



DRAGONFLY® 6 / DRAGONFLY® 7

CHARTPLOTTERS

Installation & Operation Instructions

English (en-US)

Date: 02-2016

Document number: 81345 (Rev 5)

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Document and software changes

The following tables describe the main changes that have been made since the last release of both the product software and this document.

- Applicable software version: Dragonfly® LightHouse™ II — Release 12
- Applicable documents: 81345–5
- Applicable products: Dragonfly 6 / Dragonfly 7

New features

Description	Applicable application	Applicable chapter(s) or section(s)
Added support for Dragonfly-7 Pro	N/A	N/A
Superior downrigger sonar performance.	Sonar / DownVision	N/A
Improved bottom tracking capabilities.	Sonar / DownVision	N/A

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Software updates

Important: Check the Raymarine website for the latest software releases for your product.

www.raymarine.com/software

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.

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CHAPTER 1: IMPORTANT INFORMATION



Warning: Product installation and operation

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



Warning: Ensure safe navigation

This product is intended only as an aid to navigation and must never be used in preference to sound navigational judgment. 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.



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: 12 Volt dc only

This product must only be connected to a 12 volt dc power source.



Warning: High voltages

This product may contain high voltages. Do NOT remove any covers or otherwise attempt to access internal components, unless specifically instructed in the documentation provided.



Warning: Power supply voltage

Connecting this product to a voltage supply greater than the specified maximum rating may cause permanent damage to the unit. Refer to the *Technical specification* section for voltage rating.



Warning: Product grounding

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



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.

Caution: Service and maintenance

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

Caution: Transducer cable

- Do NOT cut, shorten, or splice the transducer cable.
- Do NOT remove the connector.

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

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:

- DO NOT save data or files to a card containing cartography as the charts may be overwritten.
- Ensure that chart and memory cards are fitted the correct way around. DO NOT try to force a card into position.
- DO NOT use a metallic instrument such as a screwdriver or pliers to insert or remove a chart or memory card.

Caution: Ensure card reader door is securely closed

To prevent water ingress and consequent damage to the product, ensure that the card reader door is firmly closed.

Caution: Product cleaning

When cleaning products:

- If your product includes a display screen, do NOT wipe the 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 stated IPX standard (refer to the product's *Technical Specification*), 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.

Memory cards and chart cards

MicroSD memory cards can be used to back up / archive data (e.g. Waypoint, and Tracks). Once data is backed up to a memory card old data can be deleted from the system, creating capacity for new data. The archived data can be retrieved at any time. Chart cards provide additional or upgraded cartography.

It is recommended that your data is backed up to a memory card on a regular basis. Do NOT save data to a memory card containing cartography.

Compatible cards

The following types of MicroSD cards are compatible with your display:

- Micro Secure Digital Standard-Capacity (MicroSDSC)
- Micro Secure Digital High-Capacity (MicroSDHC)

Note:

- The maximum supported memory card capacity is 32 GB.
- MicroSD cards must be formatted to use either the FAT or FAT 32 file system format to enable use with your MFD.

Speed class rating

For best performance it is recommended that you use Class 10 or UHS (Ultra High Speed) class memory cards.

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 memory card reader.

Use branded chart cards and memory cards

When archiving data or creating an electronic chart card, 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.

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

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

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

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

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 website www.raymarine.com and on the accompanying documentation CD if supplied.

Declaration of conformity

Raymarine UK Ltd. declares that this product is compliant with the essential requirements of EMC directive 2004/108/EC. The original Declaration of Conformity certificate may be viewed on the relevant product page at www.raymarine.com.

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 allowed (refer to the product *technical specification* for details), please contact your local Raymarine service center for further advice.

Warranty policy

Your product is warranted to be free from defects in materials and workmanship for a period of 1 year from the date of first purchase of the product or, if installed on a new boat, the date of first boat delivery to the Original Customer (please retain proof of purchase in case you need to claim).

The full details of the Limited Warranty Policy and registration process are available online at: www.raymarine.com/warranty-dragonfly.

If you do not have access to the Internet, please phone the relevant number below to obtain warranty policy information:

In the USA:

- Tel: +1 603 324 7900
- Toll Free: +1 800 539 5539

In the UK, Europe, the Middle East, or Far East:

- Tel: +44 (0)13 2924 6777

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.

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.

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: DOCUMENT AND PRODUCT INFORMATION

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- [2.1 Document information — page 16](#)
- [2.2 Product overview — page 18](#)

2.1 Document information

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

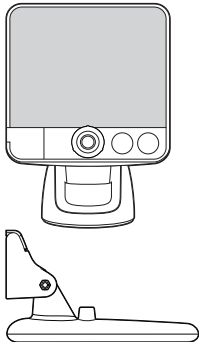
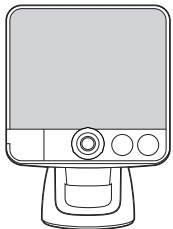
The document includes information to help you:

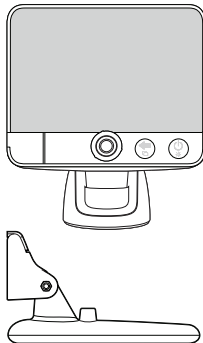
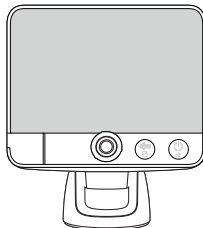
- plan your installation and ensure you have all the necessary equipment;
- install and connect your product as part of a wider system of connected marine electronics;
- troubleshoot problems and obtain technical support if required.

This and other Raymarine product documents are available to download in PDF format from www.raymarine.com.

Applicable products

This document is applicable to the following products:

	Part number	Description
	E70085	Dragonfly® 6 • 5.7 inch display • CPT-60 DownVision™ transom mount transducer
	E70226	Dragonfly®6 • 5.7 inch display

	Part number	Description
	E70231	Dragonfly®7 • 7 inch display • CPT-60 DownVision™ transom mount transducer
	E70230	Dragonfly®7 • 7 inch display

Software revision

Product software is updated regularly to add new features and improve existing functionality.

	This handbook covers Dragonfly® software version: LightHouse™ II Release 12. Please refer to the <i>Software Releases</i> section for details on software releases. Check the Raymarine website to ensure you have the latest software and user manuals. www.raymarine.com.
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Product documentation

The following documentation is applicable to your product:

Description	Part number
Dragonfly®6 mounting and getting started guide Installation and “Quick start guide” for the Dragonfly®6 display and CPT-60 transom mount transducer	88015
Dragonfly®7 mounting and getting started guide Installation and “Quick start guide” for the Dragonfly®7 display and CPT-60 transom mount transducer	88034
Dragonfly® installation and operation instructions Installation and operational instructions for the Dragonfly®6 and Dragonfly®7 displays and CPT-60 transom mount transducer	81345
Dragonfly®6 surface mounting template Dragonfly®6 display surface mount adaptor cut out template	87175
Dragonfly®7 surface mounting template Dragonfly®7 display surface mount adaptor cut out template	87210
CPT-60 Transom mount transducer mounting template CPT-60 transducer cut out template	87185
DownVision™ Thru-hull transducers CPT-70 / CPT-80 / CPT-110 / CPT-120 Installation instructions Installation of Dragonfly® DownVision™ Thru-Hull transducers CPT-70 and CPT-80.	87201

Document conventions

The following conventions are used throughout this handbook.

Select

The term ‘Select’ is used to describe the action of using the product’s directional controls to highlight an item and then pressing the *[OK]* button to confirm the selection.

Directional controls

The term ‘Directional controls’ is used to describe the *[Up]*, *[Down]*, *[Left]* and *[Right]* controls.

Document illustrations

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

All images are provided for illustration purposes only.

User manuals Print Shop

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

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

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

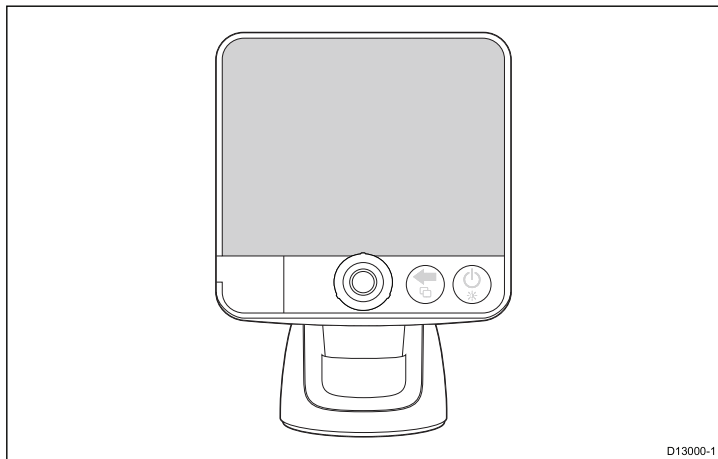
For further information about the Print Shop, please visit the Print Shop FAQ pages: <http://www.raymarine.co.uk/view/?id=5751>.

Note:

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

2.2 Product overview

The unit connects directly to a Raymarine® DownVision™ transducer and a vessel's power supply.



Dragonfly® multifunction displays are standalone Fishfinder and Chartplotter combo displays.

The product includes the following features:

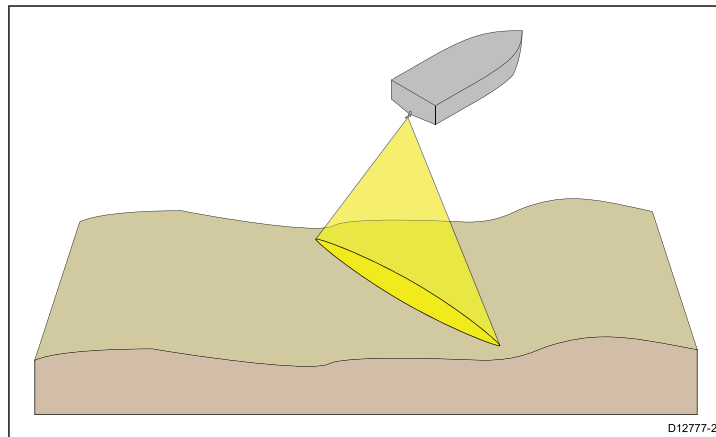
- Internal GPS receiver.
- Internal 2 Channel CHIRP sonar module:

- DownVision™ — ultra high resolution channel providing photo like clarity.
- CHIRP Sonar — high resolution fish targeting channel.
- Raymarine's LightHouse user interface.
- Tilt and swivel quick release base with optional locking core.
- Surface mountable using the optional surface mount adaptor kit.

CHIRP DownVision™ overview

DownVision™ produces a wide-angle side-to-side beam and a thin fore-to-aft beam. The coverage of the DownVision™ beam is a water column directly beneath and to the sides of the vessel.

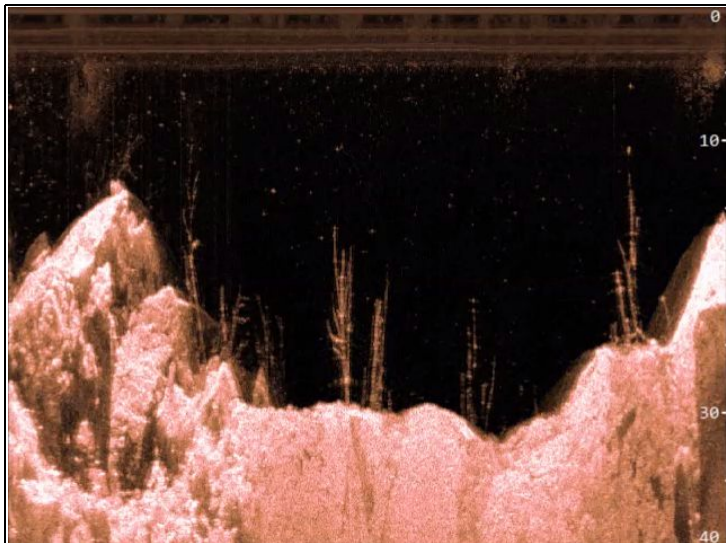
DownVision™ beam



DownVision™ is effective at lower vessel speeds. In deeper waters the CHIRP bandwidth is automatically optimized to improve bottom lock and the detection of moving objects (e.g. fish) in the wider water column.

The wide, thin beam produces clear target returns. The use of CHIRP processing and a higher operating frequency provide a more detailed image, making it easier to identify bottom structures around which fish may reside.

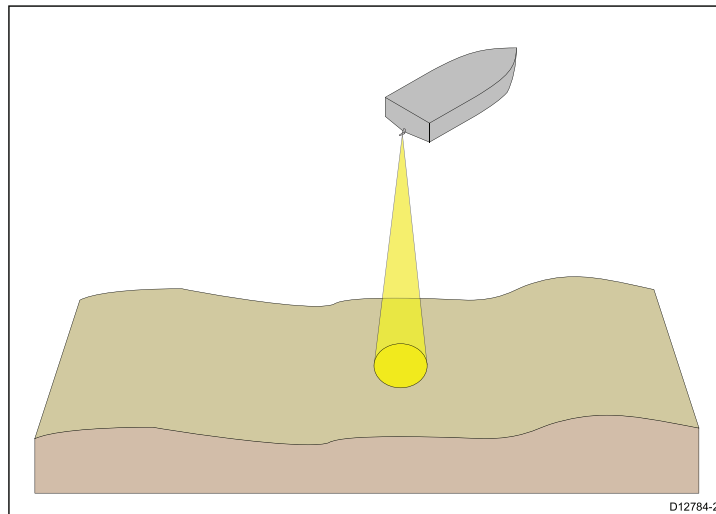
CHIRP DownVision™ screen example



CHIRP Sonar overview

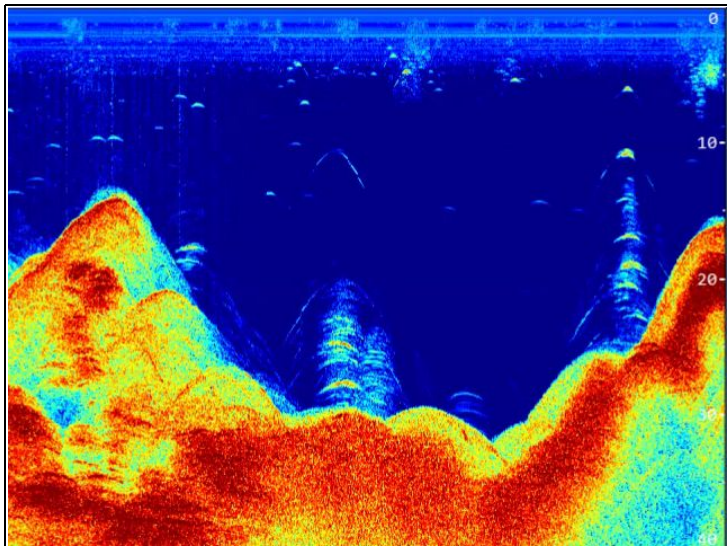
CHIRP sonar produces a conical shaped beam, the coverage of the conical beam is the water column directly beneath the vessel

Conical beam



Sonar is effective at a range of speeds. In deeper waters the CHIRP bandwidth is automatically optimized to improve bottom lock and the detection of moving objects (e.g. fish) in the wider water column.

CHIRP sonar screen example



CHAPTER 3: PLANNING THE INSTALLATION

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3.1 Installation checklist

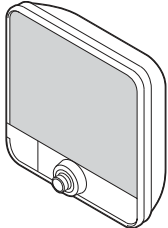
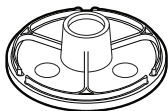
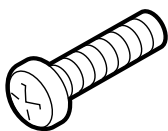
Installation includes the following activities:

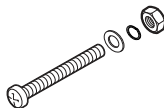
Installation Task	
1	Plan your system.
2	Obtain all required equipment and tools.
3	Site all equipment.
4	Route all cables.
5	Drill cable and mounting holes.
6	Make all connections into equipment.
7	Secure all equipment in place.
8	Power on and test the system.

3.2 Parts supplied

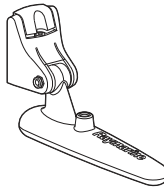
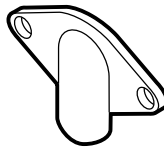
The parts supplied with your product are shown below.

Supplied with: E70085, E70226, E70230 and E70231

Item	Description	Qty
	Display	1
	Display cradle.	1
	Display cradle base	1
	Cradle securing bolt	1

Item	Description	Qty
	Cradle mounting fixings	3
	Documentation pack	1

Supplied with: E70085 and E70231

Item	Description	Qty
	CPT-60 DownVision™ transom mount transducer (including fitted 6 m (19.7 ft.) transducer cable and 2 m (6.6 ft.) power cable – not shown.)	1
	Escutcheon (for through transom cable installation.)	1
	Escutcheon mounting screws	2
	Transducer bracket mounting screws	3
	P-clips and screws	3

3.3 DownVision™ transducer compatibility

Transducer	Description	Compatible displays
CPT-DV (R70373)	Single beam DownVision™ transducer (3 keyway connector)	• DV • Wi-Fish™
CPT-DVS (R70374)	Dual beam DownVision™ and Sonar transducer (3 keyway connector)	• DVS • Pro • Updated Dragonfly 6 • Updated Dragonfly 7 • * Legacy Dragonfly 6 • * Legacy Dragonfly 7

Transducer	Description	Compatible displays
• Updated CPT-60 (A80195) • Updated CPT-70 (A80278) • Updated CPT-80 (A80279)	Dual beam DownVision™ and Sonar transducer (3 keyway connector)	• DVS • Pro • Updated Dragonfly 6 • Updated Dragonfly 7 • * Legacy Dragonfly 6 • * Legacy Dragonfly 7
• Legacy CPT-60 (A80195) • Legacy CPT-70 (A80278) • Legacy CPT-80 (A80279)	Dual beam DownVision™ and Sonar transducer (1 keyway connector)	• Legacy Dragonfly 6 • Legacy Dragonfly 7 • * DVS • * Pro

Note: * Adaptor cable required for connection.

Note:

- Connecting a CPT-DV to a DVS or a Pro will prevent the Sonar application from functioning.
- Connecting a CPT-DVS to a DV or a or Wi-Fish™ will not enable the Sonar application.
- The M cannot be connected to a transducer.

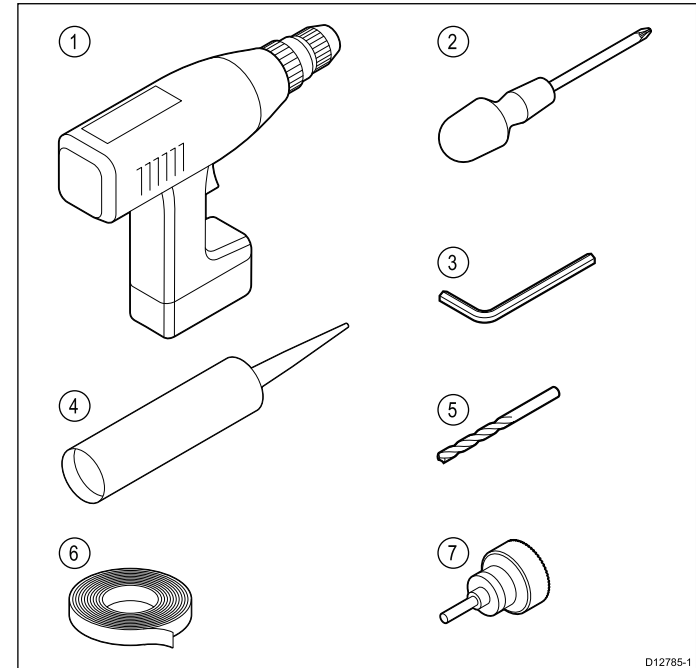
Legacy and updated products

Dragonfly 6, Dragonfly 7 displays and CPT-60 / CPT-70 / CPT-80 transducer designs have been modified to include the improved 3 keyway connectors.

The table below identifies the effective manufacturing date for the improved keyway connectors.

Product	3 keyway introduction date	3 keyway introduction serial number
Dragonfly 6 (E70085)	January 2015	E700850150001
Dragonfly 7 (E70231)	November 2014	E702311140712
CPT-60 (A80195)	December 2014	A801951240023
CPT-70 (A80278)	January 2015	A802780150001
CPT-80 (A80279)	January 2015	A802790150001

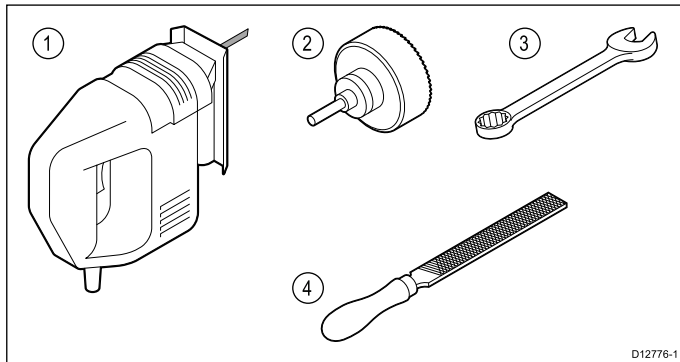
3.4 Tools required for installation



1. Power drill.
2. Pozidrive screwdriver.
3. 3 mm (5/32) Allen key.
4. Marine grade sealant.
5. Suitable sized drill bit.
6. Adhesive tape.
7. 18 mm (23/32") Hole saw (only required if you are routing the cable through the transom).

Additional tools required

When surface mounting the display the following additional tools are required.



1. Jigsaw.
2. 32 mm (1 1/4") hole saw.
3. 7 mm (9/32") spanner.
4. File.

3.5 Software updates

The software running on the product can be updated.

- Raymarine periodically releases software updates to improve product performance and add new features.
- You can update the software for your product using a connected and compatible multifunction display.
- Refer to www.raymarine.com/software/ for the latest software updates and the software update procedure for your product.
- If in doubt as to the correct procedure for updating your product software, refer to your dealer or Raymarine technical support.

Caution: Installing software updates

The software update process is carried out at your own risk. Before initiating the update process ensure you have backed up any important files.

Ensure that the unit has a reliable power supply and that the update process is not interrupted.

Damage caused by incomplete updates are not covered by Raymarine warranty.

By downloading the software update package, you agree to these terms.

3.6 Warnings and cautions

Important: Before proceeding, ensure that you have read and understood the warnings and cautions provided in the [Chapter 1 Important information](#) section of this document.

3.7 Selecting a location for the transducer

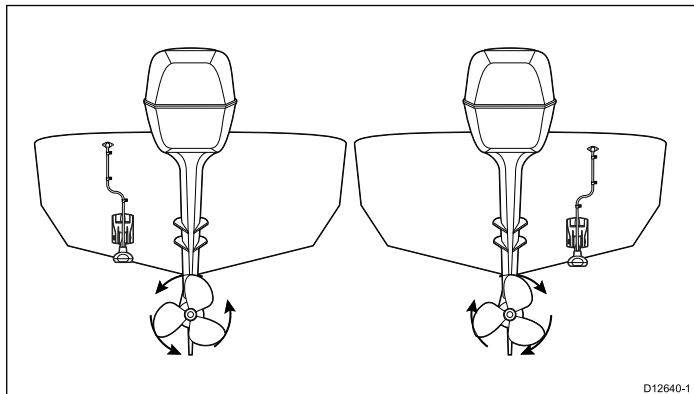
This product is supplied with a transom mount transducer. The guidelines below should be followed when selecting a location for the transducer.

Note: The transducer is not suitable for mounting on vessels where the transom is aft of the propeller(s).

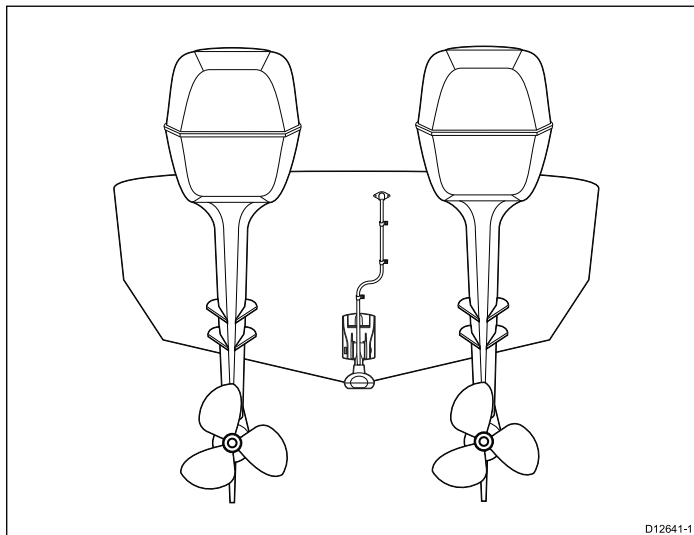
For best performance the transducer must be installed in a location with the least turbulence and aeration. The most effective way to determine this is by checking the water flow around the transom whilst underway.

- The transducer should be mounted close to the keel (centreline) of the vessel, so that the transducer remains fully submerged when the vessel is turning.

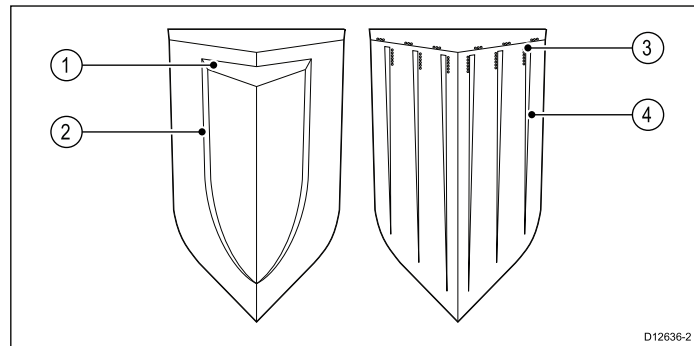
- The transducer must be mounted a suitable distance from the propeller(s) to avoid wake.
- For clockwise rotating propellers the transducer should be mounted on the starboard side, for anti-clockwise rotating propellers the transducer should be mounted on the port side.



- On a twin engine vessel the transducer should be mounted between the engines.

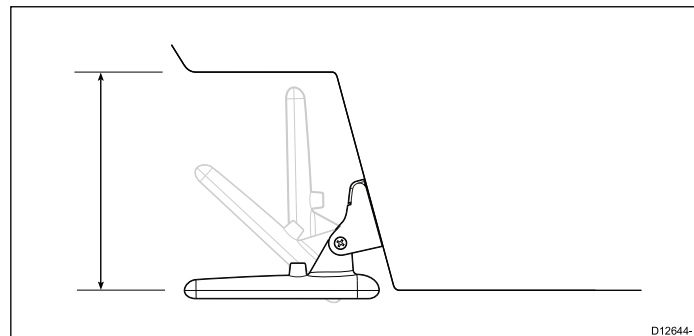


- Turbulence can also be caused by a number of other factors such as steps, ribs, strakes, and rows of rivets. The turbulence appears aft of these locations.



1	Step
2	Rib
3	Row of rivets
4	Strake

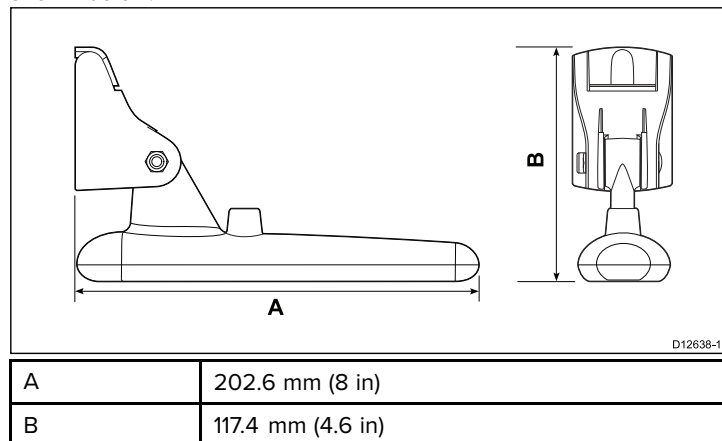
- Air trapped under the front of the vessel can travel under the hull and appear as aeration aft.
- If installing on the step of a stepped transom, allow sufficient room above the transducer for transducer kick-up.



Note: Optimum transducer location will vary depending on vessel type. Optimum transducer height and angle should be obtained by testing the transducer with the vessel in the water before locking the transducer's position.

Transducer dimensions

The transducer's dimensions including the mounting bracket are shown below.



3.8 Cable routing

Cable routing requirements for the transducer cable.

Important: To avoid interference, the cable must be routed as far away from VHF radio antenna cables as possible.

- The cable can be routed through or over the transom.
- Check that the cable is long enough to reach the equipment that it will be connected to. An optional 4m (13.1ft) extension cable is available if required.
- Ensure there is enough slack in the transducer cable, at the transducer end, to allow the transducer to pivot up and down.
- Secure the cable at regular intervals using the supplied cable clips.
- Fill all transom mounting holes with marine-grade neutral cure polyurethane sealant prior to tightening securing screws.

- Fill the transom cable hole with marine-grade neutral cure polyurethane sealant after routing the cable (if routing through the transom).
- Use the supplied escutcheon to cover over the transom cable hole (if routing through the transom).
- Any excess cable can be coiled up at a convenient location.

Note: Do NOT use sealants containing acetate or silicone, which can cause damage to plastic parts.

3.9 Selecting a location for the display

General location requirements

When selecting a location for the unit it is important to consider a number of factors.

Ventilation requirements

To provide adequate airflow:

- Ensure that equipment is mounted in a compartment of suitable size.
- Ensure that ventilation holes are not obstructed.
- Ensure adequate separation of equipment.

Mounting surface requirements

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

Cable routing requirements

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

- Minimum cable bend radius of 100 mm (3.94 in) is required unless otherwise stated.
- Use cable supports to prevent stress on connectors.

Electrical interference

Select a location that is far enough away from devices that may cause interference, such as motors, generators and radio transmitters/receivers.

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: It is recommended that the display is mounted above decks as this provides optimal GPS performance.
- Below Decks mounting: GPS performance may be less effective when mounted below decks.

