MSAS • QZSS • WAAS
Signal Acquisition:	Automatic

24.7 RVM variant sonar specification

Sonar channels

Your product supports the following sonar channels:

RV / RVM transducer connection

CHIRP sonar channels	
3D Vision (RealVision™)	DownVision™
SideVision™	High CHIRP
Sonar (CPT-S transducer)	

1 kW transducer connection

CHIRP / traditional sonar channels	
High CHIRP	Medium CHIRP
Low CHIRP	Low frequency
Conical sonar	Medium frequency
High frequency	

Sonar range

The sonar range is the effective depth or distance that the transducer can operate to, **in optimum weather conditions**.

The following ranges apply to RealVision™ Max 3D sonar channels:

Note:	
The listed sonar channel ranges are indicative only, and may differ depending on the transducer in use, the installation, and the prevailing water conditions.	

Sonar channels	Range
CHIRP sonar:	0.6 m (2 ft) to 366 m (1,200 ft)
DownVision™:	0.6 m (2 ft) to 183 m (600 ft)
SideVision™:	0.6 m (2 ft) to 91 m (300 ft)
RealVision™ Max 3D:	0.6 m (2 ft) to 91 m (300 ft)

Traditional sonar range

The following ranges apply to Traditional sonar channels:

Sonar channel	Range
Traditional sonar:	0.9 m (3 ft) to 1,524 m (5,000 ft) (in optimum conditions, using a 1 kW transducer)

- Australian Tick
- Brazil Anatel
- WEEE Directive

24.8 S variant sonar specification

The sonar range is the effective depth or distance that the transducer can operate to, **in optimum weather conditions**.

CHIRP sonar channel	Range
100 W Sonar (conical beam):	0.6 m (2 ft) to 274 m (900 ft), depending on water conditions

24.9 Conformance/approvals

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

- Radio Equipment Directive 2014/53/EU
- EN 60945:2002 (Europe, Australia New Zealand)
- FCC Part 15C and Part 15E
- ISED ICES-003
- NMEA 2000 certified

24.10 Product markings

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

- UKCA
- CE
- FCC
- ISED
- Japan

CHAPTER 25: SPARES AND ACCESSORIES

CHAPTER CONTENTS

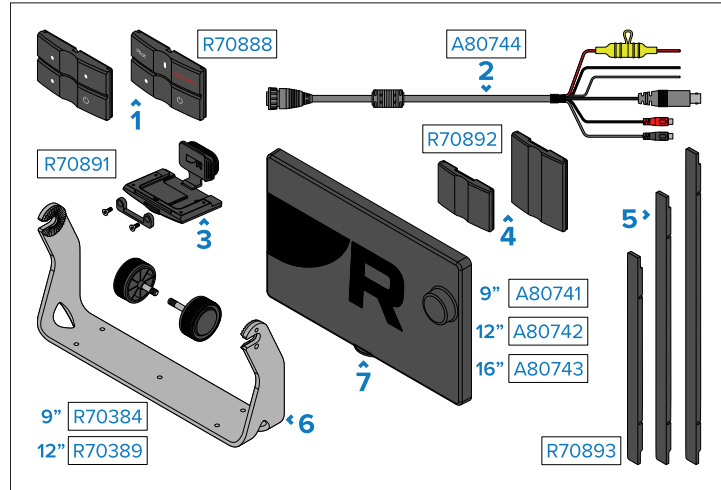
- 25.1 Compatible transducers — page 118
- 25.2 Spares — page 118
- 25.3 Accessories — page 118
- 25.4 RayNet to RayNet cables and connectors — page 120
- 25.5 RayNet to RJ45, and RJ45 (SeaTalk HS) adapter cables — page 122
- 25.6 SeaTalk NG cables and accessories — page 124

25.1 Compatible transducers

For a list of transducers that are compatible with your sonar module, refer to the following section: [p.22 — Compatible transducers](#)

25.2 Spares

The following spares are available for Axiom® 2 Pro displays.

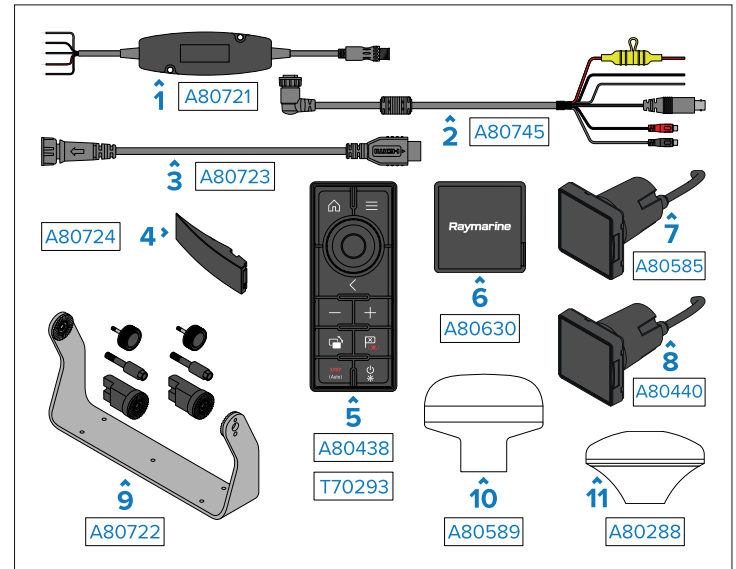


Part	Description
1	R70888 Axiom® 2 Pro Lower keypad replacement (1 x pilot keypad, 1 x user programmable keypad)
2	A80744 Axiom® 2 Straight power/video/audio cable - 1.5 m (4.92 ft)
3	R70891 Axiom® 2 Pro card reader door replacement
4	R70892 Axiom® 2 Pro 12 and 16 keypad infill replacements (2 x infills supplied)
5	R70893 Axiom® 2 Pro 9, 12, 16 Left Hand Bung replacements (3 x bungs supplied)
6	R70384 Axiom® 2 Pro 9 trunnion kit
6	R70389 Axiom® 2 Pro 12 trunnion kit

Part	Description
7	A80741 Axiom® 2 Pro 9 suncover
7	A80742 Axiom® 2 Pro 12 suncover
7	A80743 Axiom® 2 Pro 16 suncover

25.3 Accessories

The following accessories are available for Axiom® 2 Pro displays.



Part	Description
1	A80721 Actisense® NGW-1 NMEA 2000 (DeviceNet) to NMEA 0183 converter
2	A80745 A80745 — Axiom® 2 right-angled power/video/audio cable, 1.5 m (4.92 ft)
3	A80723 Micro HDMI (Type D) cable, 5 m (16.4 ft)
4	A80724 Blank Name plaque (Quantity: 40)

	Part	Description
5	A80438 / T70293	RMK-10 — display remote control
6	A80630	Bulkhead Mount Micro USB Socket
7	A80585	RCR-1 card reader
8	A80440	RCR-SDUSB card reader
9	A80722	Axiom® 2 Pro 16 trunnion kit
10	A80589	GA200 passive GNSS (GPS) antenna
11	A80288	GA150 passive GNSS (GPS) antenna

Transducer cables

RealVision™ Max 3D / RealVision™ 3D transducer extension cable(s)

Part	Length	Description
A80475	3 m (9.8 ft)	RealVision™ transducer extension cable
A80476	5 m (16.4 ft)	RealVision™ transducer extension cable
A80477	8 m (26.2 ft)	RealVision™ transducer extension cable
A80515	0.3 m (1 ft)	RealVision™ 90-degree adapter cable
A80478	0.3 m (1 ft)	Paired RealVision™ transducer Y-cable

DownVision™ / SideVision™ / CPT-S CHIRP conical beam transducer extension cable(s)

Part	Length	Description
A80490	0.2 m (7.8 in)	25-pin to 9-pin DownVision™ transducer adapter cable

CHIRP / Traditional transducer extension cable(s)

