New a Series
New c Series
New e Series

Installation and operation instructions

INNOVATION • QUALITY • TRUST

Raymarine®

Trademark and patents notice

Autohelm, hsb², RayTech Navigator, Sail Pilot, SeaTalk, SeaTalk^NG, SeaTalk^HS and Sportpilot are registered trademarks of Raymarine UK Limited. RayTalk, Seahawk, Smartpilot, Pathfinder and Raymarine are registered trademarks of Raymarine Holdings Limited.

FLIR is a registered trademark of FLIR Systems, Inc. and/or its subsidiaries.

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

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

Fair Use Statement

Software updates

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

Product handbooks

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

Contents

Chapter 1: Important information

⚠️ **Warning: Product installation and operation**

This product must be installed and operated in accordance with the instructions provided. Failure to do so could result in personal injury, damage to your vessel and/or poor product performance.

⚠️ **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).

⚡ **Warning: High voltages**

This product contains high voltages. Do NOT remove any covers or otherwise attempt to access internal components, unless specifically instructed in this document.

⚠️ **Warning: Product grounding**

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

⚡ **Warning: Switch off power supply**

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

⚡ **Warning: FCC Warning (Part 15.21)**

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

⚠️ **Warning: Radar scanner safety**

Before rotating the radar scanner, ensure all personnel are clear.

⚠️ **Warning: Radar transmission safety**

The radar scanner transmits electromagnetic energy. Ensure all personnel are clear of the scanner when the radar is transmitting.

⚠️ **Warning: Sonar operation**

- NEVER operate the sonar with the vessel out of the water.
- NEVER touch the transducer face when the sonar is powered on.
- SWITCH OFF the sonar if divers are likely to be within 7.6 m (25 ft) of the transducer.

⚠️ **Warning: Touchscreen display**

When exposed to prolonged periods of direct sunlight, the touchscreen display can get very hot. In such conditions, avoid using the touchscreen display or use the unit's physical keys and buttons instead if available.

⚠️ **Warning: Touchscreen display**

Exposure to prolonged rain may cause erroneous touch performance, in these situations keep touch activity to a minimum and wipe the screen with a dry non-abrasive cloth before using the touchscreen.

Caution: Transducer cable

Do NOT cut, shorten, splice the transducer cable or remove the connector. If the cable is cut, it cannot be repaired. Cutting the cable will also void the warranty.

Caution: Power supply protection

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

Caution: Care of chart and memory cards

To avoid irreparable damage to and / or loss of data from chart and memory cards:

- Ensure that chart and memory cards are fitted the correct way around. DO NOT try to force a card into position.
- DO NOT save data (waypoints, routes, and so on) to a chart card, as the charts may be overwritten.
- DO NOT use a metallic instrument such as a screwdriver or pliers to insert or remove a chart or memory card.
- Safe removal. Always power the unit off before inserting or removing a chart or memory card.

Caution: Ensure chart card door is securely closed

To prevent water ingress and consequent damage to the display, ensure that the chart card door is firmly closed. This can be confirmed by an audible click.

Caution: Sun covers

- To protect your product against the damaging effects of ultraviolet (UV) light, always fit the sun covers when the product is not in use.
- Remove the sun covers when travelling at high speed, whether in water or when the vessel is being towed.

Caution: Cleaning

When cleaning this product:

- Do NOT wipe the display screen with a dry cloth, as this could scratch the screen coating.
- Do NOT use abrasive, or acid or ammonia based products.
- Do NOT use a jet wash.

TFT Displays

The colors of the display may seem to vary when viewed against a colored background or in colored light. This is a perfectly normal effect that can be seen with all color Thin Film Transistor (TFT) displays.

Water ingress

Water ingress disclaimer

Although the waterproof rating capacity of this product meets the IPX6 standard, water intrusion and subsequent equipment failure may occur if the product is subjected to commercial high-pressure washing. Raymarine will not warrant products subjected to high-pressure washing.

Disclaimers

This product (including the electronic charts) is intended to be used only as an aid to navigation. It is designed to facilitate use of official government charts, not replace them. Only official government charts and notices to mariners contain all the current information needed for safe navigation, and the captain is responsible for their prudent use. It is the user's responsibility to use official government charts, notices to mariners, caution and proper navigational skill when operating this or any other Raymarine product. This product supports electronic charts provided by third party data suppliers which may be embedded or stored on memory card. Use of such charts is subject to the supplier's End-User Licence Agreement included in the documentation for this product or supplied with the memory card (as applicable).

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

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

Chart cards and memory cards

Memory cards are used for archiving data and chart cards provide additional or upgraded charts.

Compatible cards

The following types of memory or chart card are compatible with your Raymarine product:

• micro Secure Digital Standard-Capacity (microSDSC)

• micro Secure Digital High-Capacity (microSDHC)

Note: The maximum card capacity supported is 32 GB.

Chart cards

Your product is pre-loaded with electronic charts (worldwide base map). If you wish to use different chart data, you can insert compatible chart cards into the unit's card slot.

Use branded chart cards and memory cards

When archiving data, Raymarine recommends the use of quality branded memory cards. Some brands of memory card may not work in your unit. Please contact customer support for a list of recommended cards.

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.

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

• Raymarine equipment and cables connected to it are:

– At least 1 m (3 ft) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 7 ft (2 m).

– More than 2 m (7 ft) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.

• The product is supplied from a separate battery from that used for engine start. This is important to prevent erratic behavior and data loss which can occur if the engine start does not have a separate battery.

• Raymarine specified cables are used.

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

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

RF exposure

This transmitter with its antenna is designed to comply with FCC / IC RF exposure limits for general population / uncontrolled exposure. The WiFi / Bluetooth antenna is mounted behind the front facia on the left hand side of the screen. It is recommended to maintain a safe distance of at least 1 cm from the left hand side of the screen.

FCC

Compliance Statement (Part 15.19)

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

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Interference Statement (Part 15.105 (b))

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

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

1. Reorient or relocate the receiving antenna.

2. Increase the separation between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

4. Consult the dealer or an experienced radio / TV technician for help.

Industry Canada

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

Operation is subject to the following two conditions:

New a Series / New c Series / New e Series

1. This device may not cause interference; and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

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

Industry Canada (Français)

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

Son fonctionnement est soumis aux deux conditions suivantes:

1. cet appareil ne doit pas causer d'interférence, et

2. cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

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

Third party software license agreements

This product is subject to certain third party software license agreements as listed below:

• GNU — LGPL/GPL

• JPEG libraries

• OpenSSL

• FreeType

The license agreements for the above can be found on the documentation CD which accompanies this product.

Suppression ferrites

Raymarine cables may be fitted with suppression ferrites. These are important for correct EMC performance. If a ferrite has to be removed for any purpose (e.g. installation or maintenance), it must be replaced in the original position before the product is used.

Use only ferrites of the correct type, supplied by Raymarine authorized dealers.

Connections to other equipment

Requirement for ferrites on non-Raymarine cables

If your Raymarine equipment is to be connected to other equipment using a cable not supplied by Raymarine, a suppression ferrite MUST always be attached to the cable near the Raymarine unit.

Declaration of conformity

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

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

Product disposal

Dispose of this product in accordance with the WEEE Directive.

The Waste Electrical and Electronic Equipment (WEEE) Directive requires the recycling of waste electrical and electronic equipment. Whilst the WEEE Directive does not apply to some Raymarine products, we support its policy and ask you to be aware of how to dispose of this product.

Pixel defect policy

In common with all TFT units, the screen may exhibit a few wrongly-illuminated ("dead") pixels. These may appear as black pixels in a light area of the screen or as colored pixels in black areas.

If your display exhibits MORE than the number of wrongly-illuminated pixels stated below, please contact your local Raymarine service center for further advice.

	a65 / a67	e7 / e7D	c95 / c97 / c125 / c127 / e95 / e97 / e125 / e127 / e165
Maximum acceptable wrongly-illuminated pixels	5	7	8

Warranty registration

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

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

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

Chapter 2: Handbook information

Chapter contents

2.1 Handbook information

This handbook contains important information regarding your multifunction display.

The handbook is for use with the following Raymarine multifunction displays:

• New a Series

• New c Series

• New e Series

About this handbook

This handbook describes how to operate your multifunction display in conjunction with compatible electronic cartography and peripheral equipment.

It assumes that all peripheral equipment to be operated with it is compatible and has been correctly installed. This handbook is intended for users of varying marine abilities, but assumes a general level of knowledge of display use, nautical terminology and practices.

Handbooks

The following handbooks are applicable to your multifunction display:

Handbooks

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

New a Series Handbooks

Description	Part number
New a Series Mounting and getting started guide	88012
New a Series / New c Series / New e Series Installation and operation handbook	81337
a65 / a67 Mounting template	87165

New c Series Handbooks

Description	Part number
New c Series / New e Series Mounting and getting started guide	88001
New a Series / New c Series / New e Series Installation and operation handbook	81337
e95 / e97 / c95 / c97 Mounting template	87144
e125 / e127 / c125 / c127D Mounting template	87145

New e Series Handbooks
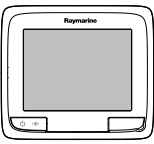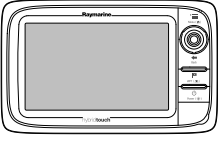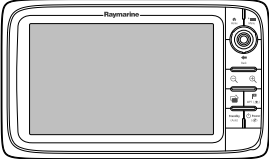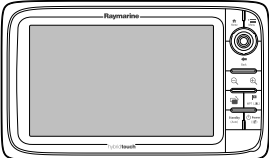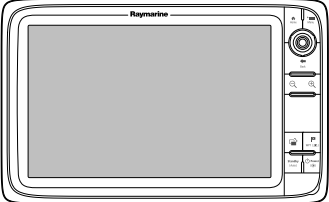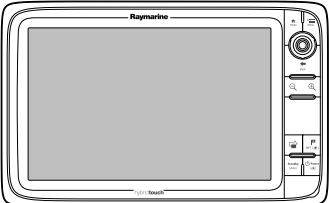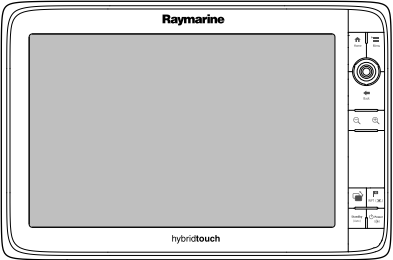
Description	Part number
e7 / e7D Mounting and getting started guide	88011
New c Series / New e Series Mounting and getting started guide	88001
New a Series / New c Series / New e Series Installation and operation handbook	81337
e7 / e7D Mounting template	87137
e95 / e97 / c95 / c97 Mounting template	87144
e125 / e127 / c125 / c127D Mounting template	87145
e165 Mounting template	87166

Additional handbooks

Description	Part number
SeaTalk^{ng} reference manual	81300

2.2 Product information

The following Raymarine multifunction display variants are available

	Non-sonar variant	Sonar variant	Series	Controls	Features
	a65	a67	New a Series	Touchscreen only	• Bluetooth. • Internal GPS.
	e7	e7D	New e Series	HybridTouch (Touchscreen and physical buttons)	• Bluetooth. • Wi-Fi • NMEA 0183 • NMEA 2000 (via SeaTalk^{ng}) • Internal GPS. • Video input.
	c95	c97	New c Series	Physical buttons only	• Bluetooth. • Wi-Fi • NMEA 0183 • NMEA 2000 (via SeaTalk^{ng}) • Internal GPS. • Video input.
	e95	e97	New e Series	HybridTouch (Touchscreen and physical buttons)	• Bluetooth. • Wi-Fi • NMEA 0183 • NMEA 2000 (via SeaTalk^{ng}) • Internal GPS. • Video input x2. • Video output.
	c125	c127	New c Series	Physical buttons only	• Bluetooth. • Wi-Fi • NMEA 0183 • NMEA 2000 (via SeaTalk^{ng}) • Internal GPS. • Video input.
	e125	e127	New e Series	HybridTouch (Touchscreen and physical buttons)	• Bluetooth. • Wi-Fi • NMEA 0183 • NMEA 2000 (via SeaTalk^{ng}) • Internal GPS. • Video input x2. • Video output.
	e165	n/a	New e Series	HybridTouch (Touchscreen and physical buttons)	• Bluetooth. • Wi-Fi • NMEA 0183 • NMEA 2000 (via SeaTalk^{ng}) • Video input x2. • Video output.

2.3 Handbook illustrations

The illustrations and screenshots used in this handbook may differ slightly from your display model.

The illustration of the multifunction display below is used throughout this manual and unless otherwise stated can apply to all variants of multifunction display (i.e. New a series, New c Series and New e Series).
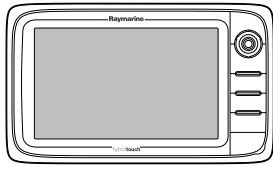
D12596-1

2.4 Handbook conventions

The following conventions are used throughout this handbook when referring to:

Type	Example	Convention
Icons	Set-up	The term "**select**" is used in procedures involving icons to refer to the action of selecting an on-screen icon, either using touch or physical buttons: • **Touch** — Press your finger on the icon to select. • **Physical buttons** — Use the **Joystick** to highlight the icon and press the **Ok** button.
Menus	View / Find Ship / Navigate	The term "**select**" is used in procedures involving menus to refer to the action of selecting a menu item, either using touch or physical buttons: • **Touch** — Press your finger on the icon to select. • **Physical buttons** — Use the **Joystick** to highlight the icon and press the **Ok** button.
	System Settings / Internal GPS: On Off / Data Sources / External Devices / Wireless Connections / NMEA Set-up	The term "**scroll**" is used in procedures involving menus and dialogs to refer to the action of scrolling a list or menu, either by touch or physical buttons: • **Touch** — Press your finger on the menu and slide up or down to scroll. • **Physical buttons** — Turn the Rotary control clockwise or anti—clockwise to scroll. .
Applications		The term "**select**" is used in procedures involving applications to refer to the action of selecting a location, object or target on-screen using touch or physical buttons: • **Touch** — Press and hold your finger on a location to select, or • **Touch** — Press and release your finger on an object or target. • **Physical buttons** — Use the **Joystick** to highlight the location, object or target and press the **Ok** button.
Numeric adjust controls	1500 ft Hold down OK	The term "**adjust**" is used in procedures involving numerical adjust controls to refer to the action of changing the numeric value using touch or physical buttons: • **Touch** — Press your finger on the up or down arrow to increase or decrease the numeric value. • **Physical buttons** — Use the **Rotary control** to increase or decrease the numeric value. With the Numeric adjust control displayed you can also select on the **keypad** icon or press and hold the **Ok** button to open a numeric keypad to enter a new value for the setting.
Slider bar controls	25% Auto	The term "**adjust**" is used in procedures involving slider bar controls to refer to the action of changing the associated numeric value using touch or physical buttons: • **Touch** — Press your finger on the up or down arrow to increase or decrease the numeric value. • **Physical buttons** — Use the **Rotary control** to increase or decrease the numeric value.

Waypoint (MOB) button / icon

Depending on the multifunction display variant there will be either a Waypoint (MOB) button or an on-screen icon.

WPT button	![WPT button icon]	• New c Series • New e Series
WPT icons	![WPT icons]	• New a Series

Throughout this manual the term: Select **WPT**, refers to pressing the physical **WPT** button or pressing the on-screen **WPT** icon.

2.5 Touch and non-touch operations

This handbook applies to New a Series, New c Series and New e Series multifunction displays. All features and functions can be accessed using physical buttons (non-touch) on New c Series and New e Series displays or by using the touchscreen on New a Series and New e Series displays.

This handbook uses icons throughout to identify whether a particular task is a touch or a non-touch operation.

	Touch (Touchscreen operation) — Touch operations apply to New a Series and New e Series multifunction displays.
	Non-touch (physical button operation) — Non-touch operations apply to New c Series and New e Series multifunction displays.

Note: Where a task does not have a touch or non-touch icon then the task applies to all display variants.

Chapter 3: Planning the installation

Chapter contents

3.1 System integration

Your multifunction display is compatible with a wide range of marine electronics devices.
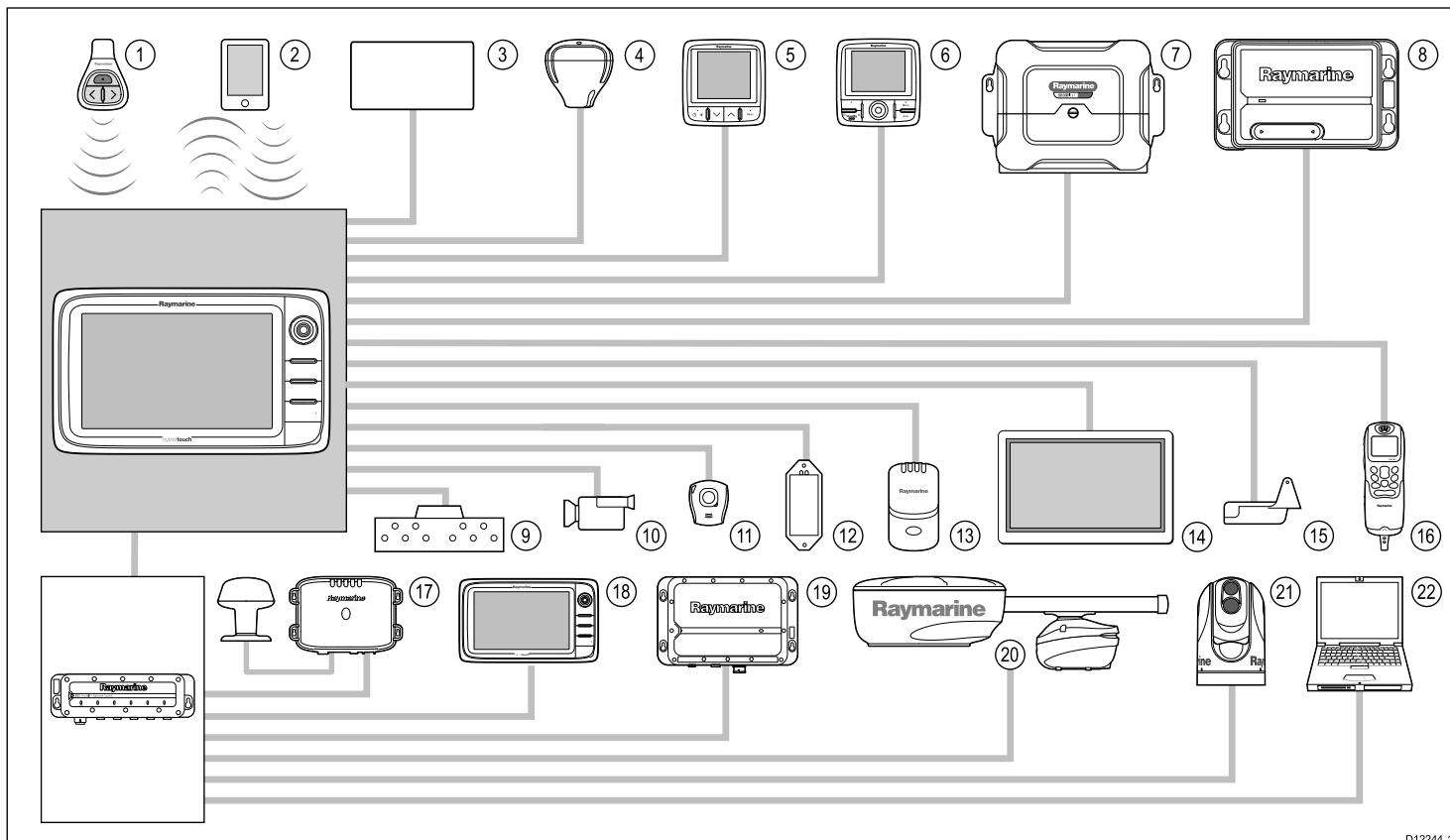
The display uses a number of protocols to transfer data between the various devices in your system. The following table details which devices may be connected to your display, and the type of connections (in terms of protocols and physical interfaces):

Item	Device Type	Maximum quantity	Suitable Devices	Connections
1	Remote control	1 per multifunction display.	Raymarine RCU-3	Bluetooth
2	Smartphone / Tablet device	1 per multifunction display.	For Raymarine wireless video streaming and remote control apps: • Apple iPhone 4 (or later) or iPad 2 (or later) • Android device with minimum 1GHz processor and running android 2.2.2 (or later) • Amazon Kindle Fire For chartplotter sync with Navionics Marine app: • Apple iPhone or iPad. • Android-compatible smartphone or tablet. For media player control (New e Series only): • Any Bluetooth-enabled device supporting Bluetooth AVRCP version 2.1 or higher.	• Chartplotter sync with Navionics Marine app: Wi-Fi. • Video streaming and remote control: Wi-Fi. • Media player control: Bluetooth AVRCP 2.1 or later.
3	Vessel tank sensors — third-party	• Up to 3 x fuel. • 1 x fresh water. • 1 x waste water. • 1 x sewage. • 1 x bait / fish.	Third-party NMEA 2000 interfaces.	NMEA 2000 (via optional DeviceNet adaptor cables).
4	GPS (external) — Raymarine	1	Any combination of the following: • Raystar125 GPS. • Raystar125+ GPS (via optional SeaTalk to SeaTalk^{ng} converter). • RS130	SeaTalk, SeaTalk^{ng}, or NMEA 0183.

Item	Device Type	Maximum quantity	Suitable Devices	Connections
5	Instruments — Raymarine	As determined by SeaTalkng bus bandwidth and power loading.	SeaTalk (via optional SeaTalk to SeaTalkng converter): • ST40 Wind, Speed, Depth, Rudder, or Compass. • ST60+ Wind, Speed, Depth, Rudder, or Compass. • i40 Wind, Speed, Depth, or Bidata. SeaTalkng: • ST70. • ST70+. • ST70+ keypads. • i50 Depth, Speed, or Tridata • i60 Wind, CH Wind • i70.	SeaTalk, SeaTalkng.
6	Pilot control heads — Raymarine	As determined by SeaTalk or SeaTalkng bus bandwidth and power loading, as appropriate.	SeaTalk (via optional SeaTalk to SeaTalkng converter): • ST6002. • ST7002. • ST8002. SeaTalkng: • ST70. (SeaTalkng course computer only.) • ST70+. (SeaTalkng course computer only.) • p70. • p70R.	SeaTalk, SeaTalkng.
7	Course computer — Raymarine	1	SeaTalk (via optional SeaTalk to SeaTalkng converter): • ST1000. • ST2000. • S1000. • S1. • S2. • S3. SeaTalkng: • All SPX course computers.	SeaTalk, SeaTalkng, or NMEA 0183.
8	AIS — Raymarine	1	• AIS 250. • AIS 500. • AIS 350. • AIS 650. • AIS 950	SeaTalkng, or NMEA 0183.
8	AIS — third-party	1	Third-party NMEA 0183–compatible AIS Class A or Class B receiver / transceiver.	NMEA 0183
9	Vessel trim tabs — third-party	1 pair	Third-party NMEA 2000 interfaces.	NMEA 2000 (via optional DeviceNet adaptor cables).
10	Video / camera	• New a Series = 0 • e7, e7D, New c Series = 1 • New e Series (excluding e7 and e7D) = 2	Composite PAL or NTSC video source.	BNC connectors.
10	IP camera	Only 1 camera may be viewed at a time.	Third party IP camera	Via SeaTalkhs network.
11	Lifetag (Man overboard alert)	1 basestation	All Raymarine Lifetag basestations.	SeaTalk (via optional SeaTalk to SeaTalkng converter)

Item	Device Type	Maximum quantity	Suitable Devices	Connections
12	Engine interface — third-party	1	Third-party NMEA 2000 interfaces.	NMEA 2000 (via optional DeviceNet adaptor cables).
13	Transducers and sensors — Raymarine	1	Analog transducers: • Wind. • Speed. • Depth.	SeaTalkng (via optional transducer pods).
13	Transducers and sensors — Airmar	1	• DT800 Smart Sensor. • DST800 Smart Sensor. • PB200 weather station.	SeaTalkng (via optional transducer pods).
14	Video out	New e Series (excluding e7 and e7D) = 1	External display.	15 pin D-Type connector (VGA Style).
15	Sonar transducer	1	Direct connection to display (Sonar variant displays only): • Raymarine P48. • Raymarine P58. • Raymarine P74. • Raymarine B60 20º • Raymarine B60 12º • Raymarine B744V ; OR: • Any 600 watt / 1Kw compatible transducer (via optional E66066 adaptor cable). ; OR: • Any Minn Kota transducer (via optional A62363 adaptor cable). Connection via external Raymarine Sonar Module: • Any sonar module-compatible transducer.	Raymarine transducer connection, OR Minn Kota transducer connection.
16	VHF radio — Raymarine	1	All Raymarine DSC VHF radios.	NMEA 0183 only (No SeaTalk support).
17	Sirius Weather receiver — Raymarine (North America only)	1	SeaTalkhs: • SR100. • SR6. SeaTalkng: • SR50.	SeaTalkhs, SeaTalkng.
18	Additional multifunction display(s) — Raymarine	5	SeaTalkhs (recommended): • New a Series multifunction displays. • New c Series multifunction displays. • New e Series multifunction displays. **Note:** You can connect Raymarine multifunction displays using NMEA 0183 or SeaTalkng but not all functions are supported. **Note:** Visit www.raymarine.com to download the latest software version for your display.	SeaTalkhs.
18	Additional multifunction display(s) — third-party	• Connections to multifunction display NMEA outputs: 4. • Connections to multifunction display NMEA inputs: 2	NMEA 0183–compatible chartplotters and multifunction displays.	NMEA 0183

Item	Device Type	Maximum quantity	Suitable Devices	Connections
19	Fishfinder (Sonar Module) — Raymarine	1	• CP450C • DSM30. • DSM300.	SeaTalk^hs.
20	Radar — Raymarine	1	All Raymarine Non-HD Digital Radomes and HD or SuperHD radar scanners. **Note:** Please ensure your radar scanner is using the latest software version.	SeaTalk^hs.
21	Thermal camera — Raymarine	1 **Note:** New a Series multifunction displays do not support thermal cameras.	All Raymarine thermal cameras.	SeaTalk^hs (for control), BNC connector (for video).
22	PC / laptop	1	Windows-compatible PC or laptop running Raymarine Voyager planning software.	SeaTalk^hs
	Cartography — included		Embedded (internal) Navionics world base map.	Internal storage.
	Cartography — optional		External MicroSD, or MicroSDHC chart cards: • Navionics Ready to Navigate. • Navionics Silver • Navionics Gold • Navionics Gold+ • Navionics Platinum • Navionics Platinum+ • Navionics Fish'N Chip • Navionics Hotmaps Refer to the Raymarine website (www.raymarine.com) for the latest list of supported chart cards.	Card slot.

3.2 Installation checklist

Installation includes the following activities:

	Installation Task
1	Plan your system.
2	Obtain all required equipment and tools.
3	Site all equipment.
4	Route all cables.
5	Drill cable and mounting holes.
6	Make all connections into equipment.
7	Secure all equipment in place.
8	Power on and test the system.

3.3 System Limits

The following limits apply to the number of system components that can be connected in a Raymarine multifunction display system.

Component	Maximum
Maximum number of SeaTalk^{hs} devices	25
Maximum number of SeaTalk^{ng} devices	50
New a Series / New c Series / New e Series multifunction displays	6

3.4 Multiple data sources (MDS) overview

Installations that include multiple instances of data sources can cause data conflicts. An example is an installation featuring more than one source of GPS data.

MDS enables you to manage conflicts involving the following types of data:

- GPS Position.
- Heading.
- Depth.
- Speed.
- Wind.

Typically this exercise is completed as part of the initial installation, or when new equipment is added.

If this exercise is NOT completed the system will automatically attempt to resolve data conflicts. However, this may result in the system choosing a source of data that you do not want to use.

If MDS is available the system can list the available data sources and allow you to select your preferred data source. For MDS to be available all products in the system that use the data sources listed above must be MDS-compliant. The system can list any products that are NOT compliant. It may be necessary to upgrade the software for these non-compliant products to make them compliant. Visit the Raymarine website (www.raymarine.com) to obtain the latest software for your products. If MDS-compliant software is not available and you do NOT want the system to automatically attempt to resolve data conflicts, any non-compliant product(s) can be removed or replaced to ensure the entire system is MDS-compliant.

3.5 Identifying your display variant

To discover which model display you have follow the steps below:

From the homescreen:

1. Select **Set-up**.
2. Select **Maintenance**.
3. Select **Diagnostics**.
4. Select **Select Device**.
5. Search the Network column for the **'This Device'** entry.
6. The Device column for this record will list the model of your display.

3.6 Networking constraints

New a Series, New c Series and New e Series displays can be networked together and can also be networked to Raymarine's E-Series Widescreen displays and G-Series systems. Caution is advised when networking a New a Series, New c Series or New e Series to a network containing a E-Series Widescreen display or when connecting to a G-Series system as there are networking constraints and restrictions which apply.

General

- Multifunction displays should be connected together using SeaTalk^{hs}.

- Multifunction displays can also be connected via SeaTalk^{ng} or NMEA 0183, but not all functions are supported.

- All networked New a Series, New c Series and New e Series displays must contain software version V4.xx or later.

Note: The New a Series cannot be networked using NMEA 0183.

Master / repeater operation

- Any network featuring more than 1 multifunction display must have 1 of the displays designated as the data master.

- The data master display will receive data through NMEA 0183 and / or SeaTalk^{ng}, and bridge the data over SeaTalk^{hs} to other networked displays.

- When networking a New a Series, New c Series or New e Series multifunction display to an E-Series Widescreen display or G-Series system the New a Series, New c Series or New e Series displays must be put into compatibility mode. Compatibility mode can be accessed from the Set-up Menu from the homescreen: **Set-up > Maintenance > Compatibility**.

- Any network containing a G-Series system must have the G-Series (GPM400) set as the data master.

Note: Connected E-Series Widescreen displays and G-Series system will reset once compatibility mode has been selected.

Legacy multifunction display support (E-Series Widescreen and G-Series system)

- A G-Series (GPM400) system operating with software version V4.xx or later will permit the connection of up to 2 New a Series, New c Series or New e Series displays or 2 E-Series Widescreen displays or 1 of each (e.g. 1 New e Series and 1 E-Series Widescreen display).

Note: Master / repeater operation applies.

- A network featuring a New a Series, New c Series or New e Series displays and either an E-Series Widescreen or G-Series system must be connected using SeaTalk^{hs} only.

-

  An incompatibility message is displayed on-screen when a multifunction display is connected which is not supported.

Homescreen sharing

- When networked, New a Series, New c Series or New e Series displays can share homescreens.

- New a Series, New c Series and New e Series cannot share homescreens with an E-Series Widescreen display or G-Series system.

Cartography sharing

- The cartography contained on chart cards is always used in preference to embedded cartography when a chart card is inserted into a card slot.

- Chart card cartography can be shared between New a series, New c Series, New e Series, E-Series Widescreen and G-Series systems.

Radar operation

- New a Series, New c Series or New e Series systems support the use of 1 radar scanner at a time.

- The data supplied by a connected radar scanner is repeated to any networked displays.

Sonar operation

- You can connect an external sonar module unit to New a Series, New c Series or New e Series displays via SeaTalk^{hs} / RayNet.

- a67, e7D, e97, e127, c97, c127 models include a 600 W built-in sonar module and the display can be directly connected to a compatible sonar transducer.

- If connecting an external sonar module unit to a a67, e7D, e97, e127, c97 or c127 then the internal sonar must be switched off. From the fishfinder application goto **Menu > Set-up > Sounder Set-up > Internal Sounder > Off**.

- You can only use 1 sonar transducer at any one time.

- The data supplied by an internal or external sonar module is repeated to any networked displays.

3.7 Typical systems

The illustrations below show examples of possible system configurations, for more details on compatible devices please refer to the *System integration* section.