Vessel construction

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

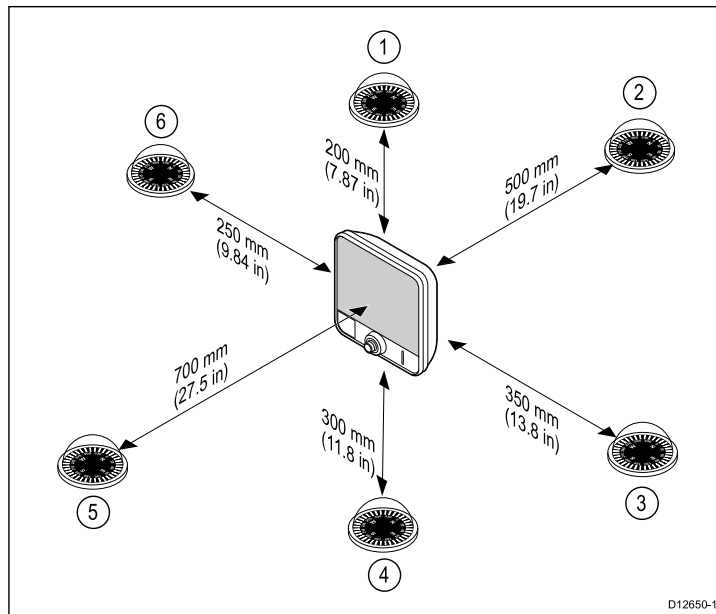
Prevailing conditions

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

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 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.

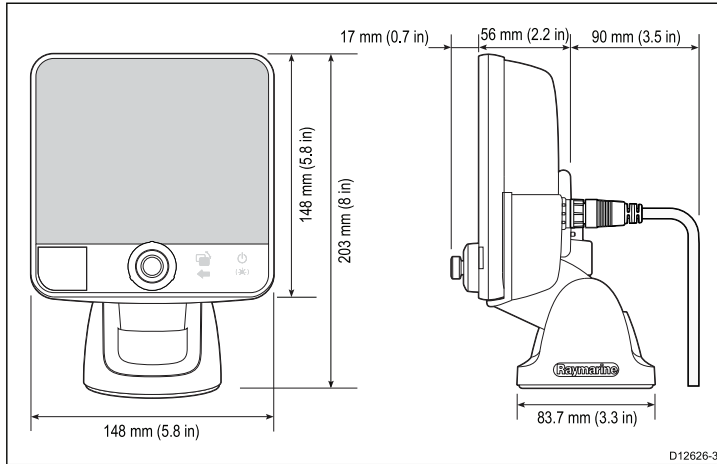


Item	Compass position in relation to display	Minimum safe distance from display
1	Top	200 mm (7.87 in.)
2	Rear	500 mm (19.7 in.)
3	Right-hand side	350 mm (13.8 in.)
4	Underside	300 mm (11.8 in.)
5	Front	700 mm (27.5 in.)
6	Left-hand side	250 mm (9.84 in.)

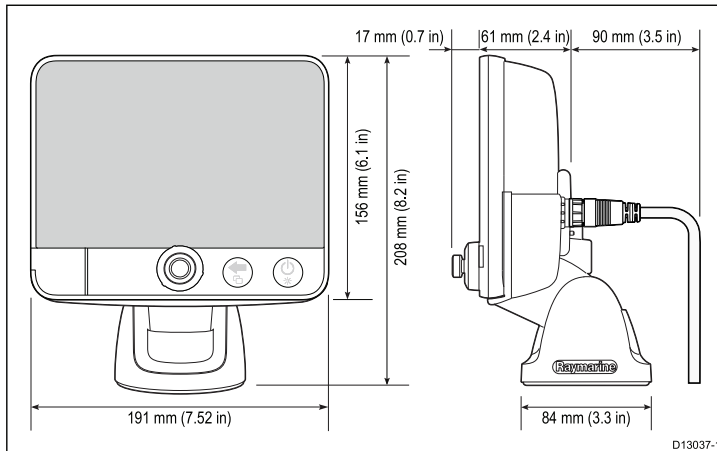
Viewing angle considerations

As display contrast and color are affected by the viewing angle, if you intend to surface mount the display, it is recommended that you temporarily power up the display when planning the installation, to enable you to identify which location gives the optimum viewing angle.

5.7 inch display product dimensions

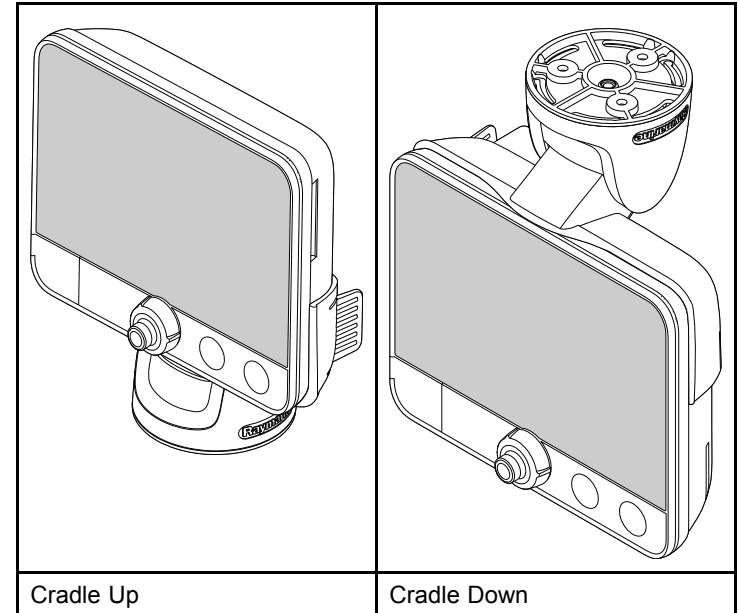


7 inch product dimensions



7 inch display cradle orientation

The 7 inch display can be mounted in 'cradle up' or 'cradle down' orientation.



The cradle mounting steps are the same regardless of orientation.

3.10 Installation process

The steps listed below are required to successfully install your product and ensure optimum performance.

1. Mounting the transducer.
2. Mounting the display.
3. Testing the transducer.
4. Finishing the transducer mounting.

CHAPTER 4: MOUNTING

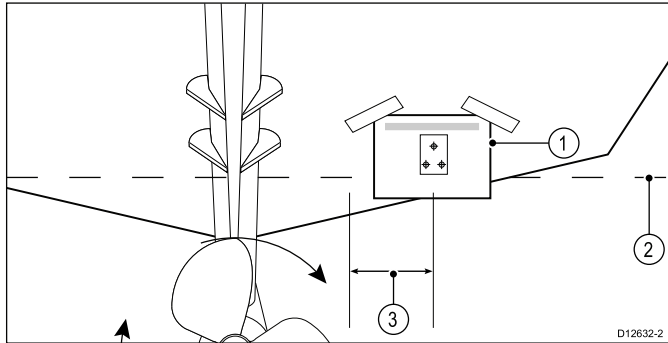
CHAPTER CONTENTS

- 4.1 Mounting the transducer — page 32
- 4.2 Cradle mounting — page 34
- 4.3 Fitting the display in the cradle — page 35
- 4.4 Fitting the 7 inch display in the cradle — Cradle down — page 35
- 4.5 Security — page 37
- 4.6 Removing the display from the bracket — page 38
- 4.7 Surface mounting — page 38
- 4.8 Testing the transducer — page 39
- 4.9 Finishing the transducer mounting — page 40

4.1 Mounting the transducer

The transducer must be mounted on the transom using the mounting bracket provided. The steps below describe the initial mounting steps required in order to test your transducers performance. After testing the transducer you must finish the mounting following the instructions in the *Finishing the transducer mounting* section.

1. Fix the transducer mounting template to the selected location, using masking or self-adhesive tape.



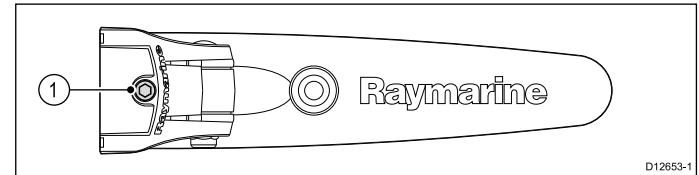
1	Transducer mounting template
2	Waterline
3	Mounting away from propeller

2. Ensure the template is parallel to the waterline.
3. Drill 2 x holes for the adjustment slot screws as indicated on the template.

Note: Do NOT drill the third mounting hole at this stage.

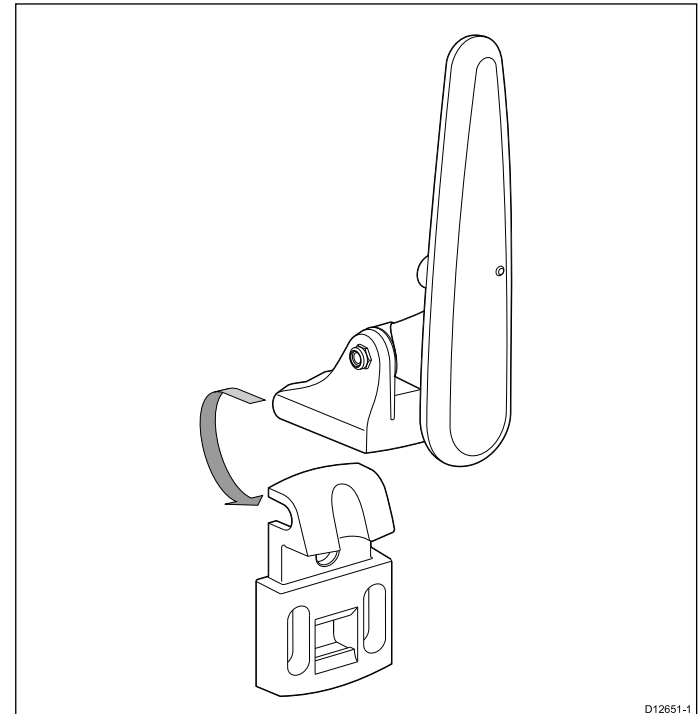
4. Fill the 2 holes with marine grade sealant.

5. The kick-up adjustment screw may need to be loosened to gain access to the mounting holes.

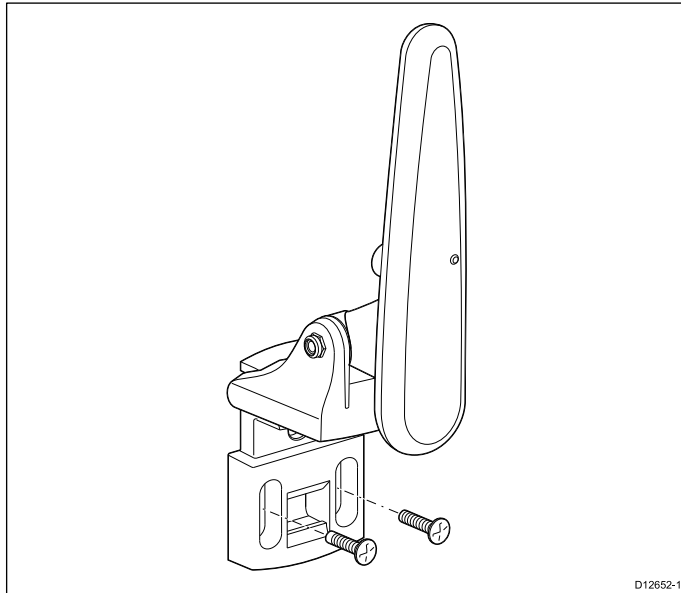


1	Kick-up adjustment screw
---	--------------------------

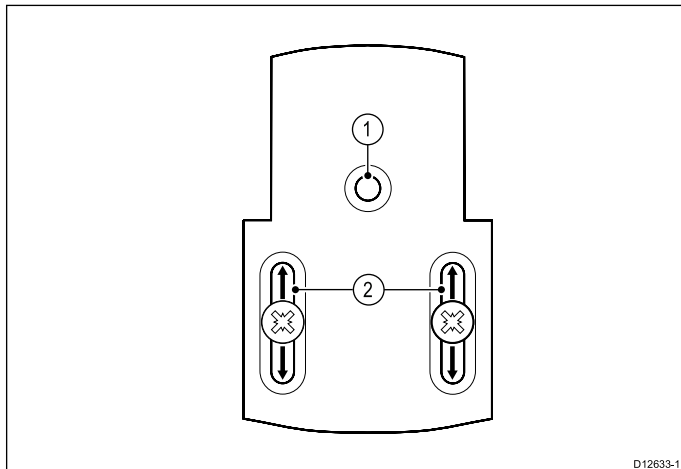
6. Ensure the transducer and bracket pivot arm are hooked over the mounting bracket back plate as shown below.



7. Lift up the transducer and pivot arm to access the mounting holes.

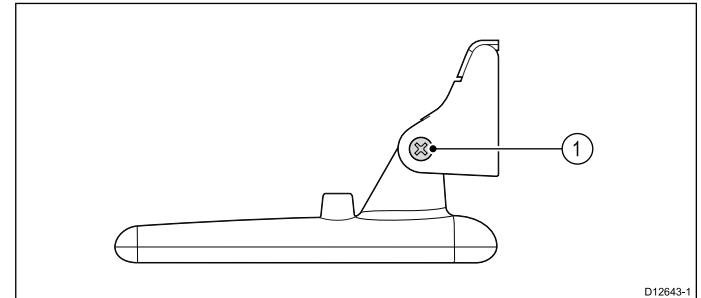


8. Using the screws provided, temporarily secure the mounting bracket using the adjustment slots on the back plate.



1	Locking hole
2	Adjustment slots

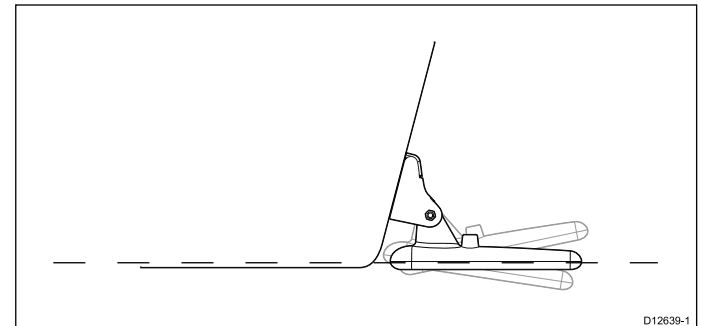
9. Push the transducer and pivot arm down until the bracket clicks into place.
10. Loosen the transducer pivot bolt approximately 3 turns to enable adjustment.



1	Pivot bolt location
---	---------------------

11. Adjust the angle of the transducer using the ratchet mechanism, one click at a time until the transducer face is parallel with the waterline.

The transducer position will be adjusted further during testing (see Testing the transducer).



12. Tighten the transducer pivot bolt.
13. Tighten the kick-up adjustment screw to achieve the desired kick-up force.

The kick-up force needs to be adequate to prevent the transducer from kicking-up during testing but also needs to be loose enough so that it can kick-up should the transducer be struck by an object when underway.

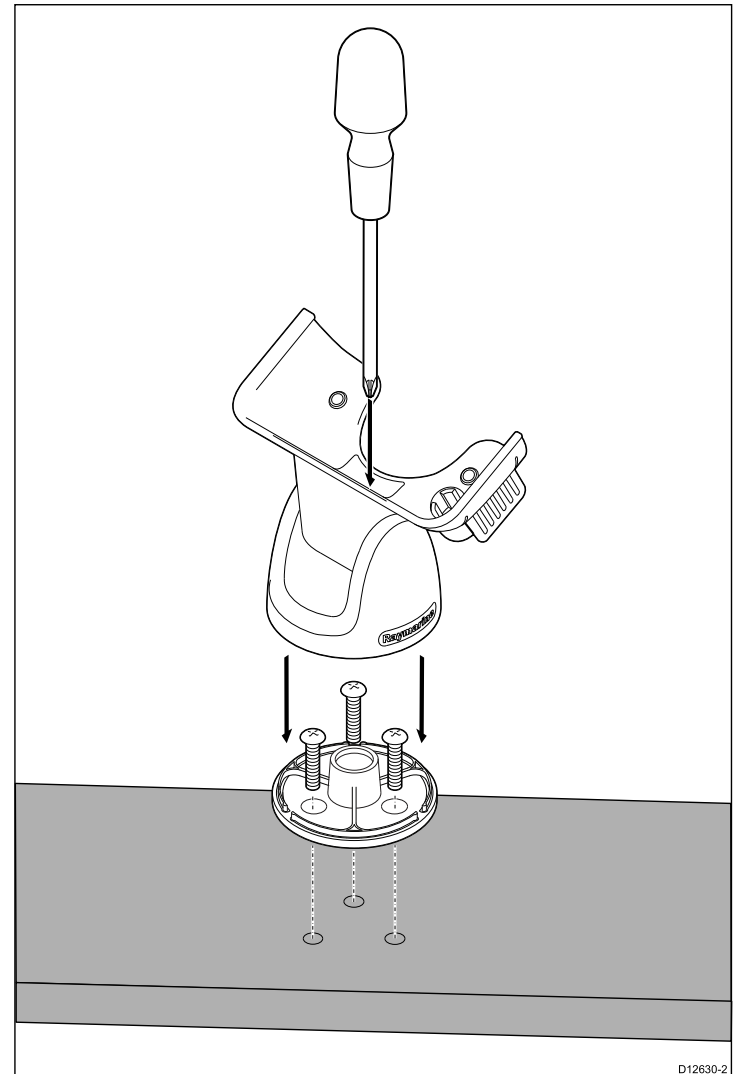
Note: The third locking screw is not used until the transducer has been successfully tested.

4.2 Cradle mounting

Follow the steps below to mount the display's cradle.

Before mounting ensure that you have:

- selected a suitable location.
- installed the transducer and routed the power/transducer cable to the selected display location.



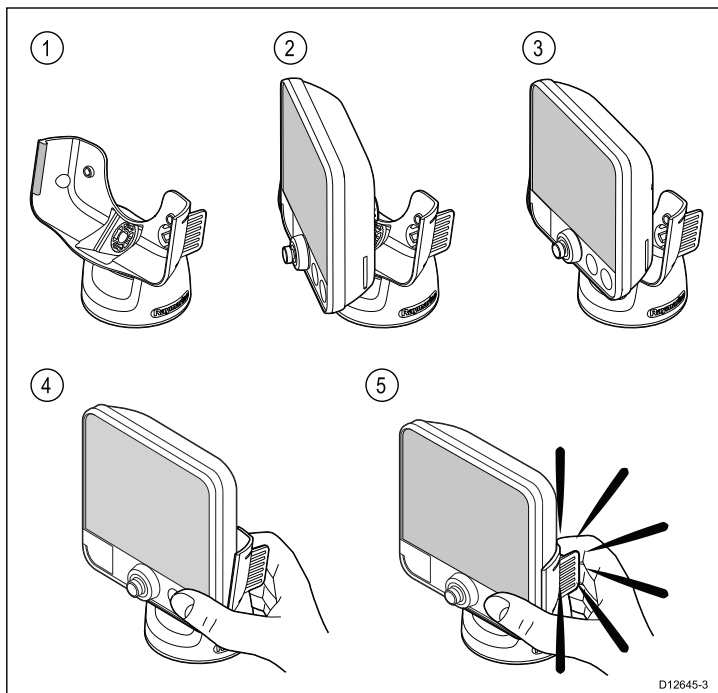
1. Mark the location of the cradle base's screw holes on the chosen mounting surface.

2. Drill holes for the screws using a suitable drill, ensuring there is nothing behind the surface that may be damaged.
3. Use the 3 screws supplied to attach the cradle base securely to the mounting surface.
4. Attach the display cradle to the base.
5. Tighten the centre screw to secure the display cradle to the base.

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

4.3 Fitting the display in the cradle

Follow the steps below to fit the display into the cradle.



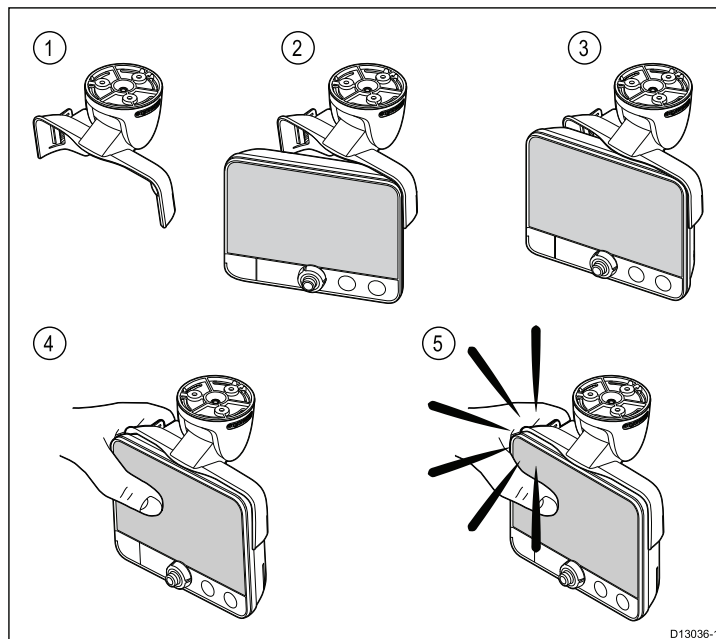
1. Ensure the cradle is securely mounted.

2. Position the display so that the guide on the left hand side of the display lines up with the guide on the left hand side of the cradle.
3. Pivot the display so that the guide on the right hand side of the display lines up with the guide on the right hand side of the cradle.
4. Place your thumb on the front of the display and your fingers behind the tab.
5. Push the display into the cradle until it clicks into place securely.

4.4 Fitting the 7 inch display in the cradle — Cradle down

Follow the steps below to fit the 7 inch display into the cradle in the cradle down orientation.

Note: When mounting the cradle in the cradle down orientation the display must still be fitted the correct way up.



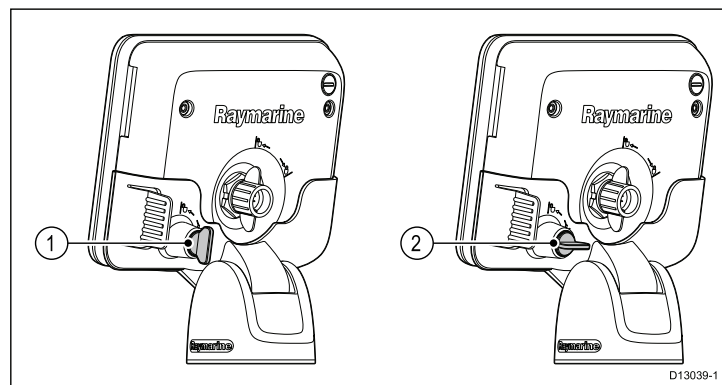
1. Ensure the cradle is securely mounted.

2. Position the display so that the guide on the right hand side of the display lines up with the guide on the right hand side of the cradle.
3. Pivot the display so that the guide on the left hand side of the display lines up with the guide on the left hand side of the cradle.
4. Place your thumb on the front of the display and your fingers behind the locking tab.
5. Push the display into the cradle until it clicks into place securely.

Engaging the safety latch

The cradle supplied with the 7 inch display includes a Safety Latch that should be used to help secure the display to the cradle.

Note: The Safety Latch **MUST** be used when mounting in the cradle down orientation, alternatively you can use a compatible third party security lock.



1. Safety Latch in unlocked position.
2. Safety Latch in locked position.

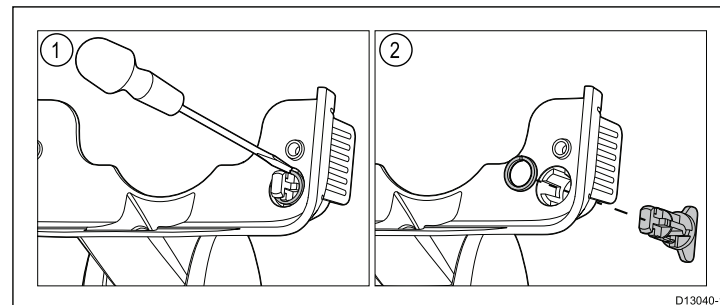
Follow the steps below to engage the safety latch:

1. Remove the blanking plug from the hole on the rear of the display that lines up with the cradle's safety latch.
2. Insert the blanking plug into the hole that will be left exposed.
3. Ensure the Safety Latch is in the unlocked position.
4. Fit the display to the cradle following the relevant procedure.

5. Push the Safety Latch in and turn clockwise to the locked position.

Removing the safety latch

If you want to use a third party security lock to secure the display to the cradle then the Safety Latch must be removed.



1. Releasing safety latch retaining ring.
2. Removing safety latch and retaining ring.

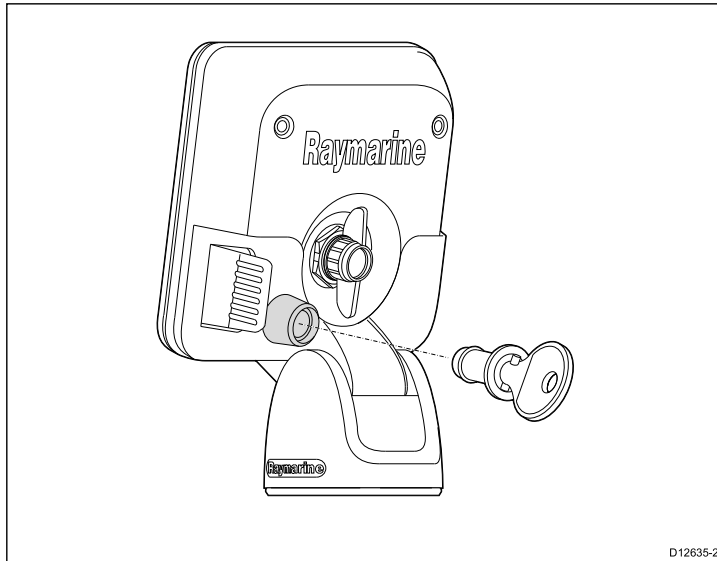
With the Safety Latch in the unlocked position:

1. Remove the display from the cradle.
2. Insert the end of a small flat blade screwdriver between the gap in the retaining ring.
3. Gently lever the retaining ring apart and over the safety latch.

The safety latch and retaining ring should be kept in case required for future use.

4.5 Security

The display can be locked into the bracket using a proprietary lock i.e. the Thule 544 lock (not supplied).



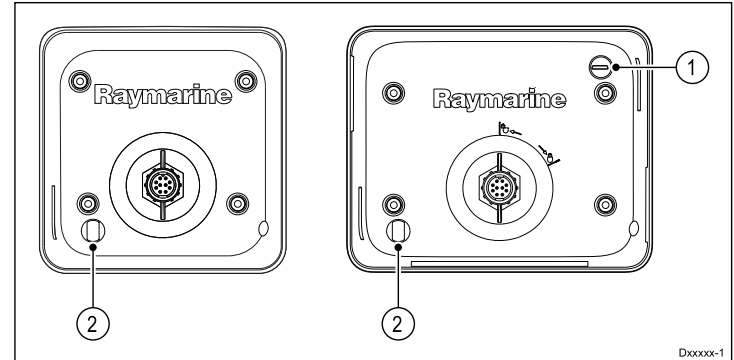
The Thule 544 lock is available from retail outlets.

Note:

- It is strongly recommended that the lock is adequately maintained to prevent the lock from corrosion and seizure.
- Raymarine does not guarantee the security of your display when using a lock.
- Raymarine will not be held liable for any damage caused to the display or cradle due to the use of a lock.

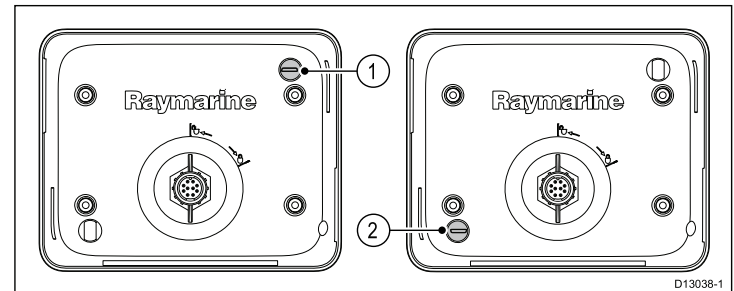
Locking hole location

If a lock is to be fitted to the display to secure it to the cradle then the blanking plug must be removed.



1. Cradle Down locking hole location.
2. Cradle Up locking hole location.

Depending on display variant the unit may be fitted in the cradle in the cradle down orientation. When mounting in the cradle down orientation, the blanking plug should be moved to cover the exposed hole as shown below.



1. Cradle Up position.
2. Cradle Down position.

Fitting the lock

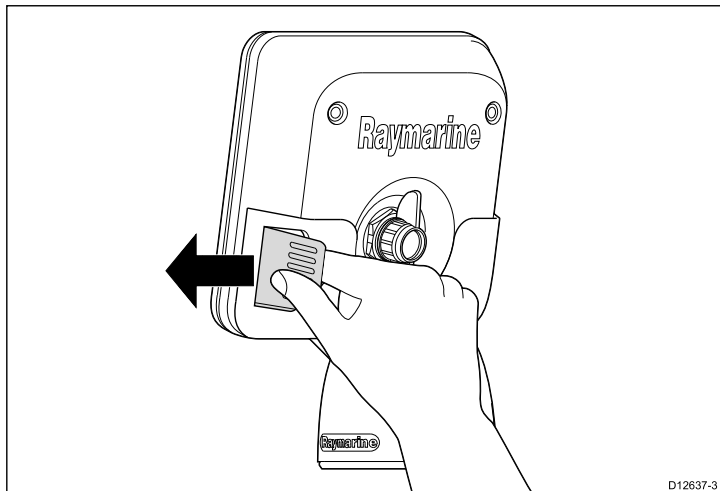
With the display mounted in the cradle:

1. Remove the plastic cap that covers the cradles locking hole.

2. For fitting follow the instructions supplied with the lock.

4.6 Removing the display from the bracket

The display can be easily removed from its mounting bracket.



1. If a lock has been fitted, ensure it is in the unlocked position.
2. Disconnect the cable from the back of the display.
3. Push the cradle release clip away from the display as shown.
When the display releases you will hear a click.
4. Remove the display from the cradle.