Part	Length	Description
A80496	0.1 m (3.9 in)	11-pin to 8-pin CP370-style transducer adapter cable
E66010	5 m (16.4 ft)	Traditional transducer extension cable
A102148	3 m (10 ft)	CHIRP transducer extension cable
A102150	5 m (16.4 ft)	CHIRP transducer extension cable
A80327	10 m (32.8 ft)	CHIRP transducer extension cable
A102146	0.3 m (1 ft)	Paired CHIRP transducer Y-cable
A80345	0.5 m (1.6 ft)	Dual Speed and Temperature CHIRP transducer cable

Operation cable

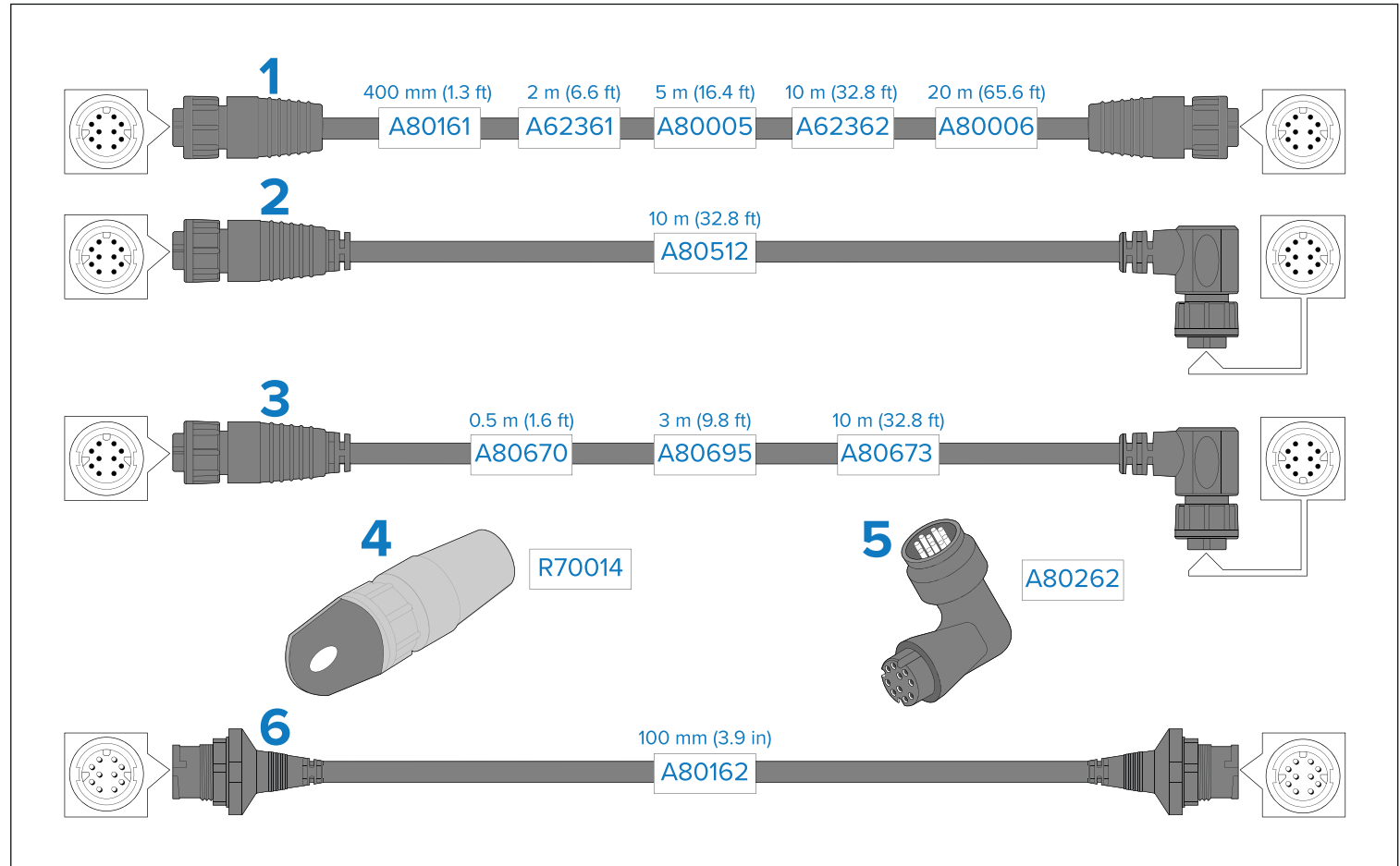
Part	Length	Description
A80328	0.1 m (3.9 in)	Single B75 / B175 operation cable

Legacy adapter plates

Adapter plates are available to enable installation of Axiom Pro and Axiom 2 Pro displays in the place of a legacy display.

Part	Adapter description
A80530	C90W / E90W to Axiom Pro 9 / Axiom 2 Pro 9 adapter plate
A80531	C120W / E120W to Axiom Pro 12 / Axiom 2 Pro 12 adapter plate
A80533	C140W / E140W / e165 to Axiom Pro 16 / Axiom 2 Pro 16 adapter plate
A80565	C120 Classic / E120 Classic to Axiom Pro 12 & Axiom 2 Pro 12 adaptor Plate.

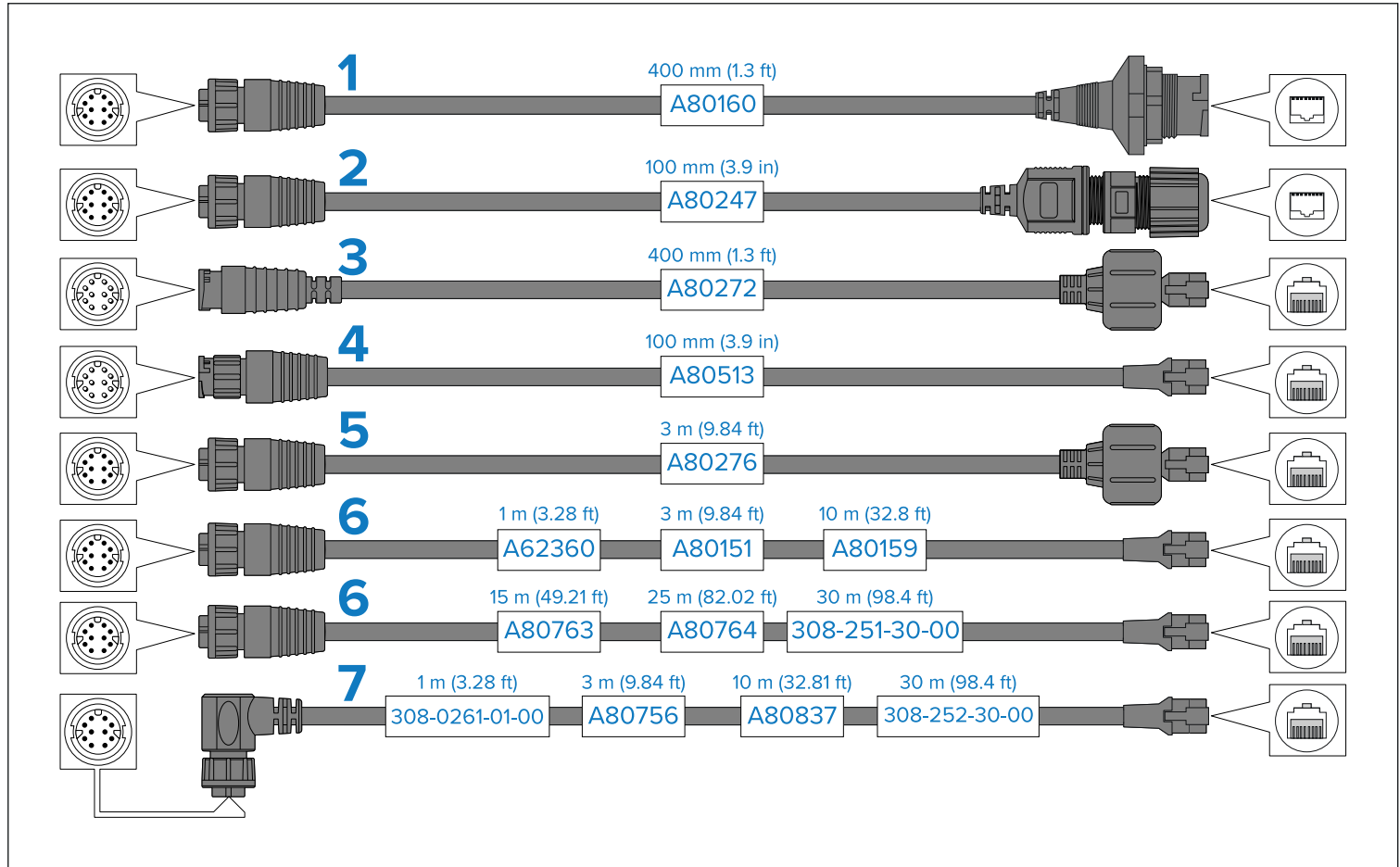
25.4 RayNet to RayNet cables and connectors