> **Note:** In the examples below the multifunction display(s) could be any of the following:
> * New a Series
> * New c Series
> * New e Series

Example: Basic system
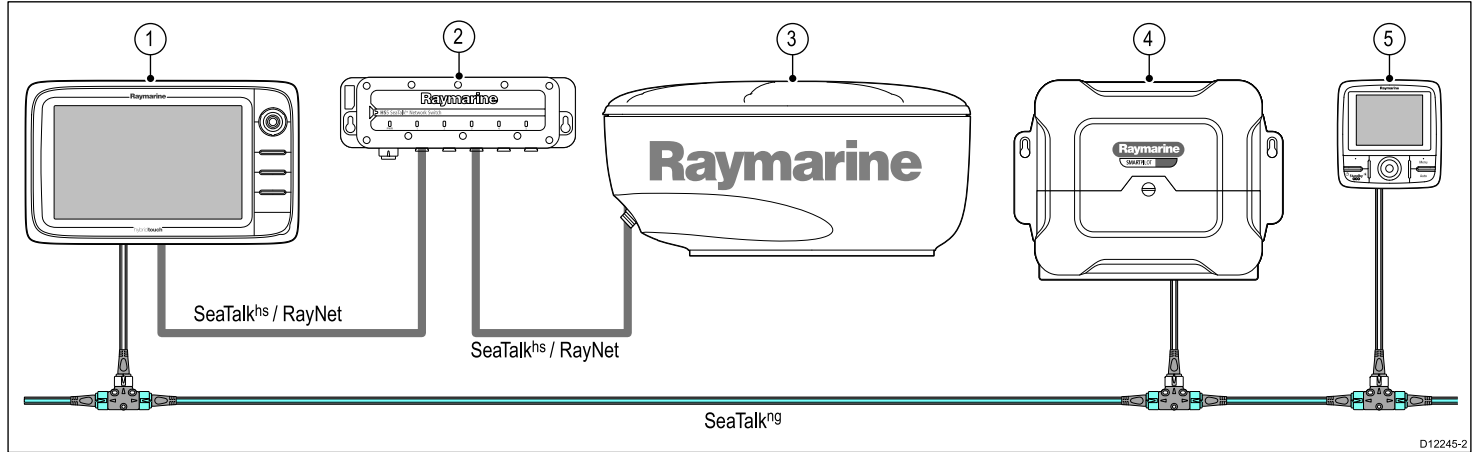
1. Raymarine Multifunction display.
2. Raymarine network switch.
3. Raymarine radar scanner.
4. SPX course computer.
5. SeaTalk^{ng} Pilot controller.

> **Note:** A network switch is only required if multiple devices are connected using SeaTalk^{hs} / RayNet.

Example: Basic system with SeaTalk equipment
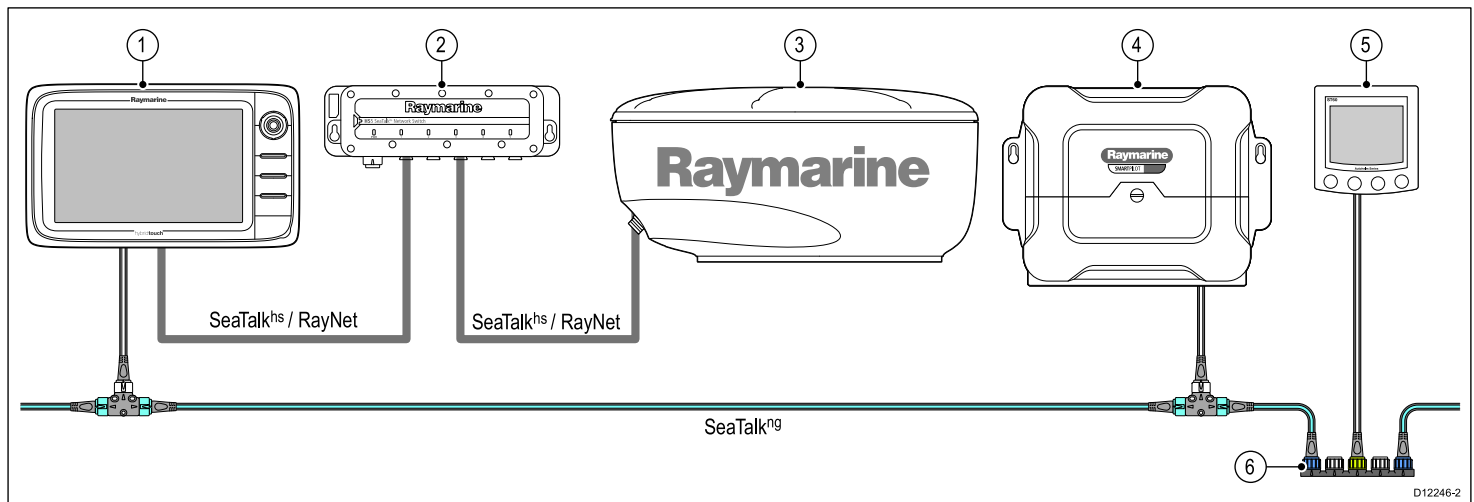
1. Multifunction display
2. Network switch.
3. Radar scanner.
4. SPX course computer.
5. SeaTalk pilot controller.
6. SeaTalk to SeaTalk^{ng} converter.

> **Note:** A network switch is only required if more than one device is connected using SeaTalk^{hs} / RayNet.

Example: Basic system with sonar variant display
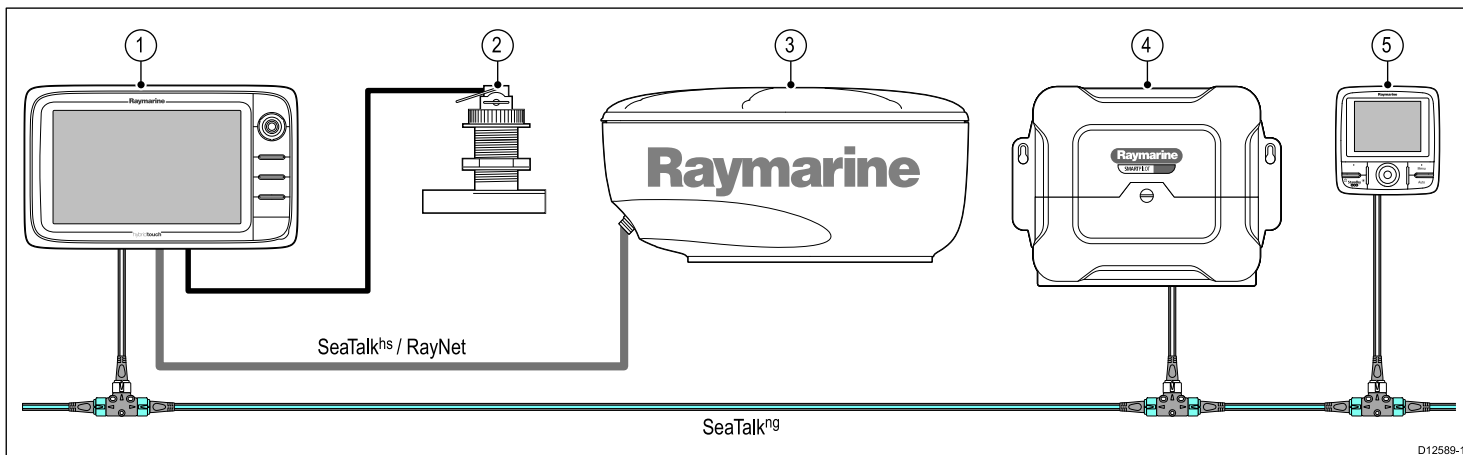
1. Multifunction display
2. Sonar transducer.
3. Radar scanner.
4. SPX course computer.
5. SeaTalk^{ng} pilot controller.

Example: Basic system with non-sonar variant display
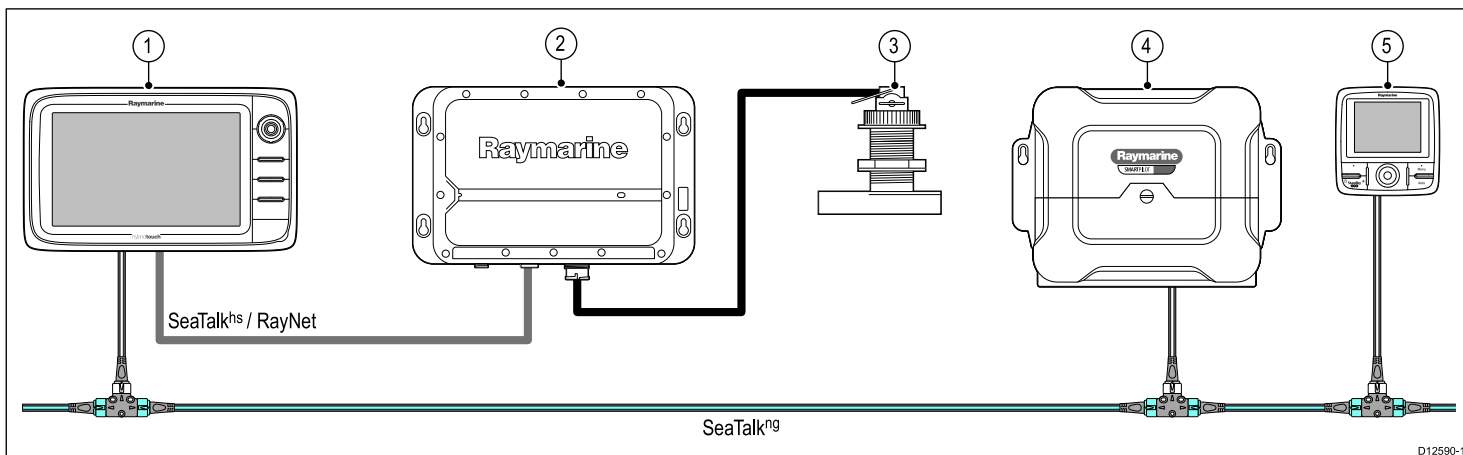
1. Multifunction display.
2. Sonar module.
3. Sonar transducer.
4. SPX course computer.
5. SeaTalk^{ng} pilot controller.

Example: Expanded system
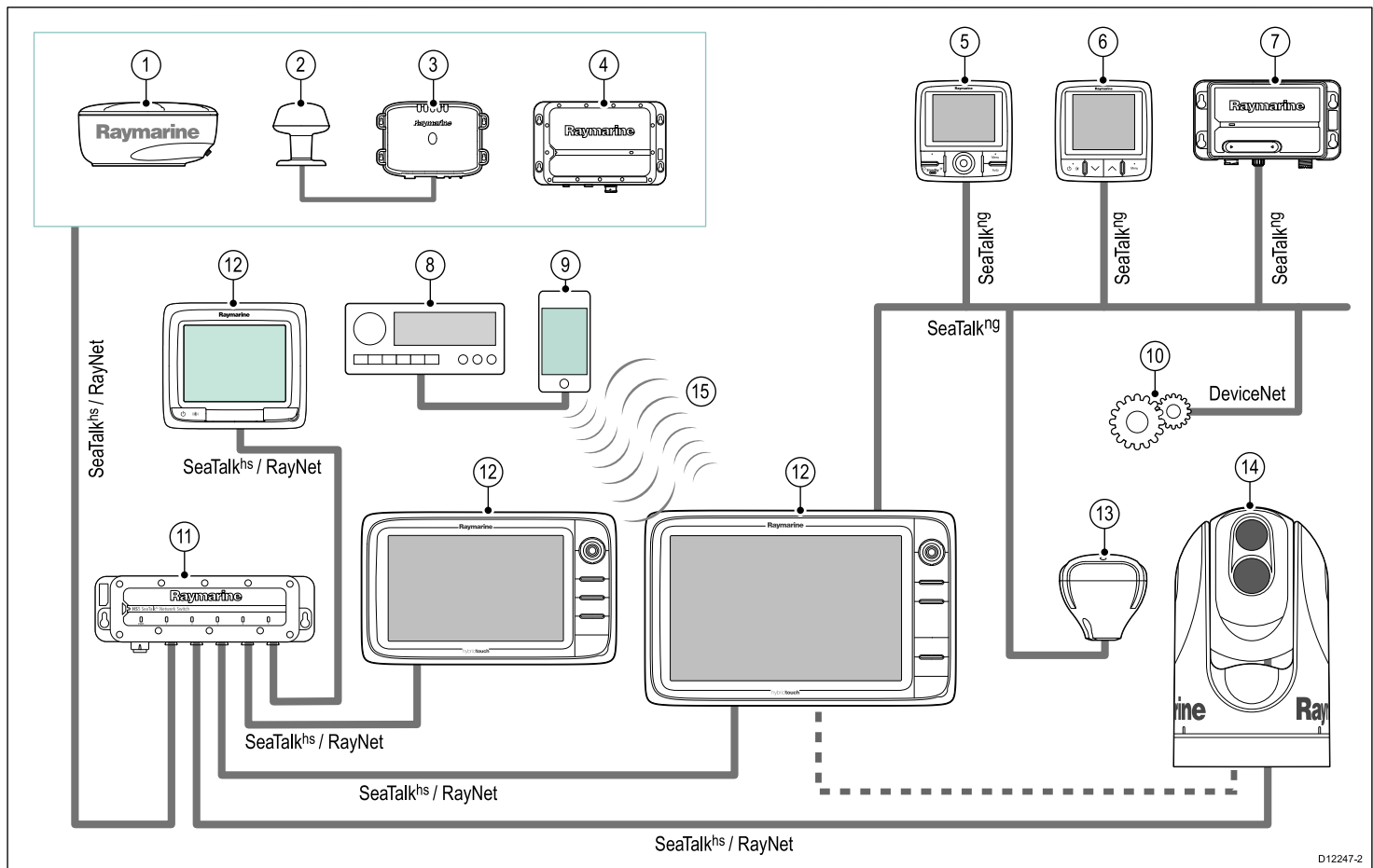
1. Radar scanner.

2. Weather sensor.

3. Sirius weather receiver.

4. Sonar module.

5. SeaTalk^{ng} Pilot controller.

6. SeaTalk^{ng} Instrument display.

7. AIS receiver / transceiver.

8. Audio system.

9. Smartphone / tablet.

10. DeviceNet spur (for NMEA 2000 devices).

11. Network switch.

12. Multifunction display.

13. GPS receiver.

14. Thermal camera.

15. Wireless connection.

3.8 System protocols

Your Multifunction Display can connect to various instruments and displays to share information and so improve the functionality of the system. These connections may be made using a number of different protocols. Fast and accurate data collection and transfer is achieved by using a combination of the following data protocols:

• SeaTalk^{hs}

• SeaTalk^{ng}

• NMEA 2000

• SeaTalk

• NMEA 0183

> **Note:** You may find that your system does not use all of the connection types or instrumentation described in this section.

SeaTalk^{hs}

SeaTalk^{hs} is an ethernet based marine network. This high speed protocol allows compatible equipment to communicate rapidly and share large amounts of data.

Information shared using the SeaTalk^{hs} network includes:

• Shared cartography (between compatible displays).

• Digital radar data.

• Sonar data.

Seatalk^{ng}

SeaTalk^{ng} (Next Generation) is an enhanced protocol for connection of compatible marine instruments and equipment. It replaces the older SeaTalk and SeaTalk^2 protocols.

SeaTalk^{ng} utilizes a single backbone to which compatible instruments connect using a spur. Data and power are carried within the backbone. Devices that have a low draw can be powered from the network, although high current equipment will need to have a separate power connection.

SeaTalk^{ng} is a proprietary extension to NMEA 2000 and the proven CAN bus technology. Compatible NMEA 2000 and SeaTalk / SeaTalk^2 devices can also be connected using the appropriate interfaces or adaptor cables as required.

NMEA 2000

NMEA 2000 offers significant improvements over NMEA 0183, most notably in speed and connectivity. Up to 50 units can simultaneously transmit and receive on a single physical bus at any one time, with each node being physically addressable. The standard was specifically intended to allow for a whole network of marine electronics from any manufacturer to communicate on a common bus via standardized message types and formats.

SeaTalk

SeaTalk is a protocol which enables compatible instruments to connect to each other and share data.

The SeaTalk cable system is used to connect compatible instruments and equipment. The cable carries power and data and enables connection without the need for a central processor.

Additional instruments and functions can be added to a SeaTalk system, simply by plugging them into the network. SeaTalk equipment can also communicate with other non-SeaTalk equipment via the NMEA 0183 standard, provided a suitable interface is used.

NMEA 0183

The NMEA 0183 Data Interface Standard was developed by the National Marine Electronics Association of America. It is an international standard to enable equipment from many different manufacturers to be connected together and share information.

The NMEA 0183 standard carries similar information to SeaTalk. However it has the important difference that one cable will only carry information in one direction. For this reason NMEA 0183 is generally used to connect a data receiver and a transmitter together, e.g. a compass sensor transmitting heading to a radar display. This

information is passed in 'sentences', each of which has a three letter sentence identifier. It is therefore important when checking compatibility between items that the same sentence identifiers are used some examples of which are:

• VTG - carries Course and Speed Over Ground data.

• GLL - carries latitude and longitude.

• DBT - carries water depth.

• MWV - carries relative wind angle and wind speed data.

NMEA Baud rates

The NMEA 0183 standard operates at a number of different speeds, depending upon the particular requirement or equipment capabilities. Typical examples are:

• 4800 baud rate. Used for general purpose communications, including FastHeading data.

• 38400 baud rate. Used for AIS and other high speed applications.

3.9 Data master

Any system containing more than one networked multifunction display must have a designated data master.

The data master is the display which serves as a primary source of data for all displays, it also handles all external sources of information. For example the displays may require heading information from the autopilot and GPS systems, usually received through a SeaTalkng or NMEA connection. The data master is the display to which the SeaTalk, NMEA and any other data connections are made, it then bridges the data to the SeaTalkhs network and any compatible repeat displays. Information shared by the data master includes:

• Cartography

• Routes and waypoints

• Radar

• Sonar

• Data received from the autopilot, instruments, the engine and other external sources.

Your system may be wired for redundancy with data connections made to repeat displays. However these connections will only become active in the event of a fault and/or reassignment of the data master.

3.10 New a Series parts supplied

The following items are supplied with your a65 / a67 multifunction display.

D12583-2
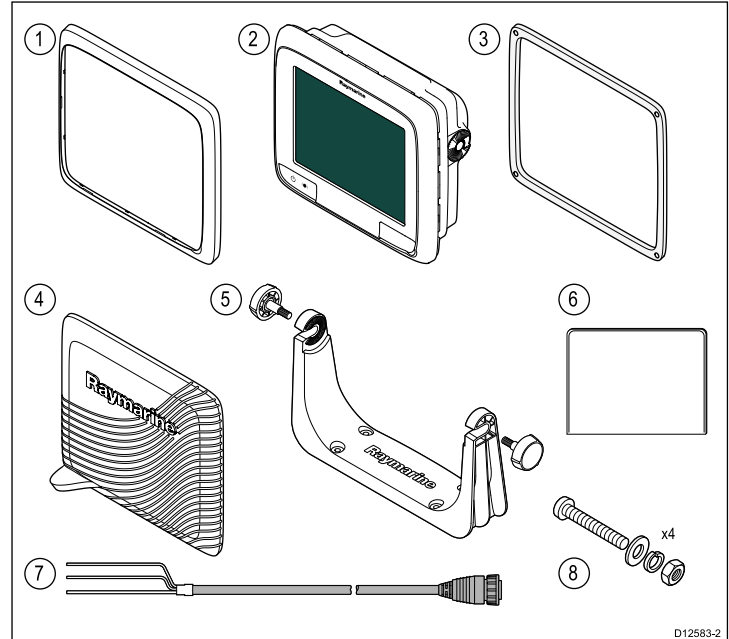
1	Front bezel
2	Multifunction display
3	Flush mount gasket
4	Sun cover
5	Trunnion bracket kit
6	Documentation pack
7	Power cable
8	4x Nuts, bolts, spring washers and washers (can be used for either flush or bracket mounting.)

3.11 e7 / e7D Parts supplied

The parts shown below are supplied with the e7 / e7D multifunction display.
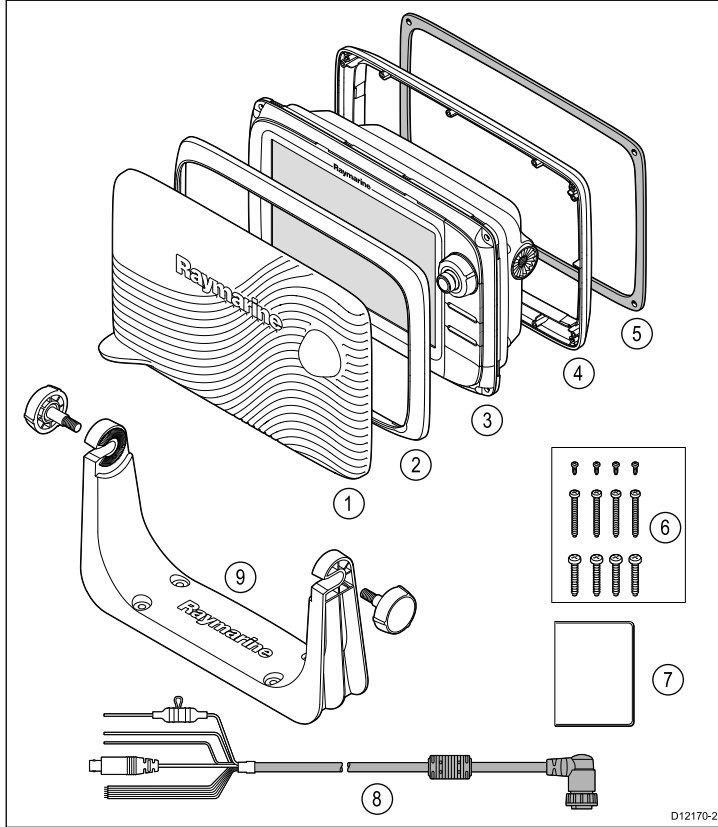
1. Sun cover.
2. Front bezel.
3. Multifunction display.
4. Rear bezel (required for trunnion bracket mounting).
5. Gasket (required for flush mounting).
6. Screw pack, includes:
   - 4 x rear bezel fixing screws.
   - 4 x unit mounting screws (for flush mounting).
   - 4 x unit mounting screws (for trunnion bracket mounting).
7. Documentation pack, includes:
   - Multilingual CD.
   - Mounting and getting started multilingual guide
   - Mounting template.
   - Warranty policy
8. Power and data cable.
9. Trunnion bracket kit.

3.12 New c Series and New e Series parts supplied

The parts shown below are supplied with the New c Series and New e Series (Excluding e7 and e7D) multifunction displays.
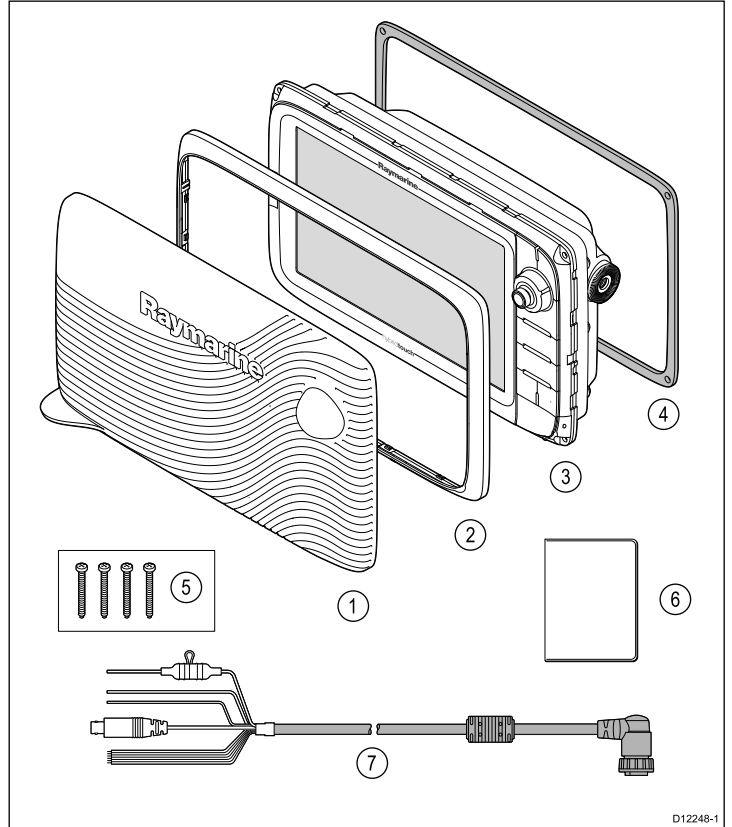
1. Sun cover.
2. Front bezel.
3. Multifunction display.
4. Gasket (required for flush mounting).
5. Screw pack, includes 4 x unit mounting screws (for flush mounting).
6. Documentation pack, includes:
   - Multilingual CD.
   - Mounting and getting started multilingual guide
   - Mounting template.
   - Warranty policy
7. Power and data cable.

3.13 Tools required for installation
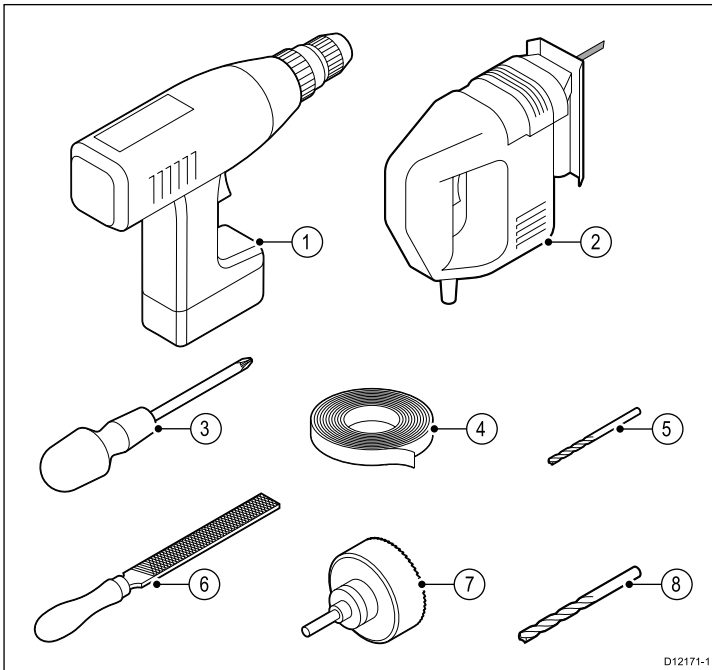
1. Power drill.

2. Jigsaw.

3. Pozidrive screwdriver.

4. Adhesive tape.

5. Drill bit for trunnion bracket mounting.

6. File.

7. Hole saw for flush mounting (For hole saw size refer to your product's mounting template).

8. Drill bit for flush mounting.

Chapter 4: Cables and connections

Chapter contents

4.1 General cabling guidance

Cable types and length

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

- Unless otherwise stated use only standard cables of the correct type, supplied by Raymarine.

- Ensure that any non-Raymarine cables are of the correct quality and gauge. For example, longer power cable runs may require larger wire gauges to minimize voltage drop along the run.

Routing cables

Cables must be routed correctly, to maximize performance and prolong cable life.

- Do NOT bend cables excessively. Wherever possible, ensure a minimum bend diameter of 200 mm (8 in) / minimum bend radius of 100 mm (4 in).
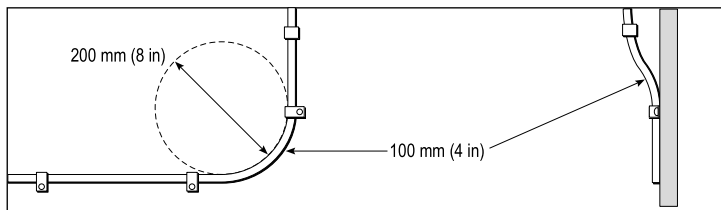
- Protect all cables from physical damage and exposure to heat. Use trunking or conduit where possible. Do NOT run cables through bilges or doorways, or close to moving or hot objects.

- Secure cables in place using tie-wraps or lacing twine. Coil any extra cable and tie it out of the way.

- Where a cable passes through an exposed bulkhead or deckhead, use a suitable watertight feed-through.

- 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,

- antennae.

Strain relief

Ensure adequate strain relief is provided. Protect connectors from strain and ensure they 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 PC's, processors, displays and other sensitive electronic instruments or devices.

- Always use an isolating transformer with Weather FAX audio cables.

- Always use an isolated power supply when using a 3rd party audio amplifier.

- Always use an RS232/NMEA converter with optical isolation on the signal lines.

- Always make sure that PC's or other sensitive electronic devices have a dedicated power circuit.

Cable shielding

Ensure that all data cables are properly shielded that the cable shielding is intact (e.g. hasn't been scraped off by being squeezed through a tight area).

4.2 Connections overview

Details of the connections available on Raymarine multifunction displays are shown below.
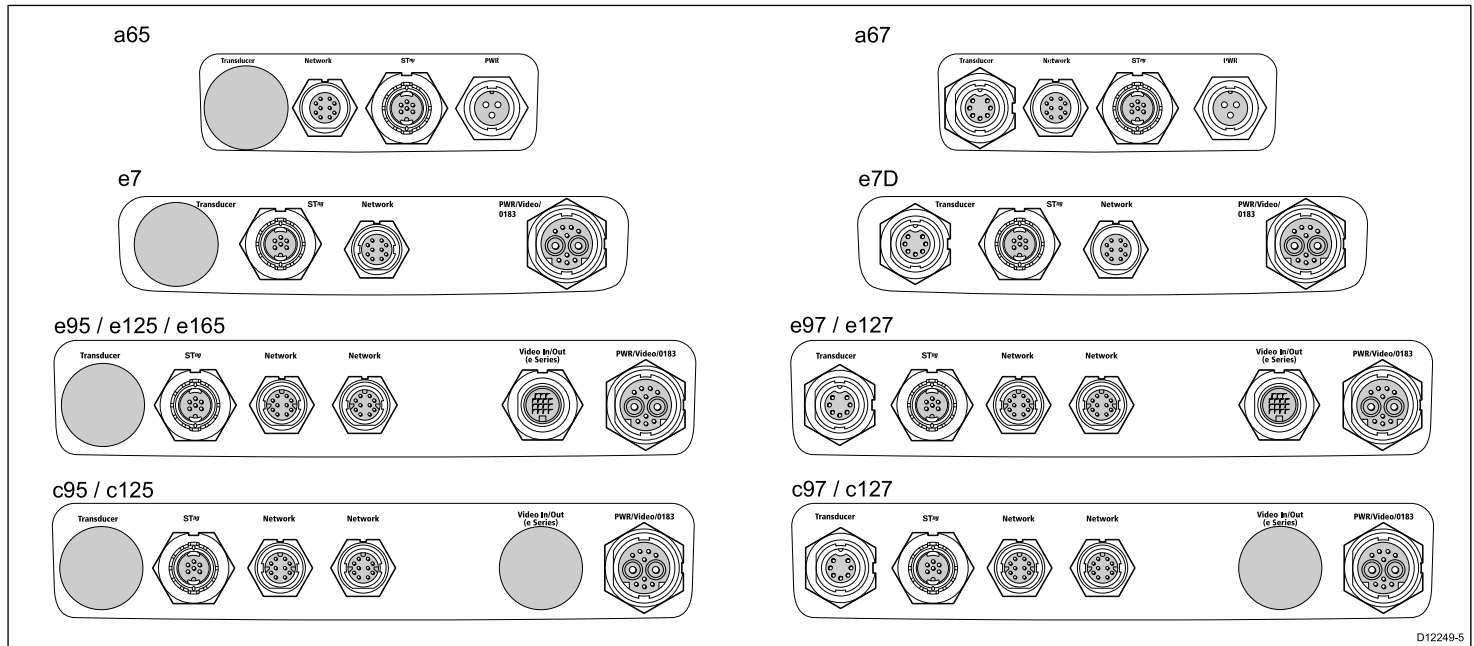
	Transducer	SeaTalk^{ng}	SeaTalk^{hs} / RayNet Network 1	SeaTalk^{hs} / RayNet Network 2	Video in / out	Power / Video / NMEA 0183
a65	✗	✓	✓	✗	✗	✓
a67	✓	✓	✓	✗	✗	✓
e7	✗	✓	✓	✗	✗	✓
e7D	✓	✓	✓	✗	✗	✓
e95	✗	✓	✓	✓	✓	✓
e97	✓	✓	✓	✓	✓	✓
e125	✗	✓	✓	✓	✓	✓
e127	✓	✓	✓	✓	✓	✓
e165	✗	✓	✓	✓	✓	✓
c95	✗	✓	✓	✓	✗	✓
c97	✓	✓	✓	✓	✗	✓
c125	✗	✓	✓	✓	✗	✓
c127	✓	✓	✓	✓	✗	✓

4.3 Power connection — New a Series

D12581-1
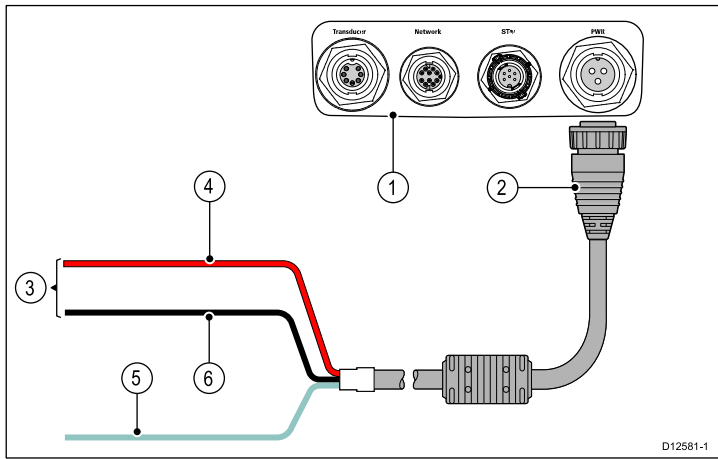
1. Multifunction display rear panel connections.
2. Power cable.
3. Connection to 12 V power supply
4. Red cable (positive).
5. Shield (drain) wire (thin black wire; must be connected to RF ground point).
6. Black cable (negative).