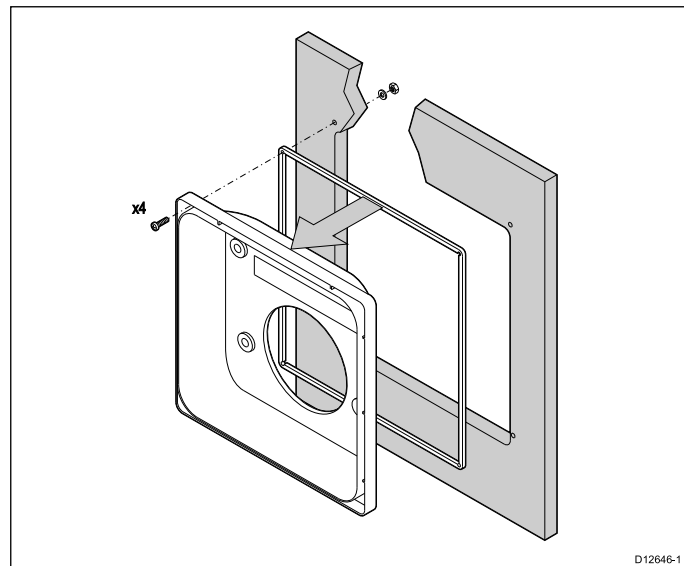
4.7 Surface mounting

The display can be surface mounted using the optional surface mounting kit.

Before mounting the unit ensure that you have:

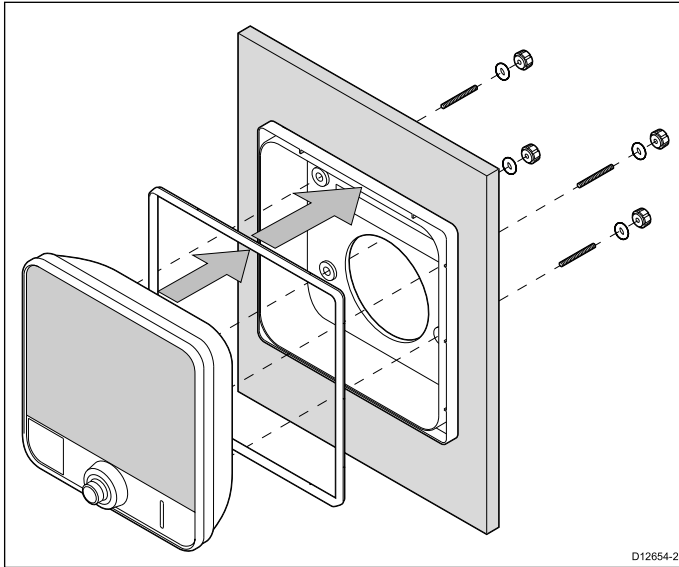
- selected a suitable location (a clear, flat area with suitable clearance behind the panel is required).
- installed the transducer and routed the power / transducer cable to the selected location.

1. Fix the surface mount adaptor template to the selected location, using masking or self-adhesive tape.
2. Using a suitable hole saw (the size is indicated on the template), make a hole in each corner of the cut-out area.
3. Using a suitable saw, cut along the inside edge of the cut-out line.
4. Ensure that the surface mount adaptor fits into the removed area and then file around the rough edge until smooth.
5. Drill 4 holes as indicated on the template to accept the surface mount adaptor's securing bolts.
6. Place the rear gasket onto the surface mount adaptor and press firmly onto the flange.
7. Place the surface mount adaptor into the prepared hole and secure using the nuts, washers, and bolts provided.



8. Attach the front gasket to the surface mount adaptor.
9. Place the display into the surface mount adaptor.
10. Secure the mounting studs to the rear of the display.
11. Place the O-rings over the mounting studs and position in the recess around the adaptors mounting holes.

12. Secure the display to the surface mount adaptor from the rear using the thumb nuts provided.



13. Connect the power / transducer cable to the display.

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.

4.8 Testing the transducer

Once the initial mounting procedures have been carried out, the transducer must be tested prior to finishing the mounting.

The testing should be carried out with your vessel in the water, with a depth greater than 0.7 m (2.3 ft) but less than the maximum depth limit of the system.

The Sonar application will be able to maintain readings at depths greater than the DownVision application.

Note: It may not always be possible to obtain depth readings at higher speeds due to air bubbles passing under the transducer.

1. Press and hold the *[Power]* button until a beep is heard.
2. Complete the Start-up wizard settings.
3. Use the View switcher to open a view which contains the Sonar or DownVision application.

If the unit is operating correctly the bottom should be visible on-screen and the depth reading displayed.
4. Start moving your vessel at a low speed and ensure the depth reading and bottom are shown and that you have a clear image on-screen.
5. Gradually increase the vessel speed up to your usual cruising speed, whilst checking the display if the image becomes poor, starts skipping or missing the bottom then the transducer needs to be adjusted.
6. Height and angle adjustments should be made in small increments, and re-tested each time until you obtain optimum performance.
7. To adjust the angle of the transducer loosen the pivot bolt approximately 3 turns and then pivot the transducer either up or down.
8. Re-tighten the pivot bolt before re-testing.
9. When you achieve optimum performance at the desired vessel speeds you can finish the transducer mounting.

Note: It may be necessary to make several adjustments to the transducer before obtaining optimum performance.

4.9 Finishing the transducer mounting

Once you have achieved optimum performance at the desired vessel speeds the transducer must be locked into position to finish the installation.

Note: If the transducer requires repositioning ensure all old holes are filled with marine grade sealant.

1. Loosen the kick-up adjustment screw.
2. Lift up the transducer and bracket pivot arm to gain access to the mounting holes.
3. Drill the locking hole location taking care not to damage the mounting bracket.
4. Fill the locking hole with marine grade sealant.
5. Secure the transducer and bracket by fully tightening all 3 mounting screws.
6. Push the transducer and pivot arm down until it clicks into position.
7. Re-tighten the kick-up adjustment screw to the desired level.

Note: The Kick-up adjustment screw needs to be tight enough to prevent kick-up during high speeds but loose enough to enable the kick-up feature to activate if an object hits the transducer when underway.

CHAPTER 5: CABLES AND CONNECTIONS

CHAPTER CONTENTS

- 5.1 General cabling guidance — page 42
- 5.2 Connections overview — page 42
- 5.3 Cable connection — page 44
- 5.4 Extension cable connection — page 47

5.1 General cabling guidance

Cable types and length

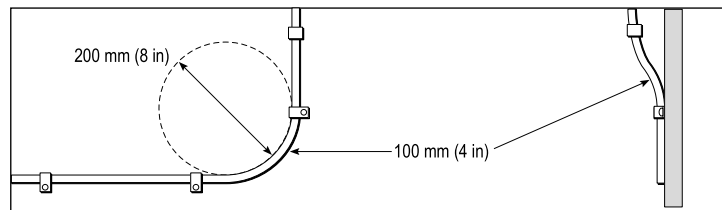
It is important to use cables of the appropriate type and length

- 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 100mm (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.

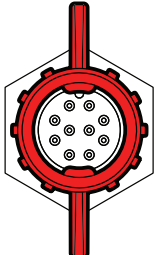
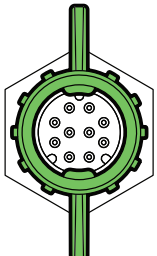
Cable shielding

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

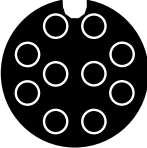
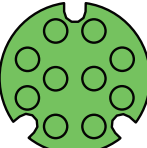
5.2 Connections overview

Depending on date of manufacture Dragonfly 6, Dragonfly 7 products and CPT-60, CPT-70 and CPT-80 transducers are available with 1 connector keyway guide (Legacy) or 3 connector keyway guides (Updated). Adaptor cables can be used to connect 1 keyway connectors to 3 keyway connectors.

Rear connector / Locking collar

Connector	Description	Unit / Display	Compatible transducer
	Red – 1 keyway	• Legacy Dragonfly 6 • Legacy Dragonfly 7	• Legacy CPT-60 • Legacy CPT-70 • Legacy CPT-80
	Green – 3 keyway	• Updated Dragonfly 6 • Updated Dragonfly 7	• Updated CPT-60 • Updated CPT-70 • Updated CPT-80 • CPT-DVS

Transducer cable connectors

Cable Connector	Description	Transducer	Compatible unit / display
	Black – 1 keyway	• Legacy CPT-60 • Legacy CPT-70 • Legacy CPT-80	• Legacy Dragonfly 6 • Legacy Dragonfly 7
	Green – 3 keyway	• Updated CPT-60 • Updated CPT-70 • Updated CPT-80 • CPT-DVS	• Updated Dragonfly 6 • Updated Dragonfly 7

Adaptor cables

Adaptor cables are available to enable connection of the older 1 keyway connectors to the new 3 keyway connectors.

Adaptor cable	Compatible transducer	Compatible display / unit
A80331 — CPT-DV / CPT-DVS (3 keyway) to Legacy Dragonfly 6 / Dragonfly 7 (1 keyway) adaptor cable	• Updated CPT-60 • Updated CPT-70 • Updated CPT-80 • CPT-DVS • CPT-DV	• Legacy Dragonfly 6 • Legacy Dragonfly 7
A80332 — Legacy (1 keyway) CPT-60 / CPT-70/ CPT-80 transducer to update Dragonfly 6 and Dragonfly 7 (3 keyway) adaptor cable	• Legacy CPT-60 • Legacy CPT-70 • Legacy CPT-80	• Updated Dragonfly-6 • Updated Dragonfly-7

Legacy and updated products

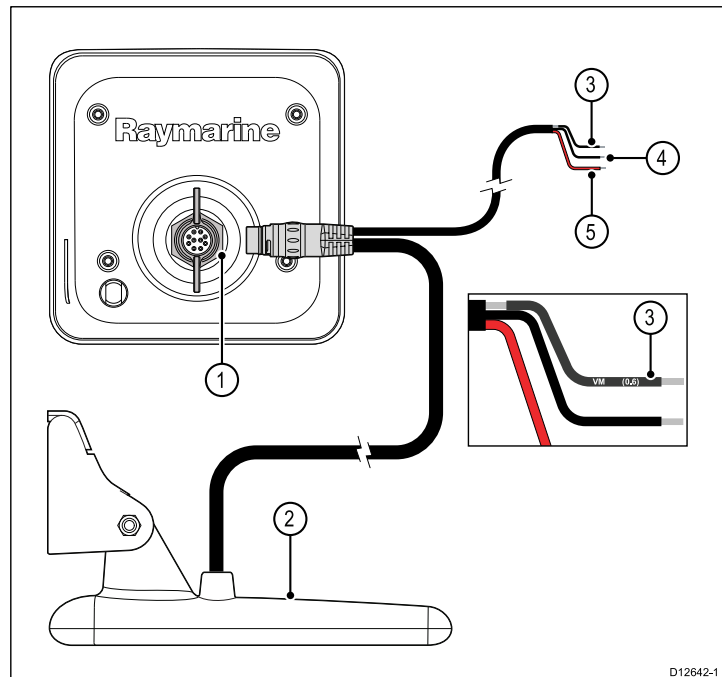
Dragonfly 6, Dragonfly 7 displays and CPT-60 / CPT-70 / CPT-80 transducer designs have been modified to include the improved 3 keyway connectors.

The table below identifies the effective manufacturing date for the improved keyway connectors.

Product	3 keyway introduction date	3 keyway introduction serial number
Dragonfly 6 (E70085)	January 2015	E700850150001
Dragonfly 7 (E70231)	November 2014	E70231140712
CPT-60 (A80195)	December 2014	A801951240023
CPT-70 (A80278)	January 2015	A802780150001
CPT-80 (A80279)	January 2015	A802790150001

5.3 Cable connection

The display has a combined power and transducer cable that is attached to the transducer.



1. Display rear panel connection.
2. Transducer with cable attached.
3. Drain wire (The drain wire is the wire with a sheath).
4. Black wire (12 V dc negative).
5. Red wire (12 V dc positive).

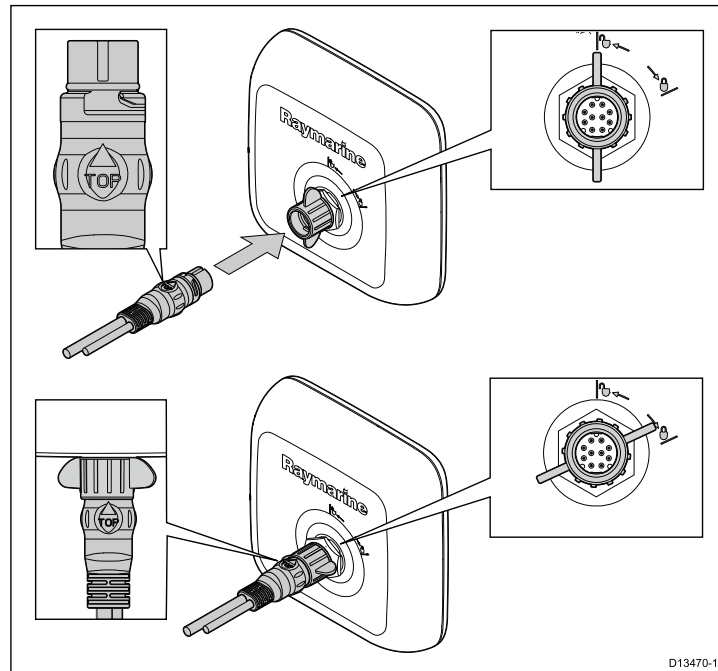
Power distribution

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.

Connecting the cable to the display



1. Ensure the locking collar is in the unlocked position.
2. Ensure that the cable connector is orientated correctly, rotate so that the word 'TOP' is on the top of the cable connector.
3. Push the cable connector all the way in, the tip of the arrow should be nearly touching the locking collar.
4. Rotate the locking collar clockwise 2 clicks, until in the locked position.



Warning: 12 Volt dc only

This product must only be connected to a 12 volt dc power source.

In-line fuse and thermal breaker ratings

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

In-line fuse rating	Thermal breaker rating
2A slow blow	3 A (if only connecting one device)

Note:

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

Power distribution

Recommendations and best practice.

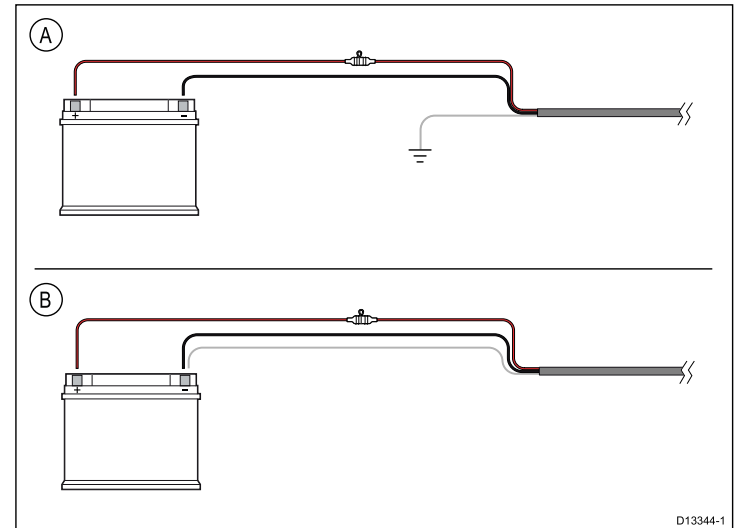
- The product is supplied with a power cable. Only use the power cable supplied with the product. Do NOT use a power cable designed for, or supplied with, a different product.
- Refer to the *Power connection* section for more information on how to identify the wires in your product's power cable, and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

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

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

Implementation — direct connection to battery

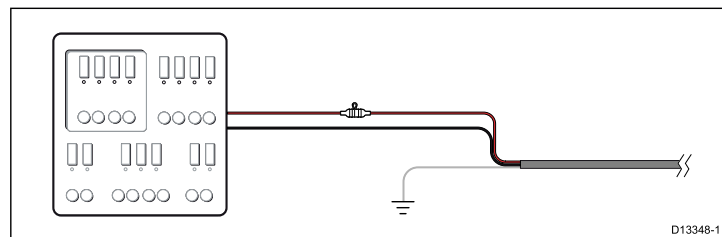
- The power cable supplied with your product may be connected directly to the vessel's battery, via a suitably rated fuse or breaker.
- The power cable supplied with your product may NOT include a separate drain wire. If this is the case, only the power cable's red and black wires need to be connected.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



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

Implementation — connection to distribution panel



- Alternatively, the supplied power cable may be connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point.
- The distribution point should be fed from the vessel's primary power source by 8AWG (8.36mm²) cable.
- Ideally, all equipment should be wired to individual suitably-rated thermal breakers or fuses, with appropriate circuit protection. Where this is not possible and more than 1 item of equipment shares a breaker, use individual in-line fuses for each power circuit to provide the necessary protection.
- In all cases, observe the recommended breaker / fuse ratings provided in the product's documentation.
- If you need to extend the length of the power cable supplied with your product, ensure you observe the dedicated *Power cable extensions* advice provided in the product's documentation.

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

Grounding

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

More information

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

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

Power cable extension

The product is supplied with a power cable, which can be extended if required.

- The power cable for each unit in your system should be run as a separate, single length of 2-wire cable from the unit to the vessel's battery or distribution panel.
- Raymarine recommends a minimum wire gauge of 18AWG (0.82mm²) for any length of cable extension.
- For all lengths of extension to the power cable, ensure there is a continuous minimum voltage at the product's power connector of 10.8V with a fully flat battery at 11V.

Important: Be aware that some products in your system (such as sonar modules) can create voltage peaks at certain times, which may impact the voltage available to other products during the peaks.

Grounding — 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: Product grounding

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

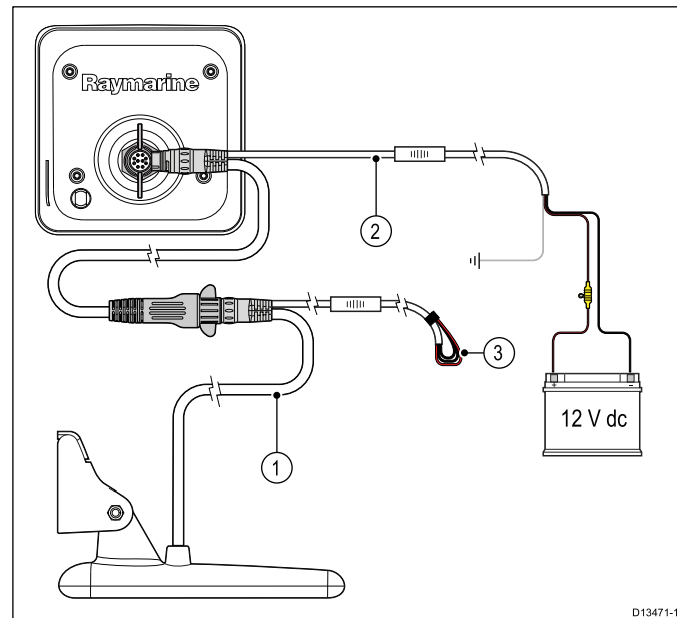


Warning: Positive ground systems

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

5.4 Extension cable connection

An optional extension cable (A80224) can be used to extend the distance from the transducer to the unit by up to 4 m (13.1 ft).



1. Existing cable.
2. Extension cable (connected to the vessel's power supply and to the existing cable.
3. Isolated power supply wires on existing transducer cable.

Note:

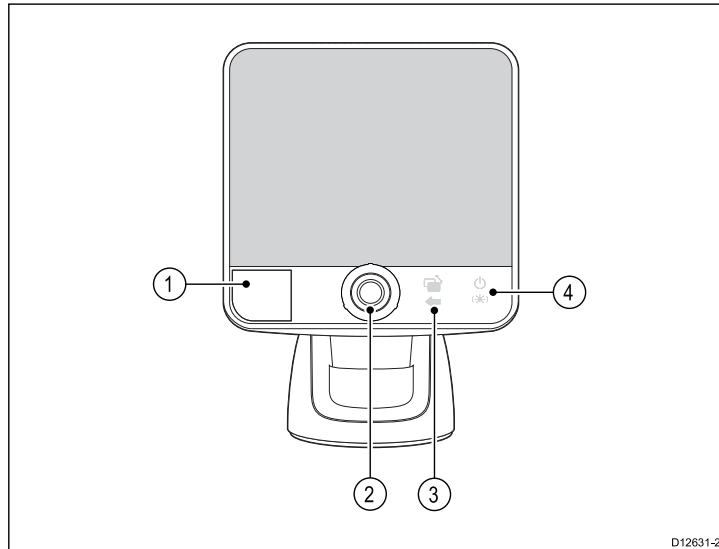
- Only 1 extension cable should be used per installation.
- The length of the power supply wires on the extension cable is 2 m (6.6 ft).

CHAPTER 6: GETTING STARTED

CHAPTER CONTENTS

- 6.1 Controls — page 49
- 6.2 Switching the unit on and off — page 50
- 6.3 Initial set up procedures — page 51
- 6.4 Satellite-based navigation — page 52
- 6.5 Checking the sonar application — page 54
- 6.6 Checking the DownVision™ application — page 54
- 6.7 Shortcuts page — page 55
- 6.8 Applications — page 56
- 6.9 View switcher — page 56
- 6.10 Memory cards and chart cards — page 58
- 6.11 Learning resources — page 59

6.1 Controls



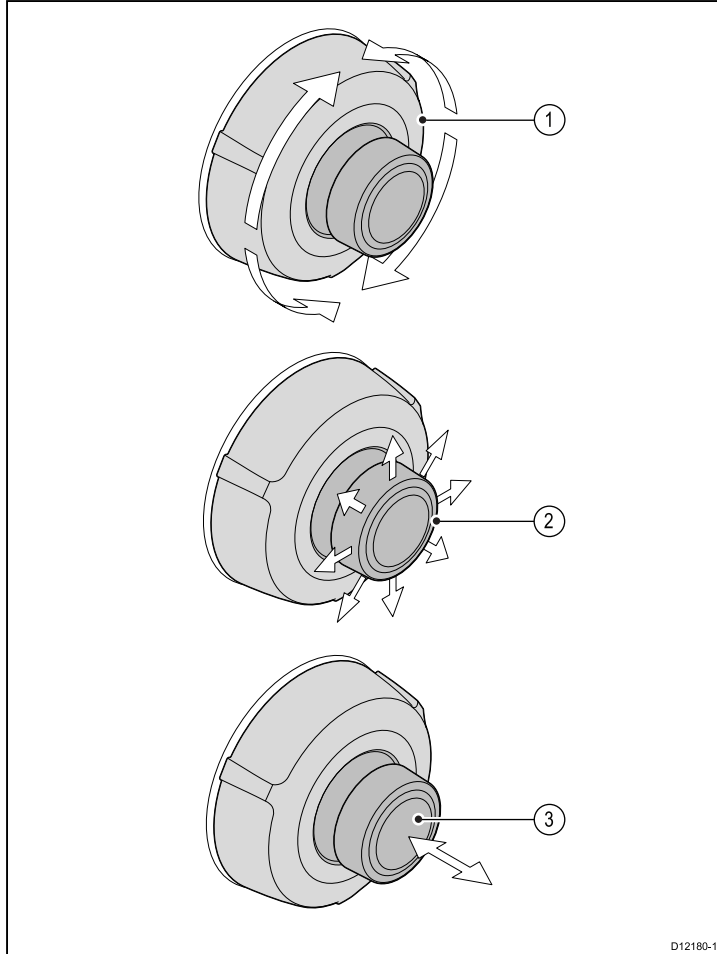
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1	MicroSD card reader – open the card door to insert or remove a MicroSD card. The card reader is used for electronic charts, archiving waypoint and track data and user settings.
2	UniControl – provides a rotary control, joystick and an OK push button for navigating menus and applications and selecting items.

3	Back / View switcher button • Press once to return to a previous menu or application state. • Press in the Chart application to exit cursor mode and centre the vessel on-screen. • Press in the Sonar or DownVision applications to resume scrolling from a paused state. • From the top level application state (Motion mode or Scrolling mode) press once to open the View switcher.
4	Power / Shortcuts button • Press once to power the unit on. • When turned on, pressing the power button will display the Shortcuts page. • Press and hold to turn the display off.

UniControl

The UniControl consists of Rotary, Joystick and push button controls.

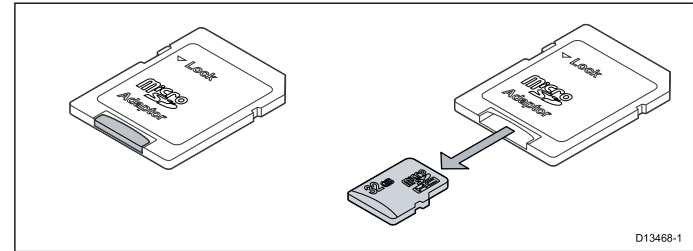


1. Rotary — use this to navigate through menu options and adjust the range in the Chart application and the Sonar / DownVision applications if set to manual range, or to cycle through the View switcher options.

2. Joystick — use this to move the cursor position in applications, pan up, down, left and right in the chart applications, navigate up and down through menu options or to cycle through the View switcher options.
3. OK button — push the end of the joystick to open menus, or context menus whilst in an application or to confirm a selection.

Removing MicroSD card from its adaptor

MicroSD memory and cartography chart cards are usually supplied inserted into an SD card adaptor. The card will need to be removed from the adaptor before inserting into your display.



6.2 Switching the unit on and off

Powering the unit on

1. Press and hold the *[Power]* button for approximately 3 seconds to power up the unit.
* On display products after approximately 5 seconds the splash screen is displayed.
2. * Press *[OK]* to accept the Limitations of Use disclaimer when it appears.

Note: * Does not apply to Wi-Fish™.

Powering the unit off

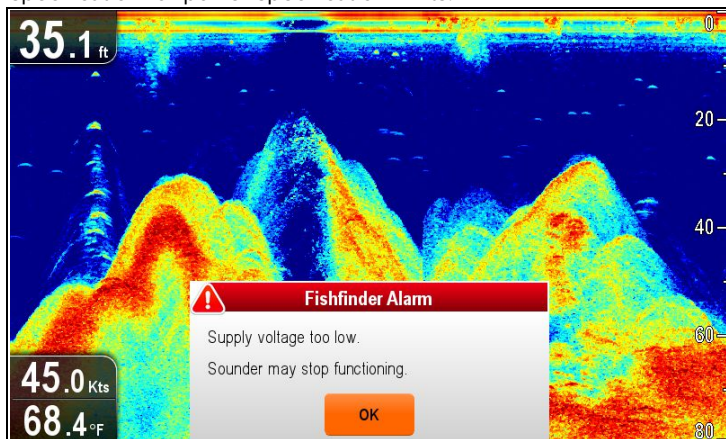
1. Press and hold the *[Power]* button for approximately 6 seconds.
On display products a 3 second count-down timer will be displayed.

To cancel the power off process, release the power button before the unit powers off.

Note: The unit will still draw a small amount of power from the battery when powered off, if this is a concern unplug the connector from the back of the unit.

Low voltage warning

A warning message is displayed when the product's voltage supply drops below 10 V dc; the warning will clear automatically when the voltage supply raises above 11 V dc. The product may not operate correctly when the supply voltage is outside of the specified operating voltage range. Please refer to the product's Technical specification for power specification limits.



6.3 Initial set up procedures

Once your display has been installed and commissioned, it is recommended that you go through the initial startup wizard and tutorial.

Startup wizard

When you power-up the display for the first time or after a system reset, the Startup Wizard is displayed after you have accepted the Limitations On Use disclaimer. The Startup Wizard guides you through the following initial settings:

Getting started

1. Language selection.
2. Configure units.
3. Finish / Tutorial.

Note: These settings can also be set at any time using the System Settings menu accessible from the Tools & Settings page.

Additional tasks

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

- Set your date and time preferences (if applicable).
- Set your transducer depth offset (if applicable).
- Familiarize yourself with the product using Simulator Mode.

Setting time and date preferences

Units that include an internal GNSS (GPS/GLONASS) receiver can timestamp waypoints and tracks with the date and time in your preferred format. Fishfinder only products do not include date and time settings.

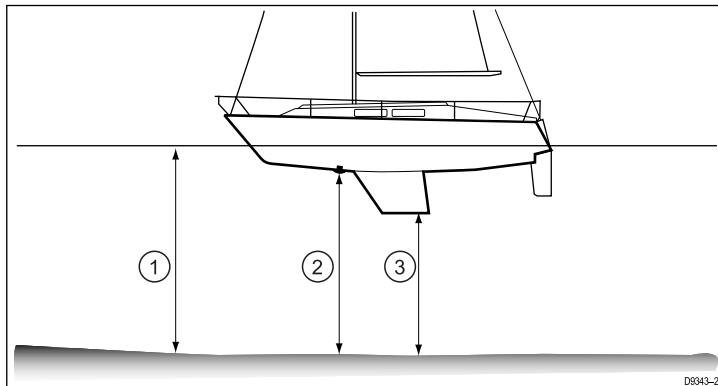
From the *[System Settings]* menu:

1. Select *[Time and Date Set-up]*.
2. Use the *[Date Format]*, *[Time Format]*, and *[Local Time:]* menu items to set your time and date preferences.

Depth Offset

Depths are measured from the transducer to the bottom, you can apply an offset value to the depth data, so that the displayed depth reading represents the depth to the bottom from either the keel (negative offset) or the waterline (positive offset).

Before attempting to set a waterline or keel offset, find out the vertical separation between the transducer and either the waterline or the bottom of your vessel's keel, as appropriate. Then set the appropriate depth offset value.



1	Waterline offset	Values greater than zero (Positive values) represent a waterline offset
2	Transducer	Zero offset represents the depth from the transducer's location
3	Keel offset	Values less than zero (Negative values) represent a keel offset

Setting the depth offset

On Fishfinder products you must apply an offset value for depth readings.

From the *[System Settings]* menu:

1. Select *[Sonar Set-up]*.
2. Select *[Depth Offset]*.
The depth offset numeric adjust control is displayed.
3. Adjust the offset to the required value.
4. Select *[Ok]* to confirm the new value and close the numeric adjust control.

Simulator mode

The Simulator mode enables you to practice operating your display without data from the GPS receiver or transducer.

The simulator mode is switched on / off in the *[System Settings]* menu.

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

Note: The simulator will NOT display any real data. This includes safety messages.