1. Standard RayNet connection cable with a RayNet (female) socket on both ends.
2. Right-angle RayNet connection cable with a straight RayNet (female) socket on one end, and a right-angle RayNet (female) socket on the other. Suitable for connecting at 90° (right angle) to a device, for installations where space is limited.
3. Right-angle RayNet connection cable with a straight RayNet (female) socket on one end, and a right-angle RayNet (female) socket on the other. Available as an alternative to the (A80512) accessory cable, for installations which require an alternate cable routing direction.
4. RayNet cable puller (5 pack).

5. RayNet to RayNet right-angle coupler / adapter. Suitable for connecting RayNet cables at 90° (right angle) to devices, for installations where space is limited.
6. Adapter cable with a RayNet (male) plug on both ends. Suitable for joining (female) RayNet cables together for longer cable runs.

25.5 RayNet to RJ45, and RJ45 (SeaTalk HS) adapter cables



1. Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 (SeaTalk HS) socket on the other end, accepting the following cables with an RJ45 (SeaTalk HS) waterproof locking (male) plug:
 - A62245 (1.5 m).
 - A62246 (15 m).
2. Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 (SeaTalk HS) socket on the other end, along with a locking gland for a watertight fit.
3. Adapter cable with a RayNet (male) plug on one end, and an RJ45 (SeaTalk HS) waterproof (male) plug on the other end.

4. Adapter cable with a RayNet (male) plug on one end, and an RJ45 (male) plug on the other end.
5. Adapter cable with a RayNet (female) socket on one end, and an RJ45 (SeaTalk HS) waterproof (male) plug on the other end.
6. Adapter cable with a RayNet (female) socket on one end, and an RJ45 (male) plug on the other end.
7. Adapter cable with a right-angled RayNet (female) socket on one end, and an RJ45 (male) plug on the other end.

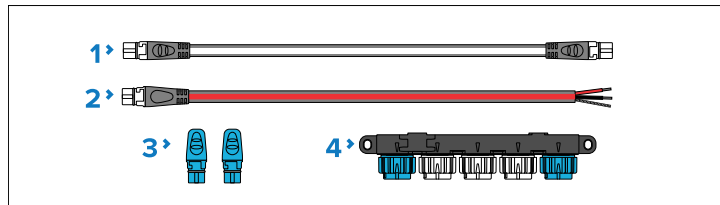
25.6 SeaTalk NG cables and accessories

SeaTalk NG cables and accessories for use with compatible products.

SeaTalk NG kits

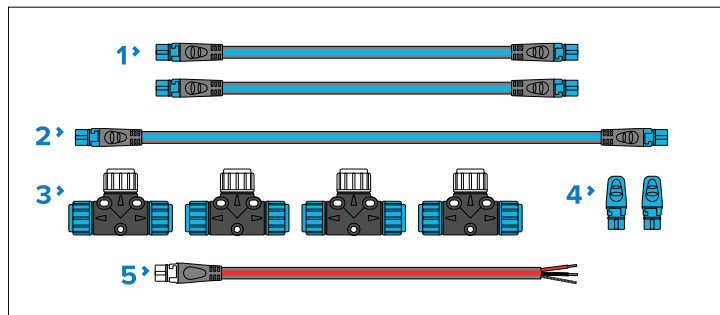
SeaTalk NG kits enable you to create a simple SeaTalk NG backbone.

Starter kit (part number: T70134) consists of:



- 1 x Spur cable 3 m (9.8 ft) (part number: **A06040**). Used to connect device to the SeaTalk NG backbone.
- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.
- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.
- 1 x 5-Way connector (part number: **A06064**). Each connector block allows connection of up to 3 SeaTalk NG devices. Multiple connector blocks can be 'daisy chained' together.

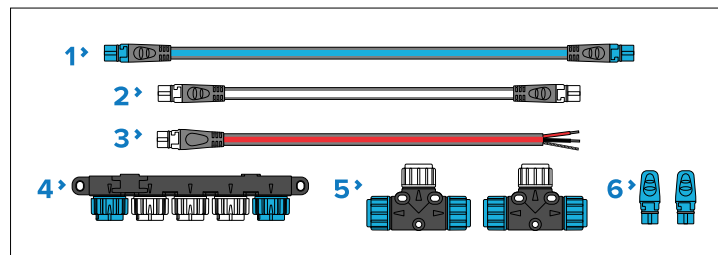
Backbone kit (part number: A25062) consists of:



- 2 x Backbone cables 5 m (16.4 ft) (part number: **A06036**). Used to create and extend the SeaTalk NG backbone.

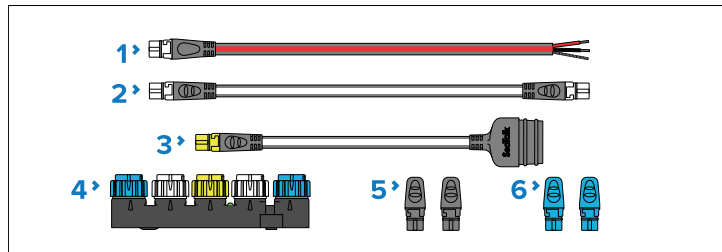
- 1 x Backbone cable 20 m (65.6 ft) (part number: **A06037**). Used to create and extend the SeaTalk NG backbone.
- 4 x T-piece (part number: **A06028**). Each T-piece allows connection of one SeaTalk NG device. Multiple T-pieces can be 'daisy chained' together.
- 2 x Backbone terminators (part number: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

Evolution-Series autopilot cable kit (part number: R70160) consists of:



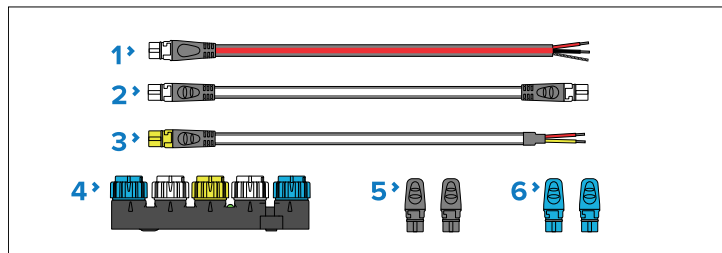
- 1 x Backbone cable 5 m (16.4 ft) (part number: **A06036**). Used to create and extend the SeaTalk NG backbone.
- 1 x Spur cable 1 m (3.3 ft) (part number: **A06040**). Used to connect device to the SeaTalk NG backbone.
- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.
- 1 x 5-Way connector (part number: **A06064**). Each connector block allows connection of up to 3 SeaTalk NG devices. Multiple connector blocks can be 'daisy chained' together.
- 2 x T-pieces (part number: **A06028**). Each T-piece allows connection of one SeaTalk NG device. Multiple T-pieces can be 'daisy chained' together.
- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

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



- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.
- 1 x Spur cable 1 m (3.3 ft) (part number: **A06039**). Used to connect a device to the SeaTalk NG backbone.
- 1 x SeaTalk 1 (3 pin) to SeaTalk NG adapter cable 0.4 m (1.3 ft) (part number: **A22164**). Used to connect SeaTalk 1 devices to the SeaTalk NG backbone via the SeaTalk 1 to SeaTalk NG converter.
- 1 x SeaTalk 1 to SeaTalk NG converter (part number: **E22158**). Each converter allows connection of one SeaTalk 1 device and up to 2 SeaTalk NG devices.
- 2 x Spur blanking plugs (part number: **A06032**). Used to cover unused spur connections in 5-way blocks, T-piece connectors and SeaTalk 1 to SeaTalk NG converter.
- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

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

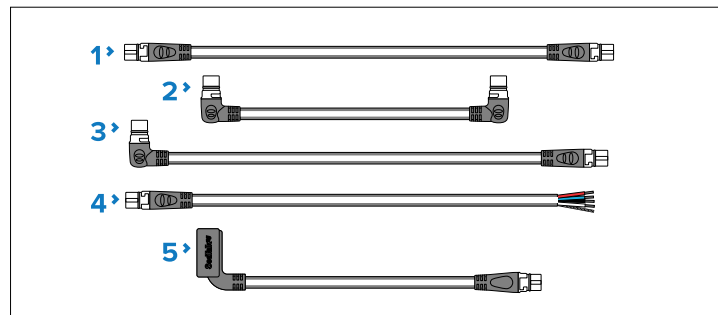


- 1 x Power cable 2 m (6.6 ft) (part number: **A06049**). Used to provide 12 V dc power to the SeaTalk NG backbone.
- 1 x Spur cable 1 m (3.3 ft) (part number: **A06039**). Used to connect a device to the SeaTalk NG backbone.