Power distribution

Raymarine recommends that all power connections are made via a distribution panel.

- All equipment must be powered from a breaker or switch, with appropriate circuit protection.
- All equipment should be wired to individual breakers if possible.

> ⚠️ **Warning: Product grounding**
>
> Before applying power to this product, ensure it has been correctly grounded, in accordance with the instructions in this guide.

Grounding — Dedicated drain wire

The power cable supplied with this product includes a dedicated shield (drain) wire for connection to a vessel's RF ground point.

It is important that an effective RF ground is connected to the system. A single ground point should be used for all equipment. The unit can be grounded by connecting the shield (drain) wire of the power cable to the vessel's RF ground point. On vessels without an RF ground system the shield (drain) wire should be connected directly to the negative battery terminal.

The dc power system should be either:

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

> ⚠️ **Warning: Positive ground systems**
>
> Do not connect this unit to a system which has positive grounding.

Power cable

The display is supplied with a power cable, this can be extended if required..

Power cables available

For flush mount installations a right angled power cable (not supplied) is available.

Cable	Part number	Notes
Right angled power cable	A80021	

Cable extension

The following restrictions apply to any extension to the power cable:

- Cable must be of a suitable gauge for the circuit load.
- Each unit should have its own dedicated power cable wired back to the distribution panel.

Total length (max)	Supply voltage	Cable gauge (AWG)
0–5 m (0–16.4 ft)	12 V	18
5–10 m (16.4–32.8 ft)	12 V	14
10–15 m (32.8–49.2 ft)	12 V	12
15–20 m (49.2–65.5 ft)	12 V	12

> **Note:** These distances are for a 2 wire power cable run from the battery to the display (approximately the distance from the battery to the display). To calculate the round trip length, double the figure stated here.

Breakers, fuses and circuit protection

The unit includes an internal fuse. It is recommended that you fit an additional thermal breaker or fuse at the distribution panel.

Thermal breaker rating
5 A (if only connecting one device)

> **Note:** The suitable fuse rating for the thermal breaker is dependent on the number of devices you are connecting. If in doubt consult an authorized Raymarine dealer.

4.4 Power connection — New c Series and New e Series

D12250-1
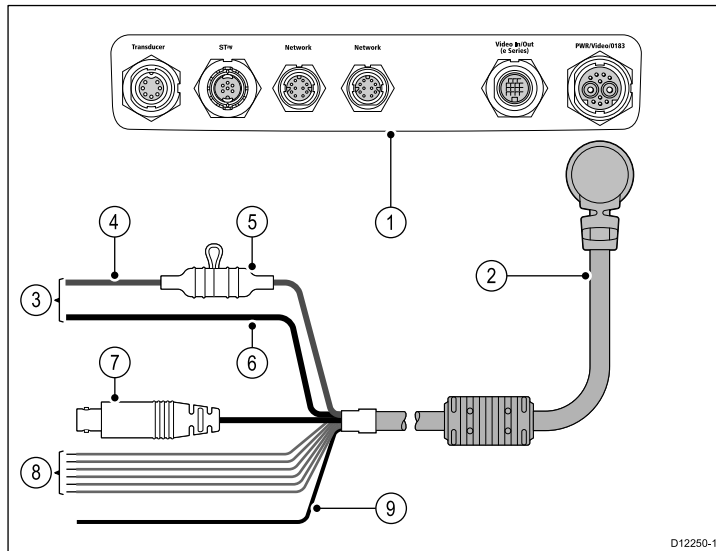
1. Multifunction display connections.

2. Power and data cable.

3. Connection to 12/24 V power supply (e7/e7D is 12V only).

4. Red cable (positive).

5. Fuse.

6. Black cable (negative).

7. Video input cable.

8. NMEA 0183 data cables.

9. Shield (drain) wire (thin black wire; must be connected to RF ground point).

Power distribution

Raymarine recommends that all power connections are made via a distribution panel.

• All equipment must be powered from a breaker or switch, with appropriate circuit protection.

• All equipment should be wired to individual breakers if possible.

⚠ **Warning: Product grounding**

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

Grounding — Dedicated drain wire

The power cable supplied with this product includes a dedicated shield (drain) wire for connection to a vessel's RF ground point.

It is important that an effective RF ground is connected to the system. A single ground point should be used for all equipment. The unit can be grounded by connecting the shield (drain) wire of the power cable to the vessel's RF ground point. On vessels without an RF ground system the shield (drain) wire should be connected directly to the negative battery terminal.

The dc power system should be either:

• Negative grounded, with the negative battery terminal connected to the vessel's ground.

• Floating, with neither battery terminal connected to the vessel's ground

⚠ **Warning: Positive ground systems**

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

Power cable

The display is supplied with a combined power and data multi cable, this can be extended if required.

Power cables available

Cable	Part number	Notes
1.5 m (4.9 ft) Straight power and data cable	R62379	
1.5 m (4.9 ft) Right angled power and data cable	R70029	

Cable extension

The following restrictions apply to any extension to the power cable:

• Cable must be of a suitable gauge for the circuit load.

• Each unit should have its own dedicated power cable wired back to the distribution panel.

Total length (max)	Supply voltage	Cable gauge (AWG)
0–5 m (0–16.4 ft)	12 V	18
	24 V	20
5–10 m (16.4–32.8 ft)	12 V	14
	24 V	18
10–15 m (32.8–49.2 ft)	12 V	12
	24 V	16
15–20 m (49.2–65.5 ft)	12 V	12
	24 V	14

Note: These distances are for a 2 wire power cable run from the battery to the display (approximately the distance from the battery to the display). To calculate the round trip length, double the figure stated here.

Breakers, fuses and circuit protection

The power cable includes an in-line fuse. It is recommended that you fit an additional thermal breaker or fuse at the distribution panel.

Fuse rating	Thermal breaker rating
7 A in-line fuse fitted within power cable.	5 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 authorised Raymarine dealer.

Sharing a breaker

Where more than 1 piece of equipment shares a breaker you must provide protection for the individual circuits. E.g. by connecting an in-line fuse for each power circuit.
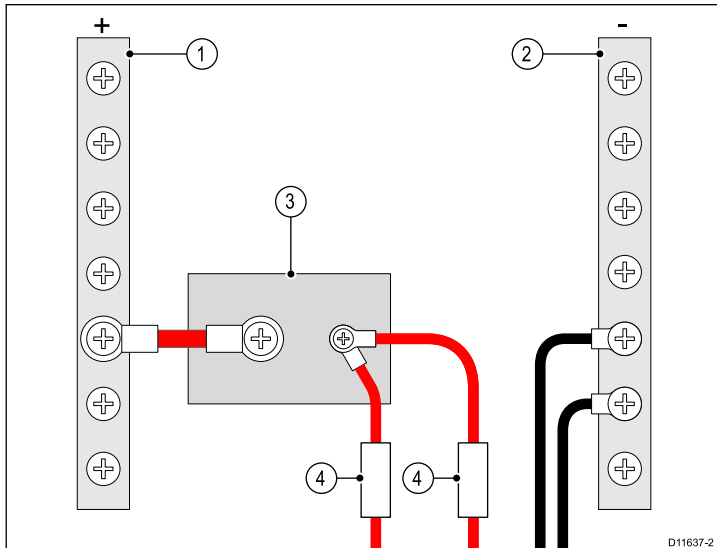
1	Positive (+) bar
2	Negative (-) bar
3	Circuit breaker
4	Fuse

Where possible, connect individual items of equipment to individual circuit breakers. Where this is not possible, use individual in-line fuses to provide the necessary protection.

4.5 Network connections

You can connect a number of digital devices to your multifunction display using the Network connector(s) at the rear of the unit.

A typical network of digital devices may include:

• Up to 6 Raymarine multifunction displays.

• SeaTalkhs or RayNet digital devices such as a sonar module and radar scanner.

• Ethernet IP cameras.

> **Note:** Your multifunction display includes the following network connectors:
>
> • e7, e7D, a65 and a67 = 1 x SeaTalkhs / RayNet connector.
>
> • New c Series and New e Series (excluding the e7 and e7D) = 2 x SeaTalkhs / RayNet connectors.
>
> Networks requiring additional network connections will require a Raymarine network switch.

Typical SeaTalkhs network
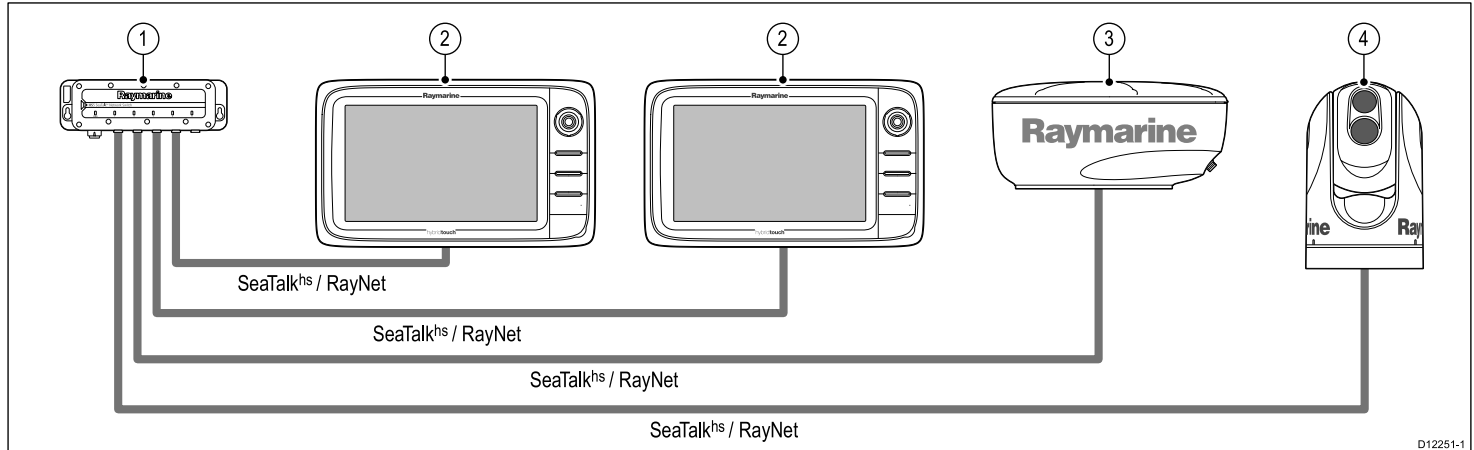
1. Raymarine network switch.

2. Multifunction display.

3. Raymarine radar scanner.

4. Thermal camera.

> **Note:** New a Series displays do not support connection to a thermal camera.
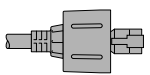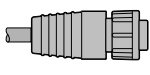
Network hardware

Item	Part number	Notes
HS5 SeaTalkhs network switch	A80007	5–port switch for network connection of multiple SeaTalkhs devices featuring RayNet connectors. Equipment with SeaTalkhs connectors can also be connected via suitable adaptor cables.
SeaTalkhs network switch	E55058	8–port switch for network connection of multiple SeaTalkhs devices.

Item	Part number	Notes
SeaTalkhs crossover coupler	E55060	Enables direct connection of SeaTalkhs devices to smaller systems where a switch is not required. Also enables the connection of SeaTalkhs devices to an HS5 SeaTalkhs network switch (in conjunction with a RayNet to RJ45 cable).
Ethernet Coupler	R32142	Enables direct connection of ethernet or SeaTalkhs devices to smaller systems where a switch is not required. Also enables the connection of ethernet or SeaTalkhs devices to an HS5 SeaTalkhs network switch (in conjunction with a RayNet to RJ45 cable).

Network cable connector types

There are 2 types of network cable connector — SeaTalk[hs] and RayNet.

	SeaTalk[hs] connector — used for connecting SeaTalk[hs] devices to a Raymarine network switch via SeaTalk[hs] cables.
	RayNet connector — used for connecting Raymarine network switches and SeaTalk[hs] devices to the multifunction display via RayNet cables. Also required for connecting a crossover coupler if only one device is being connected to the display's Network connector.

Network cable types

There are 2 types of SeaTalk[hs] network cable — "patch" and "network".

- **Patch** — for connecting the following devices to a Raymarine network switch:
  - Thermal camera via PoE injector.
  - Additional Raymarine network switch.
  - PC or laptop using Voyager planning software.
- **Network** — for connecting the following devices to a Raymarine network switch:
  - Sonar Module.
  - SR100 Sirius weather receiver.
  - Additional compatible Raymarine multifunction displays.

RayNet connector network cables

Cable	Part number
1 m (3.28 ft) RayNet to SeaTalk[hs] (RJ45) cable	A62360
3 m (9.84 ft) RayNet to SeaTalk[hs] (RJ45) cable	A80151
10 m (32.8 ft) RayNet to SeaTalk[hs] (RJ45) cable	A80159
400 mm (1.3 ft) RayNet to RayNet cable	A80160
2 m (6.56 ft) RayNet to RayNet cable	A62361
5 m (16.4 ft) RayNet to RayNet cable	A80005
10 m (32.8 ft) RayNet to RayNet cable	A62362
20 m (65.6 ft) RayNet to RayNet cable	A80006
50 mm (1.97 in) RayNet (male) to RayNet (male) cable	A80162
400 mm (1.3 ft) RayNet to SeaTalk[hs] (female) adaptor	A80160
RayNet cable puller 5 pack	R70014

SeaTalk[hs] network cables

Cable	Part number
1.5 m (4.9 ft) SeaTalk[hs] network cable	E55049
5 m (16.4 ft) SeaTalk[hs] network cable	E55050
10 m (32.8 ft) SeaTalk[hs] network cable	E55051
20 m (65.6 ft) SeaTalk[hs] network cable	E55052

SeaTalk[hs] patch cables

Cable	Part number
1.5 m (4.9 ft) SeaTalk[hs] patch cable	E06054
5 m (16.4 ft) SeaTalk[hs] patch cable	E06055
10 m (32.8 ft) SeaTalk[hs] patch cable	E06056
15 m (49.2 ft) SeaTalk[hs] patch cable	A62136
20 m (65.6 ft) SeaTalk[hs] patch cable	E06057

Radar connection

The multifunction display is compatible with Raymarine Non-HD digital radomes and HD / SuperHD radar scanners. The scanner is connected using a SeaTalk[hs] cable.

Note:

- New c Series and New e Series displays (excluding the e7 and e7D) can connect 2 SeaTalk[hs] / RayNet devices directly to the display.
- New a Series and the e7 / e7D displays can connect 1 SeaTalk[hs] / RayNet device directly to the display.

The radar is usually connected via a Raymarine network switch. On smaller systems (with only one display and no other digital devices) the radar may be connected to the display directly using a SeaTalk[hs] crossover coupler.

Radar connected using Raymarine network switch

D12252-1
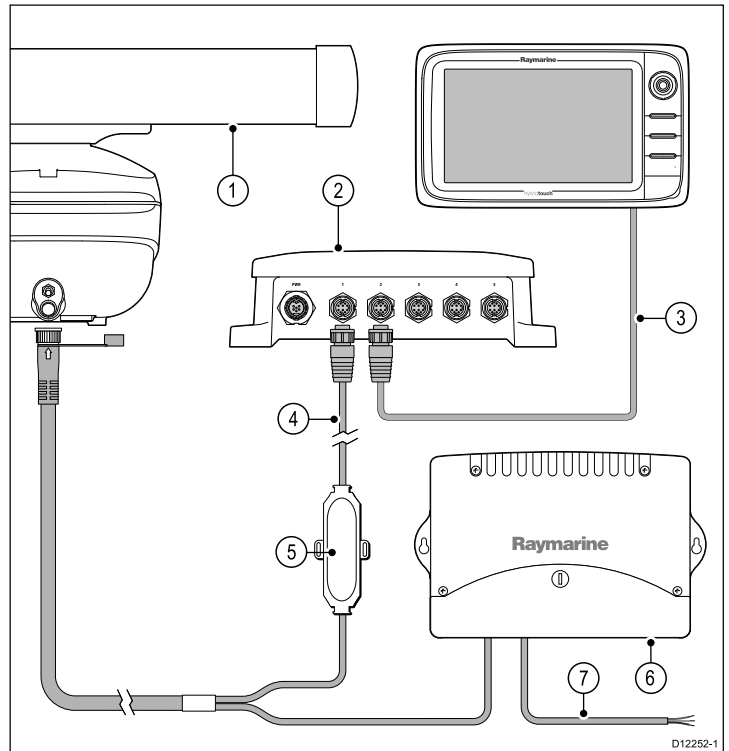
1. Radar scanner.
2. Raymarine network switch.
3. RayNet cable.
4. RayNet to SeaTalk[hs] network cable.
5. SeaTalk[hs] crossover coupler
6. VCM (Voltage Converter Module) — **required for Open Arrays**.
7. Power connection.

Radar connected using crossover coupler
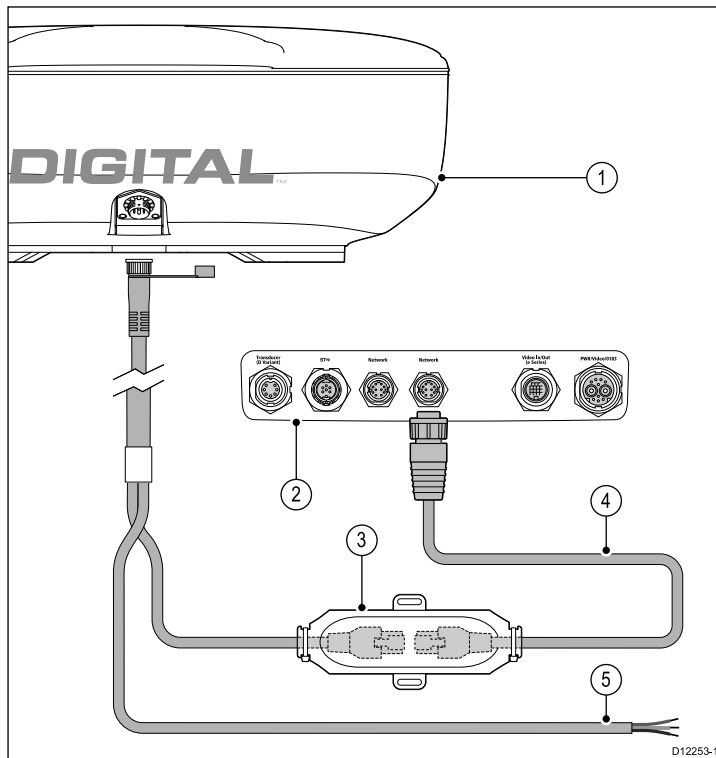
1. Radar scanner
2. Multifunction display rear connector panel.
3. SeaTalk^{hs} crossover coupler.
4. RayNet to SeaTalk^{hs} network cable.
5. Connection to power supply — **Open array scanners require a VCM (Voltage Converter Module).**

Note: The connector on the free end of the radar cable does NOT have a locking mechanism.

Radar cable extension

For longer cable runs a radar power and data digital cable extension is required.
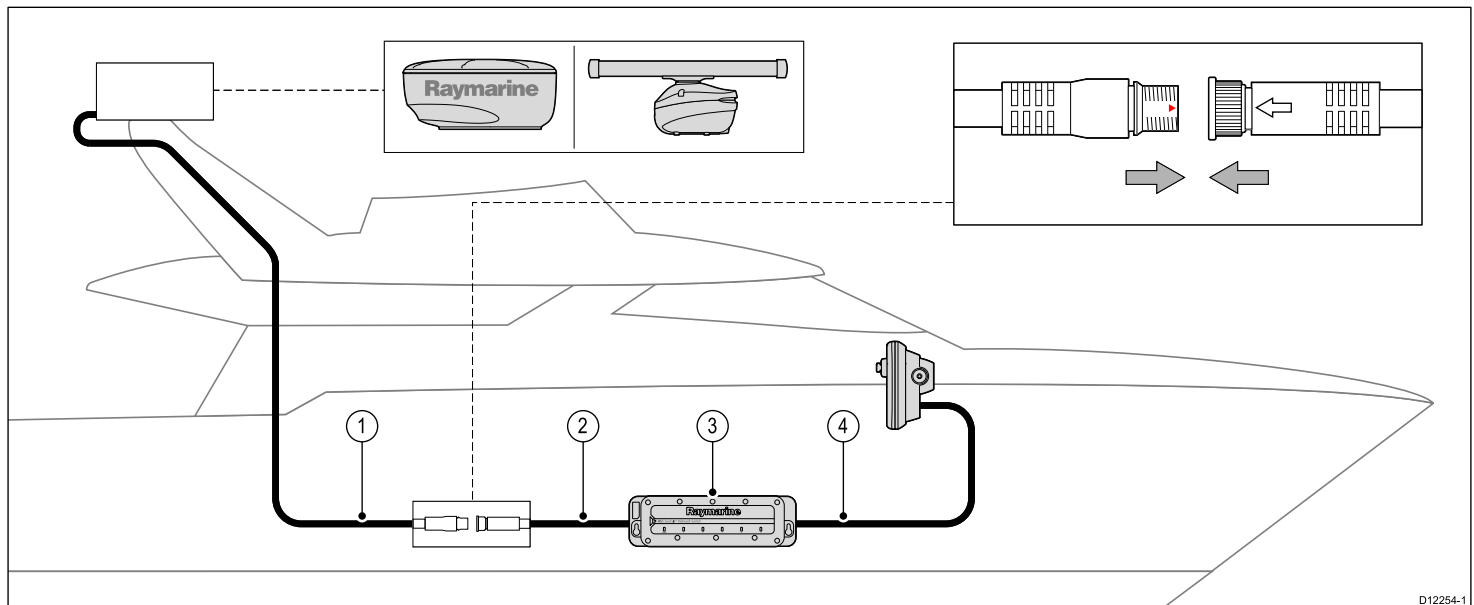
1. Radar extension cable.
2. Radar power and data digital cable.
3. Raymarine network switch (or crossover coupler if connecting radar directly to display).
4. RayNet cable (or RayNet to SeaTalk^{hs} cable if connecting via crossover coupler).

Note: The extension cable connects to the radar scanner.

Note: The power connection is NOT shown in the diagram. If using an Open Array scanner a VCM (Voltage Converter Module) must be connected between the scanner and the power supply.

Digital radar cables

You will need a dedicated radar power and data digital cable and SeaTalk^{hs} network cables to connect your scanner to your system.

Connection	Required cable
Radar scanner to power supply and Raymarine network switch.	Power and data digital cable. For longer cable runs, extensions are available in a variety of lengths.
Raymarine network switch to multifunction display.	SeaTalk^{hs} network cables, available in a variety of cable lengths.

Radar power and data digital cables

These cables contain the wires for a scanner's power and data connections.

Cable	Part number
5 m (16.4 ft) Power and data digital cable	A55076D
10 m (32.8 ft) Power and data digital cable	A55077D
15 m (49.2 ft) Power and data digital cable	A55078D
25 m (82.0 ft) Power and data digital cable	A55079D

Note: The maximum length for the radar power and data digital cable (including any extensions) is 25 m (82 ft).

Radar power and data digital extension cables

These cables extend the power and data digital cables for a scanner's power and data connections.

Cable	Part number
2.5 m (8.2 ft) Power and data digital cable	A92141D
5 m (16.4 ft) Power and data digital cable	A55080D
10 m (32.8 ft) Power and data digital cable	A55081D

Note: The maximum length for the radar power and data digital cable (including any extensions) is 25 m (82 ft).

Sonar connection

A sonar connection is required for fishfinder applications.

There are 2 types of connection required for fishfinder applications:

- **Sonar module connection** — converts the sonar signals provided by the sonar transducer into data suitable for a marine electronics system. The sonar variant multifunction displays feature a built-in sonar, enabling you to connect the display directly to a compatible sonar transducer. Non-sonar variants require a connection to an external Raymarine sonar module. Internal and external sonars require a connection to a compatible sonar transducer.

- **Sonar transducer connection** — provides sonar signals to the sonar module.

Sonar module connection
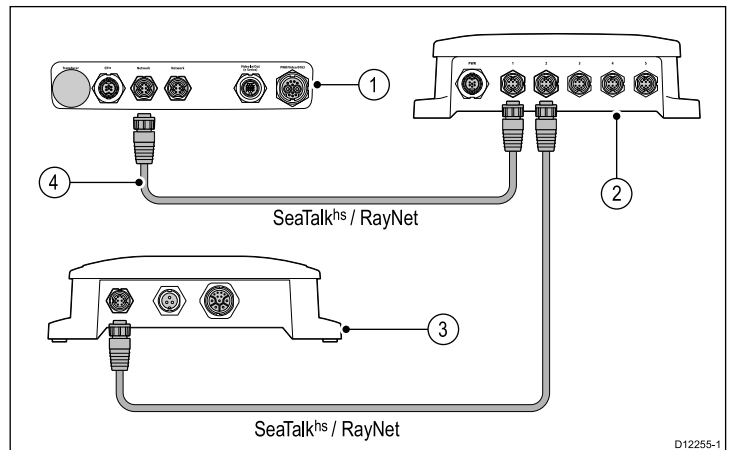
SeaTalk^{hs} / RayNet

SeaTalk^{hs} / RayNet

D12255-1

1. Rear connector panel of multifunction display (Non-sonar variant).

2. Raymarine network switch.

3. Raymarine sonar module.

4. RayNet cable.

The multifunction display can be used with the following Raymarine sonar modules:

- CP450C

- DSM300

- DSM30

Note: You can also connect a sonar variant multifunction display to a Raymarine sonar module. This is useful in circumstances where you need a higher powered sonar module for example. You can only use one sonar transducer at any one time.

Sonar connected directly to the display

On smaller systems (with only one display and no other SeaTalk^{hs} / RayNet devices) the sonar module may be connected directly to the display without using a Raymarine network switch.

Note: You must ensure that the cable ends connected into the display and sonar module have a locking / weather-tight mechanism.

Compatible sonar transducers

The multifunction display is compatible with the following sonar transducers:

- Raymarine P48.

- Raymarine P58.

- Minn Kota transducers Sonar variant Raymarine displays only), via optional A62363 adaptor cable.

- Any 600 watt sonar-compatible transducer, via optional E66066 adaptor cable.

Sonar transducer connection — Sonar variant multifunction displays

D12256-1
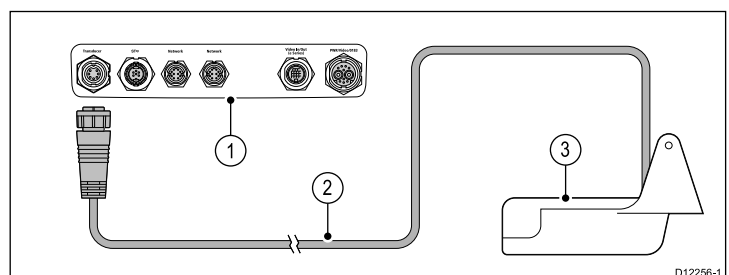
1. Rear connector panel of multifunction display (Sonar variant).

2. Sonar transducer cable.

3. Sonar transducer.

600 watt sonar-compatible sonar transducer connection via optional adaptor — Sonar variant multifunction displays
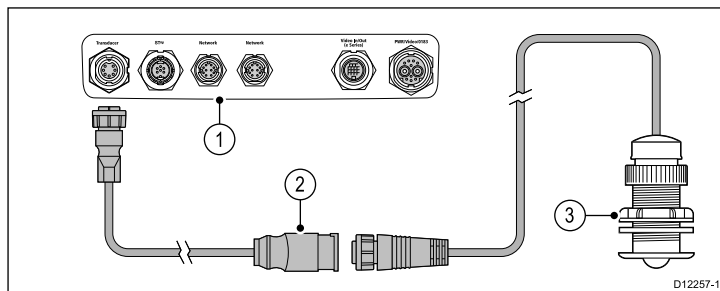
1. Rear connector panel of multifunction display (Sonar variant).
2. E66066 adaptor cable.
3. Sonar transducer.

Transducer adaptor cable

Cable	Part number
0.5 m (1.64 ft) transducer adaptor cable	E66066

Sonar transducer connection — Non-Sonar variant multifunction displays
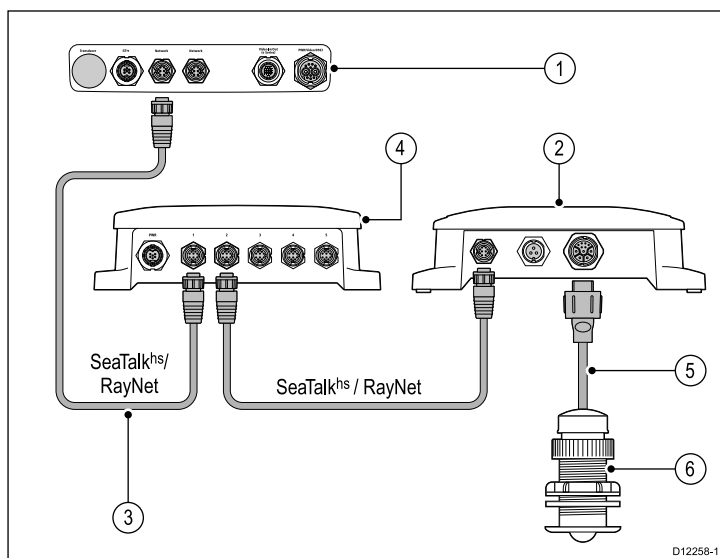
1. Rear connector panel of multifunction display (Non-sonar variant).
2. Raymarine network switch (only required if connecting more than one device using SeaTalk^hs / RayNet).
3. RayNet cable.
4. Raymarine sonar module.
5. Sonar transducer cable.
6. Sonar transducer.

Minn Kota sonar transducer connection via optional adaptor cable (Sonar variant multifunction displays only)
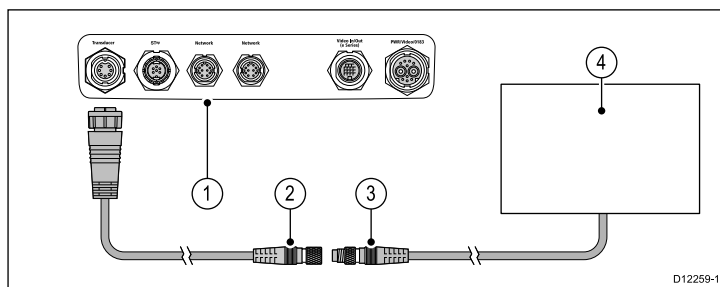
1. Rear connector panel of multifunction display (Sonar variant).
2. Minn Kota transducer adaptor cable.
3. Minn Kota transducer cable.
4. Minn Kota transducer.

Sonar variant multifunction displays

The table below details which multifunction display variants feature a built-in sonar module and can be connected directly to compatible sonar transducers.

Sonar variants	Non-sonar variants
a67	a65
e7D	e7
c97	c95
c127	c125
e97	e95
e127	e125
	e165

Minn Kota transducer adaptor cable

Connects a Minn Kota sonar transducer to a compatible Raymarine multifunction display.

Cable	Part number
1 m (3.28 ft) Minn Kota transducer adaptor cable	A62363

Thermal camera connection

You can connect a thermal camera to your New c Series or New e Series multifunction displays.

Note: New a Series does not support thermal cameras.