Enabling and disabling simulator mode

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

From the *[System Settings]* menu:

1. Select *[Simulator:]*.
2. Select *On* to turn simulator mode on, or
3. Select *Off* to turn simulator mode off.

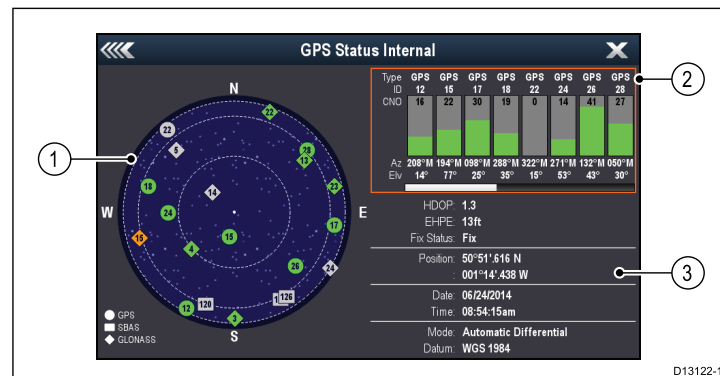
Note: The Demo movie option is for retail demonstration purposes only.

6.4 Satellite-based navigation

GPS Status

Products with an internal GPS receiver or GNSS (GPS/GLONASS) receiver can use the GPS status page to view the status of the available compatible satellites.

The satellite constellations are used to position your boat in the Chart application. You can set up your receiver and check its status from the menu. For each satellite, the screen provides the following information:



1. Sky view

2. Satellite status
3. Position and fix information

Sky view

Sky view is a visual representation that shows the position of navigation satellites and their type. Satellite types are:

- **Circle** — A circle identifies a satellite from the GPS constellation.
- **Square** — A square identifies an (SBAS) differential satellite.
- **Diamond** — A diamond identifies a satellite from the GLONASS constellation.

Satellite status area

The Satellite status area displays the following information about each satellite:

- **Type** — Identifies which constellation the satellite belongs to.
- **ID** — Displays the satellites identification number.
- **CNO** (Carrier-to-noise ratio) — Displays the signal strength of each satellite shown in the Sky view:
 - Grey = searching for satellite
 - Green = satellite in use
 - Orange = tracking satellite
- **Azimuth and Elevation** — Provides the angle of elevation and azimuth between the location of the receiver and the satellite.

Position and fix information

The following positional and fix information is provided:

- **Horizontal Dilution of Precision (HDOP)** — HDOP is a measure of satellite navigation accuracy, calculated from a number of factors including satellite geometry, system errors in the data transmission and system errors in the receiver. A higher figure signifies a greater positional error. A typical receiver has an accuracy of between 5 and 15 m. As an example, assuming a 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 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.
- **Estimated Horizontal Position Error (EHPE)** — EHPE is a measure of the estimated error of a position fix in the horizontal plane. The

value displayed indicates that your position is within a circle radius of the stated size 50% of the time.

- **Fix status** — indicates the actual mode the receiver is reporting:
 - **Fix** — Satellite fix has been acquired.
 - **No Fix** — No satellite fix can be acquired.
 - **D Fix** — A differential beacon fix has been acquired.
 - **SD Fix** — A differential satellite fix has been acquired.
- **Position** — Displays the latitude and longitude position of your receiver.
- **Date / Time** — Displays the current date and time generated by the position fix in UTC format.
- **Mode** — Identifies whether the receiver is working in differential mode or non-differential mode.
- **Datum** — The receiver's datum setting affects the accuracy of the vessel position information displayed in the Chart application. In order for your receiver and MFD to correlate accurately with your paper charts, they must be using the same datum.

Checking GPS operation

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

1. Open the Chart application.



2. Check the screen.

You should see:

Your vessel position (indicates a GPS fix). Your current position is represented by a vessel symbol or solid circle.

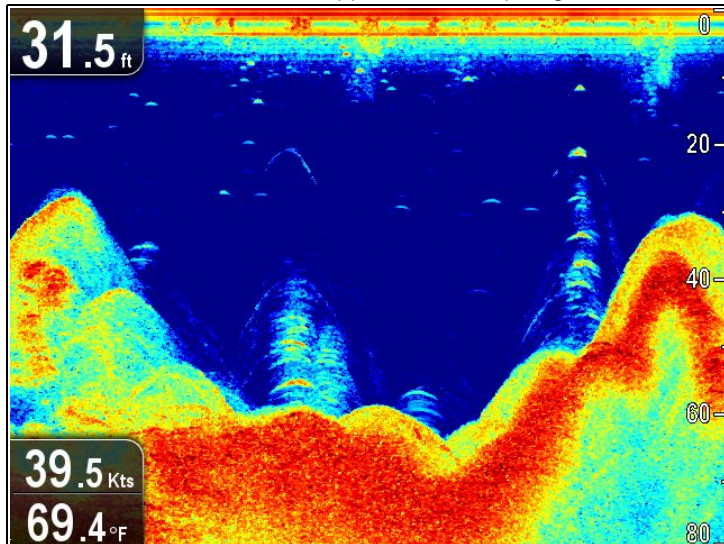
A solid circle on the chart indicates that the vessel speed is too low (i.e. less than 0.15 kts) to provide Course Over Ground (COG) data.

Note: It is recommended that you check the displayed vessel position in the Chart application against your actual proximity to a known charted object. GNSS receivers typically have an accuracy of between 5 m and 15 m.

Note: A GPS Status screen provides satellite signal strength and other relevant information.

6.5 Checking the sonar application

Products which include the Sonar application and the CPT-DVS transducer can use the Sonar application to help target fish.



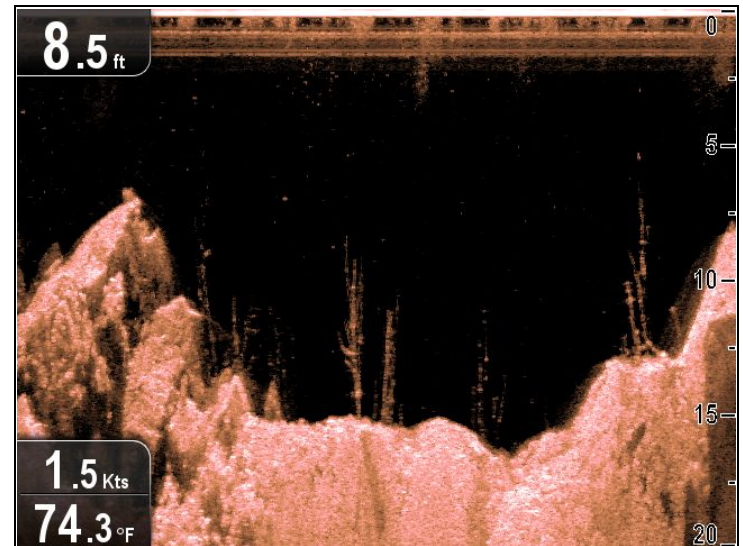
From the Sonar application:

1. Check the display.

With the transducer active you should see a scrolling (left to right) image that shows the bottom and underwater structure, you should also see a depth reading in the top left databox.

6.6 Checking the DownVision™ application

Products which include the DownVision™ application and the CPT-DV or CPT-DVS transducer can use the DownVision™ application to display underwater structure and objects.



From the DownVision™ application:

1. Check the display.

With the transducer active you should see a scrolling (left to right) image that shows the bottom structure, you should also see a depth reading in the top left databox.

6.7 Shortcuts page

The shortcuts page provides access to the following functions:



1	Brightness control.
2	PowerSave mode — selecting will activate PowerSave mode.
3	Enable / Disable Sonar — selecting will enable or disable the internal sonar and DownVision.
4	Eject SD card — select to safely remove the memory card.
5	Screen capture — selecting saves a screenshot to memory card.

Opening the shortcuts page

With the display powered on:

1. Press the *[Power]* button once.
The shortcuts page is displayed.
2. Use the *[Directional controls]* to highlight an option.
3. Press the *[OK]* button to select the option.

Adjusting the display brightness

1. Press the *[Power]* button once.
The Shortcuts page is displayed.
2. Adjust the brightness to the required level using the *[Track pad]*.

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

PowerSave mode

In PowerSave mode all functions of the product remain active, but the display is placed into a low power state. PowerSave mode is cancelled by pressing a physical button or when an alarm event occurs.

Enabling PowerSave mode

To enable PowerSave mode follow the steps below.

1. Press the *[POWER]* button.
The shortcuts menu is displayed.
2. Select *[PowerSave Mode]*.
The display is now in PowerSave mode.
3. You can wake the display from PowerSave mode at anytime by pressing a physical button.

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

Disabling and enabling the Sonar

The transducer ping can be disabled and enabled from the shortcuts page.

1. Select *[Disable Sonar]* to stop the transducer pinging.
2. Select *[Enable Sonar]* to start the transducer pinging.

Note:

- When enabled, the sonar element will ping if the view displayed contains the Sonar application or the Chart application
- When enabled, the DownVision™ element will ping only if the view displayed includes the DownVision™ application.

Screenshots

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

Screenshots are saved in .png (Portable Network Graphic) format to a MicroSD Card. The saved images can be viewed from any device capable of viewing .png images.

Taking a screenshot

You can take a screenshot by following the steps below.

1. Insert a MicroSD card with suitable free space into the card reader.
2. Press the *[Power]* button.
The Shortcuts page is displayed:
3. Select the *[Camera]* icon.
A confirmation message is displayed.
4. Select *[OK]*.
The screenshot is now saved to the MicroSD card.

Tip If your display has a *[Back]* button you can also take a screenshot by pressing and holding the *[Back]* button until the confirmation message appears.

6.8 Applications

The applications available on your display are dependent upon product variant.

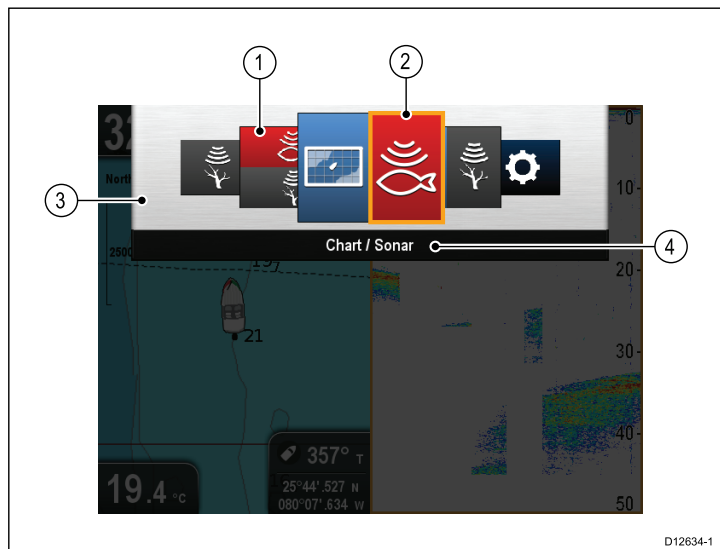
	Description	Applicable Products
	Chart application — provides a 2D graphical view of your charts to help you navigate. Waypoint and track functions enable you to navigate to a specific location or record where you've been. Chart cards provide higher levels of detail.	• Pro • M
	Sonar application — this application uses CHIRP processing to help you target fish beneath your vessel. You can also view water depth, water temperature and mark points of interest such as fishing spots or wrecks.	• DVS • Pro

	Description	Applicable Products
	DownVision application — this application gives increased coverage either side of the vessel in high definition. CHIRP processing and higher operating frequency allows greater depth resolution, making it easier to identify bottom structures around which fish may reside. You can also view water depth, water temperature and mark points of interest such as fishing spots or wrecks.	• DV • DVS • Pro
	Tools & Settings — provides access to alarms, system settings, backup and reset features.	• DVS • Pro

6.9 View switcher

Products that include more than 1 application use the *[View Switcher]* to cycle through available views.

Fullscreen and splitscreen application views are available.



1	View thumbnails
2	Active application
3	View switcher
4	View switcher titlebar

The views available are dependent on product variant but can include:

- Chart application
- Sonar application
- DownVision application
- DownVision / Sonar application — splitscreen
- Chart application / Sonar application — splitscreen
- Chart application / DownVision application — splitscreen
- Tools & Settings

Opening the View switcher

From the top level application state (Motion mode or Scrolling mode):

[Getting started](#)

1. Press the *[Back]* button.

Using the View switcher

To select a view follow the steps below.

With the View switcher displayed:

1. Use the *[Directional controls]* to highlight a view.
2. Press the *[OK]* button to display the chosen view.

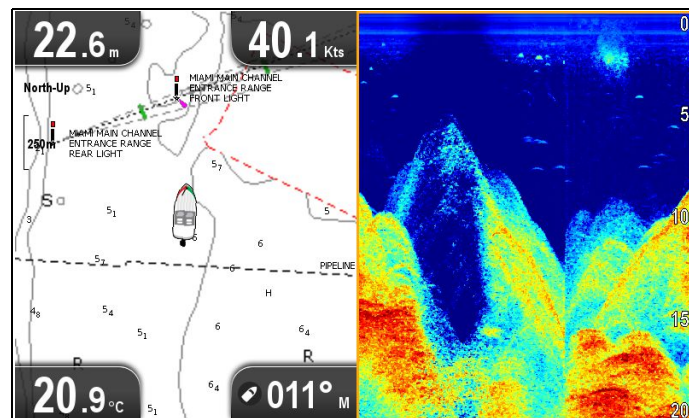
Selecting the active pane in splitscreen views

When a splitscreen view is displayed you can change the active pane (the pane that you want to control) using the View switcher.

With a splitscreen view displayed.

1. If required press the *[Back]* button to change the Chart application to Motion mode, or the Sonar and DownVision applications to Scrolling mode.
2. Press the *[Back]* button again.
The View switcher is displayed.
3. Use the *[Directional controls]* to highlight the pane you want to make active.
4. Press the *[OK]* button to confirm.

The selected view is displayed and a border is placed around the active pane.



6.10 Memory cards and chart cards

MicroSD memory cards can be used to back up / archive data (e.g. Waypoint, and Tracks). Once data is backed up to a memory card old data can be deleted from the system, creating capacity for new data. The archived data can be retrieved at any time. Chart cards provide additional or upgraded cartography.

It is recommended that your data is backed up to a memory card on a regular basis. Do NOT save data to a memory card containing cartography.

Compatible cards

The following types of MicroSD cards are compatible with your display:

- Micro Secure Digital Standard-Capacity (MicroSDSC)
- Micro Secure Digital High-Capacity (MicroSDHC)

Note:

- The maximum supported memory card capacity is 32 GB.
- MicroSD cards must be formatted to use either the FAT or FAT 32 file system format to enable use with your MFD.

Speed class rating

For best performance it is recommended that you use Class 10 or UHS (Ultra High Speed) class memory cards.

Chart cards

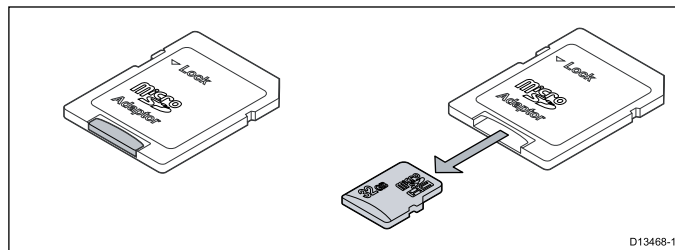
Your product is pre-loaded with electronic charts (worldwide base map). If you wish to use different chart data, you can insert compatible chart cards into the unit's memory card reader.

Use branded chart cards and memory cards

When archiving data or creating an electronic chart card, 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.

Removing MicroSD card from its adaptor

MicroSD memory and cartography chart cards are usually supplied inserted into an SD card adaptor. The card will need to be removed from the adaptor before inserting into your display.



Caution: Care of chart and memory cards

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

- DO NOT save data or files to a card containing cartography as the charts may be overwritten.
- Ensure that chart and memory cards are fitted the correct way around. DO NOT try to force a card into position.
- DO NOT use a metallic instrument such as a screwdriver or pliers to insert or remove a chart or memory card.

Inserting a memory card or chart card

1. Open the card door, located on the front left of the display.
2. Insert the card with the contacts facing down.
3. Gently press the card all the way in to the card slot. The card is secure when an audible click is heard.
4. To prevent water ingress and damage to the display, ensure the card door is closed.

Removing a memory card or chart card

1. Select *[Eject Card]* from the shortcuts page.
A confirmation dialog is displayed.

2. Open the card door.
3. Push the edge of the card towards the unit, until an audible click is heard.
The card is released from the card slot mechanism.
4. Use your fingers to pull the card clear of the card slot, using the edge of the card.
5. To prevent water ingress and damage to the display, ensure the card door is closed.
6. Press the *[OK]* button to close the confirmation dialog.

6.11 Learning resources

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

Video tutorials

	Raymarine official channel on YouTube: • http://www.youtube.com/user/RaymarineInc
	Video Gallery: • http://www.raymarine.co.uk/view/?id=2679
	Product Support videos: • http://www.raymarine.co.uk/view/?id=4952

Note:

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

Training courses

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

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

FAQs and Knowledge Base

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

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

Technical support forum

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

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

CHAPTER 7: FISHFINDER APPLICATIONS

CHAPTER CONTENTS

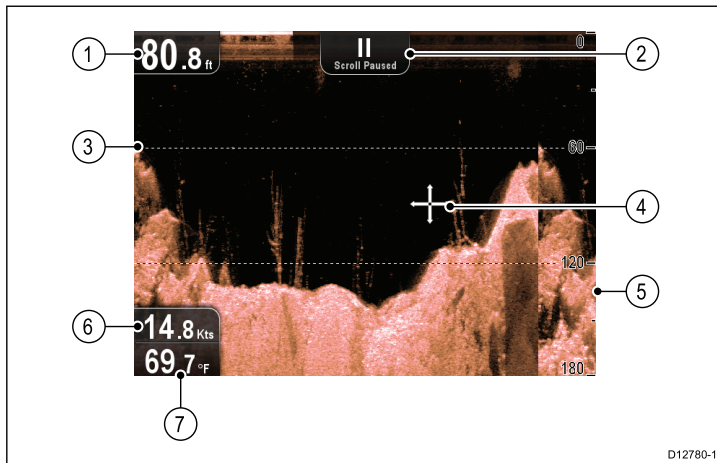
- [7.1 DownVision™ application overview — page 62](#)
- [7.2 DownVision™ application overview — page 62](#)
- [7.3 Fishfinder applications' features — page 64](#)
- [7.4 Fishfinder applications' controls — page 64](#)
- [7.5 Zoom — page 65](#)
- [7.6 Range — page 66](#)
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- [7.11 Color Palettes — page 70](#)

7.1 DownVision™ application overview

The DownVision™ application uses a compatible transducer to produce a detailed structure view of the water column beneath your vessel. This enables you to accurately distinguish bottom structure, and underwater objects. DownVision™ uses CHIRP processing with a centered 350 KHz ping frequency, which provides a higher resolution image than the Sonar application.

The DownVision™ application displays a scrolling image which scrolls from right to left across the screen.

The DownVision™ application uses monochrome palettes and shading to differentiate between target strengths.



1	Depth reading — Current depth of the bottom.
2	Scrolling paused — Scrolling pauses when the Joystick is used to move the cursor around the screen).
3	Depth lines — Horizontal dashed lines drawn at regular intervals to indicate the depth from the surface.
4	Cursor — Displayed in cursor mode.
5	Depth markers — These numbers indicate depth.

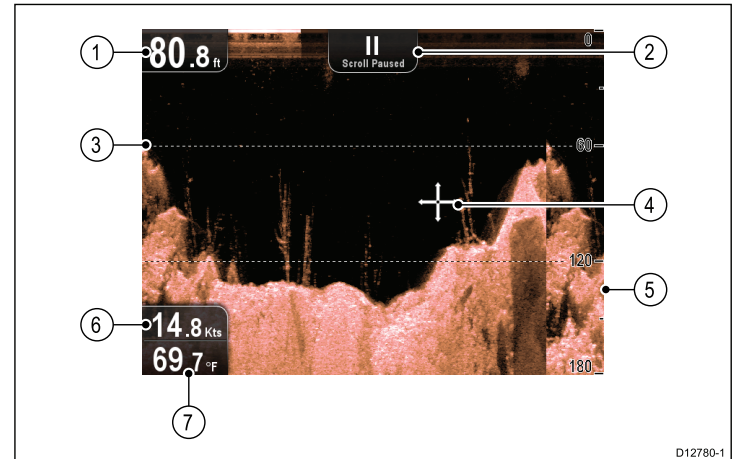
6	Speed — Current vessel Speed Over Ground (SOG). Only applicable to displays with GPS / GNSS receivers
7	Water temperature — Current water temperature.

7.2 DownVision™ application overview

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4	Cursor — Displayed in cursor mode.

5	Depth markers — These numbers indicate depth.
6	Speed — Current vessel Speed Over Ground (SOG). Only applicable to displays with GPS / GNSS receivers
7	Water temperature — Current water temperature.

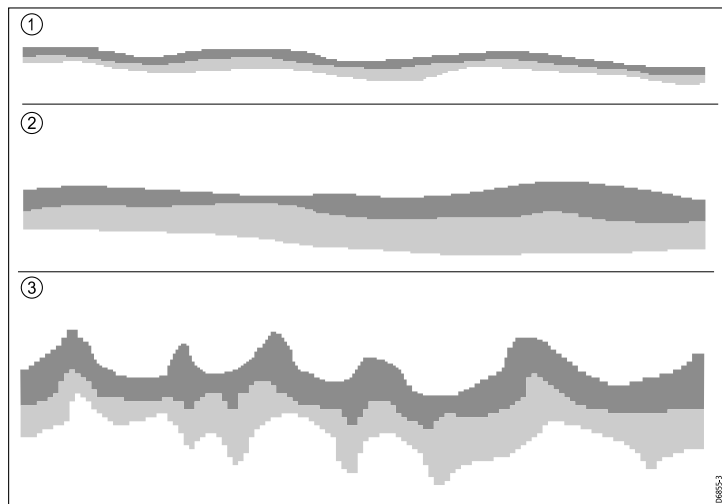
The sonar image

Interpreting the bottom using sonar

It is important to understand how to correctly interpret the bottom structure represented on-screen.

The bottom usually produces a strong echo.

The following images show how different bottom conditions are represented on-screen:



Item	Description
1	A hard bottom (sand) produces a thin line.
2	A soft bottom (mud or seaweed cover) produces a wide line.
3	A rocky or uneven bottom or a wreck produces an irregular image with peaks and troughs.

The dark layers indicate a good echo; the lighter areas indicate weaker echoes. This could mean that the upper layer is soft and therefore allowing sound waves to pass to the more solid layer below.

It is also possible that the sound waves are making two complete trips — hitting the bottom, bouncing off the vessel, then reflecting off the bottom again. This can happen if the water is shallow or the bottom is hard.

Factors influencing the sonar image

The quality and accuracy of the display can be influenced by a number of factors including vessel speed, depth, object size and background noise.

Vessel speed

The shape of the target changes along with your speed. Slower speeds return flatter, more horizontal marks. Higher speeds cause the target to thicken and arch slightly, at fast speeds the mark resembles a double vertical line.

Target depth

The closer the target to the surface, the larger the mark on screen. The depth of individual targets can be displayed by switching on the *[Target Depth ID]* in the sonar menu: *[Menu > Display Options]*. The number of target depths displayed is influenced by the fish alarm sensitivity level.

Water depth

As water depth increases signal strength decreases, resulting in a lighter on-screen image of the bottom.

Size of the target

The larger the target, the larger the return on-screen. The size of a fish target is also dependent upon the size of the fish's swim bladder rather than its overall size. The swim bladder varies in size between different breeds of fish.

Clutter / Background noise

The sonar image may be impaired by echoes received from floating or submerged debris, particulate matter (such as plankton,

phytoplankton, or silt etc.), air bubbles or even the vessel's movement. This is known as 'background noise' or 'clutter' and is controlled by the Sensitivity settings. If required you can adjust the setting manually.

7.3 Fishfinder applications' features

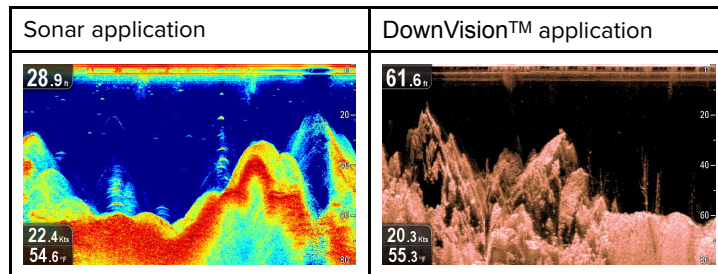
Using waypoints to mark fishing spots or target locations.	• Placing a waypoint
Determining target depths.	• Enabling / Disabling Target Depth ID • Enabling / Disabling Depth Lines
Adjusting the speed of the scrolling image.	• 7.7 Scrolling
Setting alarms (fish, depth or water temperature).	• 9.2 Alarms
Using Zoom.	• 7.5 Zoom
* Using A-Scope mode.	• 7.8 A-Scope mode
Changing the on-screen depth range.	• 7.6 Range
Adjusting Sensitivity Settings to help optimize and simplify the displayed image.	• 7.10 Sensitivity adjustments

Note: * Not available in DownVision application.

7.4 Fishfinder applications' controls

The Sonar applications consists of 2 modes: Scrolling mode and Cursor / Pause mode. The behavior of some controls are dependent upon mode.

Scrolling mode

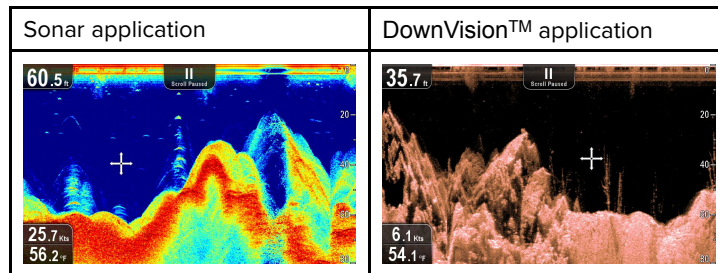


Scrolling mode is the default mode. In Scrolling mode an image is displayed which scrolls from right to left across the screen.

In Scrolling mode the controls behave as follows:

- from the default view, turning the *[Rotary control]* clockwise enables *Zoom mode*.
 - when in *Zoom mode* use the *[Rotary control]* to increase and decrease the zoom level.
- pressing the Joystick's *[Ok]* button opens the application menu.
- pressing the *[Back]* button opens the View switcher.
- moving the *[Joystick]* in any direction enters Cursor / Pause mode.

Cursor / Pause mode



In Cursor / Pause mode the scrolling image is paused and the cursor can be moved around the screen.

In Cursor / Pause mode the controls behave as follows:

- from the default view, turning the *[Rotary control]* clockwise enables *Zoom mode*.
 - when in *Zoom mode* use the *[Rotary control]* to increase and decrease the zoom level.

- moving the *[Joystick]* in any direction moves the cursor around the screen.
- pressing the Joystick's *[Ok]* button opens the context menu.
- pressing the *[Back]* button returns the application to *[Scrolling mode]*.

Menus and dialogs

With a menu or dialog open the controls behave as follows:

- The **Rotary control** or the *[Joystick]* can be used to scroll through the available menu options.
- Pressing the Joystick's *[Ok]* button selects the highlighted option or confirms and dismisses pop up messages.
- pressing the *[Back]* button returns to the previous menu or closes the menu.

Placing a waypoint

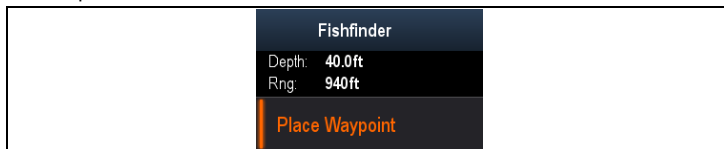
Displays with a GPS / GNSS receiver can use waypoints to mark points of interest.

1. Use the *[Directional controls]* to highlight the desired location with the cursor.
2. Press the *[OK]* button.
The context menu is displayed.
3. Select *[Place Waypoint]*.
A confirmation pop up message is displayed.
4. Select *[Ok]* to place the waypoint, or *[Edit]* to edit the waypoint details.

A waypoint is placed at the cursor's location.

Context menu

A context menu is available on displays with a GPS / GNSS receiver, which provides data and shortcuts to menu items.



The context menu provides the position of the cursor:

- Depth

- Range

The context menu also provides the following menu items:

- *[Place Waypoint]*

Accessing the context menu

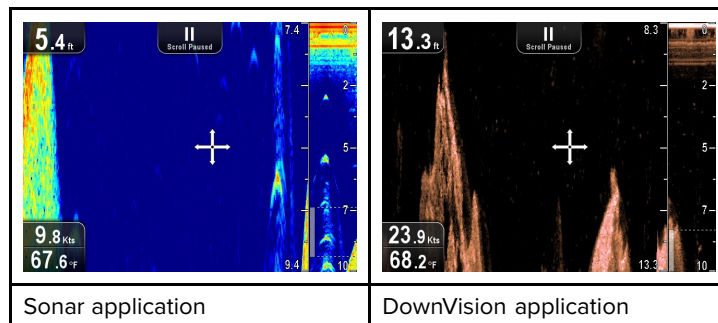
You can access the context menu by following the steps below.

1. Use the *[Directional controls]* to highlight the waypoint.
The cursor changes to the WPT cursor.
2. Press the *[OK]* button.
The Waypoint context menu is displayed.

7.5 Zoom

The Zoom function displays more detail onscreen by magnifying a specific area of the image.

When using Zoom the screen is split and displays the zoomed image alongside the standard image.



This enables you to:

- select an area from the standard view that is magnified and displayed alongside.
- increase and decrease the zoom level.

The zoomed section is indicated on the standard screen by the zoom box.

Adjusting the Zoom level

To adjust the Zoom level and area follow the steps below.

With the Fishfinder application displayed:

1. Turn the *[Rotary control]* clockwise to enable Zoom mode.
2. Subsequent clockwise turns will increase the Zoom level
3. Turning the *[Rotary control]* counter-clockwise will decrease the Zoom level and finally revert to the standard view.