- 1 x NMEA 0183 VHF stripped-end (2-wire) to SeaTalk NG adapter cable 1 m (3.3 ft) (part number: **A06071**). Used to connect an NMEA 0183 VHF radio to the SeaTalk NG backbone via the NMEA 0183 to SeaTalk NG converter.
- 1 x SeaTalk 1 to SeaTalk NG converter (part number: **E22158**). Each converter allows connection of one SeaTalk 1 device and up to 2 SeaTalk NG devices.
- 2 x Spur blanking plugs (part number: **A06032**). Used to cover unused spur connections in 5-way blocks, T-piece connectors, and the SeaTalk 1 to SeaTalk NG converter.
- 2 x Backbone terminators (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.

SeaTalk NG spur cables

SeaTalk NG spur cables are required to connect devices to the SeaTalk NG backbone.

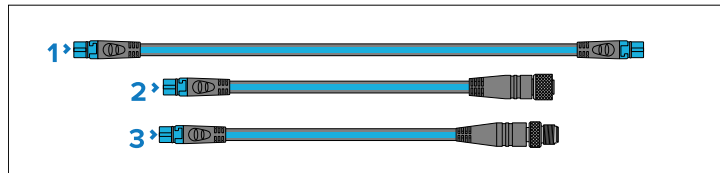


- SeaTalk NG spur cables:
 - Spur cable 0.4 m (1.3 ft) (part number: **A06038**).
 - Spur cable 1 m (3.3 ft) (part number: **A06039**).
 - Spur cable 3 m (9.8 ft) (part number: **A06040**).
 - Spur cable 5 m (16.4 ft) (part number: **A06041**).
- Elbow (right-angled) to elbow (right-angled) spur cable 0.4 m (1.3 ft) (part number: **A06042**). Used in confined spaces where a straight spur cable will not fit.
- Elbow (right-angled) to straight spur cable 1 m (3.3 ft) (part number: **A06081**). Used in confined spaces where a straight spur cable will not fit.

4. SeaTalk NG to stripped-end spur cables (connects compatible products that do not have a SeaTalk NG connector, such as transducer pods):
 - SeaTalk NG to stripped-end spur cable 1 m (3.3 ft) (part number: **A06043**)
 - SeaTalk NG to stripped-end spur cable 3 m (9.8 ft) (part number: **A06044**)
5. ACU-Series / SPX-Series autopilot to SeaTalk NG spur cable 0.3 m (1.0 ft) (part number **R12112**). Connects the course computer to the SeaTalk NG backbone. This connection can also be used to provide 12 V dc power to the SeaTalk NG backbone.

SeaTalk NG backbone cables

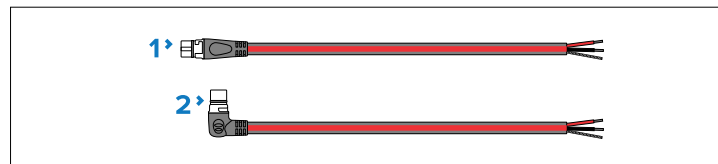
SeaTalk NG backbone cables are used to create or extend a SeaTalk NG backbone.



1. Backbone cables:
 - Backbone cable 0.4 m (1.3 ft) (part number: **A06033**).
 - Backbone cable 1 m (3.3 ft) (part number: **A06034**).
 - Backbone cable 3 m (9.8 ft) (part number: **A06035**).
 - Backbone cable 5 m (16.4 ft) (part number: **A06036**).
 - Backbone cable 9 m (29.5 ft) (part number: **A06068**).
 - Backbone cable 20 m (65.6 ft) (part number: **A06037**).
2. SeaTalk NG to DeviceNet (female) Backbone cable 0.4 m (1.3 ft) (part number: **A80675**)
3. SeaTalk NG to DeviceNet (male) Backbone cable 0.4 m (1.3 ft) (part number: **A80674**)

SeaTalk NG power cables

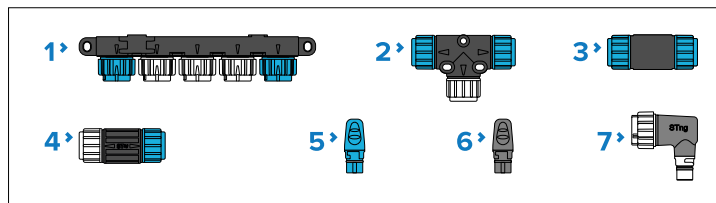
SeaTalk NG power cables are used to provide the SeaTalk NG backbone with a single 12 V dc power source. The power connection must include a 5 amp inline fuse (not supplied).



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

SeaTalk NG connectors

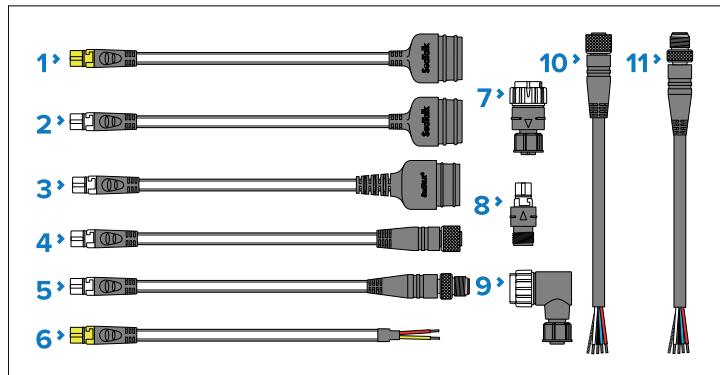
SeaTalk NG connectors are used to connect SeaTalk NG devices to the SeaTalk NG backbone and to create and extend the backbone.



1. 5-Way connector (part number: **A06064**). Each connector block allows connection of up to 3 SeaTalk NG devices. Multiple connector blocks can be 'daisy chained' together.
2. T-piece (part number: **A06028**). Each T-piece allows connection of one SeaTalk NG device. Multiple T-pieces can be 'daisy chained' together.
3. Backbone extender (part number: **A06030**). Used to connect 2 backbone cables together.
4. Inline terminator (part number: **A80001**). Used to connect a spur cable and SeaTalk NG device at the end of a backbone instead of a backbone terminator.
5. Backbone terminator (part number: **A06031**). Terminators must be fitted to both ends of the SeaTalk NG backbone.
6. Spur blanking plug (part number: **A06032**). Used to cover unused spur connections in 5-Way blocks, T-piece connectors, or the SeaTalk 1 to SeaTalk NG converter.
7. Elbow (right-angled) spur connector (part number: **A06077**). Used in confined spaces where a straight spur cable will not fit.

SeaTalk NG adaptors and adaptor cables

SeaTalk NG adaptor cables are used to connect devices designed for different CAN Bus backbones (e.g.: SeaTalk 1 or DeviceNet) to the SeaTalk NG backbone.