The camera is connected via a Raymarine network switch. If you want to use the optional Joystick Control Unit (JCU) with the camera this must also be connected to the network switch. A composite video connection is required between the camera and the multifunction display.
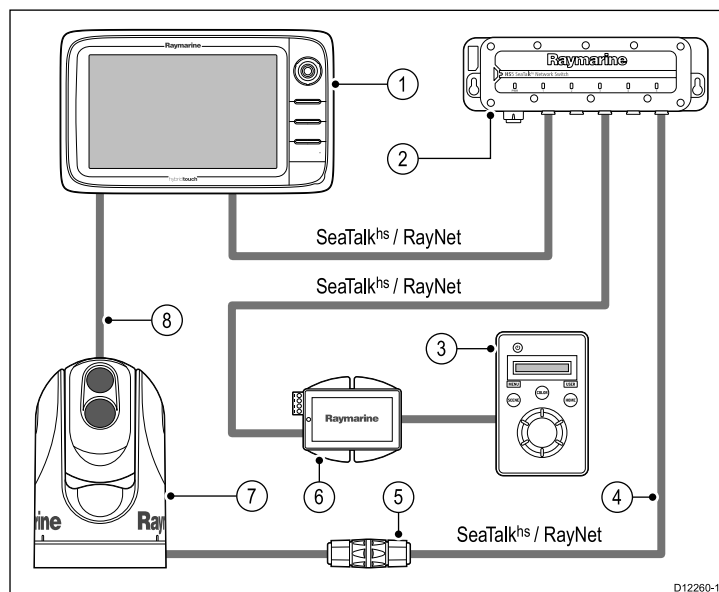
1. Multifunction display
2. Raymarine network switch
3. Joystick Control Unit (JCU), optional
4. SeaTalk^hs to RayNet cable
5. Ethernet cable coupler.
6. PoE (Power over Ethernet) injector (only required if using the optional JCU).
7. Thermal camera
8. Video connection

Important notes

• You can control the thermal camera using your multifunctional display. The Joystick Control Unit (JCU) is optional, but can be

used in conjunction with the multifunctional display to control the thermal camera if required.

- "Dual payload" thermal cameras include 2 independent lenses; 1 for thermal (infrared) and 1 for visible light. If you only have 1 display you should only connect the video cable labelled "VIS / IR" (visible light / infrared) to the display. If you have 2 or more displays you should connect 1 cable to each display.

- You can only view the thermal camera image on the multifunction display to which the camera is physically connected. If you want to view the thermal camera image on more than 1 display you must obtain a suitable third-party video distribution unit.

- For further information regarding the camera's installation (including connections and mounting), refer to the installation instructions that accompany the camera.

Thermal camera cables

Cabling requirements for thermal cameras.

Camera to network switch

A network patch cable is required to connect the camera to the network switch. The connection is made between the camera cable tail and the network switch via the coupler (supplied with the camera). Network patch cables are available in a variety of lengths.

Joystick Control Unit (JCU)

An Ethernet (with power) cable is used to connect the JCU. The JCU is supplied with a 7.62 m (25 ft) Ethernet cable for this connection. If you require a different length contact your dealer for suitable cables.

Power over Ethernet (PoE) injector to network switch

A network patch cable is required for connecting the PoE injector to the network switch. Network patch cables are available in a variety of lengths.

Video cables

Video cables are not supplied with the product. Please contact your dealer for suitable cables and adaptors.

Raymarine recommends the use of a BNC terminated RG59 75ohm (or better) coaxial cable.

IP Camera connections

You can connect IP cameras to your multifunction display.

Note: IP cameras must be configured to automatically assign an IP address prior to connecting to your multifunction display or network. Please refer to the instructions supplied with your IP camera for configuration details.

Note: Your multifunction display must be powered up before power is applied to any networked IP cameras, this is to enable your multifunction display to assign the IP camera(s) a valid IP address.

IP camera(s) can be connected directly to the SeaTalk^{hs} RayNet connector on your multifunction display.
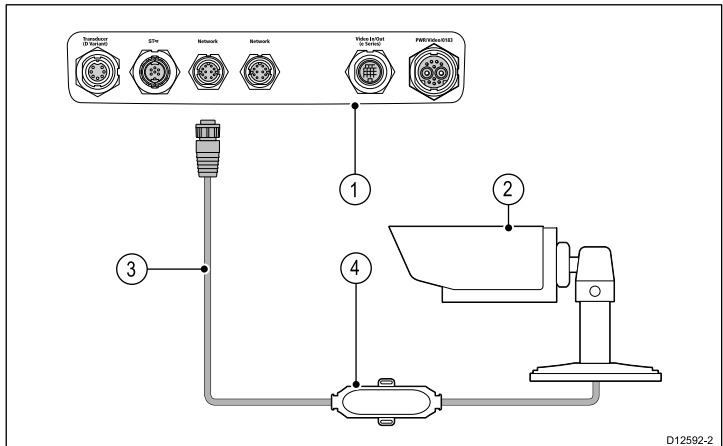
Item	Description
1	Multifunction display rear connector panel
2	IP camera

Item	Description
3	RayNet to RJ45 cable
4	SeaTalk^{hs} cross over coupler

You can also connect multiple IP cameras via the SeaTalk^{hs} network
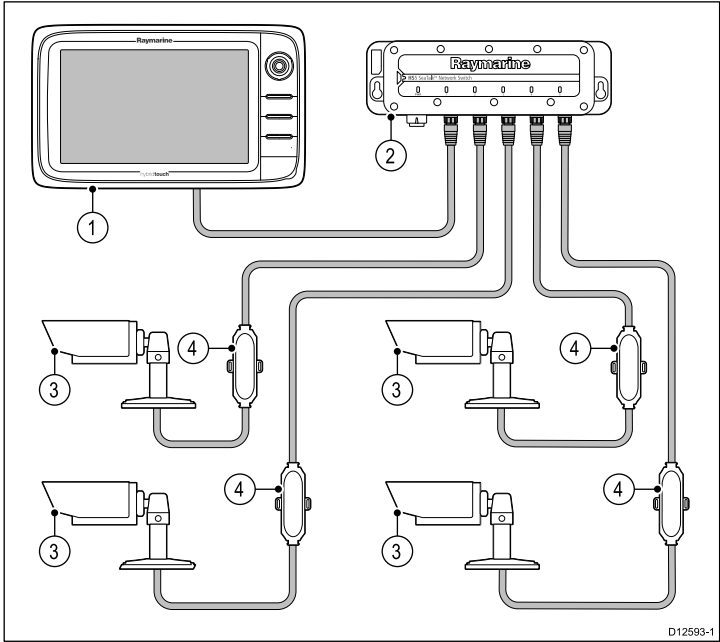
Item	Description
1	Multifunction display
2	Raymarine network switch
3	IP cameras
4	SeaTalk^{hs} cross over couplers

Note: Multifunction displays do not provide power over ethernet (PoE) connected cameras must have their own power supply.

Note: If your IP camera(s) are not detected by your multifunction display, try power cycling the IP camera(s) whilst leaving your multifunction display powered up.

4.6 GPS connection

Depending on display variant, your multifunction display may include an internal GPS receiver. If required the multifunction display can also be connected to an external GPS receiver, using SeaTalkng or NMEA 0183.

GPS connection — SeaTalkng

D12261-1
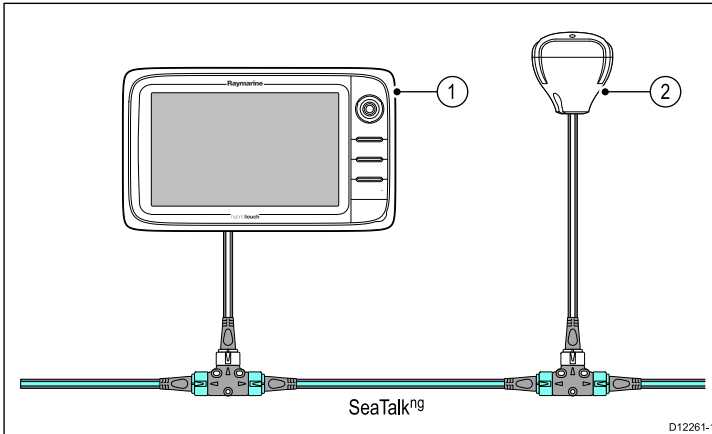
1. Multifunction display.
2. SeaTalkng GPS receiver.

GPS connection — NMEA 0183

D12262-1
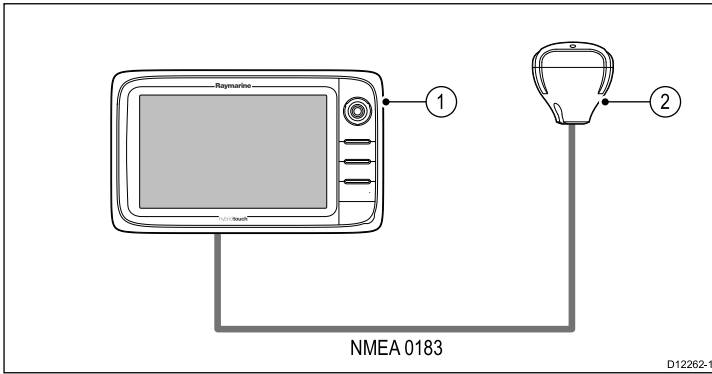
1. Multifunction display.
2. NMEA 0183 GPS receiver.

4.7 AIS connection

A compatible AIS can be connected using SeaTalkng or NMEA 0183.

Connection using SeaTalkng

D12263-1
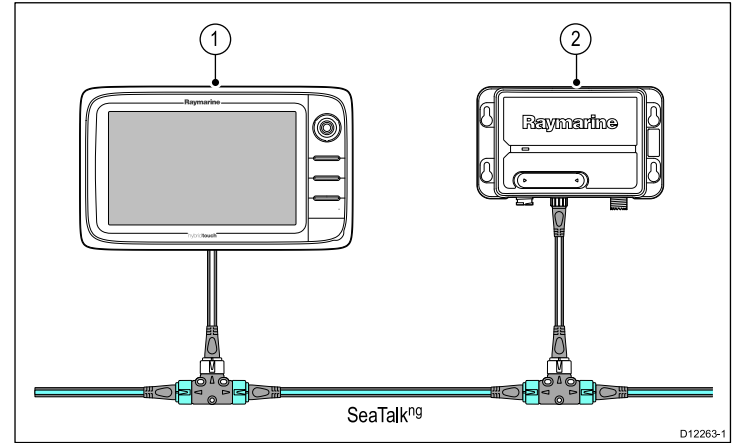
1. Multifunction display.
2. SeaTalkng AIS receiver / transceiver.

Connection using NMEA 0183

D12264-1
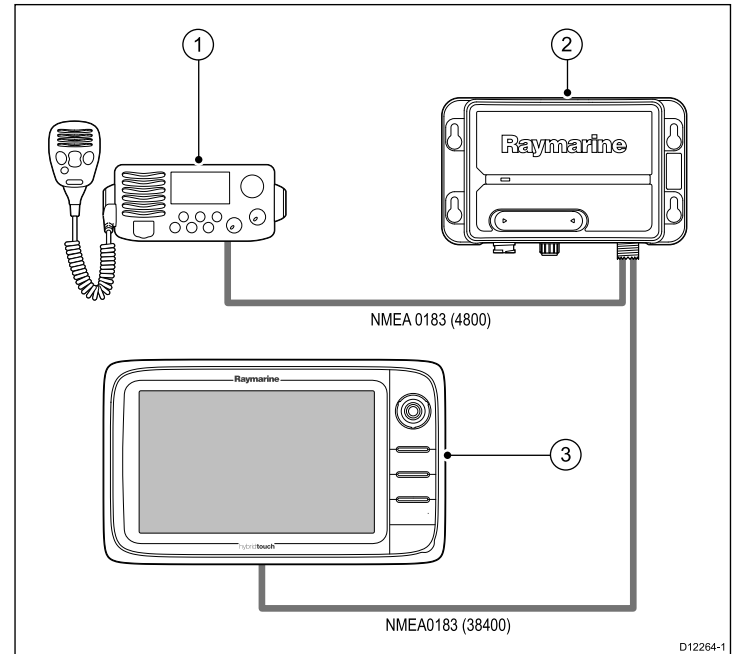
1. VHF radio.
2. AIS unit.
3. Multifunction display.

4.8 Fastheading connection

If you wish to use MARPA (radar target acquisition) functions on your multifunction display you need either:

- An autopilot connected to the multifunction display via SeaTalk^{ng} or NMEA 0183. The compass is connected to the course computer and calibrated via the pilot control head; or:

- A Raymarine or third-party fastheading sensor connected to the multifunction display via NMEA 0183.

Note: Please contact your dealer or Raymarine technical support for more information.

4.9 SeaTalk^{ng} connections

The display can connect to a SeaTalk^{ng} system.

The display can use SeaTalk^{ng} to communicate with:

- SeaTalk^{ng} instruments (for example, i70).

- SeaTalk^{ng} autopilots (for example, p70 with SmartPilot SPX course computer).

- SeaTalk equipment via the optional SeaTalk to SeaTalk^{ng} converter.

- NMEA 2000 equipment via optional DeviceNet adaptor cables.

Typical SeaTalk^{ng} system
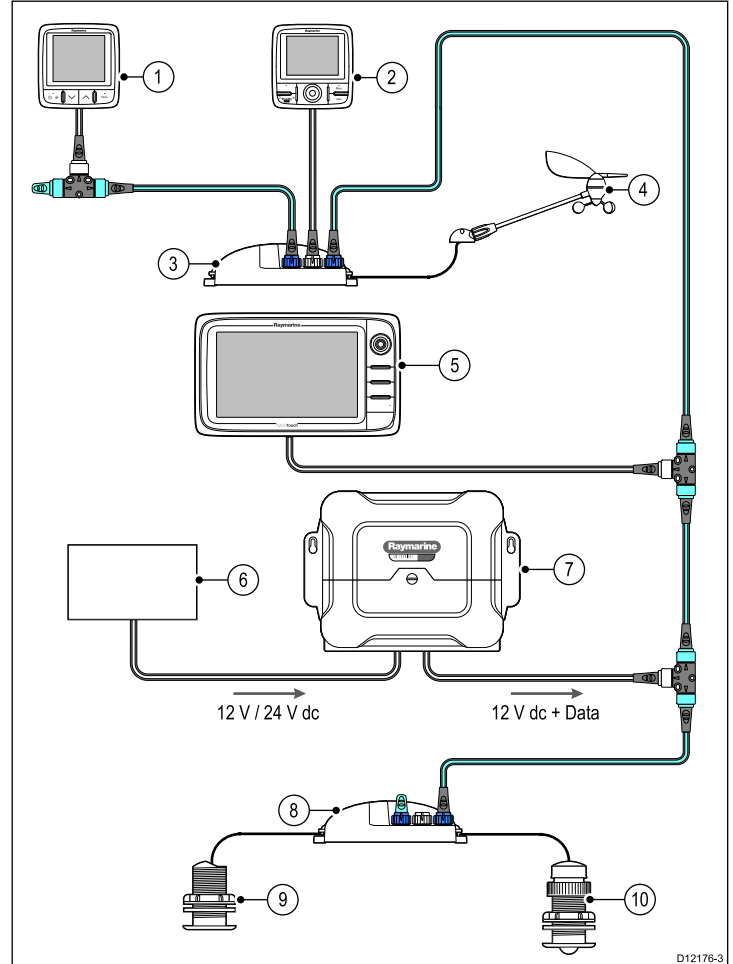
1. SeaTalk^{ng} instrument — for example, i70.

2. SeaTalk^{ng} pilot control head — for example, p70.

3. iTC-5 converter.

4. Wind transducer.

5. SeaTalk^{ng} multifunction display.

6. Power supply.

7. SeaTalk^{ng} course computer — for example, SPX-30.

8. iTC-5 converter.

9. Depth transducer.

10. Speed transducer.

SeaTalk^{ng} power requirements

The SeaTalk^{ng} bus requires a 12 V power supply.

Power may be provided from:

- Raymarine equipment with a regulated 12 V power supply (for example, a SmartPilot SPX course computer); or:

- Other suitable 12 V power supply.

Note: SeaTalk^{ng} does NOT supply power to multifunction displays and other equipment with a dedicated power supply input.

SeaTalkng cabling components

SeaTalkng cabling components and their purposes.

Connection / Cable	Notes
Backbone cable (various lengths)	The main cable carrying data. Spurs from the backbone are used to connect SeaTalkng devices.
T-piece connector	Used to make junctions in the backbone to which devices can then be connected.
Terminator	Required at either end of the backbone.
Inline terminator	Used to connect a spur cable directly to the end of a backbone; useful for longer cable runs.
Spur cable	Used to connect devices to the backbone. Devices may be daisy chained or connected directly to the T-pieces.
SeaTalkng 5–way connector	Used to branch, split, or make additional connections in SeaTalk or SeaTalkng networks.
Blanking plug	Inserted into unused spur connector positions in a 5-way connector or T-piece.

SeaTalkng cables and accessories

SeaTalkng cables and accessories for use with compatible products.

Description	Part No	Notes
Backbone Kit	A25062	Includes: • 2 x 5 m (16.4 ft) Backbone cable • 1 x 20 m (65.6 ft) Backbone cable • 4 x T-piece • 2 x Backbone terminator • 1 x Power cable
SeaTalkng 0.4 m (1.3 ft) spur	A06038	
SeaTalkng 1 m (3.3 ft) spur	A06039	
SeaTalkng 3 m (9.8 ft) spur	A06040	
SeaTalkng 5 m (16.4 ft) spur	A06041	
SeaTalkng 0.4 m (1.3 ft) backbone	A06033	
SeaTalkng 1 m (3.3 ft) backbone	A06034	
SeaTalkng 3 m (9.8 ft) backbone	A06035	
SeaTalkng 5 m (16.4 ft) backbone	A06036	
SeaTalkng 9 m (29.5 ft) backbone	A06068	
SeaTalkng 20 m (65.6 ft) backbone	A06037	
SeaTalkng to bare ends 1 m (3.3 ft) spur	A06043	

Description	Part No	Notes
SeaTalkng to bare ends 3 m (9.8 ft) spur	A06044	
SeaTalkng Power cable	A06049	
SeaTalkng Terminator	A06031	
SeaTalkng T-piece	A06028	Provides 1 x spur connection
SeaTalkng 5–way connector	A06064	Provides 3 x spur connections
SeaTalk to SeaTalkng converter	E22158	Allows the connection of SeaTalk devices to a SeaTalkng system.
SeaTalkng Inline terminator	A80001	Provides direct connection of a spur cable to the end of a backbone cable. No T-piece required.
SeaTalkng Blanking plug	A06032	
SeaTalk (3 pin) to SeaTalkng adaptor cable 0.4 m (1.3 ft)	A06047	
SeaTalk2 (5 pin) to SeaTalkng adaptor cable 0.4 m (1.3 ft)	A06048	
DeviceNet adaptor cable (Female)	A06045	Allows the connection of NMEA 2000 devices to a SeaTalkng system.
DeviceNet adaptor cable (Male)	A06046	Allows the connection of NMEA 2000 devices to a SeaTalkng system.
DeviceNet adaptor cable (Female) to bare ends.	E05026	Allows the connection of NMEA 2000 devices to a SeaTalkng system.
DeviceNet adaptor cable (Male) to bare ends.	E52027	Allows the connection of NMEA 2000 devices to a SeaTalkng system.

4.10 SeaTalk connection

You can connect SeaTalk devices to your multifunction display using the optional SeaTalk to SeaTalk^{ng} converter.
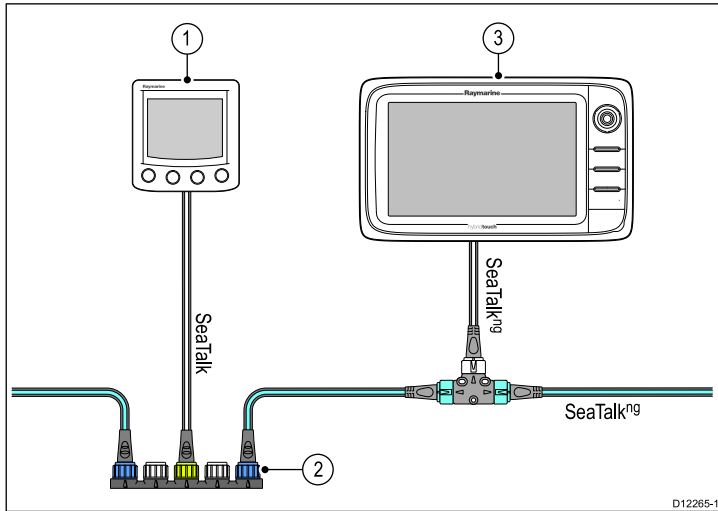
1. SeaTalk device.

2. SeaTalk to SeaTalk^{ng} converter.

3. Multifunction display.

SeaTalk accessories

SeaTalk cables and accessories for use with compatible products.

Description	Part No	Notes
3–way SeaTalk junction box	D244	
1 m (3.28 ft) SeaTalk extension cable	D284	
3 m (9.8 ft) SeaTalk extension cable	D285	
5 m (16.4 ft) SeaTalk extension cable	D286	
9 m (29.5 ft) SeaTalk extension cable	D287	
12 m (39.4 ft) SeaTalk extension cable	E25051	
20 m (65.6 ft) SeaTalk extension cable	D288	

4.11 NMEA 0183 connection

NMEA 0183 devices can be connected to New c Series and New e Series multifunction displays using the power and data cable.

Note: New a Series does not support connection of NMEA 0183 devices.
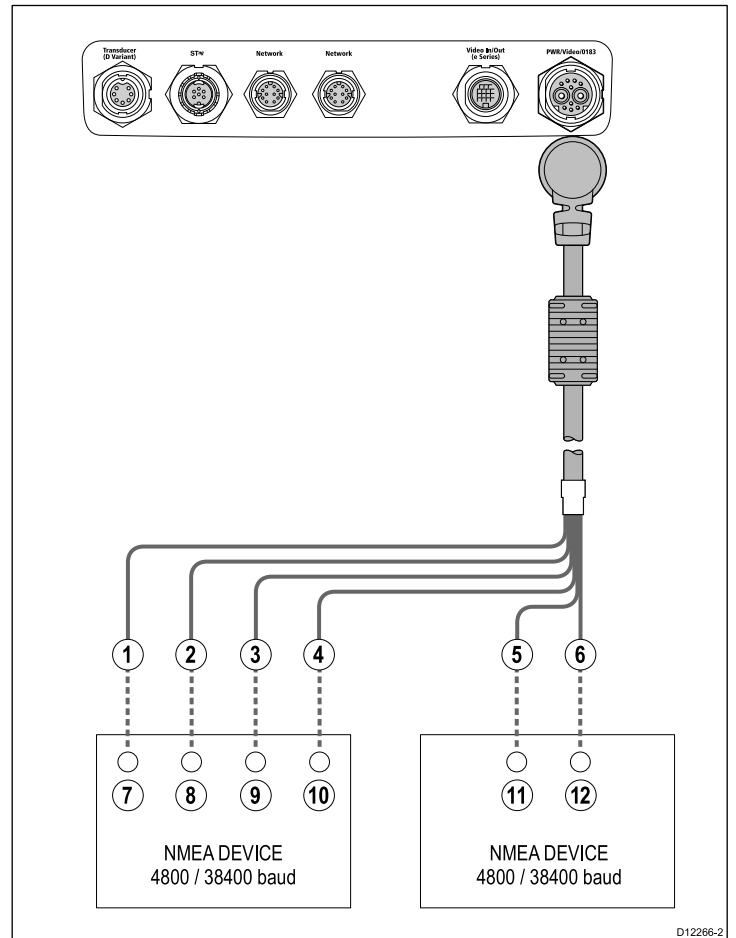
NMEA 0183 devices are connected using the supplied power and data cable.

The display has 2 NMEA 0183 ports:

- **Port 1**: Input and output, 4800 or 38400 baud rate.

- **Port 2**: Input only, 4800 or 38400 baud rate.

Note: The baud rate you want to use for each port input must be specified in the System Settings menu (**Homescreen: > Set-up > System Settings > NMEA Set-up > NMEA Input Port**).

Note: For Port 1, both the input and output communicate at the same baud rate. For example, if you have one NMEA 0183 device connected to the display's Port 1 INPUT, and another NMEA 0183 device connected to the display's Port 1 OUTPUT, both NMEA devices must be using the same baud rate.

You can connect up to 4 NMEA 0183 devices to the display's NMEA 0183 OUTPUT (Port 1). You can connect a total of 2 NMEA 0183 devices to the display's NMEA 0183 INPUT ports.

Item	Device	Cable color	Port	Input / output	Positive (+) / negative (-)
1	Multifunction display	White	1	Input	Positive
2		Green	1	Input	Negative
3		Yellow	1	Output	Positive
4		Brown	1	Output	Negative
5		Orange / white	2	Input	Positive
6		Orange / green	2	Input	Negative

Item	Device	Cable color	Port	Input / output	Positive (+) / negative (-)
7	NMEA device	*	*	Output	Positive
8		*	*	Output	Negative
9		*	*	Input	Positive
10		*	*	Input	Negative
11	NMEA device	*	*	Output	Positive
12		*	*	Output	Negative

Note: *Refer to instructions provided with NMEA device.

NMEA 0183 cable

You can extend the NMEA 0183 wires within the supplied power and data cable.

Data cable extension

Total length (max)	Cable
Up to 5 m	High quality data cable: • 2 x twisted pair with overall shield. • 50 to 75 pF/m capacitance core to core.

4.12 NMEA 2000 connection

The display can receive data from NMEA 2000 devices (e.g. data from compatible engines). The NMEA 2000 connection is made using SeaTalk^{ng} and appropriate adaptor cables.

You can EITHER:

• Use your SeaTalk^{ng} backbone and connect each NMEA 2000 device on a spur, OR

• connect the display on a spur into an existing NMEA 2000 backbone.

Important: You cannot have 2 backbones connected together.

Connecting NMEA 2000 equipment to the SeaTalk^{ng} backbone
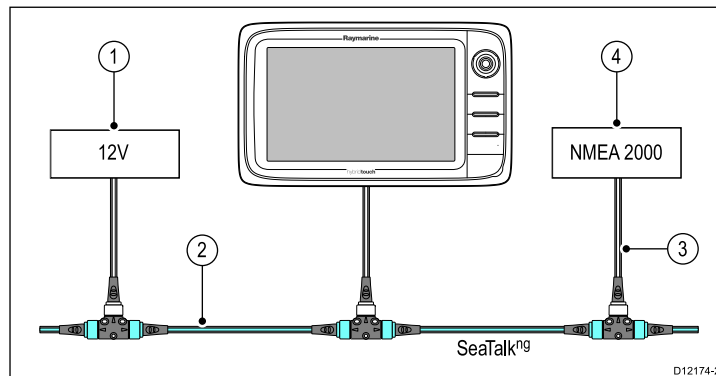
1. 12 V supply into backbone.

2. SeaTalk^{ng} backbone.

3. SeaTalk^{ng} to DeviceNet adaptor cable.

4. NMEA 2000 equipment.

Connecting the display to an existing NMEA 2000 (DeviceNet) backbone
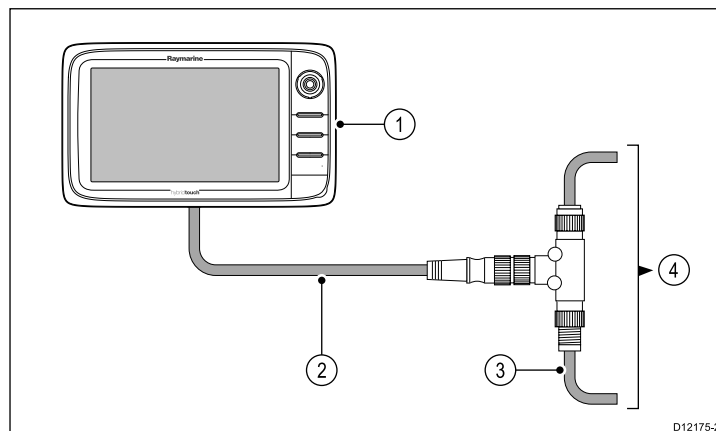
1. Multifunction display.

2. SeaTalk^{ng} to DeviceNet adaptor cable.

3. DeviceNet backbone.

4. NMEA 2000 equipment.

4.13 Camera / Video connection

A camera or a video device can be connected directly to New c Series and New e Series multifunction displays using the video connector on the power and data cable.

Note: Video devices cannot be directly connected to New a Series multifunction displays. For camera connections to a New a Series display please refer to the *IP camera connection* section.

Examples of video sources that you can connect to the display include:

• Video camera.

• Thermal camera.

• DVD player.

• Portable digital video player.

D12178-2
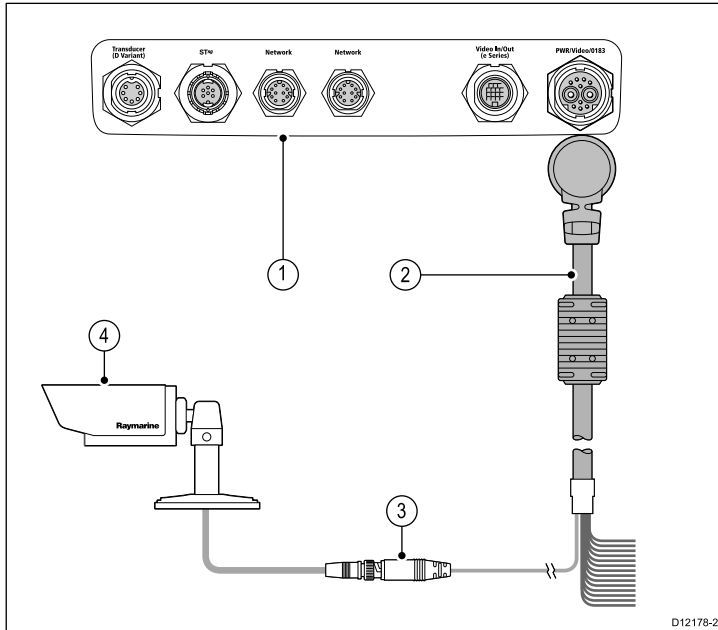
1. Rear connector panel of multifunction display.

2. Power and data cable.

3. BNC video connector (input 1).

4. Video source — for example, video camera.

Note: To listen to a movie's audio track, any connected DVD or digital video player will require speakers to be connected to the players audio output.

4.14 Camera / video in-out connection

A camera / video device or external display can be connected to New e Series multifunction displays (excluding the e7 / e7D) using the dedicated video in/out connector.

Note: New a Series and New c Series multifunction displays do not have a dedicated video in/out connector.

Video In

Examples of video input sources that you can connect to the display include:

• Video camera.

• Thermal camera.

• DVD player.

• Portable digital video player.

D12328-1
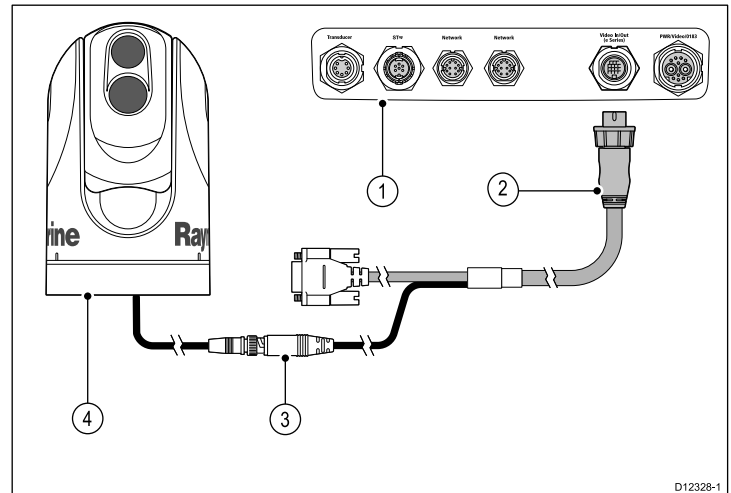
1. Rear connector panel of multifunction display.

2. Video accessory cable.

3. BNC video connector (input 2).

4. Thermal camera.

Note: To listen to a movie's audio track, any connected DVD or digital video player will require speakers to be connected to the players audio output.

Video out

Examples of video output devices that you can connect to the display include:

• HDTV with VGA input.

• VGA monitor.

D12329-1
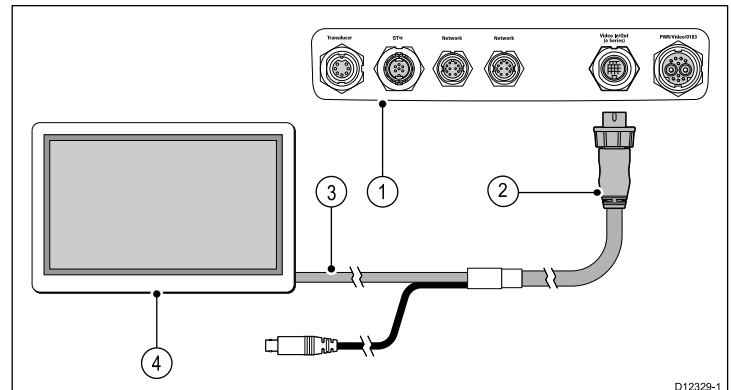
1. Rear connector panel of multifunction display.

2. Video accessory cable.

3. VGA cable to external display.

4. External display.

Video specification

Signal type	Composite
Format	PAL or NTSC

Connector type	BNC (female)
Output resolution	720p

Video cables

The following video cable is required for the video in / out connector on the e95 / e97 / e125 / e127 variant multifunction displays.