Selecting a Zoom area

When using Zoom the area displayed in the magnified area of the screen can be changed.

With Zoom enabled:

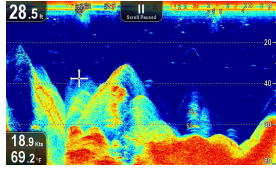
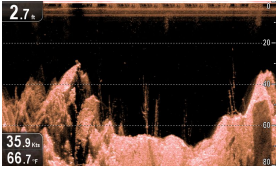
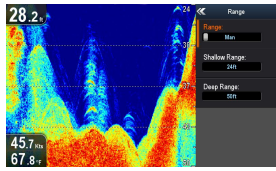
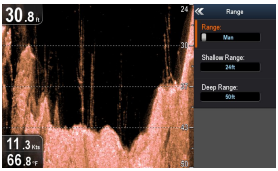
1. Move the Joystick *[Up]* and *[Down]* to move the magnified area up and down through the water column.

7.6 Range

The *[Range]* function enables you to change the range of depth displayed onscreen. Where applicable changes to the Range will apply to both the Sonar and DownVision™ applications.

By default, the Range is set to automatic, this adjusts the Range to ensure the bottom is always displayed onscreen. This is useful for targeting bigger fish and other objects located closer to the bottom such as wrecks

Manual Range allows you to specify a Shallow range depth and Deep range depth which defines the area displayed onscreen.

	Sonar application	DownVision™ application
Auto Range		
Manual Range		

Switching between Auto and Manual range

From the application menu:

1. Select *[Range]*.
2. Select *[Range:]* to switch between *Auto* and *Man*.
3. With manual mode selected you can now adjust the depth range shown onscreen.

Manually adjusting range

To specify the area of depth to be displayed onscreen follow the steps below.

From the application menu:

1. Select *[Range]*.
2. Select *[Range:]* so that *Man* is selected.
3. Select *[Shallow Range]*.

The [Shallow Range] defines the depth that will be shown at the top of the screen.

4. Adjust the *[Shallow Range]* to the required depth.
5. Select *[Deep Range]*.

The [Deep Range] defines the depth that will be shown at the bottom of the screen.

6. Adjust the *[Deep Range]* to the required depth.

7.7 Scrolling

The image scrolls from right to left. The scroll speed can be adjusted to help with target identification. The scrolling can be paused by entering Cursor mode.

Scroll speed

The default scrolling speed is 100%. The scroll speed can be slowed down to 10% of the default speed.

Adjusting the scroll speed

From the main menu:

1. Select *[Display Options]*.
2. Select *[Scroll Speed]*.
The Scroll speed adjustment control is displayed.
3. Use the *[Rotary control]* or the *[Joystick]* to adjust the scroll speed between 10% and 100%.
4. Press the *[Ok]* or *[Back]* button to confirm and close the adjustment control.

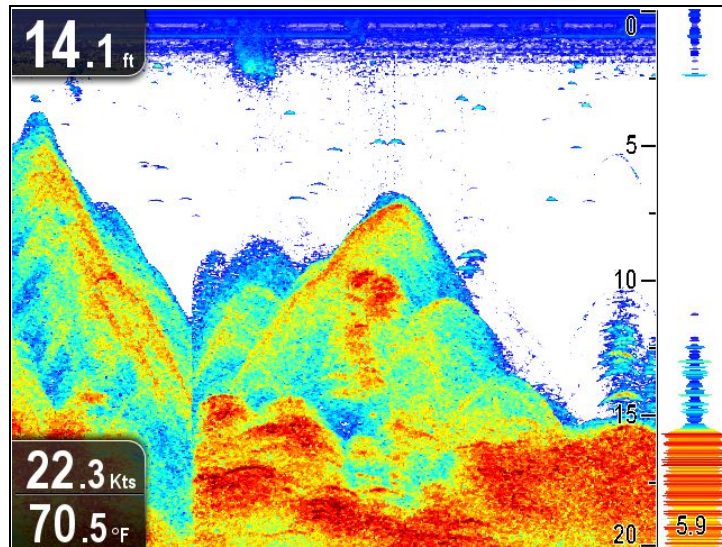
Pausing the scrolling image

With the display scrolling from right to left:

1. Move the *[Joystick]* directional controls in any direction.
The Scrolling will pause.
2. Press the *[Back]* button to resume scrolling.

7.8 A-Scope mode

A-Scope mode is available in the Sonar application only. A-Scope mode displays a splitscreen showing the standard view alongside a live image of the water column directly beneath the transducer.



The area covered by the A-Scope is indicated at the bottom of the window. A-Scope provides a more precise and easier to interpret indication of the target strength.

Switching between A-Scope and Standard view

You can switch between the standard view and A-Scope mode at any time following the steps below.

With the standard view displayed in the Sonar application:

1. Select *[Menu]*.
2. Select *[Display Options]*.
3. Select *[A-Scope:]*.

Selecting *[A-Scope:]* will switch A-Scope mode *On* and *Off*.

Note: If Zoom mode is enabled, The screen will not show the A-Scope until the Zoom has been disabled.

7.9 Display Options

The application can be customized using the *[Display Options]* menu.

The display options can be used to overlay additional depth features and manipulate the image to enable easier fish targeting.

Available depth features:

- Target Depth ID — Not available in DownVision™ application
- Depth Lines
- White Line — Not available in DownVision™ application

Enabling / Disabling Target Depth ID

You can display the depth of targets on-screen.

From the application menu:

1. Select *[Display Options]*.
2. Select *[Target Depth ID]*.

Selecting Target Depth ID will switch the target depth indicator *On* and *Off*.

Note: The strength of targets which display a depth ID is related to the Fish sensitivity setting, accessible from the Alarms menu.

Enabling / Disabling Depth Lines

You can display horizontal depth lines on-screen.

From the application menu:

1. Select *[Display Options]*.
2. Select *[Depth Lines]*.

Selecting Depth Lines will switch the horizontal depth lines *On* and *Off*.

Enabling / Disabling the White Line

You can display a thick line on-screen to represent the bottom, this line is primarily white in color (depending upon color palette chosen).

From the application menu:

1. Select *[Display Options]*.
2. Select *[White Line]*.

Selecting White Line will switch the bottom line *On* and *Off*.

7.10 Sensitivity adjustments

The onscreen image can be enhanced using the Sensitivity settings.

Sensitivity options are:

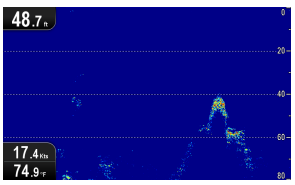
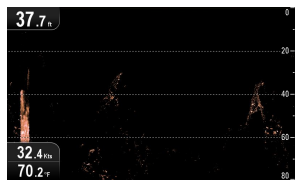
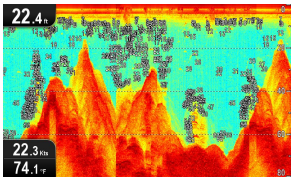
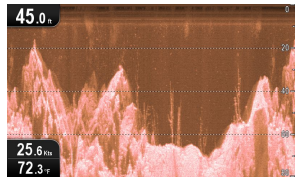
- *[Gain]*
- *[Contrast]*
- *[Noise Filter]*

Gain

The Gain setting adjusts the return threshold (echo strength) at which an object will be displayed onscreen. Adjusting the setting can improve target identification, however for optimum performance in most conditions, it is recommended that you use the auto setting.

Gain can be set to automatic or manual:

- Automatic — In *Auto* mode, the setting is automatically adjusted to suit current conditions. Any adjustments made apply to all views using that application.
- Manual — If necessary you can adjust the setting manually, between a value of 0% to 100%. The higher the setting the more detail will appear onscreen. This value should be set high enough to see fish and bottom detail without too much background noise. Generally a higher setting is used in deep and/or clear water; a low setting in shallow and/or murky water.

	Sonar	DownVision
40%		
100%		

The new values will persist over a power cycle.

Adjusting Gain

From the application menu:

1. Select *[Sonar Sensitivity]* or *[DownVision Sensitivity]*.
2. Select *[Gain]*.
3. Use the *[Up]* and *[Down]* *[Directional controls]* to adjust the Gain setting to the required value, or
4. Press the *[OK]* button to switch between *Auto* and *Manual*.

Contrast

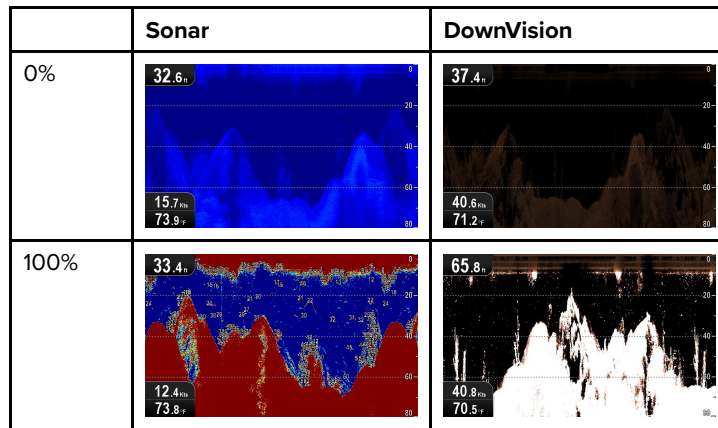
The Contrast setting changes the signal strength threshold for the strongest color / shading. Adjusting the setting can improve target identification, however for optimum performance in most conditions, it is recommended that you use the auto setting.

All echoes with a signal strength above the specified value are displayed in the strongest color / shade. Those with a weaker value are divided equally between the remaining colors / shades.

- Setting a low value produces a wide band for the weakest color / shade, but a small signal band for the other colors / shades.
- Setting a high value gives a wide band for the strongest color / shade, but a small signal band for the other colors / shades.

The Contrast setting can be set to automatic or manual:

- **Automatic** — In *Auto* mode the contrast setting is automatically adjusted to suit current conditions. Any adjustments made apply to all views.
- **Manual** — You can set the contrast manually, between a value of 0% to 100%.



The new values will persist over a power cycle.

Adjusting the Contrast

From the application menu:

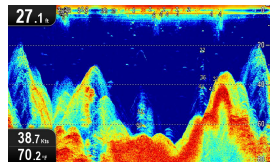
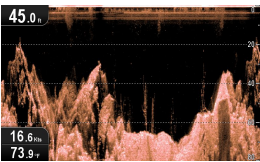
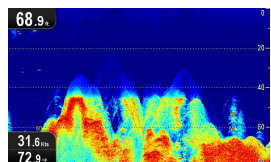
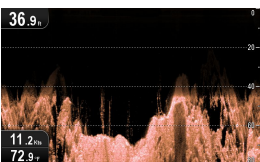
1. Select *[Sonar Sensitivity]* or *[DownVision Sensitivity]*.
2. Select *[Contrast]*.
3. Use the *[Up]* and *[Down]* *[Directional controls]* to adjust the Contrast to the required value, or
4. Press the *[OK]* button to switch between *Auto* and *Manual*.

Noise Filter

The Noise Filter reduces the amount of clutter displayed onscreen by varying the gain throughout the column of water. Adjusting the setting can improve target identification, however for optimum performance in most conditions, it is recommended that you use the auto setting.

The Noise Filter can be set to automatic or adjusted manually:

- **Automatic** — In *Auto* mode the Noise Filter is set to 20%.
- **Manual** — You can adjust the Noise Filter manually, between a value of 0% to 100%.
 - A low value decreases the depth at which the filter is applied.
 - A high value increases the depth at which the filter is applied.

	Sonar	DownVision
0%		
100%		

The new values will persist over a power cycle.

Adjusting the Noise Filter

From the application menu:

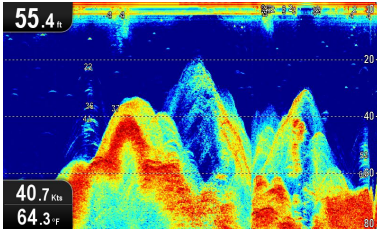
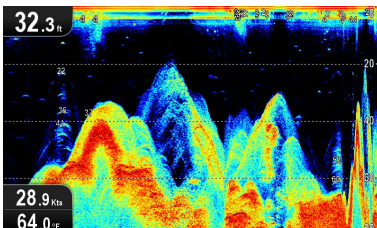
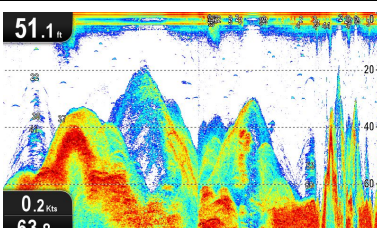
1. Select *[Sonar Sensitivity]* or *[DownVision Sensitivity]*.
2. Select *[Noise Filter]*.
3. Use the *[Up]* and *[Down]* *[Directional controls]* to adjust the Noise Filter to the required value, or
4. Press the *[OK]* button to switch between *Auto* and *Manual*.

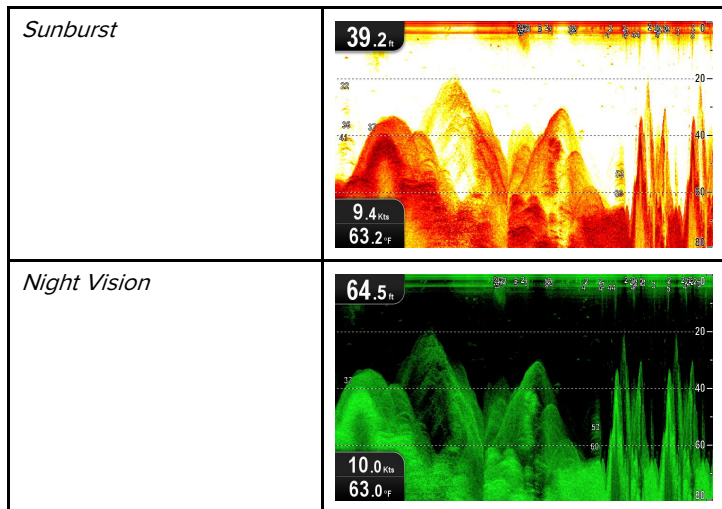
7.11 Color Palettes

Various color palettes are available to suit different conditions and your personal preference.

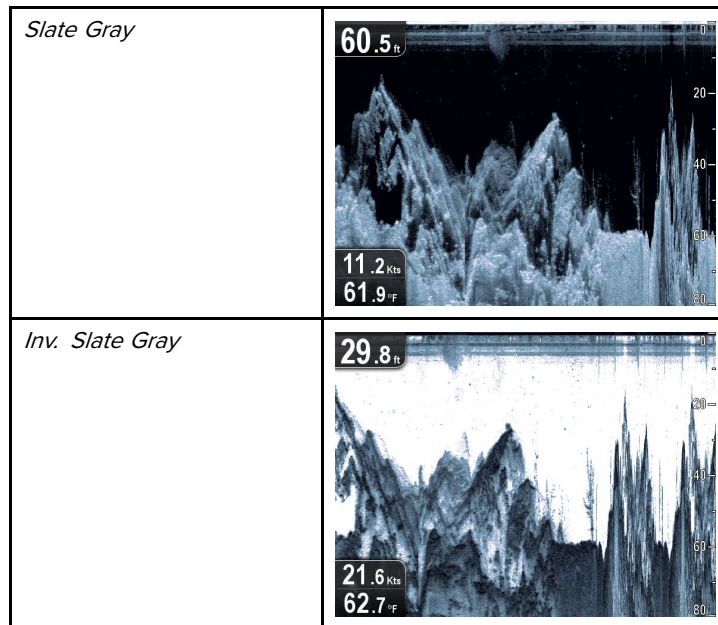
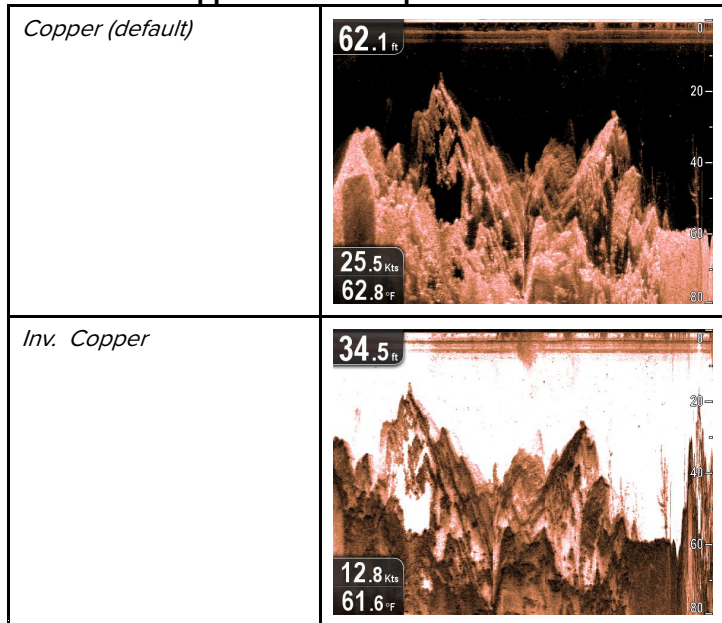
The new color palette remains selected after a power cycle, The color palette is a global setting which will apply to all views.

Sonar application color palettes

<i>Classic Blue (default)</i>	
<i>Classic Black</i>	
<i>Classic White</i>	



DownVision™ application color palettes



Selecting a Color Palette

From the application's menu:

1. Select *[Display Options]*.
2. Select *[Sonar Colors]* / *[DownVision Colors]*.
3. Select the palette you want to use.

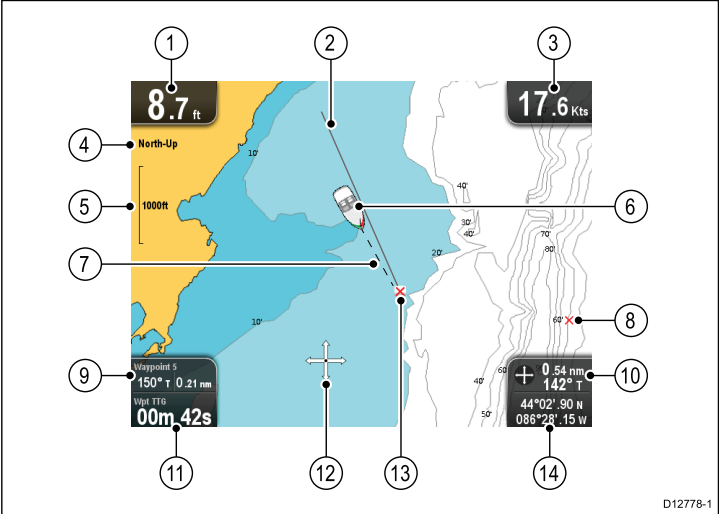
CHAPTER 8: CHART APPLICATION

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8.1 Chart application overview

The Chat application uses 2D perspective and provides a variety of cartographic information regarding your surroundings and charted objects. The Chart application is pre-loaded with LightHouse™, Navionics® and C-MAP by Jeppesen® world base maps. Compatible electronic charts can be used to expand the information and detail regarding your surroundings and charted objects.



1	Depth — Current water depth (only available with transducer connected).
2	Navigation origin line — During navigation, shows a solid line from the starting point to the target waypoint.
3	Speed — Current vessel speed (shown in selected system units).
4	Orientation — States the orientation mode that the chart is using (North-up, or Course-up).
5	Range — Chart scale indicator (shown in selected system units).
6	Vessel symbol— Shows your current position.

7	Vessel position line — During navigation, shows a dotted line from the vessel's current position to the target waypoint.
8	Waypoint — Inactive.
9	Water temperature — When not in active navigation current water temperature is displayed. Distance to cursor/waypoint — During active navigation the distance to the target is displayed. Bearing and distance to cursor/waypoint — During active navigation the distance to the target is displayed.
10	Bearing — In motion mode the vessel's current COG bearing is displayed. Cursor bearing and distance — In cursor mode the bearing and distance to the cursor's location, from your vessel is displayed.
11	Waypoint TTG — During active navigation the estimated 'time to go' to the target cursor/waypoint based on your current speed is displayed.
12	Cursor — Used to select chart objects and move around the chart area.
13	Target waypoint — Current target waypoint.
14	Vessel coordinates — In motion mode the current vessel coordinates are displayed. Cursor coordinates — In cursor mode the coordinates of the cursor's location is displayed.

The Chart application includes the following features to help you navigate your vessel safely and effectively:

Features

Using satellite-based navigation.	6.4 Satellite-based navigation
Planning with waypoints and tracks.	8.4 Waypoints overview 8.5 Tracks

Navigating using waypoints and tracks.	• 8.8 Navigation
Choosing electronic 2D cartography.	• 8.10 Chart selection • 8.2 Electronic charts overview – LightHouse charts – Navionics charts
Backing up and transferring Waypoints and Tracks.	• Saving user data and user settings
Displaying COG vectors	• 8.18 COG Vector
Viewing information for charted objects.	• 8.20 Chart objects
Controlling the level of information displayed on the Chart application	• 8.11 Chart Detail
Altering the Chart application's orientation to better suit your needs.	• 8.13 Chart orientation
Changing the boat symbol position in the Chart application.	• 8.15 Boat position
Changing the Depth at which the <i>[Deep Water]</i> contour changes color.	• 8.19 Deep Water

Note: To obtain full chart details, you must have a cartography chart card for the appropriate geographic area inserted into the card reader.

8.2 Electronic charts overview

Your multifunction display includes basic world base maps. Electronic charts provide additional cartographic information.

The level of cartographic detail available varies for different chart vendors, chart types, geographic locations and chart scales. The chart scale in use is indicated by the scale indicator, the value displayed is the distance that the line represents across the screen.

You can remove and insert chart cards at any time. The chart screen is automatically redrawn when the system detects that a compatible chart card has been inserted or removed.

Using a dual view page it is possible to display different cartography types simultaneously.

Caution: Care of chart and memory cards

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

- DO NOT save data or files to a card containing cartography as the charts may be overwritten.
- Ensure that chart and memory cards are fitted the correct way around. DO NOT try to force a card into position.
- DO NOT use a metallic instrument such as a screwdriver or pliers to insert or remove a chart or memory card.



LightHouse charts

With the introduction of the LightHouse II software, Raymarine multifunction displays now support the use of Raymarine's new LightHouse charts.

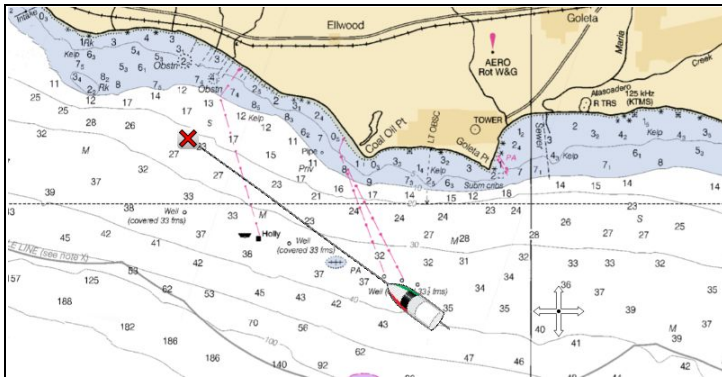
LightHouse charts are derived from vector and raster based charts, the LightHouse chart engine enables Raymarine to offer new chart types and regions from around the globe.



Refer to Raymarine's LightHouse Chart Store: <https://charts.raymarine.com> for the latest information on available LightHouse charts.

Follow the link above and Go to the Getting Started page for full instructions on downloading LightHouse Charts to MicroSD card using the LightHouse Download Manager.

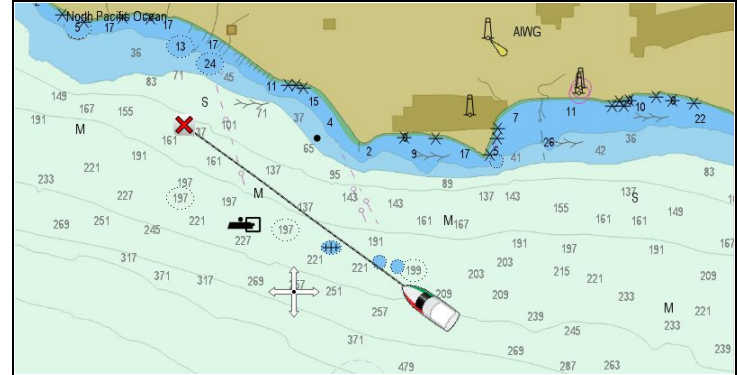
Raster charts



Raster charts are an exact copy / scan of an existing paper chart. All information is embedded directly in the chart. Ranging in and out of raster charts will make everything appear larger or smaller on the screen, including text. When changing the Chart application's orientation everything on the chart will rotate, including the text. As raster charts are a scanned image the file size is normally bigger when compared to the vector equivalent.

Chart application

Vector charts



Vector charts are computer generated, consisting of a series of points and lines that make up the chart. Chart objects and overlays on vector charts can be switched on and off and chart objects can be selected to provide further information. Ranging in and out of vector charts will make geographical features appear larger or smaller on the screen, however text and chart objects will remain the same size regardless of range. When changing the Chart application's orientation geographical features will rotate but text and chart objects will remain in the correct orientation for the display. As vector charts are generated rather than a scanned image the file size is normally smaller when compared to the raster equivalent.

Unzipping files to memory card

The LightHouse charts download file must be unzipped / extracted to memory card for use on your multifunction display.

Note: The instructions below are provided for guidance only. Depending on your PC's operating system and the archiving (zip) software in use the steps required may differ slightly from those shown below. If you are unsure please consult your operating system's and or archiving software's help files.

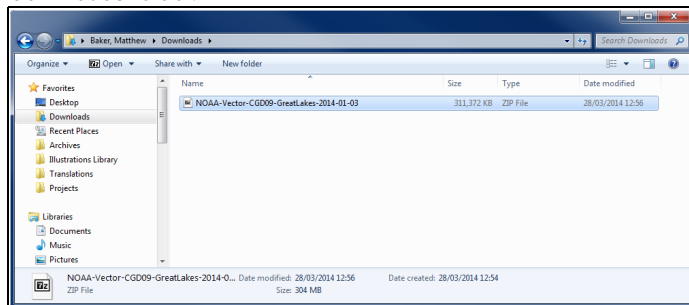
To unzip / extract charts with a filesize over 4GB you may need to install 3rd-party archiving (zip) software such as 7zip: <http://www.7-zip.org/>.

Ensure you have a memory card with sufficient space for the charts you want to download. The File size is displayed on each chart region's download page.

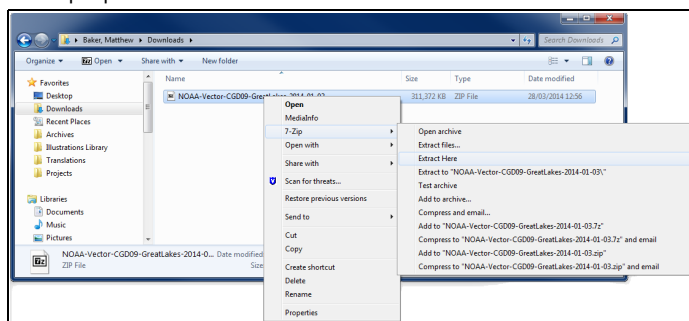
For best performance it is recommended that you use Class 10 or UHS (Ultra High Speed) class memory cards.

1. Locate the downloaded file.

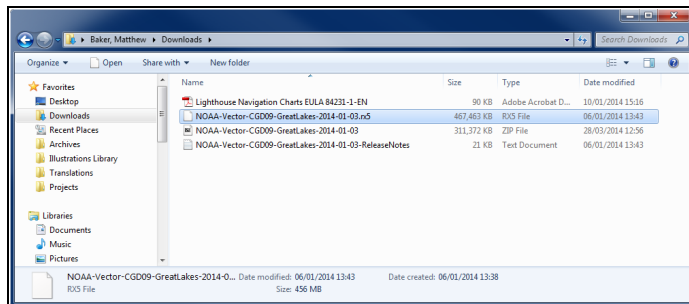
The file will be stored in the folder you selected or in your normal downloads folder.



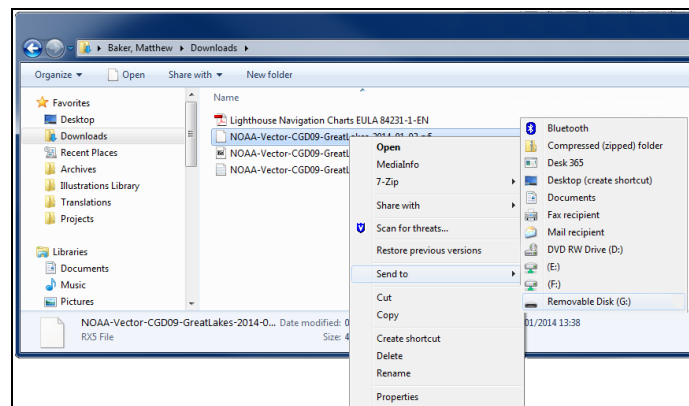
2. Right click on the file and select the *[Extract Here]* option from the zip options.



3. Once all files have been extracted select the chart files.

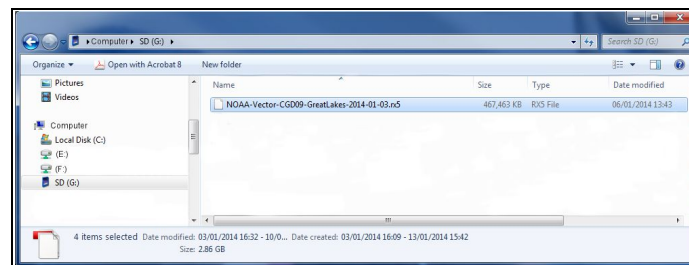


4. Right click and choose *[Send to > Removable Disk]*



The Chart files will now be copied to your memory card.

5. Check that the files have been successfully placed on your memory card by viewing its contents in your file browser.



6. Safely remove your memory card from your PC's card reader.
7. Insert your memory card into the card reader of your multifunction display.
8. Open the Chart application on your multifunction display.
9. Select the new chart from the *[Chart selection]* menu: *[Menu > Presentation > Chart Selection]*.

The Chart screen will be redrawn to display the newly selected chart type.