1. SeaTalk 1 (3 pin) to SeaTalk NG converter cable 1 m (3.3 ft) (part number: **A22164 / A06073**). Can be used to connect a SeaTalk 1 device to a SeaTalk NG backbone via the SeaTalk 1 to SeaTalk NG converter, or to connect a SeaTalk NG product directly to a SeaTalk 1 network.
2. SeaTalk 1 (3 pin) to SeaTalk NG adaptor cable 0.4 m (1.3 ft) (part number: **A06047**). Can be used to connect a SeaTalk 1 device to a SeaTalk NG backbone via the SeaTalk 1 to SeaTalk NG converter, or to connect a SeaTalk NG product directly to a SeaTalk 1 network.
3. SeaTalk 2 (5 pin) to SeaTalk NG adaptor cable 0.4 m (1.3 ft) (part number: **A06048**). Used to connect SeaTalk 2 devices or networks to a SeaTalk NG backbone.
4. SeaTalk NG to DeviceNet (female) adaptor cables connect NMEA 2000 devices that use a DeviceNet connector to the SeaTalk NG backbone, or connects SeaTalk NG devices to an NMEA 2000 network. The following cables are available:
 - SeaTalk NG to DeviceNet (female) adaptor cable 0.4 m (1.3 ft) (part number: **A06045**).
 - SeaTalk NG to DeviceNet (female) adaptor cable 1 m (3.3 ft) (part number: **A06075**).
5. SeaTalk NG to DeviceNet (male) adaptor cables. Connect NMEA 2000 devices that use a DeviceNet connector to the SeaTalk NG backbone, or connect SeaTalk NG devices to an NMEA 2000 network. The following cables are available:
 - SeaTalk NG to DeviceNet (male) adaptor cable 0.1 m (0.33 ft) (part number: **A06078**).
 - SeaTalk NG to DeviceNet (male) adaptor cable 0.4 m (1.3 ft) (part number: **A06074**).
 - SeaTalk NG to DeviceNet (male) adaptor cable 1 m (3.3 ft) (part number: **A06076**).
 - SeaTalk NG to DeviceNet (male) adaptor cable 1.5 m (4.92 ft) (part number: **A06046**).
6. NMEA 0183 stripped-end (2-wire) to SeaTalk NG adapter cable 1 m (3.3 ft) (part number: **A06071**). Used to connect an NMEA 0183 VHF radio to the SeaTalk NG backbone via the NMEA 0183 to SeaTalk NG converter.
7. SeaTalk NG (male) to DeviceNet (female) adaptor (**A06082***).
8. SeaTalk NG (female) to DeviceNet (male) adaptor (**A06083***).
9. SeaTalk NG (male) to DeviceNet (female) elbow (right-angled) adaptor (**A06084***).
10. DeviceNet (female) to stripped-end adaptor cable (0.4 m (1.3 ft)) (part number: **E05026**).
11. DeviceNet (male) to stripped-end adaptor cable (0.4 m (1.3 ft)) (part number: **E05027**).

Important:

* Do NOT connect the A06082, A06083, or A06084 adaptors directly to a backbone. Only connect as part of a **spur** connection between backbone and device.

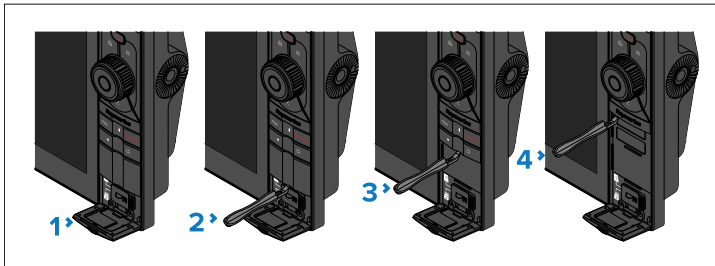
Appendix A Replacing the name plaque

The Raymarine name plaque located below the Back button on Axiom® 2 Pro displays can be replaced with an OEM-branded name plaque. OEMs can order bulk packs (qty: 40) of blank name plaques (part number: A80724), which can then have the OEM branding printed on them.

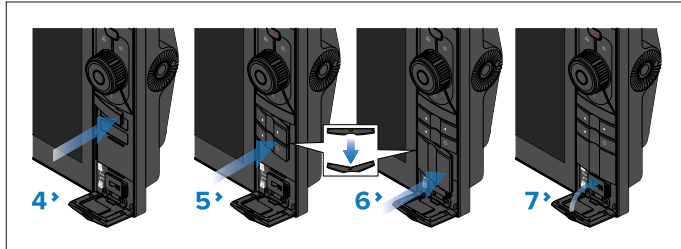
Follow the steps below to replace the name plaque.

Important:

Do NOT use metallic or sharp objects to remove the keypad or infill piece, as this could damage the keypad and and/or display.



1. Open the card reader door.
2. Axiom 2 Pro 12 and Axiom 2 Pro 16 only — Using a plastic pry tool, lever the infill piece located below the lower keypad against the small plastic protrusion. This will release the infill piece from the display.
3. Using a plastic pry tool, lever the bottom of the keypad against the small plastic protrusion to release the keypad from the display.
4. Using a plastic pry tool, lever the bottom of the name plaque approximately one third of the way along the bottom of the name plaque to release it from the display.



5. Insert one edge of the new name plaque and then apply pressure to the opposite side until it clicks into position.
6. Insert one edge of the keypad and then bend the keypad slightly in the middle to allow the other edge to be inserted into the opposite side.
7. Axiom 2 Pro 12 and Axiom 2 Pro 16 only — Insert one edge of the infill piece and then bend the infill piece slightly in the middle to allow the other edge to be inserted into the opposite side.
8. Close the card reader door.

Replacement name plaque printing specification

Specification

Base material:	Black PC / ABS
Paint:	Matt black
Logo printing method:	Pad printing
Logo ink requirement:	UV resistant ink

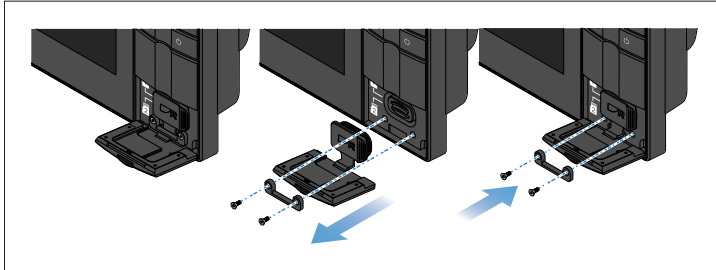
Note:

- It is the OEM's responsibility to ensure that an appropriate UV resistant ink is used for pad printing on the name plaque.
- The 'Raymarine' branding on the standard name plaque is painted using gloss black *Marabu Tampa Star TPR 980* ink, and pad printed onto the name plaque. Using this ink type and print method should be sufficient. **However, it's important that you perform your own testing to ensure suitability.** Refer to the Marabu website for ink details: <https://www.marabu-inks.com/>
- This information is provided for information only. Raymarine will not be held liable for the use of inappropriate ink or printing methods.

Appendix B Replacing the card reader door

The card reader door and card slot cover are a single piece. If the card reader door or card slot cover becomes damaged it can be replaced using the Card reader door spare (part number: R70891).

To change the Card reader door follow the steps below.

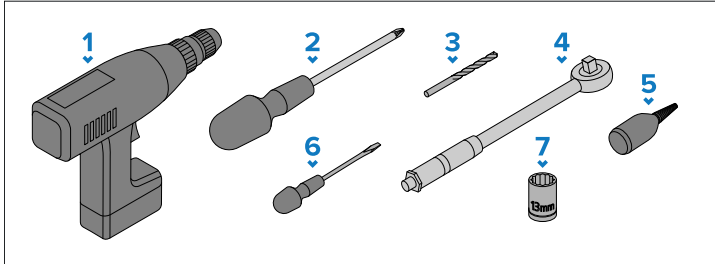


1. Open the Card reader door.
2. Unscrew the hex screws using a 1.3 mm a/f hex wrench (Allen key).
3. Remove the plastic bar.
4. Remove the Card reader door.
5. On the new Card reader door, insert the card slot cover ensuring it is correctly seated.
6. Hold the card reader door in the open position and reattach the plastic bar and secure using the hex screws, tightening the screws evenly.
7. Ensure you do not over tighten the screws.
8. Close the Card reader door ensuring that it sits flush with the bezel around the bottom of the door.