Part number	Description	Notes
R70003	e-series accessory video cable	

4.15 Bluetooth connections

Remote control connection

You can control the multifunction display wirelessly using a Raymarine remote control unit.

The remote control uses a Bluetooth wireless connection.
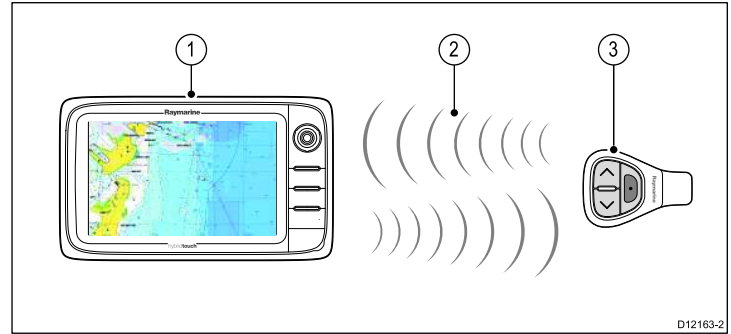
1. Multifunction display.
2. Bluetooth connection.
3. Raymarine Bluetooth remote control (for example, RCU-3).

To use the remote control you must first:

• Enable Bluetooth in the System Settings on the multifunction display.

• Pair the remote control unit with the multifunction display.

Pairing the remote and configuring the UP and DOWN buttons

The remote control unit must be "paired" with the multifunction display that you want to control. On your multifunction display, with the homescreen displayed:

1. Select **Set-up**.
2. Select **System Settings**.
3. Select **Wireless Connections**.
4. Select **Bluetooth > On**.
5. Select **New Bluetooth Connection**.

   A pop-up message will be displayed to confirm that the device you are connecting to is discoverable.
6. Select **Ok** to confirm.

   A list of discovered devices is displayed.
7. On your **remote control unit**, hold down the UP and DOWN buttons together for 10 seconds.
8. Select the remote control unit in the list of devices.
9. When prompted, press the arrow button on your remote that you wish to be configured as the UP button. The other arrow button will automatically be configured as the DOWN button.

   If the pairing was successful a "Pairing Success" message will be displayed. If a "Pairing Failure" or "Pairing Timeout" message is displayed, repeat steps 1 to 8.

Media player connection

You can use your multifunction display to wirelessly control a Bluetooth-compatible media player (such as a smartphone).

The media player must be compatible with the Bluetooth AVRCP protocol (version 2.1 or higher).
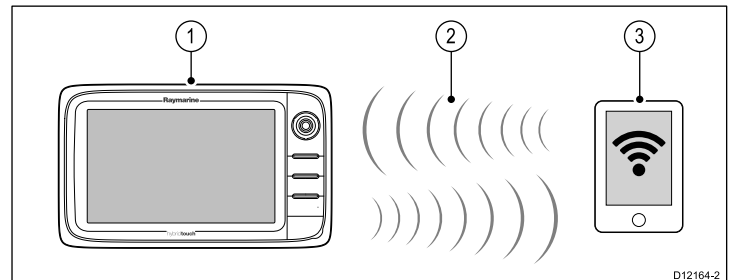
1. Multifunction display.
2. Bluetooth connection.
3. Bluetooth-compatible media player.

To use this feature you must first:

- Enable Bluetooth in the System Settings on the multifunction display.

- Enable Bluetooth on the media player device.

- Pair the media player device with the multifunction display.

- Enable Audio Control in the System Settings on the multifunction display.

- Connect an RCU-3 remote and assign the shortcut key to Start/Stop audio playback (Only required on a New c Series display).

Note: If your media player does not include built-in speakers it may be necessary to connect the media player's audio output to an external audio system or a pair of headphones. For more information refer to the instructions that accompany the media player device.

4.16 WiFi connections

Raymarine mobile app connection

You can use compatible tablet and smartphone devices as a wireless repeat display or remote control for your multifunction display.

Raymarine apps allow you to stream and / or control, remotely what you see on your multifunction display to a compatible device, using a Wi-Fi connection.

To use this feature you must first:

- Ensure your device is compatible with the app you wish to use.

- Download and install the relevant Raymarine app, available from the relevant market store.

- Enable Wi-Fi in the System Settings on the multifunction display.

- Enable Wi-Fi on your compatible device.

- Select the Raymarine Wi-Fi connection from the list of available Wi-Fi networks on your compatible device.

- Enable the relevant Mobile app in the System Settings menu on the multifunction display.

Note: The multifunction display acts as a Wi-Fi access point. If your device already connects to an access point for e-mail and internet you must revert your access point back to regain access to e-mails and internet.

Navionics chartplotter sync connection

You can wirelessly synchronize waypoints and routes between the multifunction display and a tablet or smartphone device.
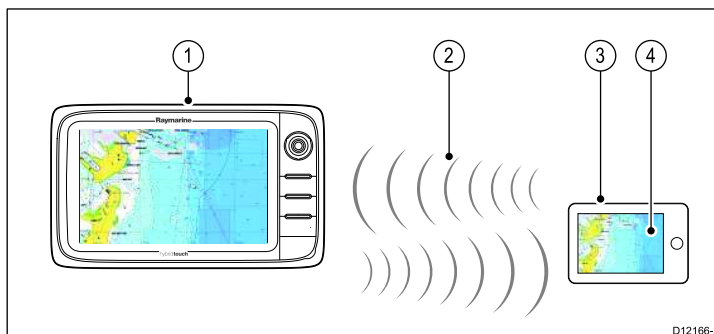
1. Multifunction display.

2. Wi-Fi connection.

3. Tablet / smartphone.

4. Navionics Marine app.

To use this feature you must first:

- Download and install the Navionics Marine app, available from the relevant app store.

- Enable Wi-Fi in the System Settings on the multifunction display.

- Enable Wi-Fi on your tablet / smartphone.

- Select the Raymarine Wi-Fi connection from the list of available Wi-Fi networks on your tablet / smartphone.

Chapter 5: Location and mounting

Chapter contents

5.1 Selecting a location

> ⚠️ **Warning: Potential ignition source**
>
> This product is NOT approved for use in hazardous/flammable atmospheres. Do NOT install in a hazardous/flammable atmosphere (such as in an engine room or near fuel tanks).

General location requirements

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

Key factors which can affect product performance are:

- **Ventilation**

  To ensure adequate airflow:

  – Ensure that equipment is mounted in a compartment of suitable size.

  – Ensure that ventilation holes are not obstructed. Allow adequate separation of equipment.

  Any specific requirements for each system component are provided later in this chapter.

- **Mounting surface**

  Ensure equipment is adequately supported on a secure surface. Do not mount units or cut holes in places which may damage the structure of the vessel.

- **Cable entry**

  Ensure the unit is mounted in a location which allows proper routing and connection of cables:

  – Minimum bend radius of 100 mm (3.94 in) unless otherwise stated.

  – Use cable supports to prevent stress on connectors.

- **Water ingress**

  The display is suitable for mounting both above and below decks. It is waterproof to IPX6 standard. 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.

Compass safe distance

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

When choosing a suitable location for the multifunction display you should aim to maintain the maximum possible distance between the display and any compasses. Typically this distance should be at least 1 m (3 ft) in all directions. However for some smaller vessels it may not be possible to locate the display this far away from a compass. In this situation, the following figures provide the minimum safe distance that should be maintained between the display and any compasses.
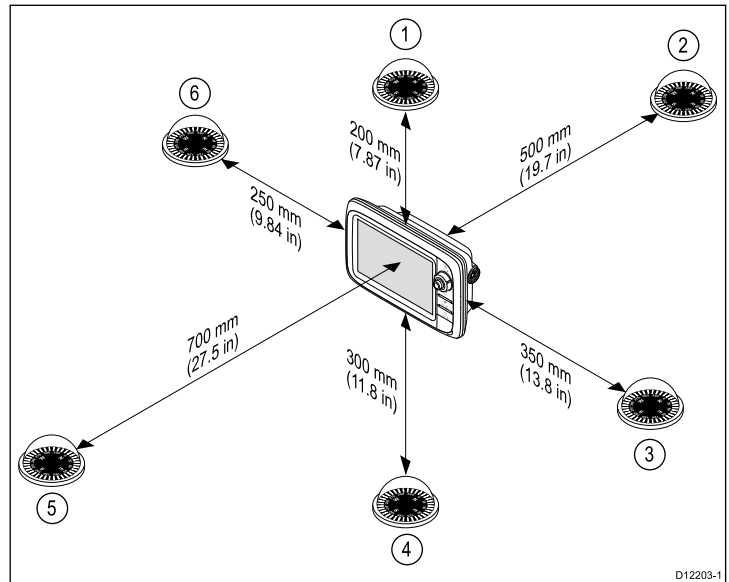
Item	Compass position in relation to display	Minimum safe distance from display
1	Top	200 mm (7.87 in.)
2	Rear	500 mm (19.7 in.)
3	Right-hand side	350 mm (13.8 in.)
4	Underside	300 mm (11.8 in.)
5	Front	700 mm (27.5 in.)
6	Left-hand side	250 mm (9.84 in.)

GPS location requirements

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

Mounting location

- **Above Decks mounting:**

  Provides optimal GPS performance. (For equipment with appropriate waterproof rating.)

- **Below Decks mounting:**

  GPS performance may be less effective and may require an external GPS antenna mounted above decks.
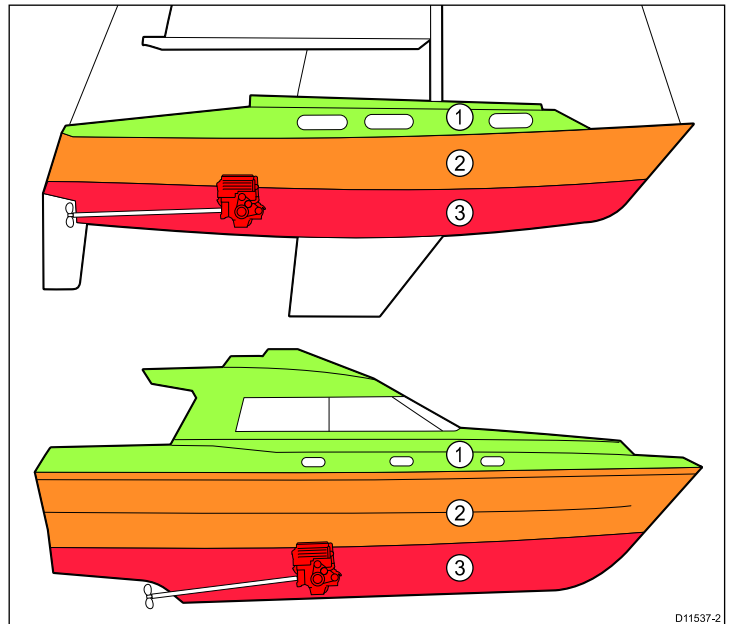
1.	🟩	This location provides optimal GPS performance (above decks).
2.	🟧	In this location, GPS performance may be less effective.
3.	🟥	This location is NOT recommended for GPS antenna.

Vessel construction

The construction of your vessel can have an impact on GPS performance. For example, the proximity of heavy structure such as a structural bulkhead, or the interior of larger vessels may result in a reduced GPS signal. Before locating equipment with an internal GPS antenna below decks, seek professional assistance and consider use of an external GPS antenna mounted above decks.

Prevailing conditions

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

Viewing angle considerations

As display contrast, color and night mode performance are all affected by the viewing angle, Raymarine recommends you temporarily power up the display when planning the installation, to enable you to best judge which location gives the optimum viewing angle.

5.2 Mounting - New a Series

Viewing angle
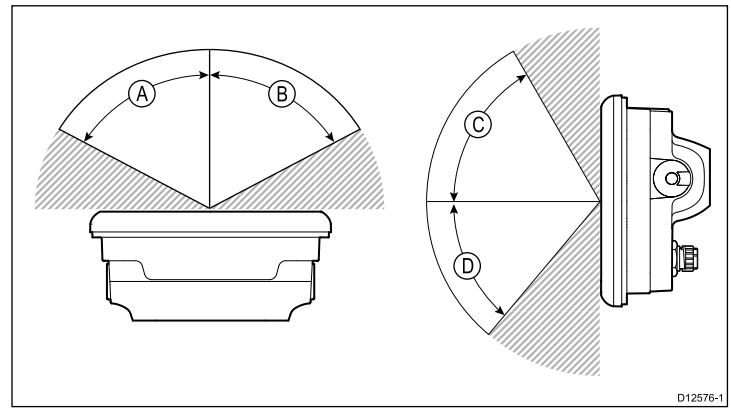
	a65 / a67
A	60º
B	60º
C	60º
D	50º

Note: The angles stated are for a contrast ratio of equal to or greater than 10.

Product dimensions
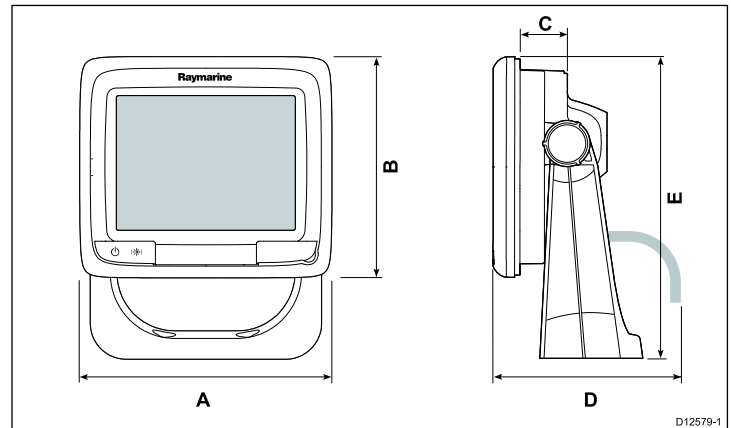
Item	a65 / a67
A	163.57 mm (6.44 in)
B	143.47 mm (5.65 in)
C	56.6 mm (2.23 in)
D	167.5 mm (6.6 in)
E	162.72 mm (6.41 in)

Flush mounting

You can mount the display in a flush or panel mounting arrangement.

Before mounting the unit, ensure that you have:

• Selected a suitable location.

• Identified the cable connections and route that the cables will take.

• Detached the front bezel.
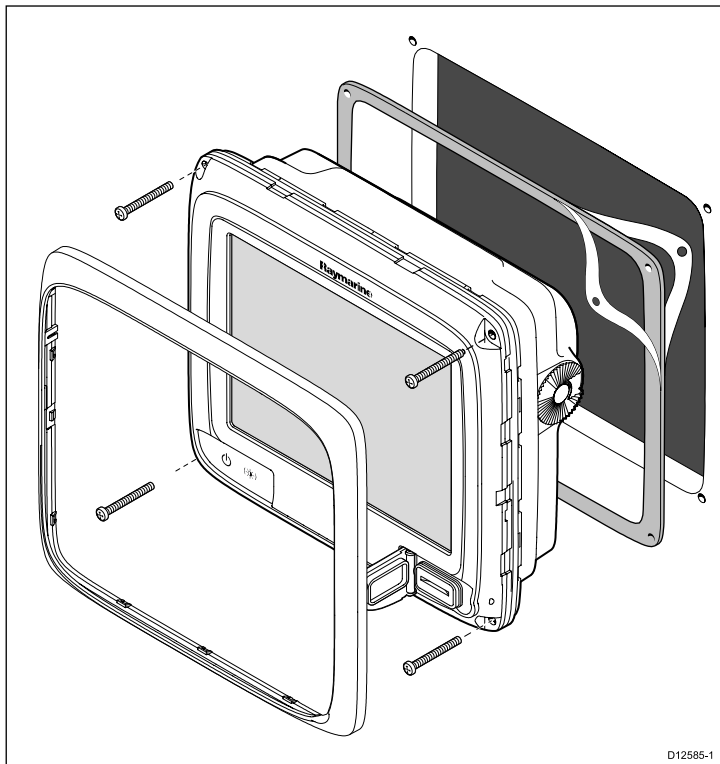
D12585-1

1. Check the selected location for the unit. A clear, flat area with suitable clearance behind the panel is required.
2. Drill or knock out the 4 mounting holes on the unit
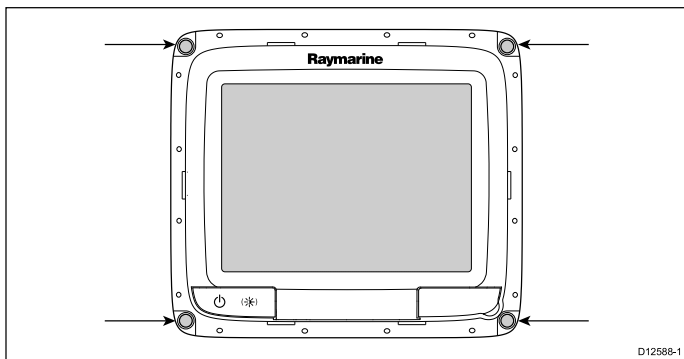
D12588-1

3. Fix the appropriate cutting template supplied with the product, to the selected location, using masking or self-adhesive tape.
4. Using a suitable hole saw (the size is indicated on the template), make a hole in each corner of the cut-out area.
5. Using a suitable saw, cut along the inside edge of the cut-out line.
6. Ensure that the unit fits into the removed area and then file around the rough edge until smooth.
7. Drill 4 holes as indicated on the template to accept the securing screws.
8. Place the gasket onto the display unit and press firmly onto the flange.
9. Connect the power, data and other cables to the unit.
10. Slide the unit into place and secure using the 4 mounting screws.

Note: The appropriate torque to use when drilling depends on the thickness of the mounting surface and the type of material.

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

Bracket (trunnion) mounting

The display can be mounted on a trunnion bracket.

Before mounting the unit ensure that you have:

• Selected a suitable location.

• Identified the cable connections and route that the cables will take.

• Attached the front bezel.
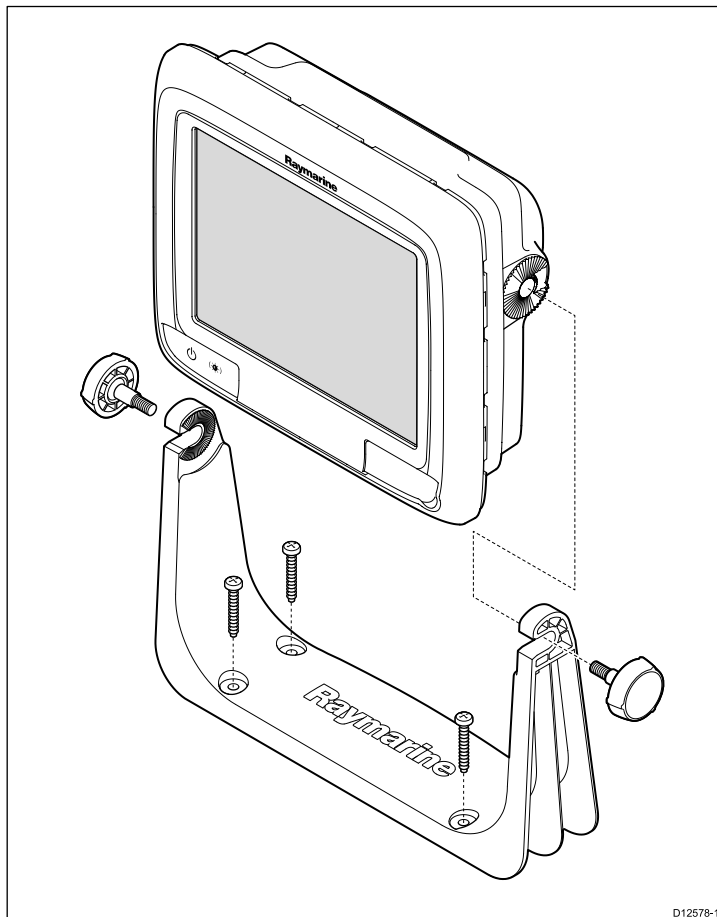
D12578-1

1. Mark the location of the mounting bracket screw holes on the chosen mounting surface.
2. Drill holes for the screws using a suitable drill, ensuring there is nothing behind the surface that may be damaged.
3. Use the screws supplied with the mounting bracket to attach securely.
4. Attach the display unit to the mounting bracket.

Note: The appropriate torque to use when drilling depends on the thickness of the mounting surface and the type of material.

Front bezel

Attaching the front bezel

The following procedure assumes that the unit has already been mounted in position.

1. Carefully lift one edge of the screen protection film, so that it is accessible for removing when unit installation is complete.
2. Ensure the memory card slot door is in the open position.
3. Orientate the bottom-right side of the bezel under the lip of the chart card door and place the bezel over the front of the display,

ensuring that the clips along the bottom edge of the bezel latch into position.

D12586-1

4. Ensure the bezel is correctly aligned with the display, as shown.
5. Apply firm but even pressure to the bezel along the:
   i. Outer edges - work from the sides upwards and then along the top edge, to ensure that it clips securely into position.
   ii. Inner edges - particularly along the chart card door edge, to ensure that the bezel sits flat.
6. Check that the **Power** button and chart card door are free to operate.

Removing the front bezel

Before proceeding ensure the memory card slot door is open.

D12584-1

Important: Use care when removing the bezel. Do not use any tools to lever the bezel; doing so may cause damage.

1. Place both your thumbs on the upper left edge of the display, at the positions indicated in the diagram above.
2. Place your fingers underneath the bezel, at the positions indicated in the diagram above.
3. In a single firm motion, apply pressure to the outer edge of the display with your thumbs and pull the bezel towards you using your fingers.

The bezel should now come away from the display easily.

5.3 Mounting - New c Series and New e series

Viewing angle

D12268-1

	e7 / e7D	e95 / e97 / c95 / c97	e125 / e127 / c125 / c127	e165
A	70º	80º	80º	80º
B	70º	80º	80º	80º
C	70º	80º	80º	70º
D	50º	60º	60º	70º

Note: The angles stated are for a contrast ratio of equal to or greater than 10.

Product dimensions

D12269-2
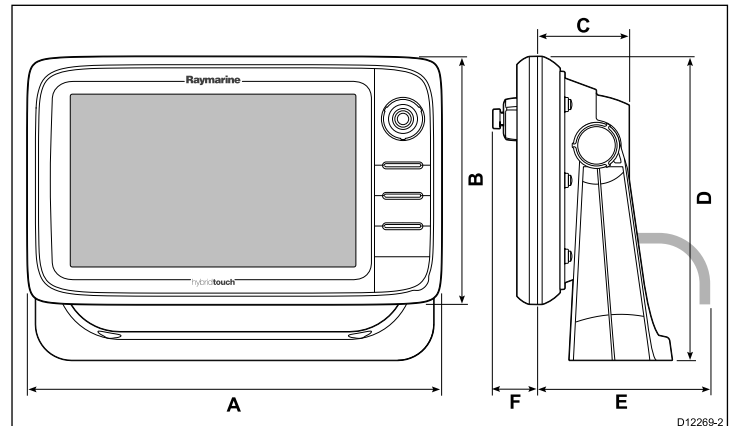
	e7 / e7D	e95 / e97 / c95 / c97	e125 / e127 / c125 / c127	e165
A	233 mm (9.17 in.)	290 mm (11.42 in.)	354 mm (13.94 in.)	426 mm (16.8 in.)
B	144 mm (5.67 in.)	173 mm (6.81 in.)	222 mm (8.74 in.)	281.4 mm (11.1 in.)
C	63.5 mm (2.5 in.)	64 mm (2.52 in.)	69 mm (2.72 in.)	68.4 mm (2.7 in.)
D	180 mm (7.09 in.)	212 mm (8.35 in.)	256.5 mm (10.1 in.)	295 mm (11.6 in.)
E	160 mm (6.29 in.)	160 mm (6.29 in.)	160 mm (6.29 in.)	176.6 mm (7 in.)
F	30 mm (1.18 in.)	31.4 mm (1.24 in.)	32 mm (1.26 in.)	33 mm (1.3 in.)

Removing the rear bezel

You must remove the rear bezel before flush-mounting the display.

Note: These steps do not apply to the e165 as it does not require a rear bezel.

1. Remove the front bezel. Refer to the separate instructions provided for that procedure.

e7 / e7D

D12184-3
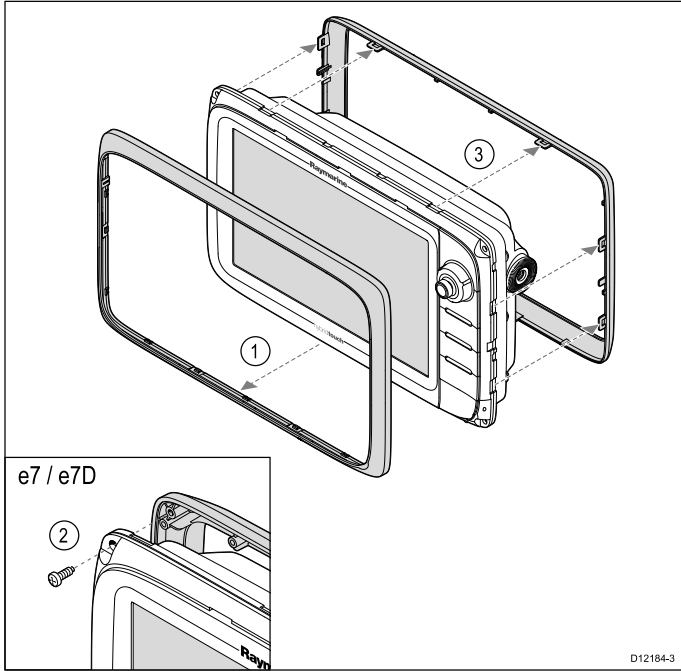
2. Remove the screws that secure the bezel to the display (only required for e7 and e7D).

3. Carefully remove the bezel from the rear of the display, pulling the bezel gently along the:

   i.   Outer edges - work from the sides upwards and then along the top edge, ensuring that the clips are fully released from the display.

   ii. Inner edges - ensure that the bezel is completely removed from the display.

Note: Only the e7 and e7D have fixing screws for the rear bezel, other multifunction display variants have clips which hold the rear bezel in place.

Flush mounting

You can mount the display in a flush or panel mounting arrangement.

Before mounting the unit, ensure that you have:

• Selected a suitable location.

• Identified the cable connections and route that the cables will take.

• Detached the front bezel.

D12271-1
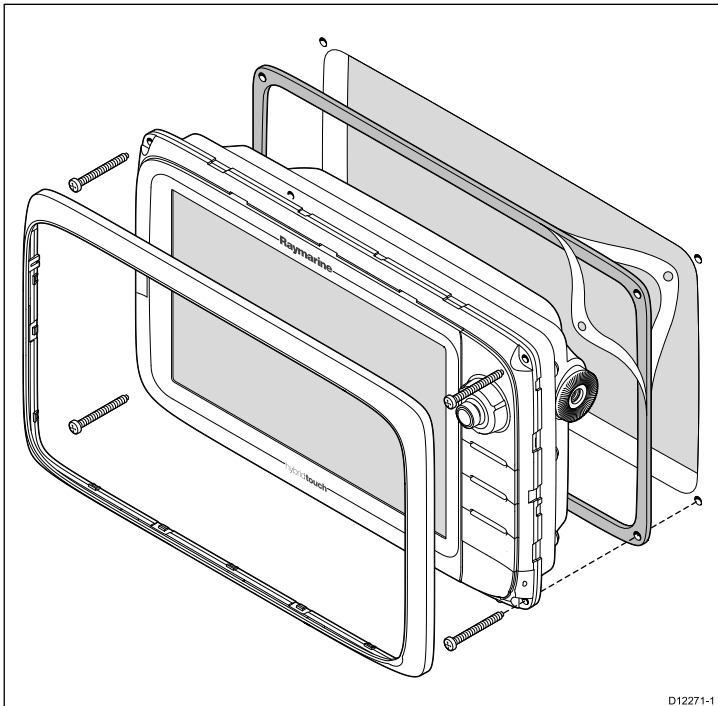
1. Check the selected location for the unit. A clear, flat area with suitable clearance behind the panel is required.

2. Fix the appropriate cutting template supplied with the product, to the selected location, using masking or self-adhesive tape.

3. Using a suitable hole saw (the size is indicated on the template), make a hole in each corner of the cut-out area.

4. Using a suitable saw, cut along the inside edge of the cut-out line.

5. Ensure that the unit fits into the removed area and then file around the rough edge until smooth.

6. Drill 4 holes as indicated on the template to accept the securing screws.

7. Place the gasket onto the display unit and press firmly onto the flange.

8. Connect the power, data and other cables to the unit.

9. Slide the unit into place and secure using the provided screws.

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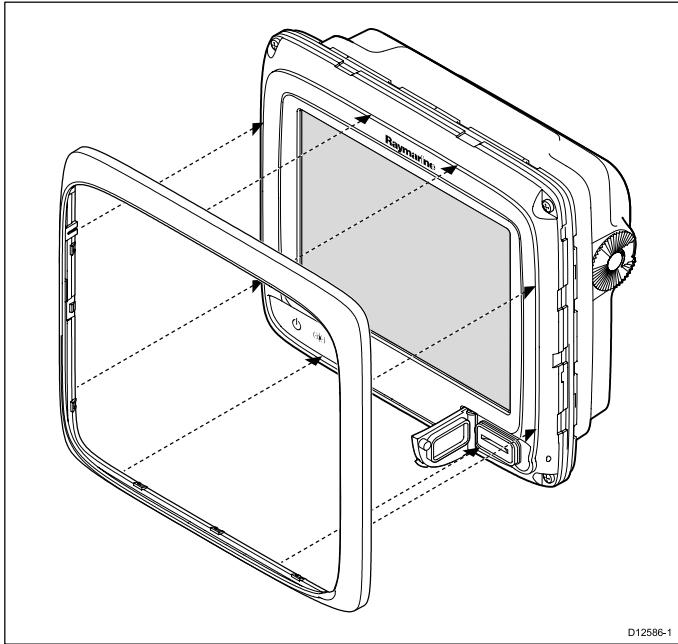
Note: The supplied gasket provides a seal between the unit and a suitably flat and stiff mounting surface or binnacle. The gasket should be used in all installations. It may also be necessary to use a marine-grade sealant if the mounting surface or binnacle is not entirely flat and stiff or has a rough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

Attaching the rear bezel

The rear bezel must be fitted if you wish to use a mounting bracket to mount the unit.

Note: These steps do not apply to the e165 as it does not require a rear bezel.

1. Remove the front bezel. Refer to the separate instructions provided for that procedure.

2. Place the bezel over the rear of the display, ensuring that it is correctly aligned with the display. Apply firm but even pressure to the bezel along the:

   i.   Outer edges - work from the sides upwards and then along the top edge, to ensure that it clips securely into position.

   ii. Inner edges - ensure that the bezel sits flat against the unit.

e7 / e7D

D12183-3
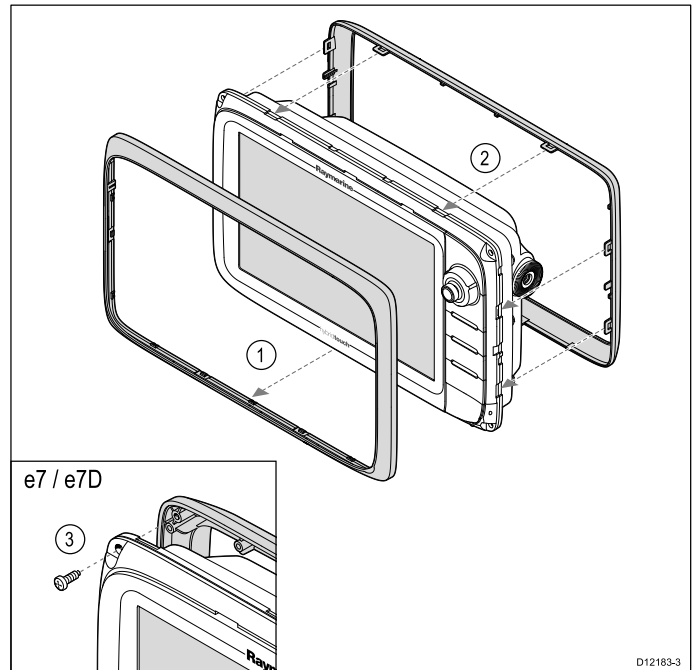
3. Use the supplied screws to secure the bezel to the display (e7 and e7D only).

Bracket (trunnion) mounting

The display can be mounted on a trunnion bracket.

Note: The mounting bracket is supplied with the e7 and e7D display variants, for all other display variants the mounting bracket is an optional accessory See the *Spares and Accessories* section of this manual for details.