Navionics charts

Your display is supplied with a base map and depending on unit a Navionics chart card. You may also purchase Navionics chart cards to get enhanced chart details and additional chart features.

Your display is compatible with the following Navionics chart cards:

- Silver
- Gold
- Gold+
- Hotmaps

Note: Refer to the Raymarine website (www.raymarine.com) for the latest list of supported chart cards.



C-MAP by Jeppesen charts

Your display is supplied with world base maps and depending on purchasing options a Jeppesen chart card. You may also purchase extra Jeppesen chart cards to get enhanced chart details and additional chart features.

Your display is compatible with the following Jeppesen chart cards:

Chart application

- C-MAP Essentials
- C-MAP 4D MAX
- *C-MAP 4D MAX+

Refer to the Raymarine website (www.raymarine.com) for the latest list of supported chart cards.

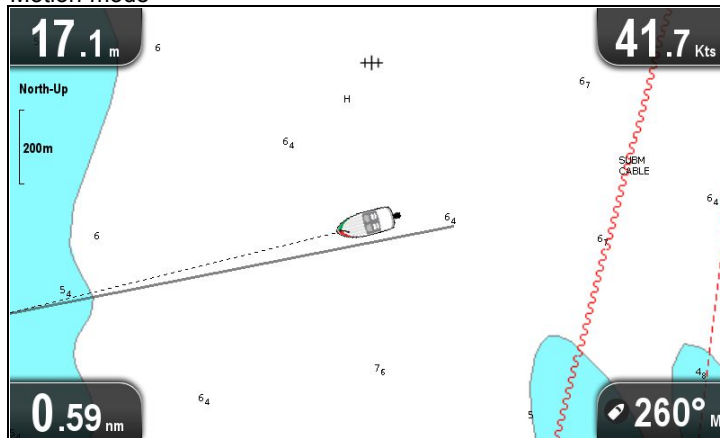
To check the current availability of Jeppesen chart cards and types, please visit: www.jeppesen.com or c-map.jeppesen.com.

Note: *C-MAP 4D MAX+ cartography will work with Dragonfly® products however the '+' features will not be available.

8.3 Chart application controls

The Chart application consists of 2 modes: Motion mode and Cursor mode. The behavior of some controls are dependent upon mode. Options and settings can also be accessed from the Chart context menu.

Motion mode



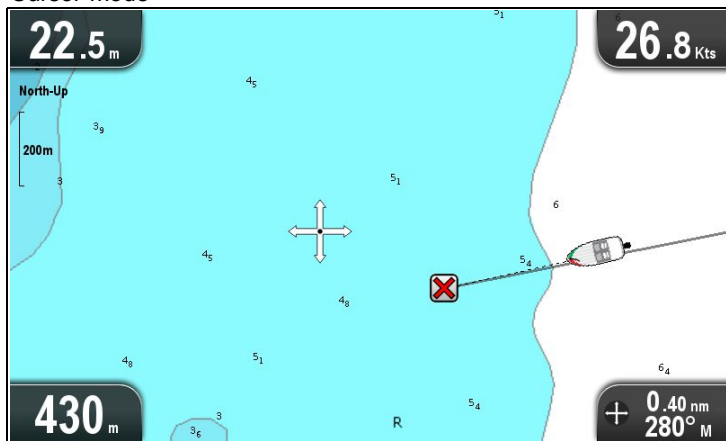
Motion mode is the default Chart application mode. In Motion mode the boat symbol remains centered onscreen and the Chart area moves around the boat symbol.

In Motion mode the controls behave as follows:

- turning the *[Rotary control]* clockwise ranges in.
- turning the *[Rotary control]* counter-clockwise ranges in.

- pressing the Joystick's *[Ok]* button opens the Chart application menu.
- pressing the *[Back]* button opens the *[View switcher]*.
- moving the *[Joystick]* in any direction enters Cursor mode.

Cursor mode



In Cursor mode the *[Joystick]* is used to move around the Chart area. When the cursor reaches the edge of the screen the Chart area will pan in that direction.

In Cursor mode the controls behave as follows:

- turning the *[Rotary control]* clockwise ranges in.
- turning the *[Rotary control]* counter-clockwise ranges out.
- moving the Joystick in any direction pans the chart area in that direction.
- pressing the Joystick's *[Ok]* button opens the context menu.
- pressing the *[Back]* button returns the application to Motion mode.

Menus and dialogs

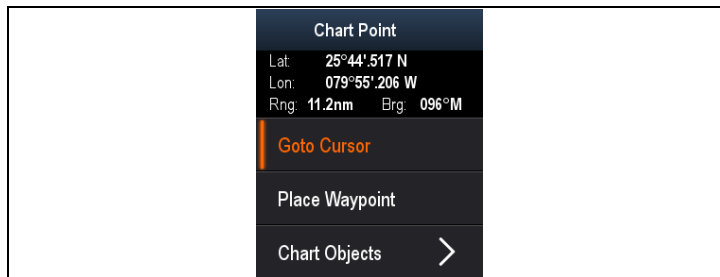
With a menu or dialog open the controls behave as follows:

- the *[Rotary control]* or the *[Joystick]* can be used to scroll through the menu's available options.
- pressing the *[Ok]* button selects the highlighted option, or confirms and dismisses pop up messages.

- pressing the *[Back]* button returns to the previous menu or closes the menu.

Chart context menu

Placing the cursor over an area in the chart application and pressing the OK button displays a context menu showing the cursor's positional data and menu items.



The context menu provides the following positional data for the cursor position in relation to your vessel:

- Latitude
- Longitude
- Range
- Bearing

The following menu items are available:

- *[Goto Cursor]* | *[Stop Goto]*
- *[Place Waypoint]*
- *[Photo]* (only available from a photo icon.)
- *[Tide Station]* (only available if a tide station is selected.)
- *[Current Station]* (only available if a current station is selected.)
- *[Pilot Book]* (only available at certain ports.)
- *[Chart Objects]*

8.4 Waypoints overview

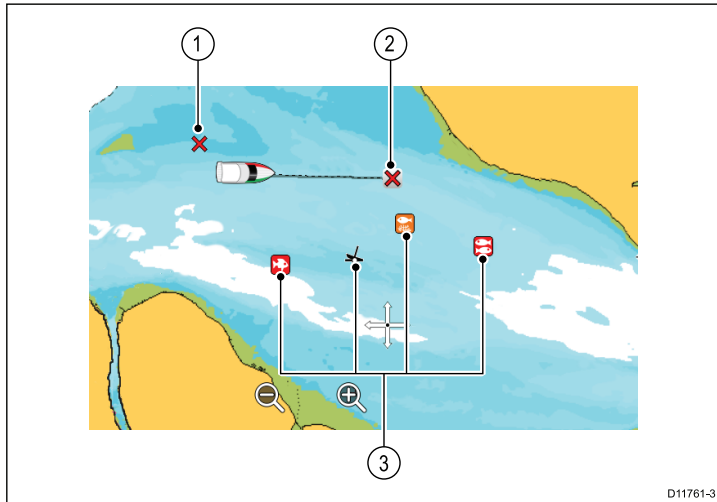
Waypoints are position markers used for the purposes of navigation. Your display can create waypoints, which can then be selected for active navigation.

There are a range of features for placing, navigating and managing waypoints, these can be accessed from the Waypoints menu and Waypoint context menu. Waypoints are represented onscreen using customizable waypoint symbols. Waypoints can be created, moved, deleted. Waypoints can also be exported or imported.

Waypoint display examples

Waypoints in the chart application

In the chart application both active and inactive waypoints are shown. An active waypoint is the one that you are navigating to.



Item	Description
1	Inactive waypoint
2	Active waypoint
3	Alternative waypoint symbols

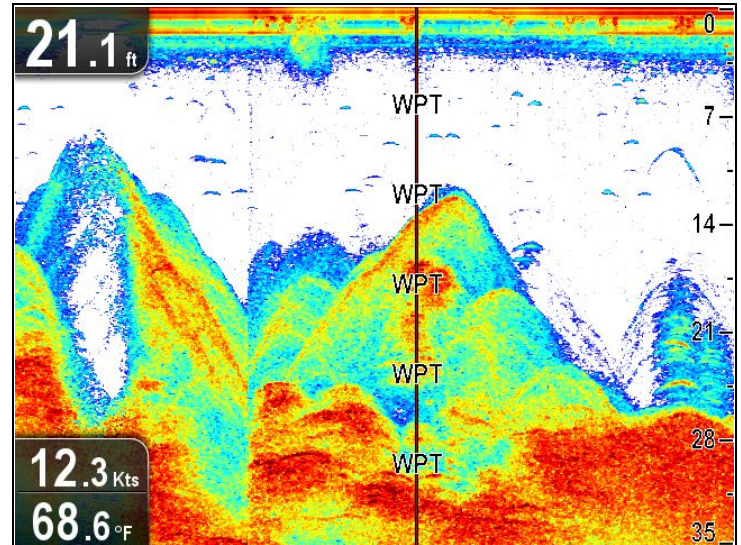
The default waypoint symbol is a red 'X'. Alternative symbols can be used if required.

Waypoints in the sonar and DownVision applications

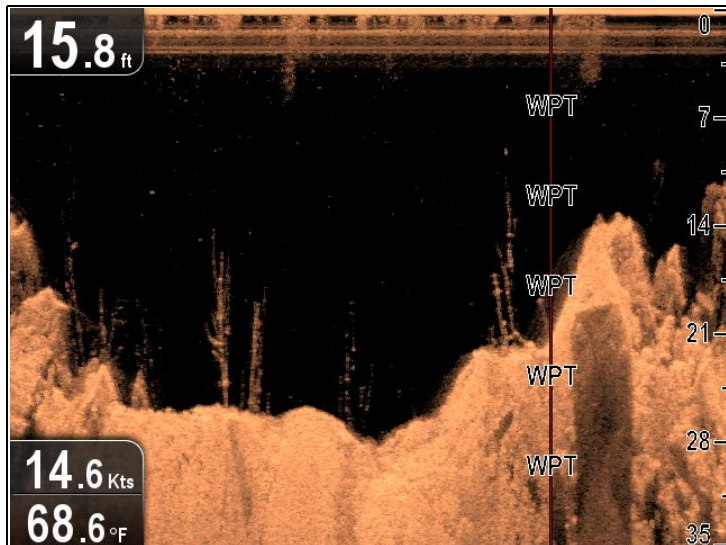
Waypoints can be placed in the Sonar and DownVision applications.

Waypoints in the sonar and DownVision applications are represented by a vertical line labelled WPT.

Example 1 — Sonar application

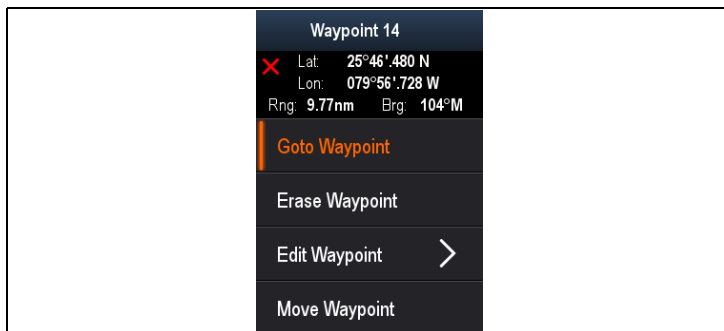


Example 2 — DownVision application



Waypoint context menu

The waypoint context menu shows the waypoint's positional data and related menu items.



The context menu provides the following positional data for the waypoint in relation to your vessel:

- Latitude
- Longitude

- Range
- Bearing

The following menu items are available:

- *[Goto Waypoint] / [Stop Goto]*
- *[Erase Waypoint]*
- *[Edit Waypoint]*
- *[Move Waypoint]*

Accessing the context menu

You can access the context menu by following the steps below.

1. Use the *[Directional controls]* to highlight the waypoint.
The cursor changes to the WPT cursor.
2. Press the *[OK]* button.
The Waypoint context menu is displayed.

Waypoint placement

Placing a waypoint

Displays with a GPS / GNSS receiver can use waypoints to mark points of interest.

1. Use the *[Directional controls]* to highlight the desired location with the cursor.
2. Press the *[OK]* button.
The context menu is displayed.
3. Select *[Place Waypoint]*.
A confirmation pop up message is displayed.
4. Select *[Ok]* to place the waypoint, or *[Edit]* to edit the waypoint details.

A waypoint is placed at the cursor's location.

Placing a waypoint at your vessel's position

From the Chart application:

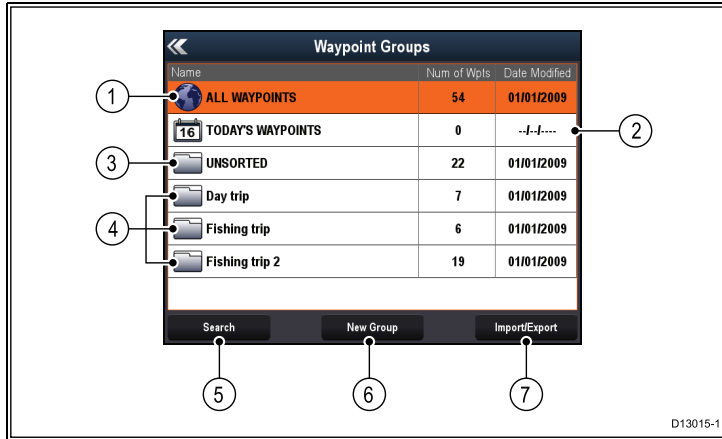
1. If required press the *[Back]* button to enter motion mode.
2. Press the *[OK]* button again to open the menu.
3. Select *[Place Waypoint]*.
A confirmation pop up message is displayed.
4. Select *[Ok]* to place the waypoint, or *[Edit]* to edit the waypoint details.

Waypoint groups

Waypoints are organized into groups. By default all waypoints are placed in the “UNSORTED” group.

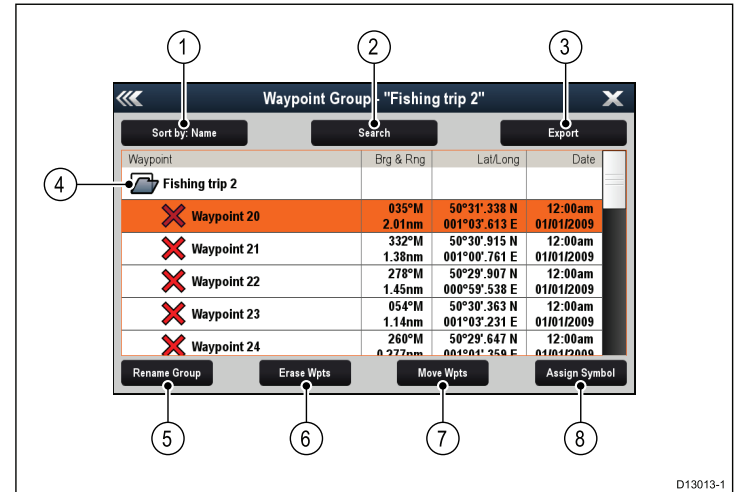
New waypoint groups can be created and each waypoint can be assigned to a waypoint group. For example; you could create a waypoint group called “Fishing” and place all of your waypoints where you caught fish into that group.

Waypoint groups can be managed from the Waypoint groups list.



1. All waypoints — Displays a list of all waypoints saved on your system.
2. Today's Waypoints — Displays a list of all waypoints created or modified today.
3. Unsorted — By default new waypoints are added to the *[UNSORTED]* waypoint group. Selecting the group will display a list of all waypoints that have not been assigned to a specific group.
4. Waypoint Groups — All waypoint groups are displayed in the list.
5. Search — You can search for waypoints using keywords by selecting *[Search]*.
6. New Group — A new waypoint group can be added by selecting *[New Group]*.
7. Import/Export — Waypoints can be exported to or imported from a microSD card by selecting *[Import/Export]*. Refer to [Saving user data and user settings](#) for details.

Selecting a waypoints group from the list displays a list of all waypoints in that group. Additional functions are available to help manage your waypoints.



1. Sort By: — Sort waypoints by Name, Range, Symbol or Date.
2. Search — Search for waypoints using keywords.
3. Export — Exports the waypoint group currently displayed to a memory card.
4. Waypoint group — This is the currently selected waypoint group.
5. Rename Group — Rename the current group.
6. Erase Wpts — Erase all waypoints in the group.
7. Move Wpts — Move all waypoints in the group.
8. Assign Symbol — Assign a new symbol to all waypoints in the group.

Displaying the waypoints group list

From the Chart application:

1. If required, Press the *[Back]* button to enter motion mode.
2. Press the *[Ok]* button to open the Chart application menu.
3. Select *[Waypoints]*.

The waypoints group list is displayed.

Making a new waypoint group

With the Waypoint Group List displayed:

1. Select *[New Group]*.
The on-screen keyboard is displayed.
2. Use the on-screen keyboard to enter the required name for the new group.
3. select *[SAVE]*.

Renaming a waypoint group

With the Waypoint group list displayed:

1. Select the group you want to rename.
Group details are displayed.
2. Select *[Rename Group]*.
The on-screen keyboard is displayed.
3. Using the on-screen keyboard change the group name as required.
4. Select *[SAVE]*.

Assigning a new symbol to a waypoint group

You can assign a new waypoint symbol to all the waypoints in a group.

From the Waypoint group list:

1. Select the group that you want to assign a new waypoint symbol to.
A group details list is displayed showing all waypoints in the selected group.
2. Select *[Assign Symbol]*.
A list of all available symbols is displayed.
3. Select the symbol that you want to use for the waypoints in the selected group.
A confirmation dialog is displayed.
4. Select *[Yes]* to apply the new symbols to the waypoints, or select No to *[cancel]*.

Moving a waypoint to a different group

With the Waypoints group list displayed:

1. Select *[ALL WAYPOINTS]*.
A list of all waypoints currently on your system is displayed.

2. Select the waypoint you want to move.
The waypoint details page is displayed.
3. Select the *[Group]* field
A list of all groups is displayed.
4. Select the *[Group]* that you want to move the waypoint to, or
5. Select *[Create New Group]* to move the waypoint to a new group.
The waypoint is moved to the selected group.

Moving all waypoints in a group to a different group

You can move all waypoints in a group to a different group.

With the Waypoints group list displayed:

1. Select the Group that contains the waypoints you want to move.
2. Select *[Move Wpts]*.
A list of all groups is displayed.
3. Select the group from the list that you want to move the waypoints too.
A confirmation dialog is displayed.
4. Select *[Yes]* to move the waypoints or *[No]* to cancel.
The waypoints have now been moved to the new group.

Erasing all waypoints in a group

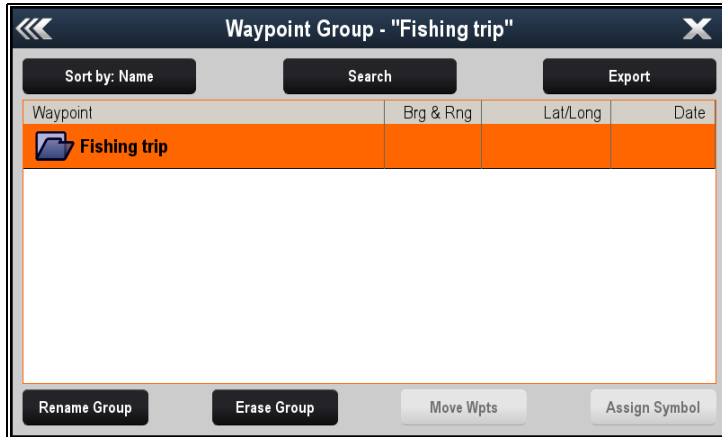
You can erase all waypoints in a selected group.

With the waypoint groups list displayed:

1. Select the group that contain the waypoints you want to erase.
A list is displayed showing all waypoints in the selected group.
2. Select *[Erase Wpts]*.
A confirmation dialog is displayed.
3. Select *[Yes]* to erase all waypoints in the group, or *[No]* to cancel.
All of the waypoints in the selected group are erased from the system and the group will now be empty.

Erasing a waypoint group

Before you can erase a waypoint group you must move or erase all the waypoints assigned to that group.



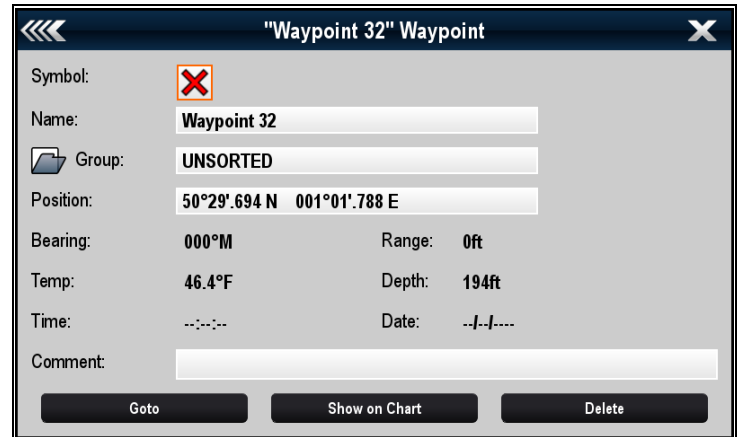
With the Waypoint Group displayed:

1. Select the waypoint group that you want to erase.
2. Select *[Erase Group]*.

The group is deleted from the system.

Waypoint information

When you create a waypoint, the system assigns information regarding the location marked. You can view and edit the details of any waypoint that has been created and stored.



The following information is assigned or captured for each waypoint:

- Symbol (a default symbol is assigned, or you can select an alternative.)
- Name (a default name is assigned, or you can select an alternative.)
- Position (Latitude and Longitude of the waypoint.)
- Bearing and Range (Bearing and range from vessel.)
- Temperature (requires appropriate sensor, only for waypoints captured at the vessel position.)
- Depth (requires appropriate sensor, only for waypoints captured at the vessel position.)
- Date and time
- Comment (you can add your own text comments to a waypoint.)

From the waypoint information page you can also perform the following actions:

- Goto (Start active navigation to the waypoint.)
- Show on Chart (Show the waypoint location in the chart application.)
- Delete (Delete the waypoint from the waypoints list.)

Editing waypoint details

With the Waypoint List displayed:

1. Select the waypoint you want to edit.
The waypoint information page is displayed.
2. Select the field you want to edit.
3. Use the on-screen keyboard to make the changes, then select the on-screen keyboard's *[SAVE]* button.

Editing a waypoint using the context menu

With the application page displayed:

1. Select the waypoint symbol on-screen.
The waypoint context menu is displayed.
2. Select *[Edit Waypoint]*.
The edit waypoint dialog is displayed.
3. Select the field you want to edit.
4. Use the on-screen keyboard to make the changes, and then select the on-screen keyboard's *[SAVE]* key.

Moving waypoints

Moving a waypoint using the context menu

With the application page displayed:

1. Select the waypoint symbol on-screen.
The waypoint context menu is displayed.
2. Select *[Move Waypoint]*.
3. Select the new position for the waypoint.

Moving a waypoint by entering new coordinates

With the Waypoint List displayed:

1. Select *[All Waypoints]*.
2. Select the relevant waypoint.
The waypoint information page is displayed.
3. Select the *Position* field.
4. Use the on-screen keyboard to make the changes, and then select the on-screen keyboard's *[SAVE]* key.

Erasing waypoints

Erasing a waypoint using the context menu

With the application page displayed:

1. Select the waypoint symbol on-screen.
The waypoint context menu is displayed.
2. Select *[Erase Waypoint]*.
The erase waypoint pop up message is displayed.
3. Select *[Yes]* to confirm, or *[No]* to cancel.

Erasing a waypoint using the waypoint list

With the Waypoint List displayed:

1. Select *[All Waypoints]*.
2. Select the waypoint you want to erase.
The waypoint information page is displayed.
3. Select *[Erase]*.
The erase waypoint pop up message is displayed.
4. Select *[Yes]* to confirm, or *[No]* to cancel.

Erasing all waypoints from the system

Note: The following procedure permanently deletes all Waypoints from the display. BEFORE proceeding, ensure that you backup any data that you want to keep on to a MicroSD card.

From the *[Backup & Reset]* menu:

1. Select *[Erase from System]*.
2. Select *[Erase Waypoints from System]*.
A confirmation dialog is displayed.
3. Select *[Yes]* to confirm.

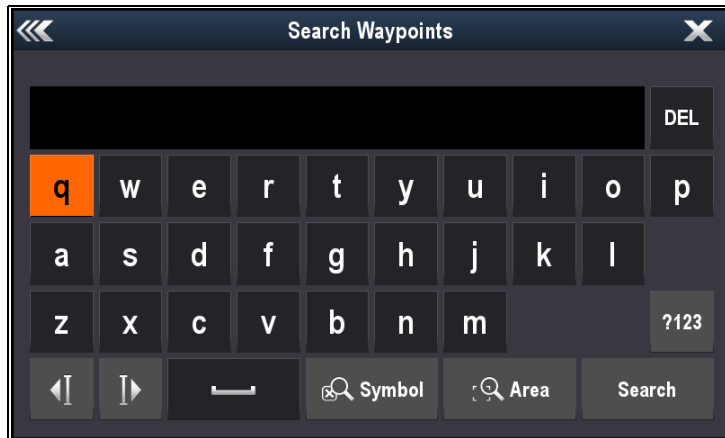
Waypoint search

The waypoint search feature allows you to search for waypoints on your system.

The search feature is available by selecting *[Search]* from the Waypoints list.

Waypoints can be searched for by:

- Name or keyword
- Symbol
- Area



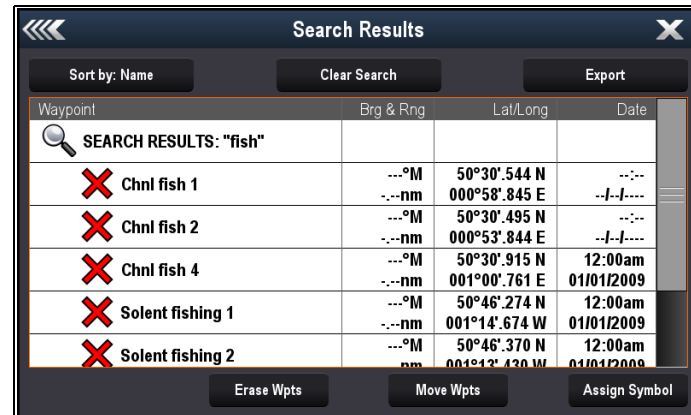
From the search results you can erase all the waypoints in the search list, move them to an existing or new waypoint group or assign all of the waypoints the same waypoint symbol.

Searching for waypoints by name or keyword

Waypoints can be searched for by name or keyword.

From the Waypoints list:

1. Select *[Search]*.
The search page is displayed.
2. Use the on-screen keyboard to enter the waypoint name or keyword.
3. Select *[Search]*.
The search results are displayed.



4. Select *[Erase Wpts]* to erase the list of waypoints from your system, or
5. Select *[Move Wpts]* to move the waypoints to a new or existing group, or
6. Select *[Assign Symbol]* to assign a new symbol to all the waypoints in the search results list.

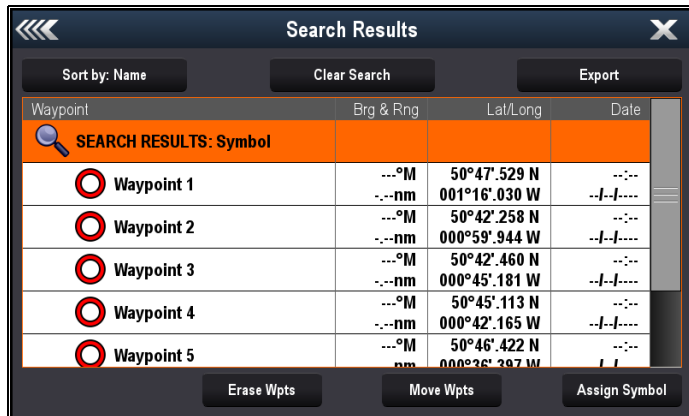
You can also select a waypoint from the list to view its details, or if accessed from the Chart application set a goto or display the waypoint in the Chart application.

Searching for waypoints by symbol

Waypoints can be searched for by waypoint symbol.

From the Waypoints list:

1. Select *[Search]*.
The search page is displayed.
2. Select *[Symbol]*.
The waypoints symbol list is displayed.
3. Select the symbol that is assigned to the waypoint(s) you want to search for.
A list of all waypoints using the selected symbol is displayed.



4. Select *[Erase Wpts]* to erase the list of waypoints from your system, or
5. Select *[Move Wpts]* to move the waypoints to a new or existing group, or
6. Select *[Assign Symbol]* to assign a new symbol to all the waypoints in the search results list.

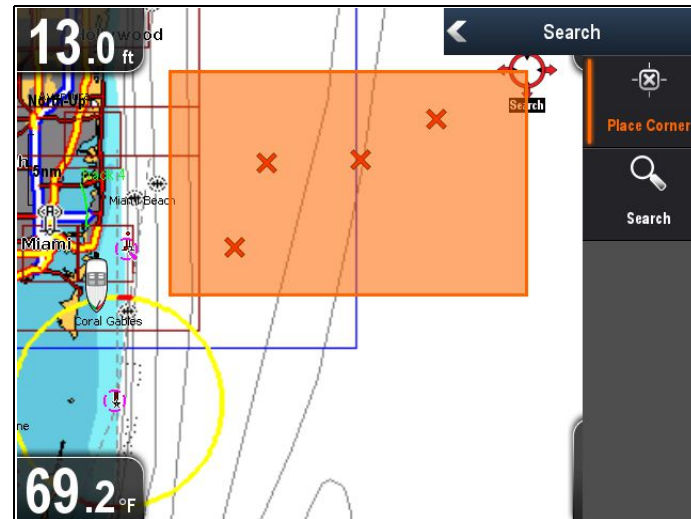
You can also select a waypoint from the list to view its details, or if accessed from the Chart application set a goto or display the waypoint in the Chart application.

Searching for waypoints by area

Waypoints can be searched for by selecting an area in the Chart application.