Appendix C Original trunnion kit mounting — Axiom® 2 Pro 16

Tools required (trunnion mount installations)

The following tools are recommended for mounting using a trunnion bracket:



1. Power drill.
2. Screwdriver (appropriate for your fixings).
3. Drill bit (suitable for the mounting surface material and the 5.75 mm (0.23 in) diameter holes in the trunnion bracket).
4. Torque wrench.
5. Loctite® 243, or equivalent threadlocker.
6. Small flat blade screwdriver (or plastic pry tool).
7. 13 mm (1/2") socket.

Display trunnion mounting preparation

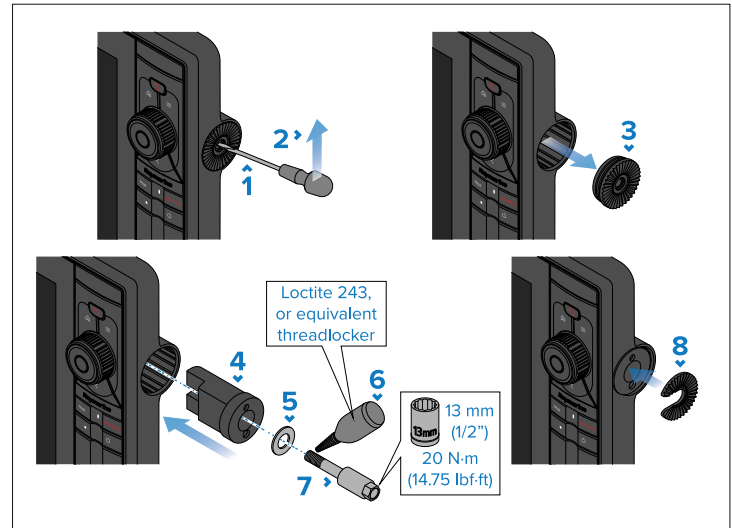
Axiom® 2 Pro 16 displays are intended to be either surface or flush mounted. An optional Trunnion bracket kit (part number: A80722) is available if trunnion mounting is desired. For trunnion mounting, the display needs to be prepared using the parts supplied in the A80722 kit.

Important:

The display is supplied with rubber trunnion bungs fitted, which must be removed before the display is trunnion mounted. Do NOT attempt to trunnion mount the display using the trunnion bungs.

To prepare the display for trunnion mounting, follow the steps below, **for both sides of the display**:

Original trunnion kit mounting — Axiom® 2 Pro 16



1. Insert a small flat blade screwdriver or plastic pry tool into the center hole of the Trunnion bung.
2. Lever the tool up or down to release the Trunnion bung.
3. Remove the Trunnion bung.
4. Insert the Spacer piece into the display with the flat edge facing forward.

Important:

Do NOT fit the ratchet plate to the spacer before tightening the standoff bolt.

5. Slide the M8 washer over the M8 standoff bolt.
6. Apply Loctite® 243 (or equivalent threadlocker) to the thread of the M8 standoff bolt.
7. Insert the M8 standoff bolt and tighten to 20 N-m (14.75 lbf-ft).

Note:

Overtightening may cause damage.

8. Remove the backing from the self adhesive tape on the rear of the Ratchet plate, and fix to the Spacer secured in the display.

The groove on the ratchet plate should face forwards and the protrusions on the back of the ratchet plate should slot into the recesses in the end of the spacer.

The display can now be trunnion mounted.

Trunnion bracket mounting

Once the display has been prepared using the instructions and parts supplied, it can be mounted using the trunnion bracket as follows:

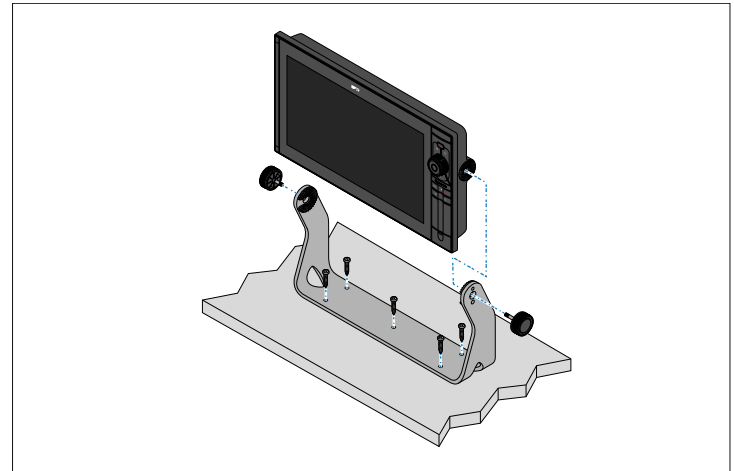
Note:

Fixings to secure the trunnion bracket to a mounting surface are not provided. 5 x self-tapping screws are required. The screws should be suitable for the mounting surface material and the 5.75 mm (0.23 in) diameter mounting holes in the trunnion bracket.

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

Important:

2 person installation is required.



1. Check the underside of the mounting surface to ensure no damage will be caused by drilling.
2. Check the thickness of the mounting surface to ensure it is sufficient to support the display.
3. Using the Trunnion bracket as a template, mark and drill the 5 x pilot holes on the mounting surface.
4. Secure the Trunnion bracket to the mounting surface using your self-tapping screws and an appropriate screwdriver.
5. One person should align the trunnion holes in the side of the display with the holes in the trunnion bracket.
6. The second person should secure the display to the trunnion bracket by inserting and tightening the trunnion knobs, ensuring that the ratchet teeth are correctly engaged.

The knobs should be tightened by hand, sufficiently to prevent the display from moving whilst your vessel is underway.
7. Route and connect necessary cables.

Appendix D NMEA 2000 PGNs

For a list of supported NMEA 2000 PGNs, please refer to the relevant Operations manual for your display:

LightHouse version	Operations manual
LightHouse 3	81370
LightHouse 4	81406

To obtain the latest version of the manual, visit: <https://bit.ly/rym-docs>

Appendix E Legacy eS and gS Series compatibility with Axiom displays

As Raymarine continues to develop new features and capabilities for the LightHouse 4 operating system, the ability to downgrade some Axiom-Series models to LightHouse software v3.11.42 (for the purposes of allowing mixed networks of Axiom-Series and legacy eS/gS Series displays) has ended.

Note:

Axiom Pro **displays manufactured after August 2022** can no longer be downgraded to a version of LightHouse which is compatible with mixed systems which include legacy eS and gS Series MFDs/chartplotters.

The following table lists Axiom-Series MFDs/chartplotters and their compatibility status with legacy eS/gS Series MFDs/chartplotters:

Display	Compatibility in mixed systems featuring eS/gS Series displays
Axiom	Yes — Software must be downgraded to LightHouse v3.11.42
Axiom+	No — NOT compatible with eS/gS systems. The LightHouse OS cannot be downgraded
Axiom XL	Yes — Software must be downgraded to LightHouse v3.11.42
Axiom 2 XL	No — NOT compatible with eS/gS systems. The LightHouse 4 OS cannot be downgraded
Axiom 2 Pro	No — NOT compatible with eS/gS systems. The LightHouse 4 OS cannot be downgraded

Display	Compatibility in mixed systems featuring eS/gS Series displays
Axiom Pro (pre-September 2022)	Yes — Software must be downgraded to LightHouse v3.11.42
Axiom Pro (post-September 2022)	No — Axiom Pro displays manufactured after August 2022, and beginning with the following serial numbers, are NOT compatible with mixed systems featuring eS/gS Series displays: • Axiom Pro 9 RVX — E70371-1027106 • Axiom Pro 12 RVX — E70372-0923640 • Axiom Pro 16 RVX — E70373-1127908 • Axiom Pro 9 S — E70481-1026853 • Axiom Pro 12 S — E70482-0924052 • Axiom Pro 16 S — E70483-1026473

If you wish to continue using a mixed system of newer Axiom-Series MFDs/chartplotters and legacy eS/gS Series MFDs/chartplotters, you must ensure that these displays are NOT connected on the same RayNet or SeaTalk NG networks.