Before mounting the unit ensure that you have:

- Selected a suitable location.
- Identified the cable connections and route that the cables will take.
- Attach the front bezel.

1. Mark the location of the mounting bracket screw holes on the chosen mounting surface.
2. Drill holes for the screws using a suitable drill, ensuring there is nothing behind the surface that may be damaged.
3. Use the screws supplied with the mounting bracket to attach securely.
4. Attach the display unit to the mounting bracket.

Note: The appropriate torque to use when drilling depends on the thickness of the mounting surface and the type of material.

## Front bezel

Attaching the front bezel

The following procedure assumes that the unit has already been mounted in position.

1. Carefully lift one edge of the screen protection film, so that it is accessible for removing when unit installation is complete.
2. Ensure the memory card slot door is in the open position.
3. Orientate the bottom-right side of the bezel under the lip of the chart card door and place the bezel over the front of the display,

ensuring that the clips along the bottom edge of the bezel latch into position.

4. Ensure the bezel is correctly aligned with the display, as shown.
5. Apply firm but even pressure to the bezel along the:
   i. Outer edges - work from the sides upwards and then along the top edge, to ensure that it clips securely into position.
   ii. Inner edges - particularly along the chart card door edge, to ensure that the bezel sits flat.
6. Check that all control buttons are free to operate.

Removing the front bezel

Before proceeding ensure the memory card slot door is open.

Important: Use care when removing the bezel. Do not use any tools to lever the bezel; doing so may cause damage.

1. Place both your thumbs on the upper left edge of the display, at the positions indicated in the diagram above.
2. Place your fingers underneath the bezel, at the positions indicated in the diagram above.
3. In a single firm motion, apply pressure to the outer edge of the display with your thumbs and pull the bezel towards you using your fingers.

The bezel should now come away from the display easily.

Chapter 6: Getting started

Chapter contents

6.1 Display power

Powering the display on

1. Press and hold the **POWER** button until the Raymarine logo appears.
2. Select **Accept** to acknowledge the disclaimer message.

Powering the display on

1. Press and hold the **POWER** button until the Raymarine logo appears.
2. Press the **OK** button to accept the disclaimer message.

Powering the display off

1. Press and hold the **POWER** button until the countdown reaches zero.

Note: If the **POWER** button is released before the countdown reaches zero, the power off is cancelled.

Standby (PowerSave) mode

In PowerSave mode all functions of the multifunction display remain active, but the unit is placed into a low power state. The LED lights around the Rotary controller will blink once every 1.5 seconds to indicate that the unit is in PowerSave mode. PowerSave mode is cancelled by pressing a physical button or when an alarm event occurs.
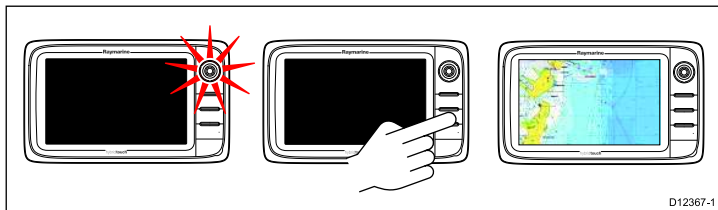
Note: To ensure user safety the PowerSave feature will not be available if any connected radars are switched on.

Enabling PowerSave mode

To enable PowerSave mode follow the steps below.

1. Ensure any radars connected to the system are switched off.
2. Press the **POWER** button.

   The shortcuts menu is displayed.
3. Select **PowerSave Mode**.

   The multifunction displays is now in PowerSave mode.
4. You can wake the unit from PowerSave mode at anytime by pressing a physical button on the multifunction display.

Note: PowerSave mode is automatically cancelled if an alarm event occurs.

6.2 New a Series Controls
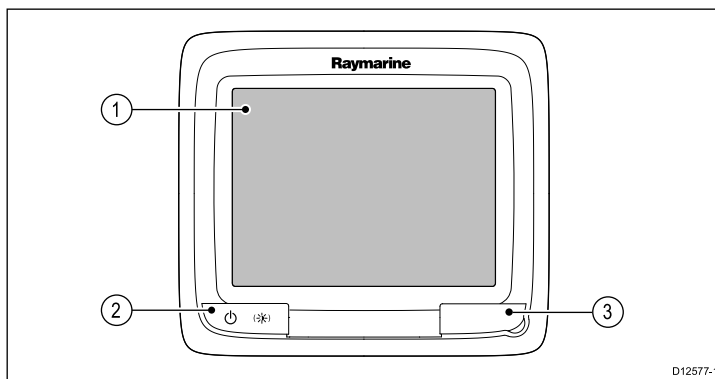
1. **Touchscreen** — touch the screen to operate functions, including all menu operations.

2. **Power** — press once to switch the unit ON. Once powered on, press the Power button again to adjust the brightness, perform a screen capture, access Powersave mode or access the power controls for external devices. Press and hold to switch the unit OFF.

3. **Chart card slot** — open the card door to insert or remove an MicroSD card. There is 1 card slot, used for electronic charts and archiving waypoint, route and track data.

6.3 e7 / e7D Controls
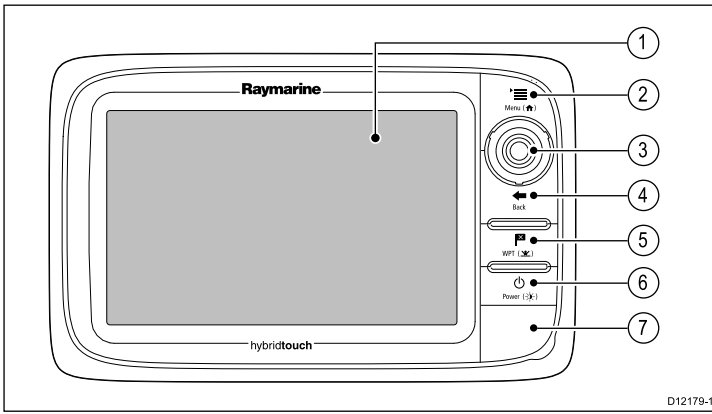
1. **Touchscreen** — you can touch the screen to operate many common functions, including all menu operations (HybridTouch multifunction displays only).

2. **Menu** — accesses menus. Press again to close menus.

3. **UniControl** — provides a joystick and rotary control and an OK button for using menus and applications.

4. **Back** — press to return to a previous menu or dialog level.

5. **WPT / MOB** — press and release to access the waypoint options. Press again to place a waypoint. Press and hold to place a Man Overboard (MOB) marker at your current position.

6. **Power** — press once to switch the unit ON. Once powered on, press the Power button again to adjust the brightness, access the power controls for external devices, and access the autopilot controls. Press and hold to switch the unit OFF.

7. **Chart card slots** — open the card door to insert or remove MicroSD cards. There are 2 card slots (labelled 1 and 2), used for electronic charts and archiving waypoint, route and track data.

6.4 c95 / c97 / c125 / c127 / e95 / e97 / e125 / e127 / e165 Controls
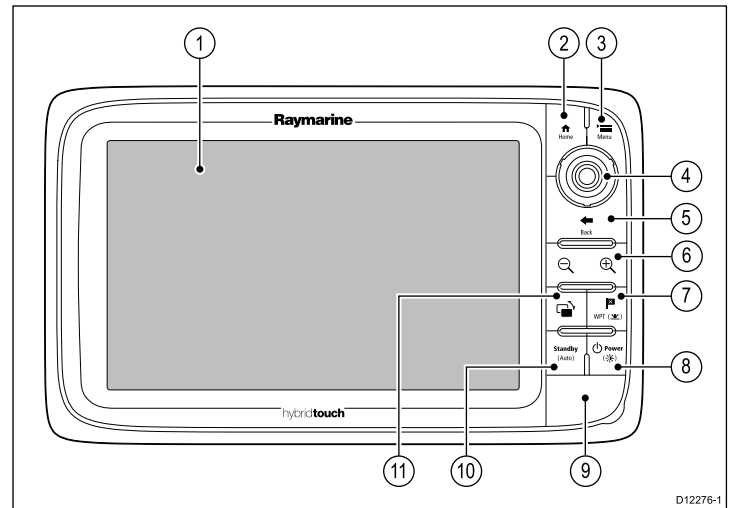
1. **Touchscreen** — you can touch the screen to operate many common functions, including all menu operations (HybridTouch multifunction displays only).

2. **Home** — Press to return to the homescreen.

3. **Menu** — accesses menus. Press again to close menus.

4. **UniControl** — provides a joystick and rotary control and an OK button for using menus and applications.

5. **Back** — press to return to a previous menu or dialog level.

6. **Range In/Out** — Press minus (-) to range out and plus (+) to range in

7. **WPT / MOB** — press and release to access the waypoint options. Press again to place a waypoint. Press and hold to place a Man Overboard (MOB) marker at your current position.

8. **Power** — press once to switch the unit ON. Once powered on, press the Power button again to adjust the brightness, access the power controls for external devices, and access the autopilot controls. Press and hold to switch the unit OFF.

9. **Chart card slots** — open the card door to insert or remove MicroSD cards. There are 2 card slots (labelled 1 and 2), used for electronic charts and archiving waypoint, route and track data.

10. **Standby (Auto)** — Press to disengage integrated autopilot, press and hold to activate Auto mode on integrated autopilot.

11. **Switch Active Pane** — Press to switch the active pane.

UniControl

New c Series and New e Series display include a UniControl which consists of Rotary, Joystick and push button controls.
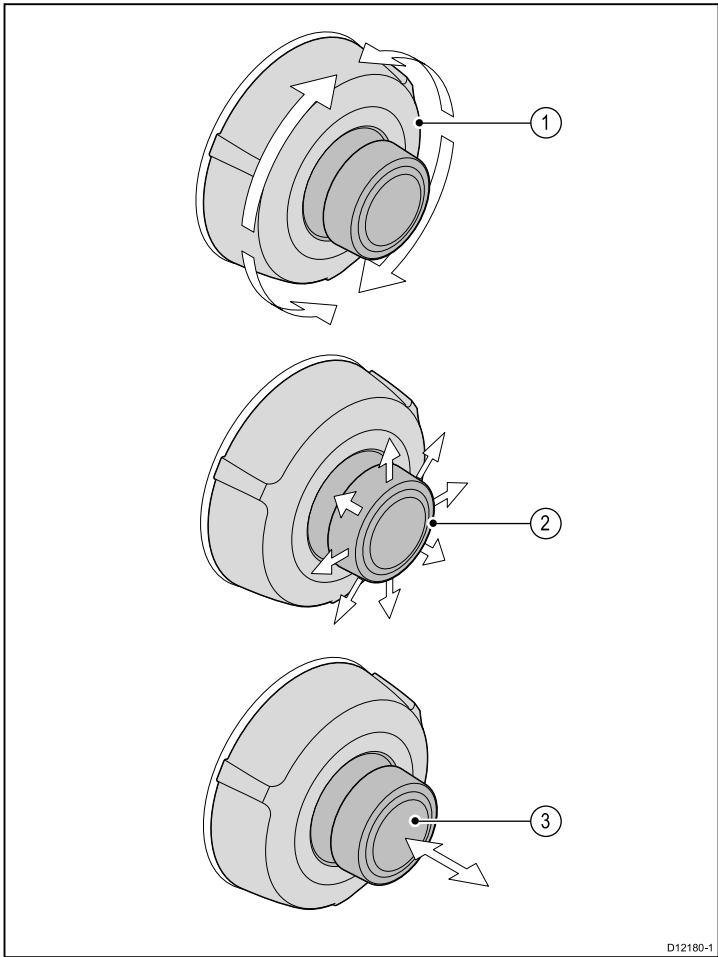
1. **Rotary** — use this to select menu items, move the on-screen cursor, and adjust the range in the chart and radar applications.

2. **Joystick** — use this to move the cursor position in applications, pan up, down, left and right in the chart, weather and fishfinder applications or to cycle through datapages in the data application.

3. **OK** button — push the end of the joystick to confirm a selection or entry.

Touch icons

Touchscreen multifunction displays can use the **BACK** and **CLOSE** icons to move between the different levels of menus available in each application.

	Back — go back one level (same effect as pressing the **BACK** button).
	Close — close all open menus (same effect as pressing the **MENU** button).

Using the cursor

The cursor is used to move around the screen.

	The cursor appears on the screen as a white cross.
	If the cursor has not been moved for a short period of time, it changes to a circle with a cross in it, to make it easier to locate on the screen.
	The cursor is context-sensitive. When it is placed over an object such as a waypoint or chart feature, it changes color and a label or information associated with the object is displayed.

List of cursor labels

Label	Feature	Application
A/B	Ruler line	Chart
AIS	AIS target	Chart
COG	Course Over Ground vector	Chart
CTR	Center of radar	Radar
FLT	Floating EBL/VRM	Radar
GRD	Guard zone	Radar
HDG	Heading vector	Chart
MARPA	MARPA target	Radar
MOB	Man Over Board marker	Chart, Radar
POS	Vessel's position	Chart
RTE	Route leg	Chart
SHM	Ship's Heading Marker	Radar
TIDE	Tide indicator	Chart
TRACK	Track line	Chart
VRM/EBL	VRM and EBL, 1 or 2	Radar
WIND	Wind indicator	Chart
WPT	Waypoint	Chart, Radar

6.5 Hybridtouch overview

If your multifunction display features Hybridtouch, this enables you to operate the unit using the touchscreen and the physical keys.

All functions can be accessed using the touchscreen. However, there may be situations (such as rough sea conditions) when it is not appropriate to use the touchscreen. In these situations, Raymarine strongly recommends that you activate the touch lock and use the physical keys to operate your multifunction display.

6.6 Touchscreen overview

The touchscreen provides an alternative to using physical buttons to control your multifunction display.

All functions can be accessed using the touchscreen

Note: Raymarine strongly recommends that you familiarize yourself with touch operations while your vessel is anchored or moored. You may find it helpful to use the simulator mode (accessible from **Homescreen > Set-up > System Settings**) in these situations.

6.7 Homescreen overview — New a Series

The homescreen provides a central point of access to your display's range of applications.

- The homescreen also provides quick access to your data (waypoints, routes, and tracks).
- The homescreen consists of a number of application "pages", each represented by an icon. Applications can be started by selecting the relevant page icon.
- Swipe the screen with your finger to scroll the homescreen and access additional application pages.
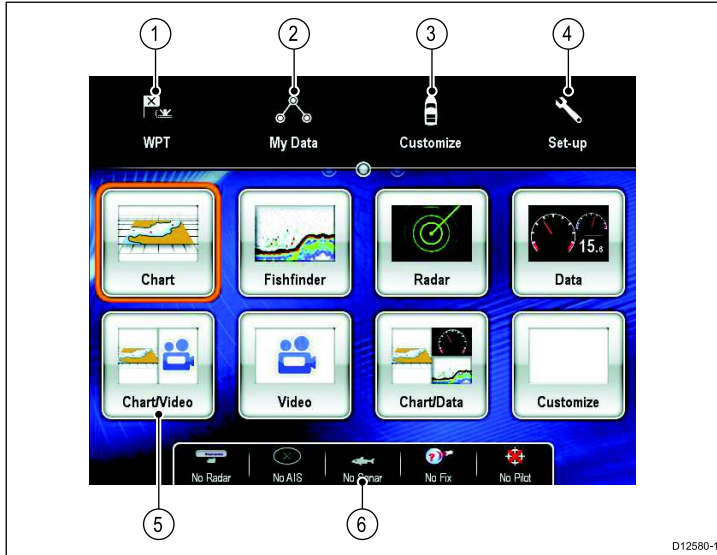
D12580-1

Screen item	Description
1	**Waypoint** — select icon to access the waypoint list. Select and hold on icon to place a Man Overboard (MOB) marker at your vessel's current position.
2	**My Data** — this icon enables you to centrally manage your lists of routes, tracks, and waypoints.
3	**Customize** — select this icon to configure application pages and select the display's language, units, date/time, boat details and display preferences.
4	**Set-up** — select this icon to access the system set-up menus.
5	**Page** — each icon represents an application page. A page can display up to 2 applications simultaneously.
6	**Status bar** — the status icons confirm the status of externally-connected equipment, including GPS, AIS, radar, and autopilot units.

6.8 Homescreen overview — New c Series / New e Series

The homescreen provides a central point of access to your display's range of applications.

- The homescreen also provides quick access to your data (waypoints, routes, and tracks).
- The homescreen consists of a number of application "pages", each represented by an icon. Applications can be started by selecting the relevant page icon.
- Use the joystick or swipe the screen with your finger (New e Series only) to scroll the homescreen and access additional application pages.
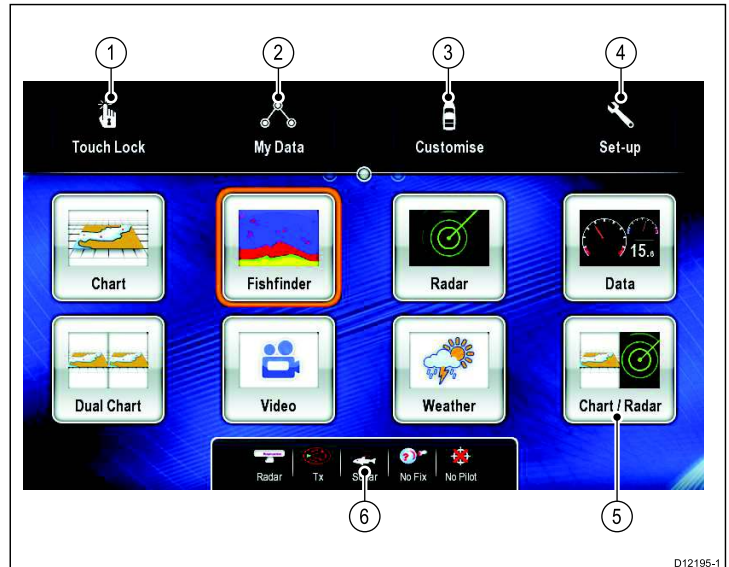
D12195-1

Screen item	Description
1	**Touch Lock** — (HybrifTouch displays only) select this icon to lock the touchscreen, preventing accidental use. To unlock, use the UniControl to deselect the Touch Lock icon.
2	**My Data** — this icon enables you to centrally manage your lists of routes, tracks, and waypoints.
3	**Customize** — select this icon to configure application pages and select the display's language, units, date/time, boat details and display preferences.
4	**Set-up** — select this icon to access the system set-up menus.
5	**Page** — each icon represents an application page. A page can display up to 2 applications simultaneously.
6	**Status bar** — the status icons confirm the status of externally-connected equipment, including GPS, AIS, radar, and autopilot units.

Accessing the homescreen

The homescreen can be accessed from any application.

To access the homescreen follow the steps below:
1. Select the homescreen icon on-screen.

Accessing the homescreen

The homescreen can be accessed from any application.

To access the homescreen follow the steps below:
1. Press the **Home** button.

Note: The e7 and e7D have a combined Menu and Home button, to access the homescreen press and hold the **Menu / Home** button for 3 seconds.

6.9 System checks

GPS Check

GPS selection

You can use an internal (if available) or external GPS receiver.

- Your multifunction display may feature an internal GPS receiver.

- You can also connect an external GPS receiver using SeaTalkng or NMEA 0183.

- Where appropriate use the System Settings menu to enable or disable the internal GPS receiver.

Enabling or disabling the internal GPS

If your multifunction display features an internal GPS then this can be enabled and disabled by following the steps below.
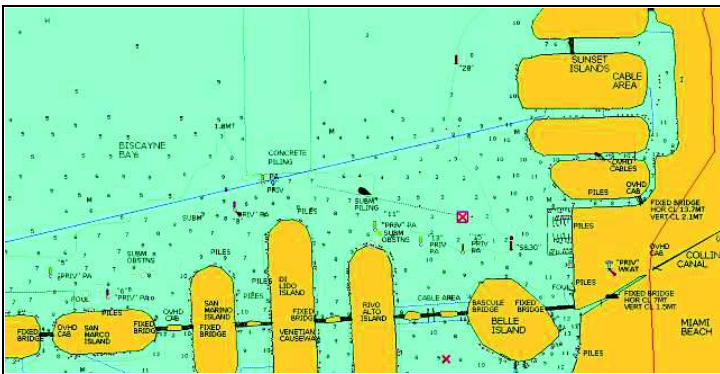
With the homescreen displayed:

1. Select **Set-Up**.
2. Select **System Settings**.
3. To enable the internal GPS, select **Internal GPS** so that On is highlighted.
4. To disable the internal GPS, select **Internal GPS** so that Off is highlighted.

Checking GPS operation

You can check that the GPS is functioning correctly using the chart application.

1. Select the Chart page.

2. Check the screen.

   With the chart displayed, you should see:

   Your boat position (indicates a GPS fix). Your current position is represented by a boat symbol or solid circle. Your position is also displayed in the data bar under VES POS.

   A solid circle on the chart indicates that neither heading nor Course Over Ground (COG) data is available.

Note: Raymarine recommends that you check the displayed vessel position in the chart application against your actual proximity to a known charted object. GPS receivers typically have an accuracy of between 5 and 15 m.
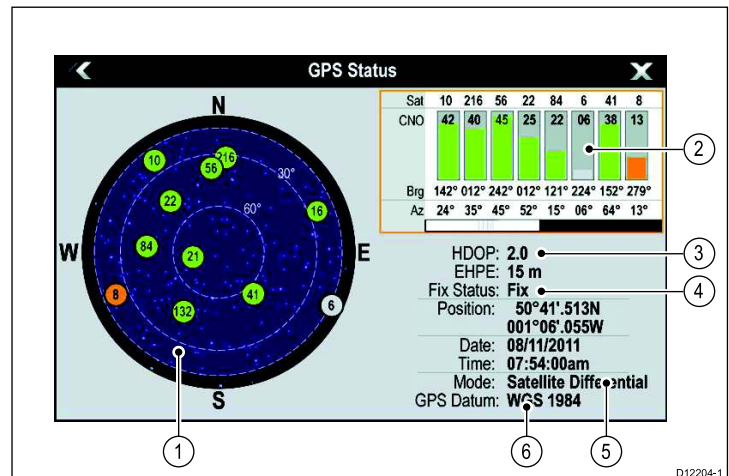
Note: A GPS Status screen is available within the Setup menu of Raymarine multifunction displays. This provides satellite signal strength and other relevant information.

GPS setup

The GPS setup options enable you to configure a connected GPS receiver.

The Global Positioning System (GPS) is used to position your vessel on the chart. You can set up your GPS receiver and check its status from the GPS Status option in the **System Settings** menu. For each tracked satellite, the screen provides the following information:

- Satellite number.
- Signal strength bar.
- Status.
- Azimuth angle.
- Elevation angle.
- A sky-view to show the position of tracked satellites.

Item	Description
1	**Sky view** — a visual representation of the position of tracked satellites.
2	**Satellite status** — displays the signal strength and status of each satellite identified in the sky view diagram on the left of the screen. The colored bars have the following meanings: • Grey = searching for satellite. • Green = satellite in use. • Orange = tracking satellite.
3	**Horizontal Dilution of Position (HDOP)** — a measure of GPS accuracy, calculated from a number of factors including satellite geometry, system errors in the data transmission and system errors in the GPS receiver. A higher figure signifies a greater positional error. A typical GPS receiver has an accuracy of between 5 and 15 m. As an example, assuming a GPS receiver error of 5 m, an HDOP of 2 would represent an error of approximately 15 m. Please remember that even a very low HDOP figure is NO guarantee that your GPS receiver is providing an accurate position. If in doubt, check the displayed vessel position in the chart application against your actual proximity to a known charted object.
4	**Fix status** — indicates the actual mode the GPS receiver is reporting (No Fix, Fix, D Fix or SD Fix).
5	**Mode** — the mode currently selected by the GPS receiver.
6	**Datum** — The GPS receiver's datum setting affects the accuracy of the vessel position information displayed in the chart application. In order for your GPS receiver and multifunction display to correlate accurately with your paper charts, they must be using the same datum.

The accuracy of the GPS receiver depends on the parameters detailed above, especially the azimuth and elevation angles which are used in triangulation to calculate your position.

Radar check

⚠ Warning: Radar scanner safety

Before rotating the radar scanner, ensure all personnel are clear.

⚠ Warning: Radar transmission safety

The radar scanner transmits electromagnetic energy. Ensure all personnel are clear of the scanner when the radar is transmitting.

Checking the radar

From the Radar application:

1. Select **Menu**.
2. Select **Power** so that On is highlighted.

   The Radar scanner will now initialize in standby mode. This process will take approximately 70 seconds.

3. Select **Radar** so that Transmit is highlighted.
   The radar scanner should now be transmitting and receiving.
4. Check that the radar screen is operating correctly.

Typical HD radar screen
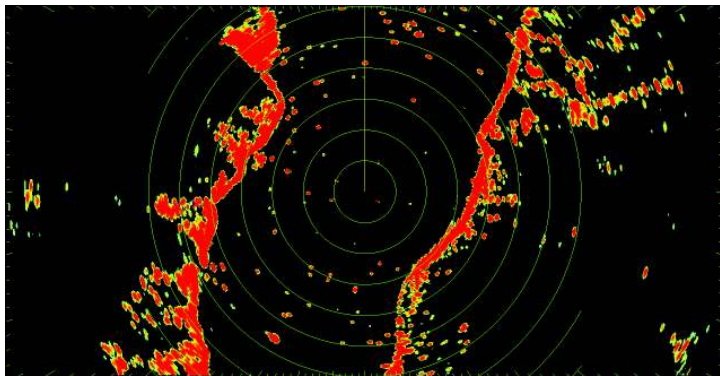
Note: The example above is representative of the enhanced output provided by a HD radar scanner.

Points to check:

- Radar sweep with echo responses are shown on screen.
- Radar status icon rotating in top right hand corner of the status bar.

Check and adjust bearing alignment

Bearing alignment

The radar bearing alignment ensures that radar objects appear at the correct bearing relative to your boat's bow. You should check the bearing alignment for any new installation.

Example misaligned radar
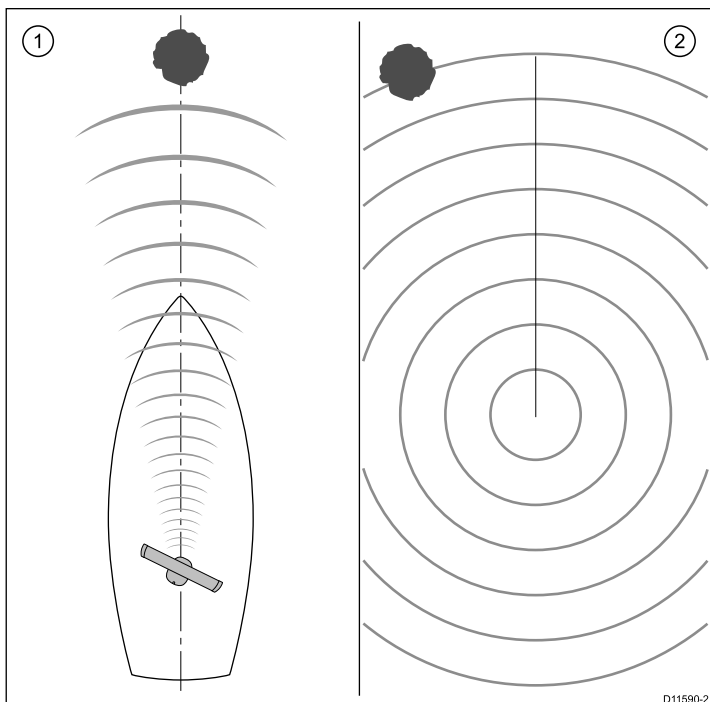
Item	Description
1	Target object (such as a buoy) dead ahead.
2	Target displayed on the radar display is not aligned with the Ship's Heading Marker (SHM). Bearing alignment is required.

Checking the bearing alignment

1. With your vessel under way: Align the bow with a stationary object identified on the radar display An object between 1 & 2 NM distant is ideal.
2. Note the position of the object on the radar display. If the target is not under the ships heading marker (SHM), there is an alignment error and you will need to carry out bearing alignment adjustment.

Adjusting the bearing alignment

Once you have checked the bearing alignment you can proceed and make any required adjustments.

With the radar application displayed:

1. Select **Menu**.
2. Select **Scanner Set-up** .
3. Select **Advanced**.
4. Select **Bearing Alignment**.
   Selecting Bearing Alignment displays the numeric adjust control.
5. Adjust the setting so that the selected target is under the Ship's Heading Marker.
6. Select **Back** or **Ok** when complete.

Sonar check

> ⚠️ **Warning: Sonar operation**
> - NEVER operate the sonar with the vessel out of the water.
> - NEVER touch the transducer face when the sonar is powered on.
> - SWITCH OFF the sonar if divers are likely to be within 7.6 m (25 ft) of the transducer.

Sonar transducer and sonar module selection

You must designate the sonar transducer and Sonar module that you want to use.

Sonar module selection

- Sonar variant displays are fitted with an internal sonar.
- All variants allow you to connect a compatible sonar module.
- If an external sonar module is connected to a sonar variant display and a power supply the internal sonar should be switched off.
- To use a displays internal sonar on a system containing an external sonar module, disconnect the network cable from the external sonar module and use the **Sounder Set-Up** menu in the fishfinder application to enable the internal sonar.

Transducer selection

- Sonar variant displays allow the direct connection of EITHER a Raymarine OR a Minn Kota sonar transducer.
- All variants allow the connection of a Raymarine sonar transducer via a compatible external sonar module.
- For all variants use the **Transducer Set-Up** menu in the fishfinder application to specify the sonar transducer you want to use.

Selecting the sonar module

Sonar variant multifunction displays can use either their internal sonar module or an external Raymarine sonar module.

Applicable only to sonar variant multifunction displays.

With the fishfinder application displayed:

1. Select **Menu**.
2. Select **Set-Up**.
3. Select **Sounder Set-Up**.
4. To use the internal sonar module select **Internal Sounder** so that On is highlighted.
5. To use a connected external Raymarine sonar module select **Internal Sounder** so that Off is highlighted.

Note: The Internal Sounder cannot be switched on if an external sonar module is connected to the system and switched on. Disconnect the network cable from the external sonar module to enable the display's internal sonar option.

Selecting the sonar transducer

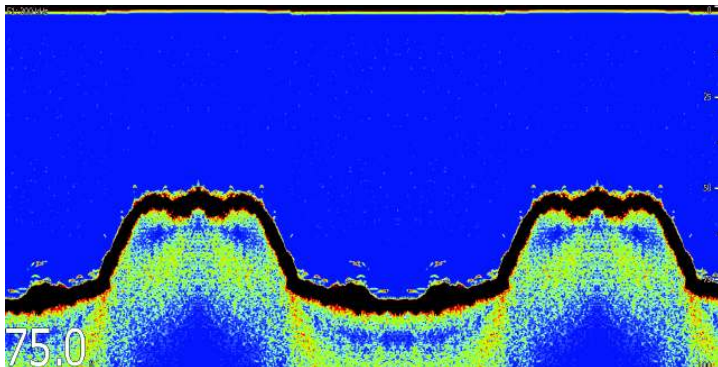With the fishfinder application displayed:

1. Select **Menu**.
2. Select **Set-Up**.

3. Select **Transducer Set-Up**.
4. Select **Transducer**.

   A list of transducers is displayed.
5. Select the transducer you want to use.

Checking the sonar

Sonar checks are made using the fishfinder application.

1. Select the fishfinder page.

2. Check the fishfinder display.

   With the fishfinder active you should see:

   • Depth reading (indicates the transducer is working). The depth is shown in large white numbers at the bottom left of the screen.

Thermal camera setup and checks

To ensure correct operation of the thermal camera you should setup and check the camera's main functions.

Before proceeding ensure that the camera is connected correctly, according to the instructions provided. If your system includes the optional Joystick Control Unit (JCU) and PoE (Power over Ethernet) injector, ensure these units are also connected correctly.

Set up the camera

You will need to:

• Adjust the image (aspect ratio, contrast, brightness, and so on).

Check the camera

You will need to:

• Check the camera movement (pan, tilt, zoom).

• Check the camera "home" position is appropriate.

Adjusting the thermal camera image

With the thermal camera application displayed:

1. Select **Menu**.
2. Select **Adjust Contrast**.
3. Select the Contrast, Brightness, or Color option as appropriate.

   The relevant numeric adjust control is displayed.
4. Adjust the value as required.
5. Select **Back** or **Ok** to confirm the new value.

Panning and tilting, and the thermal image

On a New e Series multifunction display you can pan and tilt the thermal camera image using the touchscreen.

	Move your finger up and down the screen to tilt the camera up or down.
	Move your finger left and right on the screen to rotate the camera left or right (panning).

Panning, Tilting and zooming the thermal image

On New c Series and New e Series multifunction displays you can pan, tilt and zoom the thermal camera image using the physical buttons.