From the Chart application menu:

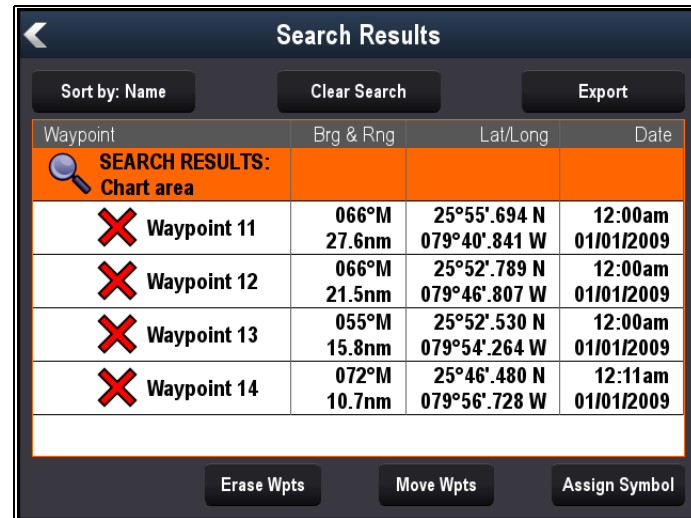
1. Select *[Waypoints]*.
The waypoints list is displayed.
2. Select *[Search]*.
The search page is displayed.
3. Select *[Area]*.
The Chart application is displayed with the area search menu open.
4. Select the location for the first corner point of the search area.
5. Select the location for the opposite corner of the search area.
A box is drawn on the screen which covers the selected area.



If the box is drawn in the wrong place you can draw a new area by selecting 2 new corner points.

6. Select *[Search]* from the menu.

A list of all waypoints in the selected area is displayed.



7. Select *[Erase Wpts]* to erase the list of waypoints from your system, or
8. Select *[Move Wpts]* to move the waypoints to a new or existing group, or
9. Select *[Assign Symbol]* to assign a new symbol to all the waypoints in the search results list.

You can also select a waypoint from the list to view its details, set a goto or display the waypoint in the Chart application.

Waypoint symbols

A Range of waypoint symbols are available that can be used to represent different waypoint types.

	Black Cross		Red Cross
	Black Circle		Red Circle
	Black Square		Red Square
	Black Triangle		Red Triangle
	Blue Cross		Green Cross
	Blue Circle		Green Circle

	Blue Square		Green Square
	Blue Triangle		Green Triangle
	Anchor		Wreck
	Buoy		Fuel
	Toilets		Restaurant
	Ramp		Caution
	Green racemark anti-clockwise		Green Racemark clockwise
	Yellow racemark anti-clockwise		Yellow Racemark clockwise
	Red racemark anti-clockwise		Red Racemark clockwise

	Marker		Restriction
	Bottom Mark		Top Mark
	Route Start		Route End
	Diver Down		Diver Down 2
	Oil Rig		Filled Circle
	FAD (Fish Attracting Device)		Concrete Rubble
	Seaweed		Oyster
	Green Can		Green Nun
	Red Can		Red Nun

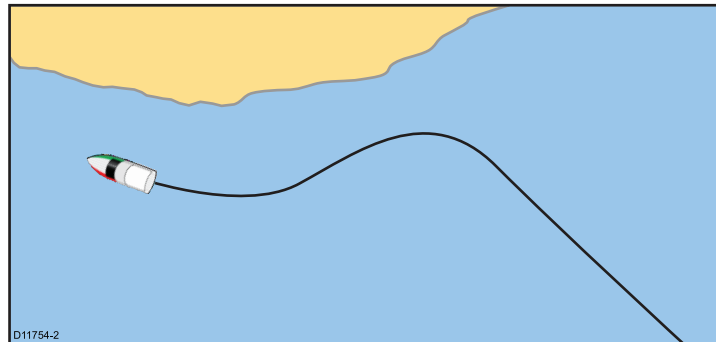
	Yellow Can		Yellow Nun
	Fish Trap		Brushpile
	Preferred Marks		Post
	Ledge		Fish
	Fish 1 Star		Fish 2 Star
	Fish 3 Star		School Fish
	Lobster		Small Fish
	Rocks		Reef
	Private Reef		Public Reef

	Dolphin		Shark
	Billfish		Tank
	Reef Ball		Sailboat
	Sportsfisher		Trawler
	Swimmer		Martini
	Tree		Tower
	Hill or Peak		Bridge
	Airplane		Car

	Skull		Diamond T
	Diamond Quarter		Filled Triangle

8.5 Tracks

A track is an on-screen trail that shows the passage you have taken. This trail is made up of a series of track points which are created automatically. You can save the track to create a permanent record of where you have been.



Creating a track

From the chart application menu:

1. Select *[Navigate]*.
2. Select *[Start Track]*.
The start track pop up message is displayed.
3. Select *[Ok]*.
As you navigate your vessel, your journey is automatically recorded.

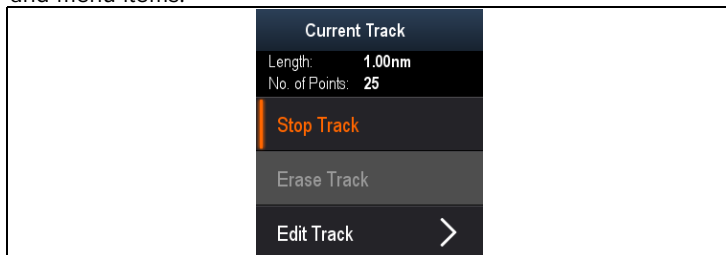
Note: If the power fails whilst a track is being recorded or the position fix is lost, a break will occur in the track.

Note: If the maximum number of tracking points is reached, a new track will be started automatically, unless you have reached the track limit.

4. To complete your track select *[Stop Track]* from the *[Navigate]* menu: *[Menu > Navigate > Stop Track]*.
The track stopped pop up message is displayed.
5. Select *[Save]*, *[Erase]* or *[Cancel]*.
 - Save — Will save the track and open the Edit track Properties dialog where you can name the track and choose a color for the track line.
 - Erase — Will erase the track.
 - Cancel — Will cancel the Stop Track action.

Track context menu

The Track context menu shows the track length, number of points and menu items.



The context menu provides the following menu items:

- *[Stop Track]* (only available during track creation.)
- *[Stop Goto]* (only available during active navigation.)
- *[Erase Track]* (not available during track creation.)
- *[Edit Track]*

Accessing the context menu

You can access the context menu by following the steps below.

1. Use the *[Directional controls]* to highlight the waypoint.
The cursor changes to the WPT cursor.
2. Press the *[OK]* button.
The Waypoint context menu is displayed.

Track editing

You can edit aspects of the stored tracks.

You can:

- Erase a track.
- Change the name of a track.
- Change the color of a track.

Displaying the track list

To display the track list follow the steps below.

From the Chart application menu:

1. Select *[Tracks]*.
The track list is displayed.

Renaming a track

You can change the name of a saved track.

With the track list displayed.

1. Select the track you want to edit.
The track options page is displayed.
2. Select *[Edit Name]*.
The on-screen keyboard is displayed.
3. Use the on-screen keyboard to change the track name.
4. When finished Select *[SAVE]*.

You can also edit track details by selecting *[Edit Track]* from the track context menu.

Changing the color of a track

You can change the color of a saved track.

With the track list displayed.

1. Select the track you want to edit.
The track options page is displayed.
2. Select *[Edit Color]*.
A list of colors is displayed.
3. Select the color you want to use.

You can also edit track details by selecting *[Edit Track]* from the track context menu.

Erasing tracks

Erasing a track

You can erase tracks from the system.

From the Chart application:

1. Select the *[Track]* on-screen
The track context menu is displayed.
2. Select *[Erase Track]*.
A confirmation pop-up dialog is displayed.
3. Select *[Yes]* to erase the track, or
4. Select *[No]* to keep the track.

You can also erase a track by selecting the relevant track from the Track list and selecting *[Erase Track]*.

8.6 Import and Export

Waypoints and Tracks can be imported and exported using a MicroSD card.

Saving waypoints and tracks to a memory card

Chartplotter variant displays can save their waypoints and tracks to MicroSD card.

Ensure a blank card (NOT a cartography card) is inserted into the card reader.

From the Chart application:

1. If required press the *[Back]* button to enter *Motion mode*.
2. Press the *[OK]* button to display the menu.
3. Select *[Waypoints]* or *[Tracks]* as required.
The Waypoints or Track list is displayed.
4. Select *[Import/Export]*.
5. Select *[Save Waypoints to Card]* or *[Save Tracks to Card]* as required.
6. Select the Waypoints or Tracks that you want to save, or select *[Select All]*.
7. Select *[Save]*.
The onscreen keyboard is displayed.
8. Enter a Filename.

The default filenames are *Waypoints* and *Tracks*.

9. Select *[Save]*.
A confirmation dialog is displayed.
10. Select *[OK]* to acknowledge and return to normal operation, or
11. Select *[Eject device]* if you want to remove the MicroSD card from the card reader.

Importing waypoints or tracks from a memory card

Chartplotter variant displays can import waypoints and tracks from MicroSD card.

Ensure that the MicroSD card that contains your saved waypoints and / or tracks is inserted into the card reader.

From the Chart application:

1. If required press the *[Back]* button to enter *Motion mode*.
2. Press the *[OK]* button to display the menu.
3. Select *[Waypoints]* or *[Tracks]* as required.
The Waypoints or Track list is displayed.
4. Select *[Import/Export]*.
5. Select *[Retrieve from Card]*.
The file browser is displayed.
6. Navigate to the gpx file you want to import.
7. Select the file.
A confirmation dialog is displayed.
8. If there is a naming conflict between waypoints or tracks already on your system and the waypoints or tracks you are trying to import you will be prompted to either:
 - i. *[Copy as new Waypoint]* — The waypoint or track will be imported and be assigned the next default name.
 - ii. *[Copy & Replace]* — The waypoint or track on your system will be overwritten with the imported waypoint or track with the same name .
 - iii. *[Don't Copy]* — The waypoint or track with the naming conflict will not be imported.When completed a Retrieving complete dialog box is displayed.
9. Select *[OK]*.

8.7 Waypoints and tracks storage capacity

The display can store the following quantities of waypoints and tracks.

Waypoints	3,000 waypoints (split between up to 100 waypoint groups)
Tracks	15 tracks (each track can contain up to 10,000 points)

8.8 Navigation

Navigating to the cursor's location

In Cursor mode you can set the Chart application to guide you to the cursor's location.

1. Use the *[Directional controls]* to move the cursor to the desired location.
2. Press the *[OK]* button.
The context menu is displayed.
3. Select *[Goto Cursor]*.

Navigating to a waypoint

You can set the Chart application to guide you to a waypoint.

1. Use the *[Directional controls]* to highlight a waypoint.
2. Press the *[OK]* button.
The context menu is displayed.
3. Select *[Goto Waypoint]*.

Navigating to a waypoint from the waypoints list

From the Chart application:

1. If required, press the *[Back]* button to enter motion mode.
2. Press the *[OK]* button to open the menu.
3. Select *[Waypoints]*.
The Waypoints list is displayed.
4. Select the waypoint you want to navigate to.
The Waypoint information page is displayed.

5. Select *[Goto]*.

Cancelling navigation to a waypoint

Active navigation can be cancelled by following the steps below.

With Pilot Control enabled on your MFD:

1. Select *[Standby]*.
2. For Wheel and Tiller drive systems see below instructions for disengaging the mechanical drive to return to manual steering
 - **Wheel Pilot:** Disengage the wheel drive clutch by rotating the clutch lever anti-clockwise (so the lever disengages fully from the locating pip. **Attention** Always reach around (not through) the wheel to operate the clutch lever.
 - **Tiller Pilot:** Remove the drive unit from the tiller pin. If necessary, extend or retract the pushrod by selecting *[Auto]* from the Pilot Control Dialog and using the *[Left Arrow]* and *[Right Arrow]* to adjust the rod's position.
3. Select any position anywhere on-screen.
The waypoint context menu is displayed.
4. Select *[Stop Goto]*.
5. Alternatively, in the chart application, go to: *[Menu > Navigate > Stop Goto]*.

Note: Once navigation is no longer active, the waypoint symbol returns to its normal state, and the dashed line between your vessel and the waypoint is removed.

Arriving at a waypoint

As your vessel approaches the target waypoint, the waypoint arrival alarm provides a warning.

1. Select *[OK]* on the waypoint arrival pop up message.

Note: You can set the approach distance (radius) at which the waypoint arrival alarm will sound using the *[Waypoint Arrival]* alarm located in the *[Alarms]* menu

8.9 Chart settings menu — cartography compatibility

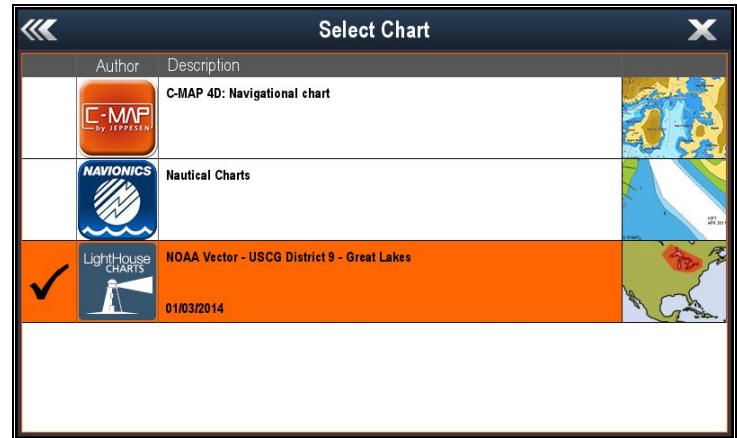
The options available in the Chart settings menu are dependent on the cartography in use. If the cartography in use is not compatible then the menu option will not be shown.

Menu option	Compatible cartography
<i>[Chart Selection]</i>	• LightHouse Charts • Navionics® Charts • Jeppesen®
<i>[Chart Detail]</i>	• LightHouse Charts • Navionics® Charts • Jeppesen®
<i>[High Res Bathy]</i>	• Jeppesen®
<i>[Chart Orientation]</i>	• LightHouse Charts • Navionics® Charts • Jeppesen®
<i>[Text/Symbol Size]</i>	• Jeppesen®
<i>[Boat Position]</i>	• Navionics® Charts
<i>[Community Edits]</i>	• LightHouse Charts • Navionics® Charts • Jeppesen®
<i>[Sonar Logs]</i>	• Navionics® Charts
<i>[COG Vector]</i>	• LightHouse Charts • Navionics® Charts • Jeppesen®
<i>[Deep Water From]</i>	• LightHouse Charts • Navionics® Charts • Jeppesen®

8.10 Chart selection

When a Chart application instance is opened for the first time, any chart cards inserted into the card reader will be detected and the cartography stored on the card will be displayed.

Where multiple chart types are present, the order of precedence will be: LightHouse Charts first, then Navionics, and then C-Map. You can switch between cartography types at any time using the Chart selection page. The selected cartography applies to the active instance of the Chart application and will persist over a power cycle.



Selecting the Cartography type

You can select the cartography type you want to display in the Chart application.

Ensure you have inserted the chart card that contains the cartography type you want to display.

From the Chart application menu:

1. Select *[Chart Settings]*.
2. Select *[Chart Selection]*.
A list of available cartography is displayed.
3. Select the cartography type you want to display

The Chart window is re-drawn to show the select cartography type.

8.11 Chart Detail

The chart detail setting determines the amount of detail shown in the Chart application.

Selecting the *Low* option for the *[Chart Detail]* disables the following objects:

- Community Layer
- Chart Text
- Chart Boundaries
- Light Sectors
- Routing Systems
- Caution Areas
- Marine Features
- Land Features
- Panoramic Photo
- Roads
- Additional Wrecks
- Color Seabed Areas
- Depth Contours

Changing the level of chart detail

You can change the level of detail, displayed in the Chart application.

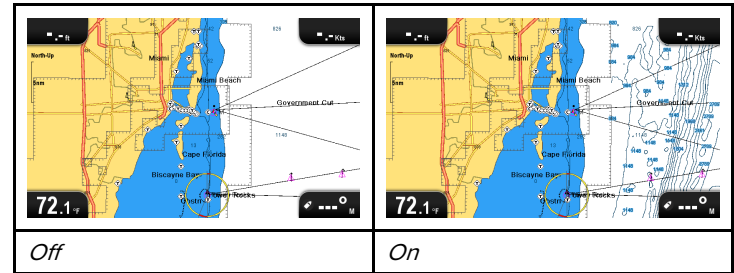
In Motion mode:

1. Press the *[OK]* button.
The Chart application menu is displayed.
2. Select *[Chart Settings]*.
3. Select *[Chart Detail]*.
Selecting Chart Detail switched the detail between *High* and *Low*.

8.12 High resolution bathymetry

The *[High Res Bathy]* setting is available when using Jeppesen charts and switches the display to view high resolution bathymetry data.

Note: With *[High Res Bathy]* switched on the cartography is not suitable for navigation.



Switching High Res Bathy on and off

If supported by your cartography type, the chart can be switched to display high resolution bathymetry data.

From the Chart application menu:

1. Select *[Chart Settings]*.
2. Select *[High Res Bathy:]* so that *On* is selected to display high resolution bathymetry data, or
3. Select *[High Res Bathy:]* so that *Off* is selected to turn off high resolution bathymetry data.

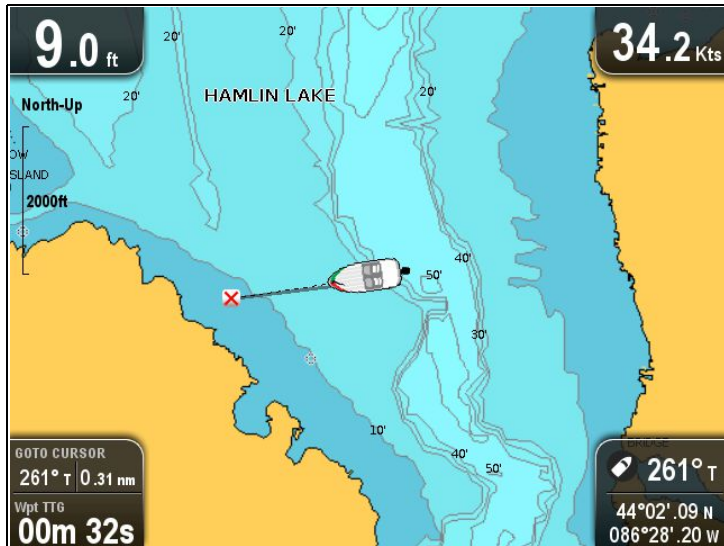
8.13 Chart orientation

The orientation of a chart refers to the relationship between the chart and the direction that you are travelling in.

The mode you choose applies to all chart views, and is restored at power up.

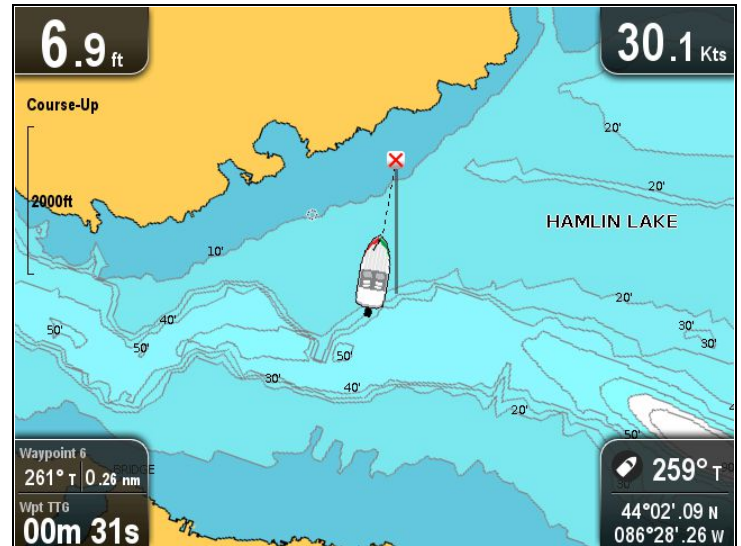
The following options are available:

North Up



In *[North Up]* mode, the *[Chart Orientation]* is fixed with true north pointing up (this is the usual orientation for nautical charts). As your heading changes the vessel symbol rotates accordingly. This is the default orientation for the Chart application.

Course Up



In *[Course Up]* mode, during active navigation, the Chart application displays the vessel's current destination waypoint directly up. As your COG changes, the boat symbol moves accordingly. If you select a new course, the picture will reset to display the new course upwards. If COG data becomes unavailable *[Course Up]* mode is suspended and the Chart application will set COG to 0°.

Setting the chart orientation

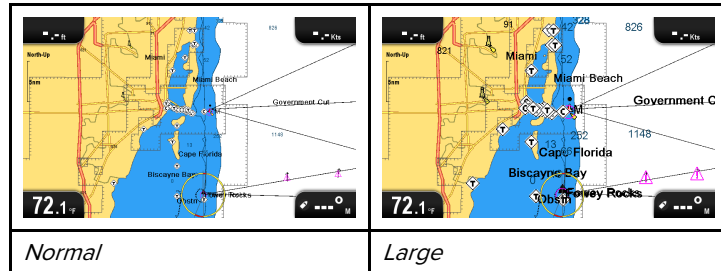
From the chart application menu:

1. Select *[Chart settings]*.
2. Select *[Chart Orientation]*.

Selecting Chart Orientation switches between *North Up* and *Course Up*.

8.14 Text and Symbol size

The size that text and symbols appears when using Jeppesen cartography can be adjusted to make the screen easier to read from *[Normal]* to *[Large]*



Switching text and symbol size

If supported by your cartography type, the display text and symbols size can be increased.

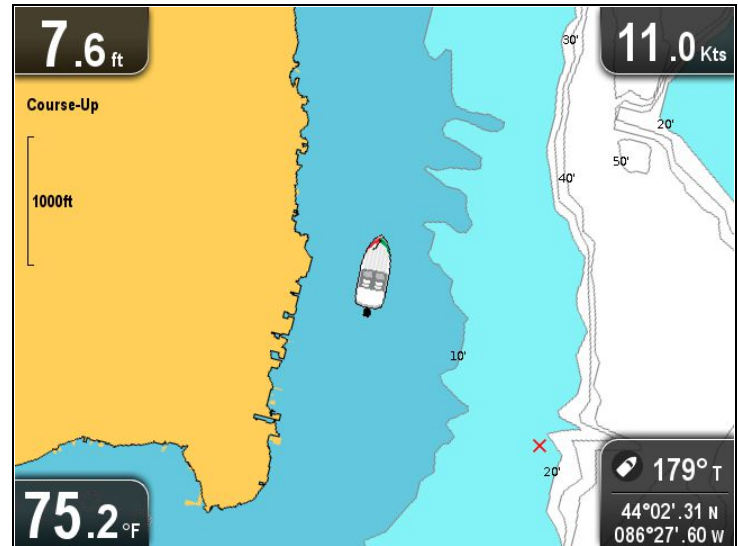
From the Chart application menu:

1. Select *[Chart Setting]*.
2. Select *[Text/Symbol Size:]* so that *Large* is selected to increase the size of text and symbols in the Chart application, or
3. Select *[Text/Symbol Size:]* so that *Normal* is selected to reduce text and symbol size to normal.

8.15 Boat position

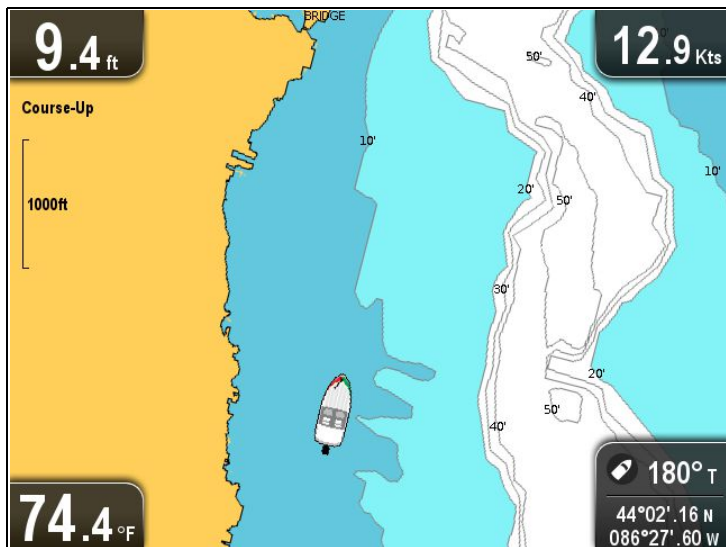
The *[Boat position]* function determines the position of the boat symbol on-screen.

Center



With Boat position set to *Center* the boat symbol remains in the center of the screen.

Offset



With Boat position set to *Offset* the boat symbol is offset from the center of the screen so that more Chart area is visible in front of the boat symbol.

Changing the boat position

You can change the position the vessel icon is displayed on-screen.

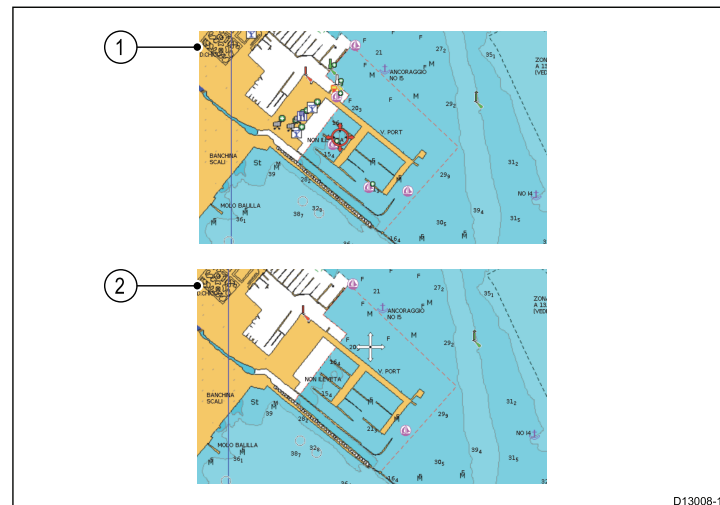
From the Chart application menu:

1. Select *[Chart Settings]*.
2. Select *[Boat Position]*.

Selecting Boat Position switches the boat position between *Center* and *Offset*.

8.16 Community layer

If supported by your cartography type, you can display User Generated Content (UGC) on the Chart application.



1. Community feature On.
2. Community feature Off.

To check if your Navionics cartography supports community edits downloads please refer the Navionics website: for information and instructions on downloading the updates to your chart card.

Switching the community layer on and off

If supported by your cartography type, the User Generated Content (UGC) overlay can be switched on and off by following the steps below.

From the Chart application menu:

1. Select *[Chart Setting]*.
2. Select *[Community Edits:]* so that *On* is selected to display UGC, or
3. Select *[Community Edits:]* so that *Off* is selected to turn off UGC.

8.17 Sonar logging

When using compatible Navionics® cartography you can share sonar information using Navionics® SonarCharts™.

The *[Sonar Logging]* function allows logging of depth and position data to a compatible Navionics® chart card. The saved data can then be uploaded to the Navionics® website to help improve the contour detail of Sonar Charts on your MFD. Refer to the Navionics® website for instructions on how to upload your sonar logs.

Enabling and disabling Sonar logs

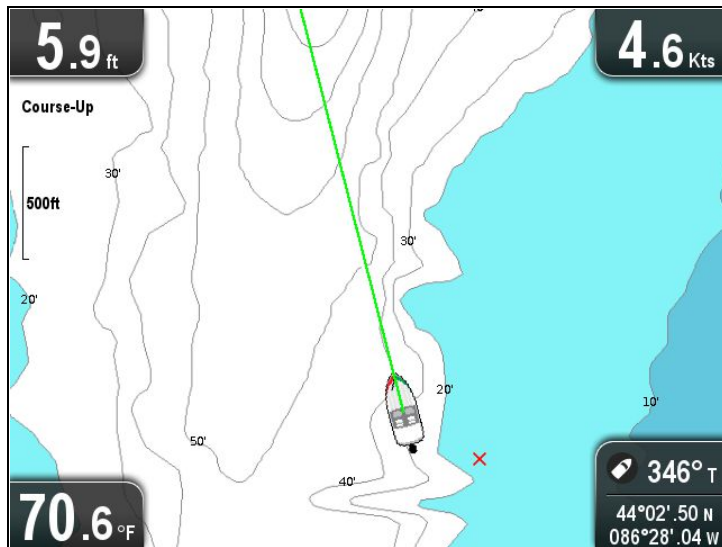
Sonar logging can be enabled or disabled at any time.

From the Chart application menu:

1. Select *[Chart Setting]*.
2. Select *[Sonar Logs:]* so that *On* is selected to enable sonar logging, or
3. Select *[Sonar Logs:]* so that *Off* is selected to disable sonar logging.

8.18 COG Vector

The chart application can be set to display a green line to represent Course Over Ground (COG).



The green line indicates the vessel's actual course.

Enabling and disabling the COG vector

You can enable and disable the COG vector.

From the Chart application menu:

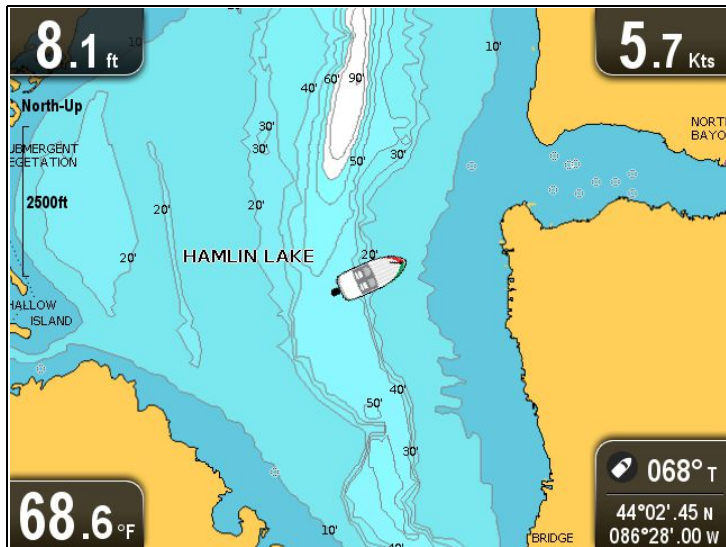
1. Select *[Chart Settings]*.
2. Select *[COG Vector]* to switch between *On* and *Off*.