Appendix F Ethernet (IPv4) networking of Raymarine devices with third-party products

Raymarine uses a custom Ethernet (IPv4) networking configuration. Use the following information to help you understand how Raymarine's Ethernet (IPv4) implementation interacts with third-party Ethernet (IPv4) devices on your vessel, such as routers, switches, Access Points (APs) etc.

Important:

- Third-party networking products such as routers, switches, and Access Points (APs) *may* work when connected to Raymarine networks, when configured correctly. However, correct operation is not guaranteed. It's important to refer to the instructions provided by the relevant third-party device manufacturer, to ensure that your intended use of a third-party device is consistent with the device's design intent.
- Raymarine does not warrant that Raymarine products are compatible with products manufactured by any person or entity other than Raymarine.
- When using third-party products in your Raymarine electronics network, you should be aware of, and understand, the concepts and limitations described in the following Disclaimer: [p.13 — Disclaimer](#)

Overview

- Ethernet (IPv4) networking is a method for interconnecting multiple electronic devices, allowing many devices to function in a network and share data using only a single RJ45 or RayNet connection for each device.
- In order to function correctly, every Ethernet (IPv4) device (whether Raymarine or third-party) must have a unique IP address allocated to it, and it must not conflict with that of any other device.
- IPv4 addresses can be centrally-allocated to devices either **automatically**, using a method known as *DHCP* (Dynamic Host Configuration Protocol), or **manually** (i.e. allocated a static IP address). The most common method for allocating IPv4 addresses on vessel electronics networks is *DHCP*. In this configuration, the *server* device is known as a *DHCP server*.

Client / Server device	Example(s)
Raymarine IPv4 DHCP client	• Radar scanner (e.g. Quantum-Series) • Sonar module (e.g. CP470) • IP camera (e.g. CAM300)
Raymarine IPv4 DHCP server and self-addressing device	• Chartplotter (MFD), running LightHouse 3 or LightHouse 4 (e.g. Axiom-Series) • Marine Router (e.g. YachtSense Link)
Third-party IPv4 DHCP client	IP camera
Third-party IPv4 DHCP server	• Router • Switch • Access Point (AP)

Note:

The DHCP server maintains a pool of IP addresses and “leases” an address to any DHCP-enabled client, when the client device first powers up and announces its presence on the network. Because the IP addresses are dynamic (leased) rather than static (permanently assigned), addresses no longer in use are automatically returned to the DHCP server's pool, for subsequent reallocation.

It's also possible to have multiple DHCP servers issuing addresses on an IPv4 network, but to avoid addressing conflicts, all DHCP servers must be carefully configured to only allocate IP addresses in distinct address ranges. The *subnet mask* must also be carefully configured, to ensure that devices can correctly communicate with one another.

Implementation

- Raymarine Ethernet (IPv4) devices expect to use a private **Raymarine IPv4 network**, which is designed to be internal to the vessel only. Raymarine has carefully chosen a specific IP address range (**198.18.0.0/21**) to ensure that it does not interfere with

any external IP address ranges, or other legacy and real-world addressing constraints (including but not limited to marina Wi-Fi networks).

Note:

Raymarine's IP address range is for **local traffic** within the **vessel's private Raymarine network only**, and does NOT traverse across Raymarine products to external networks, or to the Internet.

- In a Raymarine Ethernet (IPv4) network, IP addresses are self-allocated by certain Raymarine equipment in the following range: **198.18.0.32 to 198.18.3.255** (inclusive). **You must avoid placing any devices in this range using manual (static) IP addresses.**
- Whether your network includes only Raymarine Ethernet (IP) devices, or a mixture of Raymarine and third-party Ethernet (IPv4) devices, you have 3 options for configuring the Ethernet (IPv4) network and managing the IP addresses for your devices:
 1. Use a Raymarine device as the sole DHCP server to allocate IP addresses automatically to all Raymarine and third-party Ethernet (IPv4) devices on the network. **For the purposes of simplicity and reliability, this is the recommended option for most vessels.** The following Raymarine devices can act as DHCP servers:
 - a. **Raymarine chartplotter (MFD)**, running LightHouse 3 or LightHouse 4; or:
 - b. **Raymarine YachtSense Link router**

Note:

If both a Raymarine chartplotter (MFD) **and** YachtSense Link router are present in the same network, the YachtSense Link router **MUST** be configured as the DHCP server for that network. To facilitate this, the Raymarine chartplotter's (MFD's) DHCP setting defaults to *Automatic* as standard. On power up, if the YachtSense Link router is detected on the Ethernet network, any chartplotters (MFDs) in the network will disable their own *DHCP Server*, to permit the YachtSense Link router to manage the network's IP addresses. Only Raymarine chartplotters (MFDs) running LightHouse 4 are compatible with the YachtSense Link router. Additionally, the most recent versions of the LightHouse 4 and YachtSense Link software must be used.

2. Use a third-party Ethernet (IPv4) device (such as a router or Access Point) to allocate IP addresses automatically, as a sole *DHCP server*. To do this, refer to the *Configuring a third-party router as DHCP server* section, below.

Note:

Any Raymarine LightHouse 3 or LightHouse 4 chartplotters (MFDs) will still self-allocate their own IP address, even if a third-party DHCP server is being used to allocate IP addresses to other Raymarine or non-Raymarine *DHCP client* devices (Camera, Radar, Sonar etc.) on the network.

3. Manually configure static IP addresses for your devices. The address range **198.18.0.32 to 198.18.3.255** (inclusive) is used by Raymarine equipment, and any other third-party equipment on the network should not be set to a static IP address in this range. It should instead be set elsewhere in the 198.18.0.0/21 range.

Adding third-party devices to your Raymarine Ethernet (IP) network

- It is recommended that any third-party products connecting to a Raymarine Ethernet (IPv4) network (e.g., a third-party IP camera) are configured as DHCP clients, so that they automatically get allocated a correct IP address within the range used by the **Raymarine IPv4 network**. If this is not possible, (for example, in the scenario that your third-party IP Camera requires a static IP address), you should configure the product to have a static IP

address within the following range: **198.18.0.1 to 198.18.0.31** (inclusive).

- Any third-party router in your network should be performing IPv4 *Network Address Translation* (NAT) from the private address to another one on an upstream interface.

Configuring a third-party router as DHCP server

In the scenario that you wish to use a third-party DHCP server to allocate the IP addresses for your vessel's IPv4 network, use the following information to help you configure the third-party DHCP server to work with Raymarine Ethernet (IPv4) client devices:

1. Configure the third-party DHCP server / router to use Raymarine's subnet details, which are as follows:
 - a. Set the DHCP server's IP address to **198.18.0.1**
 - b. Set the *netmask* to /21, i.e. **255.255.248.0**
 - c. Set the DHCP range from **198.18.4.0 to 198.18.7.254** (inclusive). If this is not possible, ensure that the address range is smaller than this (but within the range of **198.18.4.0 to 198.18.7.254** (inclusive)).
 - d. The address range **198.18.0.32 to 198.18.3.255** (inclusive) is used by Raymarine equipment, and therefore you must ensure that any other third-party equipment on the network is NOT set to a static IP address in this range.
2. It may be necessary to set the DHCP setting for **all** of the chartplotters (MFDs) on the vessel to *[Off]*. However, the default option (*[Auto]*) will likely work fine in many cases. If for any reason the third-party DHCP server starts up after the chartplotter (MFD) starts up, the user should manually set the chartplotter's (MFD's) DHCP switch to *[Off]*. This is because, when the chartplotter (MFD) starts up, its DHCP *[Auto]* feature tries to detect if another DHCP server is already present on the network.
3. In case of failure of the third-party device, the chartplotters (MFDs) can be easily configured to be the DHCP server again, by setting the chartplotter's (MFD's) DHCP setting back to *[Auto]*.