In some circumstances it may be better to use just the UniControl's rotary and joystick controls to manipulate the thermal camera view. For example, this method is ideal for finer control over the camera and is particularly useful in rough sea conditions.

	UniControl joystick — is used for rotating the camera left or right (panning), or tilting the camera up or down.
	UniControl rotary — is used to zoom in and out.

Note: Only the Uni-control can be used on a New c Series display to pan, tilt and zoom the thermal image.

Resetting the thermal camera to the home position

In the thermal camera application:

1. Select **Menu**.
2. Select **Camera Home**.

   The camera returns to its currently defined home position, and the "Home" icon appears on-screen momentarily.

6.10 Enabling autopilot functions

With the homescreen displayed:

1. Select **Set-up**.
2. Select **System Settings**.
3. Select **Autopilot Control** so that On is highlighted.

   Selecting Autopilot Control switches the control On and Off.
4. Select **Back**to return to the **System Settings** menu.
5. Select **Pilot Controls**.

   If this menu option is disabled, no autopilot has been found. Check the physical connections, then repeat steps 1 to 5 above.
6. The Pilot Control dialog is displayed, indicating that pilot control is enabled and an autopilot is detected.

6.11 Enabling AIS functions

Before proceeding ensure your AIS unit is connected to NMEA Port 1.

With the homescreen displayed:

1. Select **Set-Up**.
2. Select **System Settings**.
3. Select **NMEA Set-Up**.
4. Select **NMEA Input Port 1**.
5. Select the AIS 38400 option.
6. Select **Back** to return to the **System Settings** menu.
7. Select **External Devices**.
8. Select **AIS Unit Set-up**.

   The AIS Unit Set-up menu is displayed.
9. Adjust the AIS options as appropriate.

6.12 Language selection

The system can operate in the following languages:

English (US)	English (UK)	Arabic
Chinese	Croatian	Danish
Dutch	Finnish	French
German	Greek	Italian
Japanese	Korean	Norwegian
Polish	Portuguese (Brazilian)	Russian
Spanish	Swedish	Turkish

With the homescreen displayed:

1. Select **Customize**.
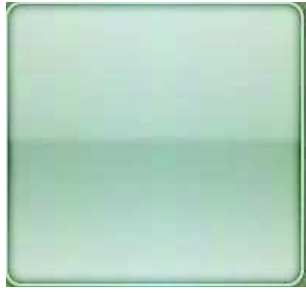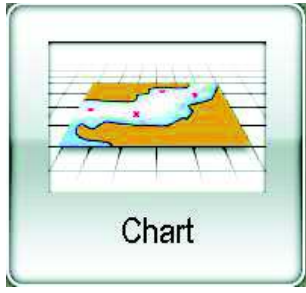2. Select **Language**.
3. Select from the languages available.

6.13 Pages

Pages are used to display applications.

Pages are displayed and accessed on the homescreen. Each page can display more than 1 application.

- You can set up and display up to 4 applications per page using a New c Series or New e Series (except for the e7 and e7D) multifunction display.
- The New a Series and the e7 / e7D multifunction displays can only set up and show up to 2 applications per page.
- ~The New a series and the e7 / e7D can however show up to 4 application per page if they are sharing the homescreen of a capable multifunction display which already has pages with up to 4 applications set up.

Any page on the homescreen can be customized, enabling you to group your applications into different pages, each designed for a specific purpose. For example, you could have a page that includes the chart and fishfinder applications, suitable for fishing, and another page that includes the chart and data applications, which would be suitable for general sailing.

	You can add any application(s) to any empty page.
Chart	Page featuring a single application.
Custom	Page featuring multiple applications.

You can also define a "layout" for each page, which determines how the applications are arranged on the screen.

Changing an existing page on the homescreen

With the homescreen displayed:

1. Select **Customize**.
2. Select **Homescreen**.
3. Select **Edit Page**.
4. Select the page icon that you want to change.
   The Customize menu options are displayed.
5. Select the appropriate page layout (for example, "Splitscreen").
6. Select the application(s) you want to display on the page, either by selecting the relevant menu item or dragging it over to the displayed page.
7. Select **Finish**.
   The Rename Page dialog is displayed.
8. Use the on-screen keyboard to name the page, then select **Save**.

Changing an empty page

With the homescreen displayed:

1. Select **Customize**.
2. Select **Homescreen**.
3. Select **Edit Page**.
4. Select an empty page icon (labelled "Customize").
   The Customize menu options are displayed.
5. Select the appropriate page layout (for example, "Splitscreen").
6. Select the application(s) you want to display on the page, either by selecting the relevant menu item or dragging it over to the displayed page.
7. Select **Finish**.
   The Rename Page dialog is displayed.
8. Use the on-screen keyboard to name the page, then select **Save**.

Moving a page on the homescreen

With the homescreen displayed:

1. Select the **Customize** icon.
2. Select **Homescreen**.
3. Select **Swap Page**.
4. Select the page icon that you want to move.
5. Select the page icon that you want to swap positions with.
   The page icon is moved to the new position.

Renaming a page on the homescreen

With the homescreen displayed:

1. Select the **Customize** icon.
2. Select **Homescreen**.
3. Select **Rename Page**.
4. Select the page that you want to rename.
   The on-screen keyboard is displayed.
5. Using the on-screen keyboard, enter the new name for the page.
6. Select SAVE.

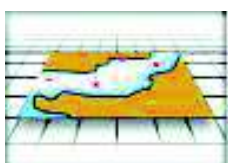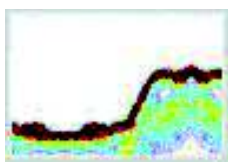## Deleting a page from the homescreen

With the homescreen displayed:

1. Select the **Customize** icon.
2. Select **Homescreen**.
3. Select **Delete Page**.
4. Select the page that you want to delete.
   The page is deleted.

Resetting the homescreen to default settings

With the homescreen displayed:

1. Select the **Customize** icon.
2. Select **Homescreen**.
3. Select **Reset**.
   A warning message is displayed asking for confirmation.
4. Select **Yes** to reset the homescreen to the default range of pages, or **No** to cancel the operation.
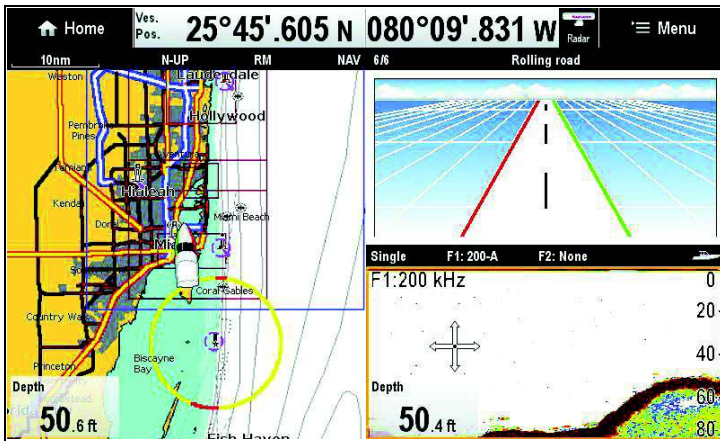
6.14 Applications

|	
	Chart application — provides a 2D or 3D graphical view of your charts to help you navigate. Waypoint, route, and track functions enable you to navigate to a specific location, build and navigate routes, or record where you've been. Chart cards provide higher levels of detail and 3D views.
	Fishfinder application — with a transducer and a sonar variant multifunction display or compatible Sonar Module, you can use the fishfinder application to help you accurately distinguish between different sizes of fish, bottom structure, and underwater obstacles. You can also view sea depth and temperature data and mark points of interest such as fishing spots or wrecks.
	Radar application — with a suitable radar scanner, you can use the radar application to track targets and measure distances and bearings. A number of automatic gain presets and color modes are provided to help you get the best performance from your radar scanner.
	Data application — view system and instrument data on your multifunction display, for a range of compatible instruments. Use the joystick or touchscreen to scroll through the available data pages.
	Weather application — (North America only). With a suitable weather receiver connected to your system, the weather application overlays historical, live, and forecasted weather graphics on a world map.
	Thermal camera application — view and control a compatible thermal camera using your multifunction display. **Note:** The thermal camera application is not available on the New a Series multifunction displays.
	Video application — view a video or camera source on your multifunction display.
	Document Viewer — view pdf documents stored on an SD card.

6.15 Splitscreen controls

When viewing a page with more than 1 application displayed you can switch applications from the splitscreen view to fullscreen view.

Example 1 — Splitscreen page

Example 2 — Fishfinder application expanded to Fullscreen
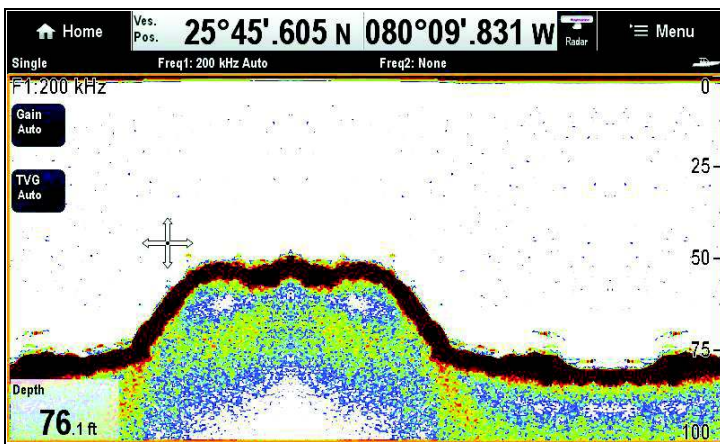
Selecting the active window — New a Series and e7 / e7D

When viewing a splitscreen page you can select the active application and view it fullscreen on a New a Series or e7 / e7D by following the steps below.

With a page featuring multiple applications displayed:

1. Touch anywhere inside the application you want to make active.

   A border appears around the application, indicating that it is active.
2. Select **Menu**.
3. Select **Fullscreen** to view the active application in fullscreen, or
4. Select **Splitscreen** to return to the splitscreen view.

Selecting the active window — New c Series and New e Series

When viewing a splitscreen page you can select the active application and view it fullscreen on a New c Series or New e Series (excluding e7 / e7D) by following the steps below.

With a page featuring multiple applications displayed:

1. Press the [icon] **Switch Active Pane** button.

   The active pane pop up is displayed:
2. Press the **Switch Active Pane** button or use the **Rotary control** to cycle the active application.
3. Press the **Range in** or **Range out** buttons to switch the active application between splitscreen and fullscreen views.

Selecting the active window — e7 / e7D

When viewing a splitscreen page you can select the active application and view it fullscreen on an e7 / e7D with the touch lock enabled by following the steps below.

With a page featuring multiple applications displayed:

1. Press the **Menu** button.
2. Select **Cycle application**.

   Selecting cycle application cycles through the available applications.
3. Select **Fullscreen** to view the active application in fullscreen, or
4. Select **Splitscreen** to return to the splitscreen view.

6.16 Screen overview

D12196-1

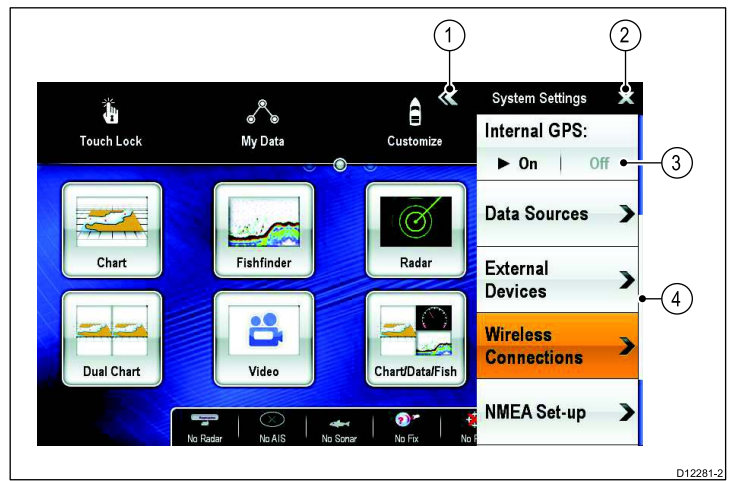| Screen item	Description
1	**Home** • New a Series — Select the on-screen **Home** icon to access the homescreen. • New c Series — Use the **Home** button to go back to the previous menu. • e7 / e7D — Press and hold the **Menu** button for 3 seconds to access the homescreen. • New e Series — Select the on-screen **Home** icon, or use the **Home** button to access the homescreen.
2	**Databar** — provides information about your vessel and its environment. The position and type of information in the databar can be customized from the **Homescreen > Customize > Databar Set-up** menu, if required.
3	**Menu** — The menu options are specific to the application that you are currently using.
4	**Pop-up menu** — menu options are displayed when the Menu is selected.
5	**Pop-up messages** — alert you to a situation (such as an alarm), or unavailable function. Pop-up messages may require a response from you — for example, select **OK** to silence alarms.
6	**Dialogs** — enable data to be selected, edited or entered. Use in many common functions — for example, editing a waypoint.
7	**Context menu** — provides information and options specific to each application.
8	**Status bar** — provides information specific to each application. This information cannot be edited or moved.

Using pop-up menus

Pop-up menus enable you configure settings and preferences.

Menus are used in the:

• **Homescreen** — to configure your multifunction display and externally-connected equipment.

• **Applications** — to configure the settings for that particular application.

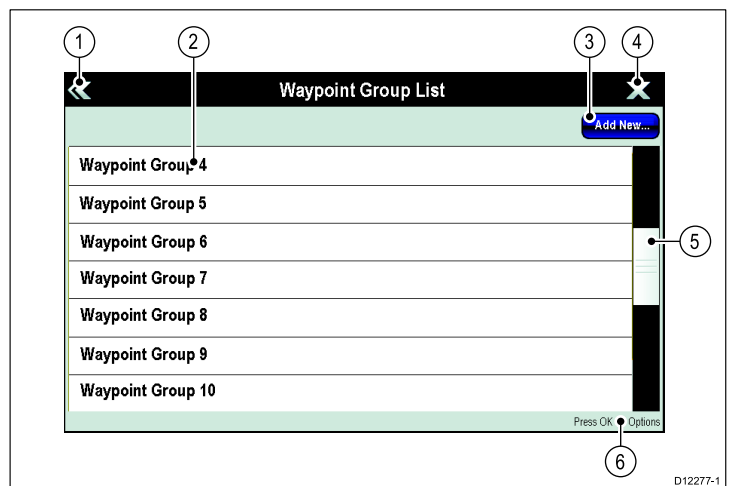The following diagram shows the main features of a pop-up menu:

D12281-2

Screen item	Description
1	**Back** — On touchscreen displays (New e Series and New a series) you can press the on-screen **<<** (back) icon to go back to a previous menu. (On New c Series displays use the **Back** button.
2	**Close** — On touchscreen displays (New e Series and New a series) you can press the on-screen **X** (close) icon to go back to a previous menu. (On New c Series displays use the **Back** button to back out of the menu structure.
3	**On / Off switch** — On touchscreen displays (New e Series and New a series) you can select on-screen menu items to switch features On or Off to enable or disable the function. (On New c Series displays use the **OK** button to switch the function On or Off.
4	**Scroll bar** — indicates that further menu items are available by scrolling the menu. On touchscreen displays (New e Series and New a series) to scroll through the available menu items, press and hold your finger on the menu and drag it up or down. (On New c Series displays use the **Rotary control**.

Using menu dialogs

Menu dialogs are full-screen menus that enable you to manage data items such as waypoints and routes.

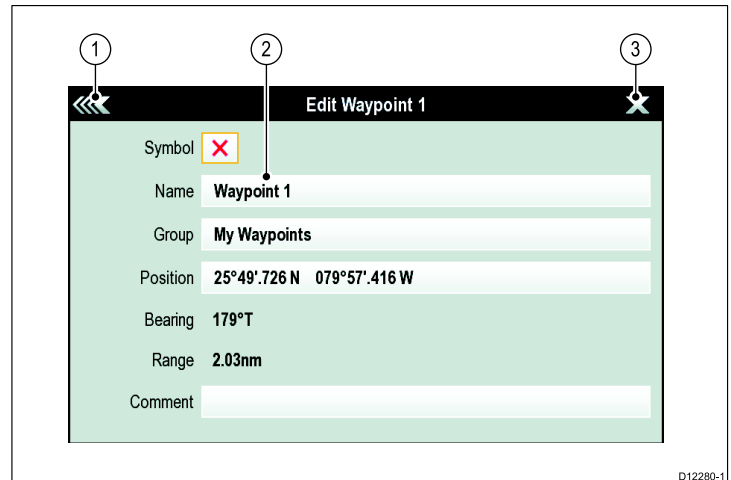The following diagram shows the main features of a standard menu:

D12277-1

Screen item	Description
1	**Back** • Touchscreen — Select the on-screen **Back** icon to go back to the previous menu. • Non–touchscreen — Use the **Back** button to go back to the previous menu.
2	**Menu item** • Touchscreen — Momentarily touching a menu item highlights and automatically selects the item. To scroll a menu, touch a menu item and hold your finger down on the item while dragging your finger up or down • Non–touchscreen — Use the **Rotary control** to highlight an item, and the **Ok** button to select it. To scroll a menu, use the **Rotary control**.
3	**Function icon** — Some menu dialogs include an icon which can be selected to access additional functions. For example, in the Waypoint Group List menu dialog, the **Add New** icon can be used to add a new Waypoint group.
4	**Close** — On Touchscreen displays you can select this icon to close the menu(s). The close icon is not available on non-touchscreen displays.
5	**Scroll bar** • Touchscreen — To scroll through the available menu items, press and hold your finger on the menu to drag it up or down. • Non-touchscreen — To scroll through the available menu items, use the **Rotary control**.
6	**Options** — Select a menu item to access more options for that item. For example, in the Waypoint Group list you can select a menu item to view the waypoints in the group, edit the group name, or erase the group.

Using list dialogs

List dialogs are full-screen menus that display the details for specific types of data, such as Waypoints.

The following diagram shows the main features of a list dialog:

D12278-1

Screen item	Description
1	**Back** • Touchscreen — Select the on-screen **Back** icon to go back to the previous menu. • Non–touchscreen — Use the **Back** button to go back to the previous menu.
2	**Sort icon** — Some list dialogs include an icon which can be selected to sort the items in the list. For example, in the Waypoint List you can sort the list by name, range, group, symbol, and so on.

Screen item	Description
3	**Close** — On Touchscreen displays you can select this icon to close the menu(s). The close icon is not available on non-touchscreen displays.
4	**Scroll bar** • Touchscreen — To scroll through the available menu items, press and hold your finger on the menu to drag it up or down. • Non-touchscreen — To scroll through the available menu items, use the **Rotary control**.
5	**Details** — the details for a particular list item are displayed at the bottom of the dialog.

Using edit dialogs

Edit dialogs enable you to edit the details of data items stored on your multifunction display, such as waypoints, routes, and tracks.
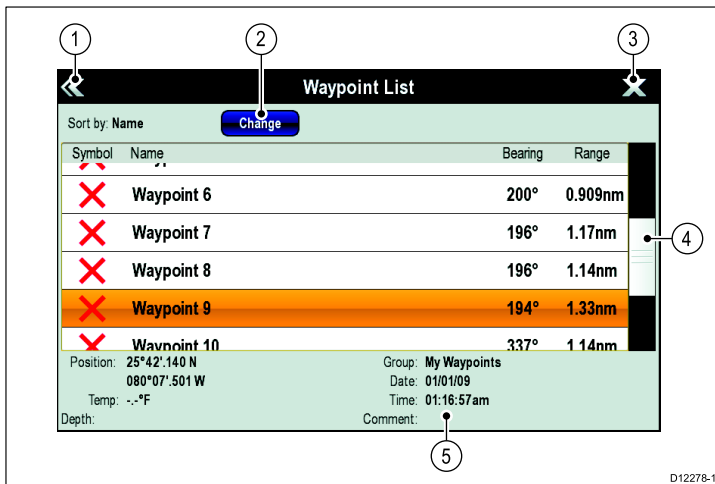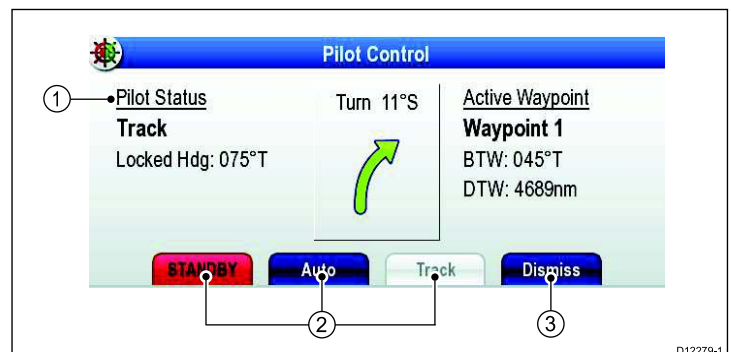
The following diagram shows the main features of a typical edit dialog:

D12280-1

Screen item	Description
1	**Back** • Touchscreen — Select the on-screen **Back** icon to go back to the previous menu. • Non–touchscreen — Use the **Back** button to go back to the previous menu.
2	**Field** — Selecting a text field automatically displays the on-screen keyboard, which can be used to edit the details.
3	**Close** — On Touchscreen displays you can select this icon to close the menu(s). The close icon is not available on non-touchscreen displays.

Using control dialogs

Control dialogs enable you to control externally connected equipment, such as an autopilot unit.

The following diagram shows the main features of a typical control dialog:

D12279-1

Screen item	Description
1	**Status** — provides status information for the connected equipment. For example, the Pilot Control dialog displays the locked heading and current navigation mode for a connected autopilot unit.
2	**Control icons** — provide direct control of the connected equipment. For example, the Pilot Control dialog **Standby**, **Auto** and **Track** icons enable you to instruct a connected autopilot unit to perform specific functions.
3	**Dismiss** — Closes the control dialog.

Using slider bar controls

Slider bar controls provide a graphical representation of numeric data and enables you to quickly change setting values.

D12570-1
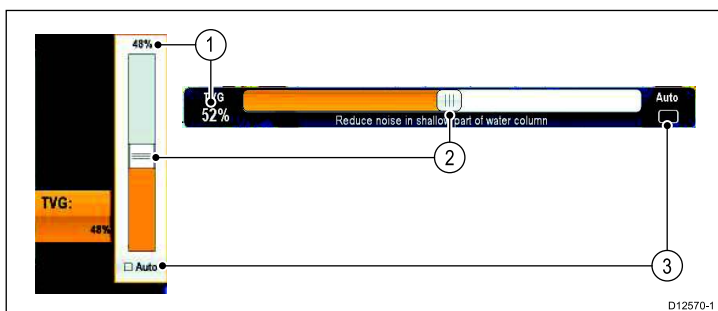
Item	Description	Non—Touch operation	Touch operation
1	Current value	N/A	N/A
2	Slider control	Use the **Rotary control** to adjust value	Slide the slider **Up** or **Down** to adjust value.
3	Auto	Press **Ok** button to switch between Auto and manual adjustment.	Select to switch between Auto and manual adjustment.

6.17 Editing information in dialogs

With the dialog displayed:

1. Select the field you want to edit.

   The on-screen keyboard is displayed:

2. Use the on-screen keyboard to make the changes.
3. Use the on-screen keyboard's **SAVE** key to keep any changes.

Entering special or accented characters

With the on-screen keyboard displayed:

1. Select the on-screen keyboard's **àèò** key.
2. Select the character you want to accent.

   The available accented characters are displayed above the text entry field.
3. For characters that have multiple available accents, use the character key to toggle between them.
4. Select the **àèò** key to enter the character.

6.18 Editing numerical settings

To edit numerical values in you can either use the **Rotary Control**, the on-screen numeric adjust control or on-screen numeric keypad to increase or decrease the value.

D12567-1
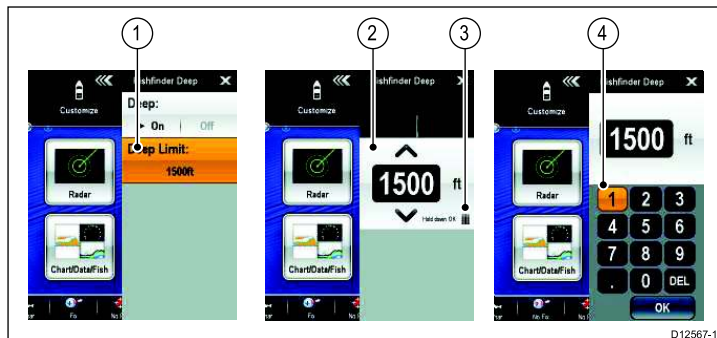
1. Select the numeric data field you want to edit.

   The numeric adjust control is displayed.
2. Adjust the setting to the required value using:
   i. The **Rotary control** — New c Series and New e Series, or
   ii. The on-screen **Up** and **Down** arrows — New a Series and New e Series.
3. To access the on-screen numeric keypad:

   • New a Series — Select the on-screen keypad icon from the numeric adjust control.

   • New c Series — Press and hold the **Ok** button.

   • New e Series — Select the on-screen keypad icon from the numeric adjust control.

   The on-screen numeric keypad is displayed.
4. Enter the required value.
5. Select **Ok** to exit the numeric keypad and return to the menu.

6.19 Basic touchscreen operations

Placing and moving the cursor using touch

To place or move the cursor around the screen on a touchscreen multifunction display follow the steps below.

1. Touch the screen at any position on the screen to place the cursor there.

Touchscreen lock

You can lock the touchscreen to prevent accidental use.

	This only applies to HybridTouch displays.

For example, locking the touchscreen is particularly useful in rough water or weather conditions.

The touchscreen is locked from the home screen. An icon in the home screen indicates the lock status:

	Touchscreen is unlocked.
	Touchscreen is locked. All functions remain available using the buttons and softkeys.

You must use the UniControl to unlock the touchscreen.

Locking the touchscreen

	This only applies to HybridTouch displays.

With the homescreen displayed:

1. Select the **Touch Lock** icon.

   It changes color to indicate that the touchscreen is disabled. All functions are still available using the buttons and UniControl.

Unlocking the touchscreen

	This only applies to HybridTouch displays.

With the homescreen displayed:

1. Use the UniControl to highlight the **Touch Lock** icon.
2. Press the **OK** button.

   The Touchscreen is enabled.

6.20 Databar status symbols

The status symbols on the databar confirm whether the appropriate connections to your system have been made.

The symbols show the status for the following:

- Radar scanner.
- AIS receiver / transceiver.
- Sonar module.
- GPS receiver.
- Autopilot.

Radar scanner status symbols

The radar scanner power mode status is indicated in the databar.

Symbol	Radar power mode	Description
	Transmit (TX)	Rotating icon, signifying that the scanner is on and transmitting. When SCANNER is set to ON, select this mode to activate the scanner. This is the usual mode of operation.
	Standby (STBY)	Static icon, indicating that the scanner is on but not transmitting, and the antenna is not rotating. The scanner does not transmit and the radar data is removed from the screen. This is a power-save mode used when the radar is not needed for short time periods. When you return to transmit mode, the magnetron does not need to warm up again. This is the default mode.
	Off	Scanner powered off when radar not required, but display is in use for other applications, such as the chart. When selected, the system counts down. During this time you cannot re-power the scanner.
	Timed Transmit	Scanner switches between on/transmitting, and standby mode. Scanner goes into power save mode when constant use of radar is not required.

AIS status symbols

AIS status is indicated by a symbol in the databar.

Symbol	Description
	AIS unit is switched on and operating.
	AIS currently unavailable.
	AIS unit is switched off, or not connected.
	AIS unit is in Silent Mode.
	AIS unit is in Silent Mode, with active alarms.

Symbol	Description
	AIS unit is connected and switched on, but has active alarms.
	AIS unit is connected and switched on, but the dangerous and lost alarm is disabled.

Sonar status symbols

The sonar status is indicated in the databar.

Symbol	Description
	Symbol animated: the sonar module is connected and transmitting.
	Symbol static: the sonar module is connected but not transmitting.
	Symbol greyed-out: the sonar module is not connected, or is not detected.

GPS status symbols

The GPS receiver status is indicated in the databar.

Symbol	Description
	A GPS receiver is connected and has obtained a fix.
	A GPS receiver is not connected, or cannot obtain a fix.

Autopilot status symbols

The autopilot status is indicated in the databar.

Symbol	Description
	Autopilot is in Standby mode.
	Autopilot is in Track mode.
	Autopilot is in Auto mode.
	No autopilot detected.
	Autopilot alarm active.
	Dodge mode is active.
	Fish mode is active.
	Autopilot calibration.

Symbol	Description
	Power steering active.
	Wind Vane mode is active.

6.21 Initial set up procedures

Once your display has been installed and commissioned, Raymarine recommends that you perform an initial set up procedure.

Startup wizard

D12568-1

When you power-up the display for the first time or after a system reset a Startup Wizard is displayed. The wizard guides you through the following initial settings:

1. Language selection
2. Vessel type selection
3. Configure units
4. Boat details (minimum safe depth, total fuel capacity and economy units.)
5. Finish

Note: These settings can also be set at any time using the menus accessible from **Homescreen > Customize**.

Additional settings

In addition to the settings covered by the Wizard, it is also recommended that the following initial set up tasks are completed:

• Set your date and time preferences.
• Adjust the display brightness (and set up a shared brightness scheme if appropriate).
• Align the touchscreen (HybridTouch displays only).
• Designate the data master.
• Select the GPS data source.
• Familiarize yourself with the Simulator Mode.

Setting the vessel minimum safe depth

With the homescreen displayed:
1. Select **Customize**.
2. Select **Boat Details**.
3. Select **Min. Safe Depth**.
4. Adjust the setting as appropriate.

Note: The units for the depth measurement are based on those specified in the **Homescreen > Customize > Units Set-up > Depth Units** menu.

Setting time and date preferences

With the homescreen displayed:
1. Select **Customize**.
2. Select **Time and Date Set-up**.
3. Use the **Date Format**, **Time Format**, and **Local Time: UTC** menu items to set your time and date preferences.

Adjusting the display brightness — New a Series and New e Series

Shortcuts

Display Brightness

Radar status: **Off/Not connected**

Power up Radar | **Radar:Tx**

(press POWER key to toggle)

Disengage Pilot

Powersave Mode

Press to capture screen image to SD card

1. Press the **POWER** button once.

   The Shortcuts menu is displayed.
2. Adjust the brightness to the required level using the on-screen brightness slider bar control, or
3. Touch the Sun icon to increase the brightness level or the Moon icon to decrease the brightness level.

Note: The brightness level can also be increased by pressing the **Power** button multiple times.

Adjusting the display brightness

1. Press the **POWER** button once.

   The Shortcuts menu is displayed.
2. Adjust the brightness to the required level using the **Rotary control**.

Note: The brightness level can also be increased by pressing the **Power** button multiple times.

Touchscreen alignment

If the touchscreen is misaligned to your touch, you can realign it to improve the accuracy.

Realignment involves a simple exercise to align an on-screen object with your touch. For best results, perform this exercise when your vessel is anchored or moored.

Note: This only applies to touchscreen multifunction displays.

Aligning the touchscreen

With the homescreen displayed:

1. Select **Set-up**.
2. Select **Maintenance**.
3. Select **Touchscreen Alignment**.
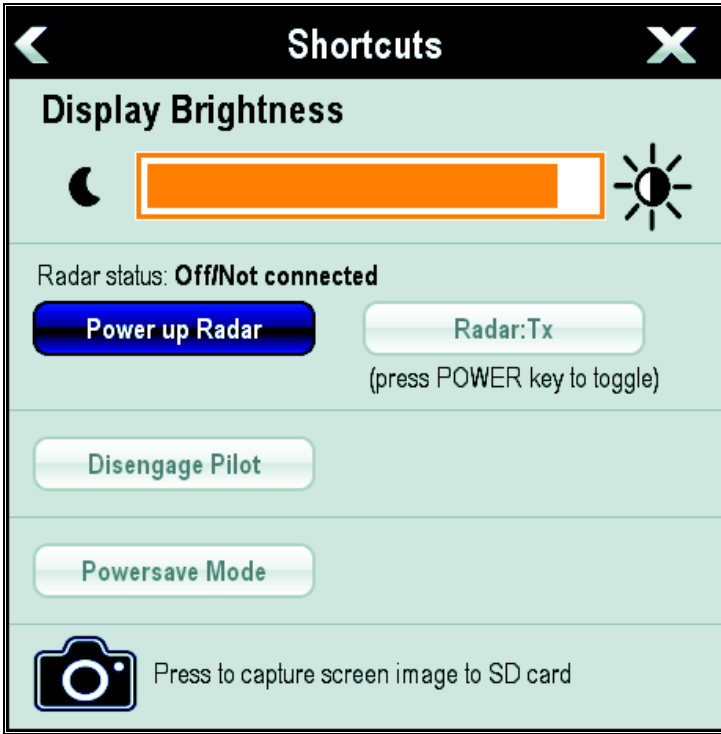4. Place your finger over the on-screen object momentarily, then remove it.
5. Repeat the action a further 3 times.
6. If the operation was successful, an "Alignment Completed" message is displayed.
7. Select **Exit** to return to the Maintenance menu.
8. If the operation was unsuccessful at any point during the alignment exercise, an "Incorrect touch detected" message is displayed, the alignment exercise is repeated.