Adding third-party Wi-Fi Access Points / Wi-Fi routers to your Raymarine Ethernet (IPv4) network

- There is a large volume of multicast IPv4 traffic on the Raymarine Ethernet (IPv4) network. Many consumer Wi-Fi Access Points /

Wi-Fi routers simply bridge all multicast traffic from the Ethernet interface to the Wi-Fi interface when there are connected Wi-Fi clients. This will result not only in poor Wi-Fi performance but also in a reduction of usable Wi-Fi spectrum to other Wi-Fi users and vessels in the vicinity. If using a third-party Wi-Fi Access Point or Wi-Fi router, Raymarine recommends that *IGMP Snooping* is enabled on the third-party device, and additional checks are performed, in order to ensure that your device is not bridging any unexpected multicast traffic to its Wi-Fi interface from the Raymarine Ethernet (IPv4) network.

- Raymarine's YachtSense Link router is pre-configured with IGMP Snooping enabled, and therefore does not bridge internal multicast traffic on the wired network to the Wi-Fi network. No additional configuration is required in this respect.

Appendix G Document change history

Document number:	Document name:
87443	Axiom 2 Pro Installation Instructions

Changes:

Revision	Date
7	September 2025

- Added details of breather hole location and care point when using sealant.
- Added legacy adaptor plate A80565 to Spares and Accessories.

Changes:

Revision	Date
6	July 2025

- Added details of the LCD screen protective film.

Changes:

Revision	Date
5	October 2023

- Updated product warnings and included updated disclaimer.
- Corrected CHIRP in-hull / pocket and traditional transducer illustrations in compatible transducers section.
- Added new details of modified Axiom 2 Pro 16 trunnion kit and added new assembly and installation details.
- Moved existing Axiom 2 Pro 16 trunnion kit assembly and installation details to appendix.
- Updated product dimensions and included table of example of minimum depths for surface mounting.
- Corrected keyway on power connector illustrations.
- Added Legacy MFD compatibility to appendix.
- Added Network constraints details to Networking connections chapter.

- Added Internet connection details to Network connections chapter.

Changes:

Revision	Date
4	March 2023

- Minor layout changes.

Changes:

Revision	Date
3	February 2023

- Fuse rating in power technical specification updated.
- Removed NMEA 0183 appendix.
- Added document change history to appendix.

Changes:

Revision	Date
2	February 2023

- S variant display sonar specification updated.

Changes:

Revision	Date
1	January 2023

- Initial release

Index

A

Accessories.....	118–119
Network adapter cables.....	122
Network cables.....	120
RayNet cables.....	120
SeaTalk NG adaptor cables.....	127
SeaTalk NG backbone cables.....	126
SeaTalk NG cables.....	124
SeaTalk NG connectors.....	126
SeaTalk NG kits.....	124
SeaTalk NG Power cables.....	126
SeaTalk NG spur cables.....	125
Accessory connection.....	81
Applicable documents.....	16
Audio.....	
Connections (RCA).....	79
Autopilot keypad.....	42

B

Box contents.....	31–32
Breather hole.....	48, 50

C

Cable.....	
Bend radius.....	53
Protection.....	53–54
Routing.....	53
Security.....	53
Strain relief.....	53
Cable extension.....	71
Cabling.....	
Circuit isolation.....	53
Circuit isolation.....	53
Cleaning.....	85
Screen.....	85
Compass safe distance.....	40
Compatible transducers.....	28
Compliance.....	

Cybersecurity.....	12
Connecting cables.....	55
Connections.....	
Accessory.....	54–55, 81
Analog camera.....	76
Analog video.....	76
Audio.....	79
Bare-ended wires.....	55
Battery.....	60
Card reader.....	81
CHIRPtransducers.....	71
CPT-S transducers.....	71, 74
DeviceNet.....	64
Distribution panel.....	59
DownVision™ transducers.....	71
Ethernet.....	65
External storage.....	81
GPS antenna.....	83
GPS Antenna.....	54–55
Ground.....	54–55
HDMI Out.....	54–55, 76
Internet.....	66–67
Network.....	54–55, 65
NMEA 2000.....	54–55, 64
Optional grounding.....	61
Overview.....	54–55
Power.....	54–55, 58
RayNet.....	54–55, 66
RealVision 3D transducers.....	70
RealVision Max 3D transducers.....	70
Rear connectors.....	54–55
RNS-5.....	65
SeaTalk NG.....	64
SideVision™ transducers.....	71
Traditional transducers.....	72
Transducer.....	70–72, 74
Transducers.....	54–55
USB (via RCR-SDUSB).....	81
Video.....	54–55
Wi-Fi.....	67
Wire.....	55
Cybersecurity.....	12

D

Declaration of Conformity	11
Dedicated grounding	61
Diagnostics	100
Dimensions	34
Document history	138
Documentation	16

E

e-Label	11
Electromagnetic Compatibility	39
EMC, <i>See</i> Electromagnetic Compatibility	
eS Series	134
Ethernet	135
Ethernet connection	65
External storage	81

F

Factory reset	90
Flush mounting	47
Fuse rating	58

G

GNSS antenna connection	83
GPS antenna connection	83
gS Series	134

H

HDMI Out	
Resolutions	76

I

Installation	47, 50
Best practice	60
Flush mount	48
Mounting options	42

Surface mount	51
Trunnion mounting	43, 46, 132
Interference	40
<i>See also</i> Compass safe distance	
RF	40
Internet connection	66–67
IP address	100
IP networking	135

K

Keypad	42
--------------	----

L

Legacy adaptor	17
LightHouse	
Downgrade	134
Location requirements	
General	36
GNSS	36
GPS	36
Touchscreen	38
Viewing angle	39
Wireless	38
Wireless interference	39

M

Maintenance	11, 85
MFD transducers	28

N

Name plaque	129
Network	
cables	122
Network connection	65
Networking (IP)	
Overview	135
NMEA 2000	133
PGN list	133

NMEA 2000 connection	64
----------------------------	----

O

Operation instructions	17, 87
------------------------------	--------

P

Parts supplied	31–32
Pilot keypad	42
Power	
Battery connection	60
Connection to battery	60
Connection to distribution panel	59
Distribution	58
Distribution panel	59
Grounding	60
Sharing a breaker	59
Power connection	58
Power troubleshooting	90
Product Dimensions	34
Product documentation	16
Product features	19
Product information	100
Product overview	19
Product recycling (WEEE)	14
Product support	99
Protective film	51

R

Radio Frequency (RF) interference	40
RayNet	135
cables	120, 122
RayNet cable	66
RayNet connection	65
Recovery mode	90
Regulatory standards	11
RJ45	
cables	122
Routine checks	85

S

SeaTalk NG	
Adaptor cables	127
Backbone cables	126
Connectors	126
Kits	124
Power cables	126
Spur cables	125
SeaTalk NG cables	124
SeaTalk NG connection	64
SeaTalkhs	
cables	122
Service Center	99
Servicing	11, 85
Software update	17
Software updates	39
Sonar range	105, 110–111, 115–116
Spares	118
Support forum	101
Suppression ferrite	66
Suppression ferrites	81
Surface mounting	50
System examples	20

T

Technical specification	
Approvals	106, 111, 116
Compliance	106, 111, 116
Connections specification	105, 109, 114
Environmental specification	103, 108, 113
Internal GPS (GNSS) receiver specification	104, 110, 115
LCD specification	103, 108, 113
Physical specification	103, 108, 113
Power specification	103, 108, 113
Product markings	11
Technical support	99, 101
Tools required	43–44, 46, 49, 131
Bracket mounting	43–44, 131
Flush mounting	46
Surface mounting	49
Trunnion mounting	43–44, 131

Training courses.....	101
Transducers	28
Transducers, compatibility	118
Troubleshooting	89, 91, 94, 97
GNSS.....	91
GNSS (GPS).....	91
GPS.....	91
Miscellaneous.....	89
Power	90
Sonar.....	91
Touchscreen	97
Wi-Fi.....	94
Trunnion kit.....	43
Typical system	20

V

Ventilation	36
Video connection	76

W

Warranty.....	13, 99
WEEE Directive	14
What's in the box.....	31–32
Wi-Fi	
Settings.....	67

Y

YachtSense Link	
IP address conflict.....	67
Network connection	67