9. After 2 failed alignment exercises you may be asked to perform a precision alignment exercise.

Data master

Any system containing more than one networked multifunction display must have a designated data master.

The data master is the display which serves as a primary source of data for all displays, it also handles all external sources of information. For example the displays may require heading information from the autopilot and GPS systems, usually received through a SeaTalkng or NMEA connection. The data master is the display to which the SeaTalk, NMEA and any other data connections are made, it then bridges the data to the SeaTalkhs network and any compatible repeat displays. Information shared by the data master includes:

• Cartography

• Routes and waypoints

• Radar

• Sonar

• Data received from the autopilot, instruments, the engine and other external sources.

Your system may be wired for redundancy with data connections made to repeat displays. However these connections will only become active in the event of a fault and/or reassignment of the data master.

Designating the data master

For systems with 2 or more displays the following task must be performed on the multifunction display that you want to designate as the data master.

With the homescreen displayed:

1. Select **Set-up** .
2. Select **Maintenance**.
3. Select **Data Master**.
4. Select the display that you want to designate as the data master.

GPS selection

You can use an internal (if available) or external GPS receiver.

• Your multifunction display may feature an internal GPS receiver.

• You can also connect an external GPS receiver using SeaTalkng or NMEA 0183.

• Where appropriate use the System Settings menu to enable or disable the internal GPS receiver.

Enabling or disabling the internal GPS

If your multifunction display features an internal GPS then this can be enabled and disabled by following the steps below.

With the homescreen displayed:

1. Select **Set-Up**.
2. Select **System Settings**.
3. To enable the internal GPS, select **Internal GPS** so that On is highlighted.
4. To disable the internal GPS, select **Internal GPS** so that Off is highlighted.

Simulator mode

The Simulator mode enables you to practice operating your display without data from a GPS antenna, radar scanner, AIS unit, or fishfinder.

The simulator mode is switched on / off in the **System Setup Menu**.

Note: Raymarine recommends that you do NOT use the simulator mode whilst navigating.

Note: The simulator will NOT display any real data, including any safety messages (such as those received from AIS units).

> **Note:** Any system settings made whilst in Simulator mode are NOT transmitted to other equipment.

Enabling and disabling simulator mode

You can enable and disable simulator mode by following the steps below.

With the homescreen displayed:

1. Select **Set-Up** .
2. Select **System Settings**.
3. Select **Simulator:**.
4. Select On to turn simulator mode on, or
5. Select Off to turn simulator mode off.

> **Note:** The Demo movie option is for retail demonstration purposes only.

Chapter 7: Managing display data

Chapter contents

7.1 Memory cards overview

You can use memory cards to archive data such as waypoints, routes, and tracks.

Memory cards can be used to archive your data when the system capacity is reached. You can then delete old data from your system, creating capacity for new data. The archived data can be retrieved at any time. You can also use memory cards to backup your data.

Note: Raymarine recommends that you backup your data to a memory card on a regular basis.

7.2 Inserting a memory card or chart card

Note: New a Series displays have 1 card slot, cards must be inserted into New a Series displays with the contacts facing up.

1. Open the chart card door, located on the front right of the display.
2. Insert the card, as shown in the diagram below. For slot 1, the card contacts should be facing DOWN. For slot 2, the card contacts should be facing UP. Do NOT force the card. If the card does not fit easily into the slot, check the orientation.
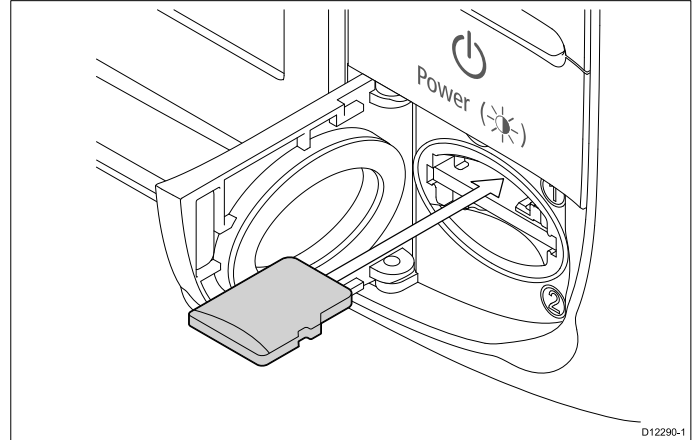
3. Gently press the card all the way in to the card slot, as shown in the diagram below. The card is secure when an audible click is heard.
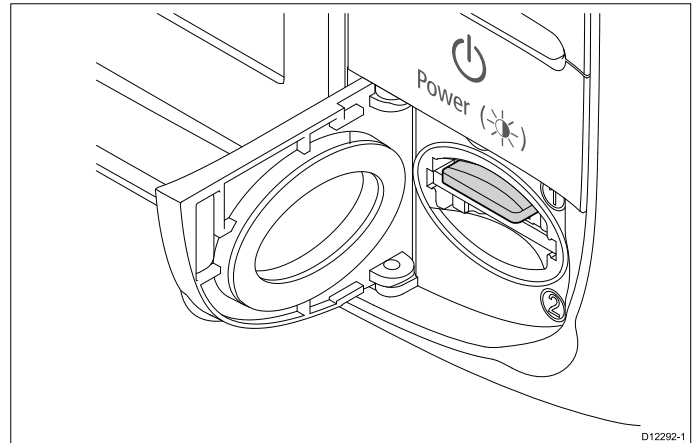
4. To prevent the ingress of water and consequent damage, close the chart card door.

7.3 Removing a memory card or chart card

From the homescreen:

1. Select **My Data**.
2. Select **Eject Card**.

   A message is displayed prompting you to select the memory device you want to eject.
3. Select **SD1** for a memory card in the top card slot, or **SD2** for a memory card in the bottom card slot.
4. Open the chart card door, located on the front right of the display.
5. Push the edge of the card towards the unit, until an audible click is heard.

   The card is released from the card slot mechanism, as shown in the following diagram:
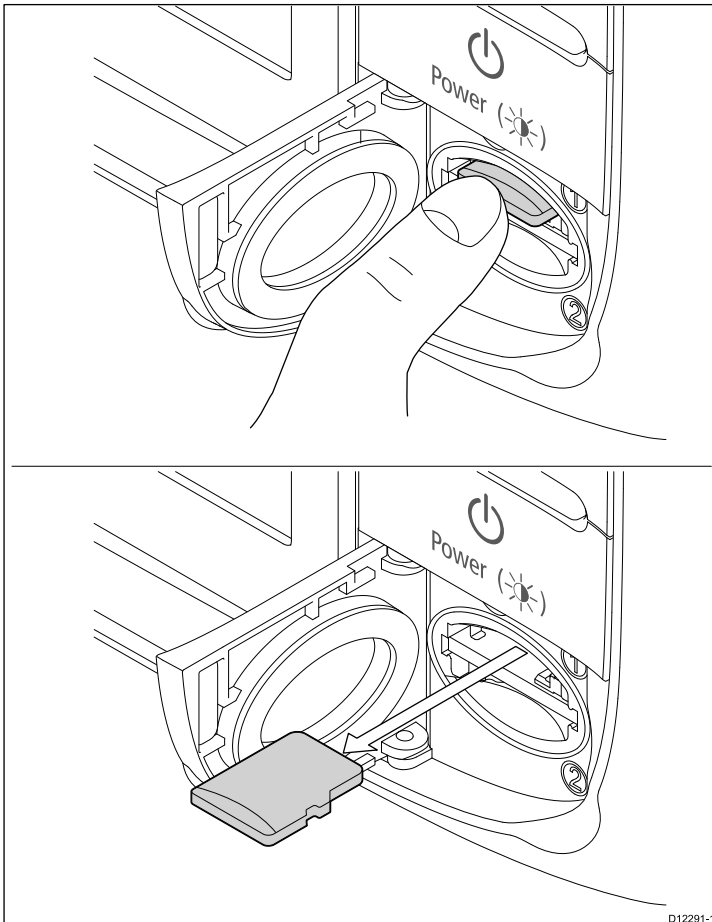
6. Use your fingers to pull the card clear of the card slot, using the edge of the card.
7. To prevent the ingress of water and consequent damage, close the chart card door.

Note: You can also power off the multifunction display and follow steps 4 to 7 above.

7.4 Saving user data and user settings

You can save user data (waypoints, routes, and tracks) or user settings to a memory card for later retrieval.

Type of data	Description	Notes
User data (waypoints)	Saves all waypoints to a single archive file.	Only 1 waypoints archive file can be saved per memory card.
User data (routes)	Saves all routes to a single archive file.	Only 1 routes archive file can be saved per memory card.
User data (tracks)	Saves all tracks to a single archive file.	Only 1 tracks archive file can be saved per memory card.
User settings	Saves the settings you've made in the set-up menus to a single archive file.	Only 1 user settings archive file can be saved per memory card.

Note: Raymarine recommends that you save your user data and user settings to a memory card on a regular basis.

Note: Raymarine strongly recommends that you save settings to a separate memory card, and NOT to a chart card containing cartography.

Saving waypoints, routes, and tracks to a memory card

With the homescreen displayed:

1. Ensure you have a memory card (NOT a chart card) in one of the card slots.
2. Select **My Data**.
3. Select **Save Data to Card**.

   If your display has more than 1 card slot then a message is displayed prompting you to select the memory device you want to save the data to, if your display only has 1 card slot then you will not be prompted.
4. Select **SD1** for a memory card in the top card slot, or **SD2** for a memory card in the bottom card slot.
5. Select **Save Waypoints to Card**, **Save Routes to Card**, or **Save Tracks to Card**, as appropriate.

Retrieving waypoints, routes, or tracks from a memory card

With the homescreen displayed:

1. Ensure you have a memory card containing the user data in one of the card slots.
2. Select **My Data**.
3. Select **Retrieve from Card**.

   If your display has more than 1 card slot then a message is displayed prompting you to select the memory device you want to retrieve data from, if your display only has 1 card slot then you will not be prompted.
4. Select **SD1** for a memory card in the top card slot, or **SD2** for a memory card in the bottom card slot.
5. Select **Retrieve Waypoints**, **Retrieve Routes**, or **Retrieve Tracks**, as appropriate.

Erasing waypoints, routes, and tracks from a memory card

With the homescreen displayed:

1. Ensure you have the memory card containing the data in one of the card slots.
2. Select **My Data**.
3. Select **Erase from Card**.

   If your display has more than 1 card slot then a message is displayed prompting you to select the memory device you want to erase data from, if your display only has 1 card slot then you will not be prompted.

4. Select **SD1** for a memory card in the top card slot, or **SD2** for a memory card in the bottom card slot.

5. Select **Erase Waypoints from Card**, **Erase Routes from Card**, or **Erase Tracks from Card**, as appropriate.

Erasing waypoints, routes, and tracks from the system

> **Note:** The following procedure permanently erases selected or ALL waypoints, routes, or tracks stored on the display. BEFORE proceeding, ensure that you backup any data that you want to keep on to a memory card.

With the homescreen displayed:

1. Select **My Data**.
2. Select **Erase from System**.
3. Select **Erase Waypoints from System**, **Erase Routes from System**, or **Erase Tracks from System**, as appropriate.
4. Select the specific data items you want to erase, or select **Erase All**.

   A message is displayed prompting you for confirmation.
5. Select **Yes** to proceed with the deletion, or **No** to cancel the operation.

Saving user settings to a memory card

With the homescreen displayed:

1. Ensure you have a memory card (NOT a chart card) in one of the card slots.
2. Select **My Data**.
3. Select **Backup and Restore Settings**.
4. Select **Backup Settings**.

   If your display has more than 1 card slot then a message is displayed prompting you to select the memory device you want to save the settings to, if your display only has 1 card slot then you will not be prompted.
5. Select **SD1** for a memory card in the top card slot, or **SD2** for a memory card in the bottom card slot.

Retrieving user settings from a memory card

With the homescreen displayed:

1. Ensure you have the memory card containing the user data in one of the card slots.
2. Select **My Data**.
3. Select **Backup and Restore Settings**.
4. Select **Restore Settings**.

   If your display has more than 1 card slot then a message is displayed prompting you to select the memory device you want to retrieve settings from, if your display only has 1 card slot then you will not be prompted.
5. Select **SD1** for a memory card in the top card slot, or **SD2** for a memory card in the bottom card slot.

Save and retrieve items

The table below details the data items and settings which will be saved to and retrieved from SD card on your multifunction display.

Homescreen and system settings

Application	Setting
Homescreen	Default page configuration
System settings	Position mode
	Text size
	Shared brightness
	Brightness group
	TD set-up
	Simulator
	Bearing mode

Application	Setting
	MOB Data type
	Variation source
	Manual variation
	Language
	Date format
	Time format
	Local time offset
	Distance units
	Distance subunits
	Speed units
	Depth units
	Temperature units
	Pressure units
	Volume units
System settings — integration	Autopilot control
	DSC message
	SeaTalk alarms
	Bridge NMEA heading
Multiple data sources	GPS position source
	Heading source
	Depth source
	Speed source
	Wind source
Databar set-up	Databar content (cell 1 to 6)
	Compassbar
	Status icon
GPS status	GPS screen

Alarms

Application	Setting
Alarms	Anchor alarm
	Timer
	Alarm clock
	Temperature alarm
	Arrival alarm
	Offtrack alarm
	Collision alarm
	Guard zone sensitivity
	Fish alarm
	Fish alarm depth limit
	Shallow depth alarm
	Deep depth alarm
	AIS dangerous target alarm

Chart application — Cartography settings

Application	Setting
Cartography	Data overlay cell 1 on / off
	Data overlay cell 1 content

Application	Setting
	Data overlay cell 2 on / off
	Data overlay cell 2 content
	Chart object menu
	Chart display
	Chart grid
	2D shading
	Community layer
	Chart text
	Chart boundaries
	Spot soundings
	Safety contour
	Depth contour
	Deep water color
	Hide rocks
	Nav marks
	Nav marks symbols
	Light sectors
	Routing systems
	Caution areas
	Marine features
	Land features
	Business services
	Panoramic photos
	Roads
	Additional wrecks
	Aerial photo overlay
	colored seabed areas
	Vessel icon
	Vessel size

Radar application

Application	Setting
Radar	Select scanner
	Range rings

AIS Layer

Application	Setting
AIS Layer	Displayed target types
	AIS safety messages
	Buddy tracking
	Silent mode

Data application

Application	Setting
Data	Datapages and content
	Datapage order
	Color theme
	Dial color
	Number of engines
	Maximum tachometer range

Fishfinder application

Application	Setting
Fishfinder	Configure preset frequencies

Weather application

Application	Setting
	Wind symbol
	Watchbox alerts

Boat details

Application	Setting
	Economy units
	Low fuel threshold
	Fuel alarm on/off

7.5 Screenshots

You can take a screenshot of what is currently displayed on the screen.

Screenshots are saved to an SD card in .bmp (bitmap) format. The saved image can be viewed form the multifunction display or any device capable of viewing bitmap images.

Taking a screenshot

You can take a screenshot by following the steps below.

1. Insert an SD card with suitable free space available into the SD card slot of your multifunction display.

> **Note:** The SD card slot should be inserted into the card slot selected in the **Customize > Display Preferences > Screenshot File** menu option accessible form the homescreen.

2. Press the **Power** button.

   The Shortcuts page is displayed:
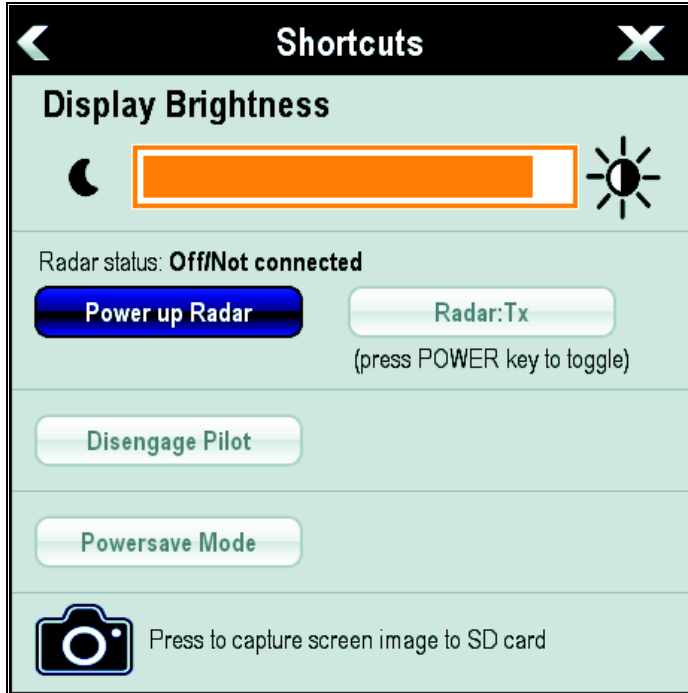
3. Select the **Camera** icon.

   A confirmation pop-up is displayed.

4. Select **Ok**.

   The screenshot is now saved to the SD card.

Selecting the SD card slot for screenshots

New c Series and New e Series multifunction displays have 2 SD card slots. When performing a screenshot you must first select which card slot to save the screenshot too.

From the homescreen.

1. Select **Customize**.
2. Select **Display Preferences**.
3. Select **Screenshot File:**.
4. Select either **MicroSD 1** or **MicroSD 2**.

Viewing a screenshot on the multifunction display

You can view images on the multifunction display

1. Insert an SD card with the screenshot or image saved to it, into the SD card slot of your multifunction display.
2. From the homescreen, select **My Data**.
3. Select **View Images**.

   The file browser dialog is displayed.

4. Browse to the location on the SD card to where the image is saved.
5. Select the image you want to view.

   The image will now open.

6. Select **Back** or **Close** to close the image.

7.6 Resetting your system

Your system may be reset to its factory default settings if required.

There are 2 types of reset operation, both of which affect the current display you are using, AND any networked displays.

- Settings reset.
- Settings and data reset.

Settings reset

This option resets your setup menus, page sets, and databar settings to factory default. It will NOT affect your waypoints, routes, or tracks data.

Settings and data reset

In addition to the settings reset detailed above, performing a settings and data reset will also remove ALL waypoints, routes, and tracks data.

Resetting system settings

With the homescreen displayed:

1. Select **Set-up**.
2. Select **Maintenance**.
3. Select **System Settings Reset**.

   A message is displayed prompting you to confirm the action.

4. Select **Yes** to proceed with the settings reset, or **No** to cancel.

Resetting system settings and data

> **Note:** Performing a settings and data reset erases ALL waypoints, routes, and track data from your system. BEFORE proceeding with a settings and data reset, ensure that you backup any data that you want to keep on to a memory card.

With the homescreen displayed:

1. Select **Set-up**.
2. Select **Maintenance**.
3. Select **System Settings and Data Reset**.

   A message is displayed prompting you to confirm the action.

4. Select **Yes** to proceed with the settings and data reset, or **No** to cancel.
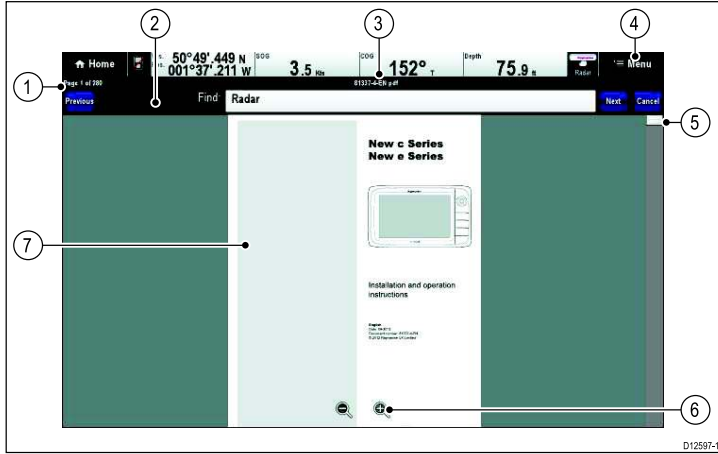
Chapter 8: Using the document viewer

Chapter contents

8.1 Document viewer overview

Your multifunction display includes a pdf document viewer.

The document viewer is available from the homescreen and is used to view and search pdf documents (such as product handbooks).

1	Current page number (page x of y)
2	Find (search) tool bar (only displayed when searching a document.)
3	Current pdf's filename
4	Document viewer menu
5	Scroll bar
6	On-screen zoom controls (Touchscreen displays only)
7	pdf document content

Note: The document viewer does not support password protected documents or documents containing security certificates. An error message will be displayed if you try to open such documents.

The following options are available from the document viewer menu:

- **Open File** — Allows you to browse for a pdf document to open.
- **Find** — Allows you to search the document for a specified words.
- **Go to page:** — Allows you to jump to a specified page number.

Opening a pdf document

You can open pdf documents stored on an SD card by following the steps below.

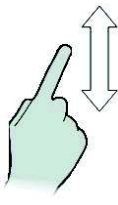**Note:** When saving pdf documents to SD cards, ensure you do not overwrite important data.

1. Save the required pdf document to SD card.
2. Insert the SD card into the SD card slot of the multifunction display you wish to view the document on.
3. Select **Menu**.
4. Select **Open File**.
   The file browser dialog is displayed.
5. Browse to the location on the SD card where you saved the document to.
6. Select the document you want to view.
   The document will now open.
7. If the 'Cannot Open File' error message is displayed then select **Ok** to confirm and then try opening the document again or check that the pdf is not corrupted or whether it contains security which is not supported by the document viewer application.

Note: Large filesize pdf documents may take a while to open.

Browsing an open document

On touchscreen displays you can browse pdf documents as detailed below.

With a pdf document open:

- Move your finger up to scroll down the document.
- Move your finger down to scroll up the document.

When the document width is greater than the width of the application window, move your finger left or right to pan the width of the document.

Note: You can also use the scroll bars to navigate through the document.

Browsing an open document

On HybridTouch and non-touch displays you can browse pdf documents by following the steps below.

With a pdf document open:

1. Move the Joystick **Up** or **Down** to move up and down through the document.
2. Move the Joystick **Left** or **Right** to pan left and right.

Changing the zoom factor

On touchscreen displays you can change the zoom factor of the open document by following the steps below.

With a pdf document open:

1. Select the on-screen **Zoom in** icon to zoom in, or
2. Select the on-screen **Zoom out** icon to zoom out.

Changing the zoom factor

On HybridTouch and non-touch displays (excluding the e7 and e7D) you can change the zoom factor of the open document by following the steps below.

With a pdf document open:

1. Use the **Range out** button to zoom out, or
2. Use the **Range in** button to zoom in.

Note: New a Series and e7 / e7D multifunction displays do not have Range in and Range out button.

Selecting a page

You can skip to the page you want to view by entering the page number.

With a pdf document open:

1. Select **Menu**.
2. Select **Go to page:**.
   The numeric keypad is displayed.
3. Enter the page number of the page you want to view.
4. Select **Ok** to view the page.

Using document hyperlinks

On touchscreen displays you can use internal document hyperlinks.

With a pdf document opened on a page containing a hyperlink:

1. Momentarily touch your finger on the hyperlink.
   You will be taken to the hyperlinked page.

Note: Document hyperlinks cannot be activated on a New c Series display.

👆 Searching for text

On touchscreen displays you can use the find function to search for text in an open pdf document.

With a pdf document open:

1. Select **Menu**.
2. Select **Find**.

   The on-screen keyboard is displayed.
3. Enter the keyword you want to find.
4. Select **SAVE**.

   The document viewer will enter find mode and:

   - You may see a 'Searching' icon while all occurrences are found.

   - The find tool bar is displayed.

   - The first occurrence of the keyword is highlighted.

5. Select **Next** to find the next occurrence of the keyword, or
6. Select **Previous** to go back to the last occurrence of the keyword.
7. You can select **Cancel** at any time to close the find tool bar and return to the normal viewing.

🚫 Searching for text

On HybirdTouch and non-touch displays you can use the find function to search for text in an open pdf document by following the steps below.

With a pdf document open:

1. Press the **Menu** button.
2. Select **Find**.

   The on-screen keyboard is displayed.
3. Enter the keyword you want to find.
4. Select **SAVE**.

   The document viewer will enter find mode and:

   - You may see a 'Searching' icon while all occurrences are found.

   - The find tool bar is displayed.

   - The first occurrence of the keyword is highlighted.

5. Move the **Joystick Down** to go to the next occurrence of the keyword, or
6. Move the **Joystick Up** to go to the previous occurrence of the keyword.
7. You can press the **Back** button at any time to close the find tool bar and return to the normal viewing.

Keyword not found

The document viewer will let you know if the keyword you have searched for does not appear in the document.

If the keyword is not found then the find tool bar will display an exclamation mark and a pop-up message is displayed on-screen.

Selecting **New Search** will take you back to the on-screen keyboard so that you can try a different keyword. Selecting **Cancel** will close the find tool bar and resume normal operation.

Chapter 9: Using autopilot control
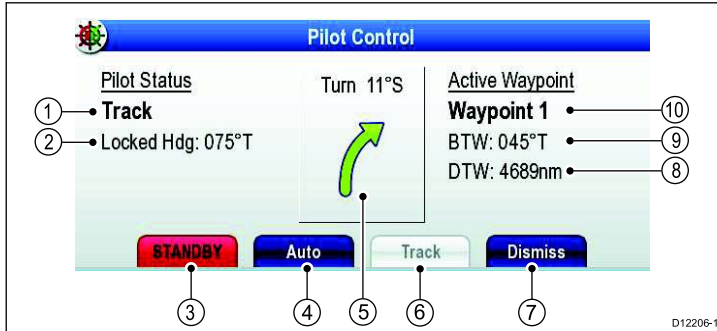
Chapter contents

9.1 Autopilot control

You can use your multifunction display to control your autopilot.

Note: For information on connecting your multifunction display to a Raymarine autopilot system, refer to the documentation that accompanied your autopilot.

With the Autopilot Control function enabled, you can use your multifunction display to:

- Engage the autopilot and instruct it to follow a route, or a waypoint.
- Disengage the autopilot.
- Silence the waypoint arrival alarm.

Pilot Control dialog

Item	Description
1	Pilot Mode.
2	Current Locked Heading.
3	**STANDBY** — Disengages the autopilot and return to manual vessel control.
4	**Auto**—Engages the autopilot.
5	Turn angle — The turn angle is only available for SPX autopilots connected using SeaTalk^{ng}. This indicates the direction and severity of turns to be made under autopilot.
6	**Track** — Engages the autopilot in Track mode and automatically steers your vessel along a route plotted on your chartplotter.
7	**Dismiss** — Dismisses the Pilot Control dialog.
8	Distance to next waypoint.
9	Bearing to next waypoint.
10	Next waypoint name.

Note: The **Pilot Control** dialog will close if no action is taken for 10 seconds.

The Pilot Control dialog is displayed in the following situations:

- When you select **Menu > Navigate > Goto Waypoint** , **Goto Cursor** or **Follow Route** option in the chart application.
- When you select **Goto Waypoint** or **Goto Cursor** using the chart context menu.
- When you place the cursor over an active route or waypoint on the chart and select **Stop Goto**, **Stop Follow** or **Advance Waypoint** from the context menu.
- When you are following a route or going to a waypoint or cursor position, and select **Menu > Navigate > Stop Goto**, **Stop Follow**, or **Advance Waypoint**.
- When you arrive at a target waypoint.

Note:

When arriving at a waypoint, the dialog title bar turns red to indicate waypoint arrival.

Enabling the autopilot control function

From the homescreen:
1. Select **Set-up**.
2. Select **System Settings**.

3. Select **Autopilot Control** so that On is highlighted.
   Selecting Autopilot Control will switch the control between On and Off.

Disengaging the autopilot using the shortcuts menu

On multifunction displays which do not have a dedicated pilot button (i.e. a65, a67, e7 and e7D) you can disengage the autopilot from the Shortcuts menu.

With the autopilot engaged:
1. Press and release the **POWER** button.
2. Select **Disengage Pilot**.

The autopilot is disengaged, and put into standby mode.

Disengaging the autopilot using the pilot button

On multifunction displays which have a dedicated pilot button (i.e. New c Series and New e Series displays, excluding the e7 and e7D) you can disengage the autopilot using the dedicated Pilot button.

With the autopilot engaged:
1. Press the **Pilot** button.

The autopilot is disengaged, and put into standby mode.

Disengaging the autopilot from the chart application

On all multifunction display variants the autopilot can be disengaged from the chart application's menu.

In the chart application with the autopilot engaged:
1. Select **Menu > Navigate > Stop Goto** or **Stop Follow**.
   The Pilot Control dialog is displayed.
2. Select **STANDBY**.
   The autopilot is disengaged, and put in standby mode.

Engaging the autopilot using the shortcuts menu

On multifunction displays which do not have a dedicated pilot button (i.e. a65, a67, e7 and e7D) you can engage the autopilot from the Shortcuts menu.

With the autopilot engaged:
1. Press and release the **POWER** button.
2. Select **Engage Pilot**.

The autopilot is engaged.

Engaging the autopilot using the pilot button

On multifunction displays which have a dedicated pilot button (i.e. New c Series and New e Series displays, excluding the e7 and e7D) you can engage the autopilot using the dedicated Pilot button.

With the autopilot disengaged:
1. Press the **Pilot** button.
   The pilot control dialog is displayed.
2. Select **Engage Pilot**.

Note: You can also automatically engage the autopilot by pressing and holding the **Pilot** button.

Engaging the autopilot from the chart application menu

In the chart application:
1. Select **Menu > Navigate > Goto Cursor**, **Goto Waypoint**, or **Follow Route** as appropriate.
   The Pilot Control dialog is displayed.
2. Select **Engage Pilot**.
   A confirmation pop-up message is displayed.
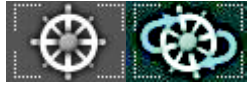3. Select **Yes** to confirm and engage the autopilot, or
4. Select **No** to leave the autopilot in the current state.

Engaging the autopilot using the context menu

From the chart application context menu::

1. Select any of the following options from the Chart context menu:

    - **Goto Waypoint**

    - **Goto Cursor**

    - **Follow Route**

    - **Follow from Here**

    - **Follow Route in Reverse**

    The pilot control dialog is displayed.

2. Select **Yes (Track)**.

    A confirmation pop-up message is displayed.

3. Select **Yes** to confirm and engage the autopilot.

Manually displaying the pilot control dialog box

You can also open the Pilot Control dialog at any time from the homescreen or chart application.

1. From the homescreen:
    i.   Select **Set-up**.
    ii. Select **Pilot Controls**.
2. From the chart application:
    i.   Select **Menu**.
    ii. Select **Navigate**.
    iii. Select **Pilots Controls**.

9.2 Autopilot status symbols

The autopilot status is indicated in the databar.

Symbol	Description
	Autopilot is in Standby mode.
	Autopilot is in Track mode.
	Autopilot is in Auto mode.
	No autopilot detected.
	Autopilot alarm active.
	Dodge mode is active.
	Fish mode is active.
	Autopilot calibration.
	Power steering active.
	Wind Vane mode is active.

9.3 Autopilot alarms

The autopilot function provides alarms to alert you to situations that require action.

Your multifunction display shows autopilot alarms, regardless of whether there is active navigation on the system. If autopilot control is enabled, and an alarm is raised by the autopilot, the multifunction display provides an audible alarm sound (providing that the alarm has not already been silenced). The **Pilot Control** dialog is displayed, indicating a new alarm. Additionally, the autopilot status icon is displayed in red, and remains red until the alarm is cleared.

Silencing autopilot alarms

1. Select **Dismiss**.

   The alarm is silenced and the autopilot remains engaged in auto mode, continuing on the current locked heading.
2. Select **Auto**.

   The alarm is silenced and the autopilot remains engaged in auto mode, continuing on the current locked heading.
3. Select **Track**.

   The alarm is silenced and the autopilot 'tracks' to the next waypoint.

Silencing autopilot alarms and disengaging autopilot

1. Select **STANDBY**.

The alarm is silenced, and the autopilot is disengaged and put in standby mode.