8.19 Deep Water

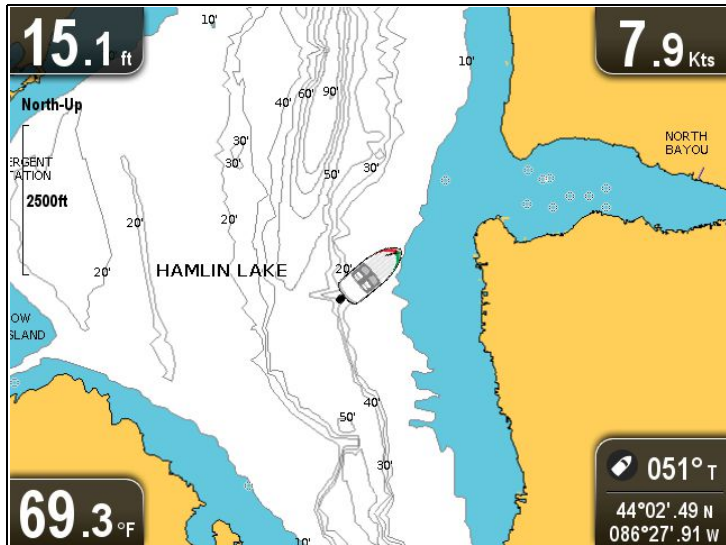
Water depth can be represented using blue shading with white used to represent deep water.

The depth at which water color turns from blue shading to white can be changed to suit user requirements.

Example 1 — Deep water from: 60 ft



Example 2 — Deep water from: 6 ft



The deep water feature can also be turned off so that all water appears as white.

Note: The Deep Water function is restricted to the depth data available on your chart card.

Changing the Deep Water From setting

You can choose the depth that water changes color to white.

From the Chart application menu:

1. Select *[Chart Settings]*.
2. Select *[Deep Water From:]*.
3. Select the relevant depth, or select *Off*.

Selecting *Off* will display all water as white regardless of depth.

8.20 Chart objects

If supported by your cartography type, you can display additional information in the chart application for cartographic objects, ports, or marinas.

Depending on the chart card you are using, you can view some or all of the following additional information:

- Details of each cartographic object that is marked on the chart, including source data for structures, lines, open sea areas, and so on.
- Details of ports, port features, and business services.
- Pilot book information (similar to what you would see in a marine almanac). Pilot book information is available at certain ports.
- Panoramic photos of ports and marinas. The availability of photos is indicated by a camera symbol on the chart display.

This information can be accessed using the chart context menu options.

Note: The amount of object information available depends upon the electronic charts that you are using for your system. For full details of the features available for your chart cards contact your chart card supplier.

Displaying pilot book information

From the chart application, when a port symbol is displayed for a port which has a pilot book:

1. Select the port symbol.
The chart context menu will be displayed.
2. Select *[Pilot Book]*.
3. Select the relevant chapter.

Displaying panoramic photos

From the chart application, when a camera symbol is displayed, indicating the availability of a photo:

1. Select the camera symbol.
The chart context menu is displayed.
2. Select *[Photo]*.
The photo is displayed on screen.

Note: Not all cartography types are capable of displaying panoramic photos.

Displaying chart object information

From the chart application:

1. Select an object.
The chart context menu is displayed.
2. Select *[Chart Objects]*.
The Chart Object Dialog is displayed.
3. Selecting available options will display detailed information about that item.
4. Selecting the position in the dialog will close the information dialog and position the cursor over the object.

CHAPTER 9: TOOLS & SETTINGS

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9.1 System Settings menu

The options available in the System settings menu are shown below

Menu item	Description	Options
[Key Beep]	An audible sound can be made each time a button is pressed.	• <i>On (default)</i> • <i>Off</i>
[Language]	Allows selection of the system language.	See the System Languages section for details.
[Units Set-up]	Allows selection of units of measurement that will be used in all applications.	• * <i>Distance Units</i> • * <i>Speed Units</i> • <i>Depth Units</i> • <i>Temperature Units</i>
[GPS Set-up]	Provides GPS setting options.	• View Satellite Status • COG/SOG Filter: • Restart GPS
[Sonar Set-up]	Provides sonar setting options.	• Depth Offset (W) • Sonar Reset
[Time and Date Set-up]	Allows selection of date and time formats.	• Date Format: • Time Format: • Local Time:
[Simulator]	Switches simulator mode <i>On</i> or <i>Off</i> .	• <i>Off (default)</i> • <i>On</i> • <i>On (Demo movie)</i>
[Maintenance]	Provides diagnostic information. Also enables you to reset the display to factory settings.	See the Maintenance menu section for details.
[Bearing Mode]	Determines how bearing data is displayed.	• <i>True</i> • <i>Magnetic (default)</i>

System Languages

The system can operate in the following languages:

English (US)	English (UK)	Arabic
Bulgarian	Chinese	Croatian

Czech	Danish	Dutch
Finnish	French	German
Greek	Icelandic	Italian
Japanese	Korean	Norwegian
Polish	Portuguese (Brazilian)	Russian
Slovenian	Spanish	Swedish
Turkish		

Selecting a language

From the Tools & Settings menu:

1. Select *[System Settings]*.
2. Select *[Language:]*
3. Select the relevant language from the list.

Units set-up

You can specify your preference for the units of measurement that will be used in all applications.

Menu item	Description	Options
<i>[Distance Units]</i>	The units of measure that will be used in all applications for the display of all values related to distance.	• <i>Nautical Miles</i> • <i>NM & m (Nautical miles and meters)</i> • <i>Statute Miles</i> • <i>Kilometers</i>
<i>[Speed Units]</i>	The units of measure that will be used in all applications for the display of all values related to speed.	• <i>Knots</i> • <i>MPH (Miles Per Hour)</i> • <i>KPH (Kilometers Per Hour)</i>
<i>[Depth Units]</i>	The units of measure that will be used in all applications for the display of all values related to depth.	• <i>Feet</i> • <i>Meters</i> • <i>Fathoms</i>
<i>[Temperature Units]</i>	The units of measure that will be used in all applications for the display of all values related to temperature.	• <i>Fahrenheit</i> • <i>Celsius</i>

GPS Set-up menu

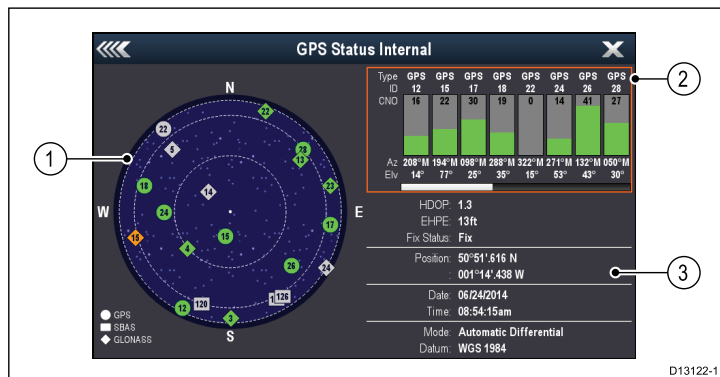
The options available from the GPS set-up menu are shown below.

Menu item	Description	Options
<i>[View Satellite Status]</i>	Displays the GPS status page.	
<i>[COG/SOG Filter:]</i>	Refer to the COG/SOG Filter section for details.	• <i>Low</i> • <i>Medium (default)</i> • <i>High</i>
<i>[Restart GPS]</i>	Selecting <i>[Restart GPS]</i> will reboot the internal GPS.	

GPS Status

Products with an internal GPS receiver or GNSS (GPS/GLONASS) receiver can use the GPS status page to view the status of the available compatible satellites.

The satellite constellations are used to position your boat in the Chart application. You can set up your receiver and check its status from the menu. For each satellite, the screen provides the following information:



1. Sky view
2. Satellite status
3. Position and fix information

Sky view

Sky view is a visual representation that shows the position of navigation satellites and their type. Satellite types are:

- **Circle** — A circle identifies a satellite from the GPS constellation.
- **Square** — A square identifies an (SBAS) differential satellite.
- **Diamond** — A diamond identifies a satellite from the GLONASS constellation.

Satellite status area

The Satellite status area displays the following information about each satellite:

- **Type** — Identifies which constellation the satellite belongs to.
- **ID** — Displays the satellites identification number.
- **CNO** (Carrier-to-noise ratio) — Displays the signal strength of each satellite shown in the Sky view:
 - Grey = searching for satellite
 - Green = satellite in use
 - Orange = tracking satellite
- **Azimuth and Elevation** — Provides the angle of elevation and azimuth between the location of the receiver and the satellite.

Position and fix information

The following positional and fix information is provided:

- **Horizontal Dilution of Precision (HDOP)** — HDOP is a measure of satellite navigation accuracy, calculated from a number of factors including satellite geometry, system errors in the data transmission and system errors in the receiver. A higher figure signifies a greater positional error. A typical receiver has an accuracy of between 5 and 15 m. As an example, assuming a 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 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.
- **Estimated Horizontal Position Error (EHPE)** — EHPE is a measure of the estimated error of a position fix in the horizontal plane. The value displayed indicates that your position is within a circle radius of the stated size 50% of the time.
- **Fix status** — indicates the actual mode the receiver is reporting:
 - **Fix** — Satellite fix has been acquired.
 - **No Fix** — No satellite fix can be acquired.
 - **D Fix** — A differential beacon fix has been acquired.
 - **SD Fix** — A differential satellite fix has been acquired.
- **Position** — Displays the latitude and longitude position of your receiver.
- **Date / Time** — Displays the current date and time generated by the position fix in UTC format.
- **Mode** — Identifies whether the receiver is working in differential mode or non-differential mode.
- **Datum** — The receiver's datum setting affects the accuracy of the vessel position information displayed in the Chart application. In order for your receiver and MFD to correlate accurately with your paper charts, they must be using the same datum.

COG/SOG Filter

The COG/SOG filter averages the velocity vectors to compensate for the oscillating motion of the vessel, giving a clearer indication of the vessel's course and speed.

The filter does not affect the calculation of your receiver's reported position. The velocity vectors calculated from the signal provide an instantaneous measure of speed and direction of the receiver. The

COG and SOG can therefor seem erratic under certain conditions. For example, when a vessel is moving slowly through rough seas, the receiver moves from side to side as well as in the direction of travel.

Slow moving vessels, or vessels sailing in rough seas will benefit from a high setting, whereas a power boat that can quickly change speed and direction will benefit from a low setting.

Sonar Set-up menu

The Sonar Set-up menu provides the following options.

<i>[Depth Offset:]</i>	Offset represents the depth of the transducer relative to: • Waterline = 0.0 ft and above. • Keel = 0.1 ft and below.	• <i>-9.8 to +9.8 feet</i> — or equivalent units
<i>[Sonar Reset]</i>	Restore all settings on the sonar module to factory default. When performing a <i>[Sonar Reset]</i> , it is normal to briefly lose connection with the sonar module.	• <i>Yes</i> • <i>No</i>

Time and Date set-up

You can specify your preference for the way that time and date will appear in all applications.

Menu item	Description	Options
[Date Format]	Allows you to specify the preferred format for the display of date information in all applications.	• <i>MM:DD:YY (Month, Day, Year)</i> • <i>DD:MM:YY (Day, Month, Year)</i>
[Time Format]	Allows you to specify the preferred format for the display of time information in all applications.	• <i>12hr</i> • <i>24hr</i>
[Local Time: UTC]	Allows you to specify the local time zone that will be used, in terms of an offset from UTC (Universal Coordinated Time), in 0.5 hour increments.	• <i>–13 to +13 hours (in 0.5 hour increments)</i>

Simulator mode

The Simulator mode enables you to practice operating your display without data from the GPS receiver or transducer.

The simulator mode is switched on / off in the [System Settings] menu.

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

Note: The simulator will NOT display any real data. This includes safety messages.

Enabling and disabling simulator mode

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

From the [System Settings] menu:

1. Select [Simulator:].
2. Select *On* to turn simulator mode on, or
3. Select *Off* to turn simulator mode off.

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

Maintenance menu

This menu provides access to systems settings reset and diagnostics.

Menu item	Description	Options
<i>[About This Unit]</i>	Displays a list of details about your unit.	• Device • Serial No. • Software
<i>[Settings Reset]</i>	This option resets your menu options to factory default. It will NOT affect your waypoints or tracks.	• <i>Yes</i> • <i>No</i>
<i>[Settings and Data Reset]</i>	In addition to the settings reset detailed above, performing a settings and data reset will also remove ALL waypoint and track data.	• <i>Yes</i> • <i>No</i>
<i>[Back-up Settings]</i>	Back-up settings to a memory card.	
<i>[Restore Settings]</i>	Restore saved settings from a memory card.	
<i>[Save Logs]</i>	Allows you to save error logs to SD card for troubleshooting purposes.	
<i>[Erase Logs]</i>	Selecting this option will erase any crash logs on the device.	

9.2 Alarms

Alarms alert you to a situation or hazard requiring your attention.

You can configure the behavior of certain alarms by selecting the relevant menu option from the *[Alarms]* menu.

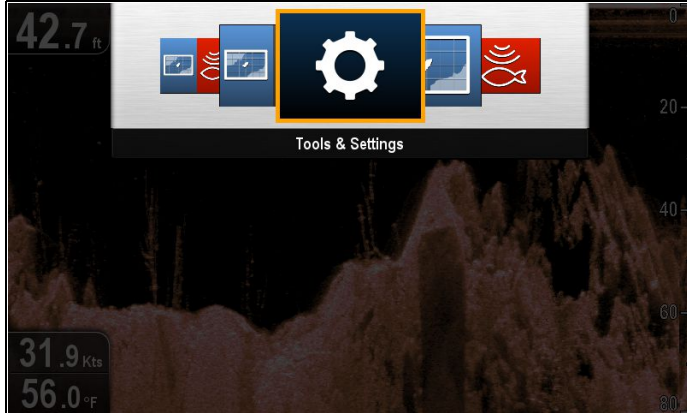
Accessing the alarms menu

The *[Alarms]* menu can be accessed at any time by following the steps below.

From any application:

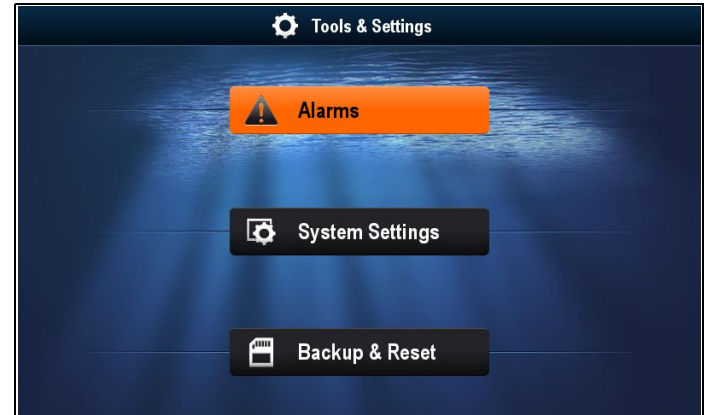
1. Press *[Back]* to open the *[View switcher]*

If the application is currently in Cursor mode then press the [Back] button twice.



2. Select *[Tools and Settings]*.

The *[Tools & Settings]* page is displayed.



3. Select *[Alarms]*.

The *[Alarms]* menu is displayed.

Alarms menu

The Alarms available are dependent on the display variant.

Alarm	Description	Options
<i>[Deep Water Arrival]</i>	When set to <i>On</i>, an alarm is triggered when the depth reaches the value specified in the <i>[Deep Limit]</i> setting. This option is only available when current depth data is available. Note: The <i>[Deep limit]</i> cannot be set to a value less than the <i>[Shallow Limit]</i>.	Deep: • <i>Off (default)</i> • <i>On</i> Deep Limit: • 2ft (or equivalent units) to the maximum of the transducer range
<i>[Shallow Water Arrival]</i>	When set to <i>On</i>, an alarm is triggered when the depth reaches the value specified in the <i>[Shallow Limit]</i> setting. This option is only available when current depth data is available. Note: The <i>[Shallow Limit]</i> cannot be set to a depth greater than the <i>[Deep Limit]</i>.	Shallow: • <i>Off (default)</i> • <i>On</i> Shallow Limit: • 2ft (or equivalent units) to the maximum of the transducer range
<i>[Fish]</i>	If the Fish alarm and fish depth limits alarm are set to <i>On</i>, a warning sound is triggered if any target meets the sensitivity level and is within the Shallow Fish Limit and Deep Fish Limit that you specify. The following items are available in the sub-menu: • Fish — Switches fish alarm On and Off. • Fish Sensitivity — If the Fish alarm is set to On, an alarm is triggered when the fish return strength reaches the sensitivity that you specify. • Fish Depth Limits — Switches depth limits On and Off. • Shallow Fish Limit — Specifies the lower value for the Fish Alarm Depth Limit. • Deep Fish Limit — Specifies the upper value for the Fish Alarm Depth Limit.	Fish • <i>Off (default)</i> • <i>On</i> Fish Sensitivity • 1 to 10 Fish Depth Limits • <i>On</i> • <i>Off (default)</i> Shallow Fish Limit • 2ft (or equivalent units) to the maximum of the transducer range Deep Fish Limit

Alarm	Description	Options
		• 2ft (or equivalent units) to the maximum of the transducer range
<i>[Water Temperature]</i>	When set to <i>On</i> , an alarm and pop-up message is triggered when the water temperature is equal to or lower than the Lower Temp Limit, or equal to or greater than the Upper Temp Limit.	Water Temperature • <i>Off (default)</i> • <i>On</i> Lower Temp Limit • <i>60 degrees fahrenheit (or equivalent units)</i> • <i>–09.9 to +99.7 degrees fahrenheit (or equivalent units)</i> Upper Temp Limit • <i>75 degrees fahrenheit (or equivalent units)</i> • <i>–09.7 to 99.9 degrees fahrenheit (or equivalent units)</i>
<i>[Waypoint Arrival Alarm]</i>	When you arrive at a waypoint, an alarm is triggered. This setting allows you to specify the distance from the target waypoint at which the alarm is triggered.	0.01 to 9.99 nm (or equivalent units)

9.3 Backup and reset

The backup and reset menu provides the following functions:

Save Data to Card	Save waypoints and tracks to memory card.	For details on performing these procedures please refer to Saving user data and user settings .
Retrieve from Card	Retrieve / import waypoints and tracks from a memory card.	
Erase from Card	Erase files from a memory card.	
Erase from System	Erase waypoints and tracks from the system.	
User Settings	Backup, Reset and restore user settings, Reset settings and data.	
Restart GPS	Restart the internal GPS receiver.	
Sonar Reset	Reset the internal sonar module.	For details on performing a sonar reset please refer to Resetting your system

Saving user data and user settings

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

Type of data	Description	Notes
Waypoints	Saves all waypoints to a single archive file.	Only 1 waypoints archive file can be saved per memory card.
Tracks	Saves all tracks to a single archive file.	Only 1 tracks archive file can be saved per memory card.
User settings	Saves 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: It is recommended that you save your user data and user settings to a memory card on a regular basis.

Note: It is strongly recommended that you save user data and settings to a separate memory card, and NOT to a chart card containing cartography.

Erasing all waypoints from the system

Note: The following procedure permanently deletes all Waypoints from the display. BEFORE proceeding, ensure that you backup any data that you want to keep on to a MicroSD card.

From the *[Backup & Reset]* menu:

1. Select *[Erase from System]*.
2. Select *[Erase Waypoints from System]*.
A confirmation dialog is displayed.
3. Select *[Yes]* to confirm.

Erasing tracks from the system

Note: The following procedure permanently deletes the selected Tracks from the display. BEFORE proceeding, ensure that you backup any data that you want to keep on to a memory card.

From the Tools & Settings page:

1. Select *[Backup & Reset]*.
2. Select *[Erase from System]*.
3. Select *[Erase Tracks from System]*.
The Track list is displayed.
4. Select the Track that you want to delete, or
5. Select *[Erase All]*.
A confirmation dialog is displayed.
6. Select *[Yes]* to confirm.

Erasing waypoints and tracks from a MicroSD card

Ensure the MicroSD card with the saved waypoints and / or tracks that you want to delete is inserted into the card reader.

From the *[Backup & Reset]* menu:

1. Select *[Erase from Card]*.
The file browser is displayed.
2. Navigate to the file you want to delete.
3. Select the file you want to delete.
A confirmation dialog is displayed.
4. Select *[Yes]* to delete the file.

Saving user settings to a memory card

Ensure a memory card (NOT a chart card) is inserted into the card reader.

From the Tools & Settings page.

1. Select *[Backup & Reset]*.
2. Select *[User Settings]*.
3. Select *[Back-up Settings]*.
When complete a saving complete dialog box is displayed.
4. Select *[OK]* to acknowledge and return to normal operation, or
5. Select *[Eject device]* if you want to remove the memory card from the card reader.

Retrieving user settings from a memory card

Ensure the memory card with your user settings saved on it is inserted into the card reader.

From the Tools & Settings page.

1. Select *[Backup & Reset]*.

2. Select *[User Settings]*.
3. Select *[Restore Settings]*.
When complete a Restoring complete dialog box is displayed.
4. Select *[OK]* to acknowledge and return to normal operation, or
5. Select *[Eject device]* if you want to remove the memory card from the card reader.

Resetting your system

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

There are 3 types of reset operation.

- Settings reset.
- Settings and data reset.
- Sonar reset.

Settings reset

This option resets your setup menus to factory default. It will NOT affect your waypoints or tracks.

Settings and data reset

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

Sonar reset

This option resets the sonar to default settings.

Resetting system settings

From the Tools & Settings page:

1. Select *[Backup & Reset]*.
2. Select *[User Settings]*.
3. Select *[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.
If Yes is selected the system will reboot and the settings will be reset to factory defaults.

Resetting system settings and data

Note: Performing a settings and data reset erases ALL waypoints and tracks 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.

From the Tools & Settings page:

1. Select *[Backup & Reset]*.
2. Select *[User Settings]*.
3. Select *[Settings & 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.
If Yes is selected the system will reboot and the settings will be reset to factory defaults and all use data is deleted.

Resetting the sonar

The sonar setting can be reset to factory defaults.

From the Tools & Settings page:

1. Select *[System Settings]*.
2. Select *[Sonar Set-up]*.
3. Select *[Sonar Reset]*.
A confirmation dialog is displayed.
4. Select *[Yes]* to reset the sonar settings.

CHAPTER 10: MAINTENANCE

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- 10.1 Service and maintenance — page 116
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- 10.3 Transducer cleaning — page 116

10.1 Service and maintenance

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

Routine equipment checks

Raymarine strongly recommends that you complete a number of routine checks to ensure the correct and reliable operation of your equipment.

Complete the following checks on a regular basis:

- Examine all cables for signs of damage or wear and tear.
- Check that all cables are securely connected.

10.2 Product cleaning

Best cleaning practices.

When cleaning products:

- If your product includes a display screen, do NOT wipe the 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.

Cleaning the display case

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

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

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

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

Cleaning the display screen

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

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

10.3 Transducer cleaning

Growth can collect on the bottom of the transducer, this can reduce performance. To prevent the build up of sea growth, coat the transducer with a thin layer of water based antifouling paint, available from your local marine dealer. Reapply paint every 6 months or at the beginning of each boating season. Certain smart transducers have restrictions on where antifouling paint is applied. Please consult your dealer.

Note: Transducers with a temperature sensor may not work properly if painted.

Note: Never use ketone based paint. Ketones can attack many plastics possibly damaging the sensor.

Note: Never use spray paint on your transducer. Spraying incorporates tiny air bubbles, and a marine transducer cannot transmit properly through air.

Use a soft cloth and mild household detergent to clean the transducer. If the fouling is severe, remove the growth with a green scotch brite™ pad. Be careful to avoid scratching the transducers face.

If your transducer has a paddlewheel you can wet sand with fine grade wet/dry paper.

Note: Harsh cleaning solvents such as acetone may damage the transducer.

CHAPTER 11: TROUBLESHOOTING

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11.1 Troubleshooting

The troubleshooting information provides possible causes and corrective action required for common problems associated with marine electronics installations.

All Raymarine products are, prior to packing and shipping, subjected to comprehensive test and quality assurance programs. However, if you experience problems with the operation of your product this section will help you to diagnose and correct problems in order to restore normal operation.

If after referring to this section you are still having problems with your unit, please contact Raymarine Technical Support for further advice.

11.2 Power up troubleshooting

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

Product does not turn on or keeps turning off

Possible causes	Possible solutions
Blown fuse / tripped breaker	1. Check condition of relevant fuses and breakers and connections, replace if necessary (Refer to the <i>Technical Specification</i> section of your product's installation instructions for fuse ratings.) 2. If fuse keeps blowing check for cable damage, broken connector pins or incorrect wiring.
Poor / damaged / insecure power supply cable / connections	1. Check that the power cable connector is fully inserted into the unit and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 3. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 4. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 5. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc, replace if necessary.
Incorrect power connection	The power supply may be wired incorrectly, ensure the installation instructions have been followed.
Power source insufficient	With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible to establish actual voltage when the current is flowing. (Refer to the <i>Technical Specification</i> section of your product's installation instructions for power supply requirements.)

Product will not boot up (re-boot loop)

Possible causes	Possible solutions
Power supply and connection	See possible solutions from 'Products does not turn on or keeps turning off' above.
Software corruption	1. In the unlikely event that the products software has become corrupted please try re-flashing the latest software from the Raymarine website. 2. On display products, as a last resort, you can try to perform a 'Power on Reset', however this will delete all settings/presets and user data (such as waypoints and tracks) and revert the unit back to factory defaults.

Performing a Power on Reset

Performing a Power on Reset will delete all settings/presets and user data (such as waypoints and tracks) and revert the unit back to factory defaults.

1. Power the unit off.
2. Power the unit back on.
3. When the Dragonfly logo appears Press and hold the *[Power]* button.

The Raymarine Initialization screen is displayed.

4. Press the *[Power]* button again to select '1 – Reset to factory defaults'.

A 7 second countdown will begin. When the countdown reaches zero the unit will be reset to factory default settings.

5. You can stop the reset process by pressing the *[Power]* button again before the countdown timer reaches zero.

This will select the second option: '2– Exit and start the application' and begin a new countdown timer.

11.3 GPS troubleshooting

Before troubleshooting GPS problems ensure your product has the latest software, by checking the Software Updates page on the Raymarine website www.raymarine.com.

GPS cannot acquire satellite fix

Possible causes	Possible solutions
Geographic location or prevailing conditions preventing satellite fix.	Check periodically to see if a fix is obtained in better conditions or another geographic location. A GPS Status page is available. This provides satellite signal strength and other relevant information.
Location of product	For optimum performance the unit should be mounted above decks and not be in close proximity to any structural bulkheads or other electrical equipment or cables which may cause interference. Refer to Chapter 3 Planning the installation for details on product location requirements

Cannot output GPS data

Possible causes	Possible solutions
This product is a standalone product that is not networkable, GPS data cannot be shared with other devices.	N/A

11.4 Sonar / DownVision troubleshooting

Problems with the Sonar or DownVision and their possible causes and solutions are described here.

Scrolling image is not being displayed

Possible causes	Possible solutions
Sonar disabled	Select <i>[Enable Sonar]</i> from the Shortcuts page.
Damaged cables	1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 5. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 6. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Fishfinder applications to stop scrolling or the unit to reset/turn off), replace if necessary.
Damaged or fouled transducer	Check the condition of the transducer ensuring it is not damaged and is free from debris/fouling, clean or replace as necessary.
Wrong transducer fitted	The CPT-DV transducer is a DownVision™ only transducer, you cannot use the Sonar application with a CPT-DV transducer connected. If you have a DVS or Pro variant display ensure you are using a dual element transducer such as the CPT-DVS. Refer to 3.3 DownVision™ transducer compatibility for transducer compatibility.

No depth reading / lost bottom lock

Possible causes	Possible solutions
Transducer location	Check that the transducer has been installed in accordance with the transducer location requirements.
Transducer angle	If the transducer angle is too great the beam can miss the bottom, adjust transducer angle and recheck.
Transducer kicked-up	Check that the transducer hasn't kicked up due to hitting an object.

Possible causes	Possible solutions
Power source insufficient	With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible to establish actual voltage when the current is flowing. (Refer to Chapter 13 Technical specification for power supply requirements.)
Damaged or fouled transducer	Check the condition of the transducer ensuring it is not damaged and is free from debris / fouling.
Damaged cables	1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 5. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 6. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Fishfinder applications to stop scrolling or the unit to reset/turn off), replace if necessary.
Vessel speed too high	Slow vessel speed and recheck. Note: The Sonar channel will be able to hold bottom at higher speeds than the DownVision™ channel.
Bottom too shallow or too deep	The bottom depth may be outside of the transducers depth range, move vessel to shallower or deeper waters as relevant and recheck. (Refer to Chapter 13 Technical specification for transducer depth range.) Note: Depending on water conditions, the Sonar channel maybe able to achieve increased depth range over the DownVision™ channel.

Poor / problematic image

Possible causes	Possible solutions
Scrolling paused	From Cursor mode, press the <i>[Back]</i> button to enter scrolling mode.
Sensitivity settings may be inappropriate for present conditions.	Check and adjust sensitivity settings or perform a Sonar reset.
Damaged cables	1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 5. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 6. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Fishfinder applications to stop scrolling or the unit to reset/turn off), replace if necessary.
Transducer location	The presence of thin lines at a constant depth may be a reflection of structures on the bottom of the vessel check that the transducer has been installed in accordance with the transducer location requirements.
	If the transducer is mounted too high on the transom it may be lifting out of the water, check that the transducer face is fully submerged when planing and turning.
Transducer kicked-up	Check that the transducer hasn't kicked up due to hitting an object.
Damaged or fouled transducer	Check the condition of the transducer ensuring it is not damaged and is free from debris / fouling.
Damaged transducer cable	Check that the transducer cable and connection is free from damage and that the connections are secure and free from corrosion.
Turbulence around the transducer at higher speeds may affect transducer performance	Slow vessel speed and recheck.
Interference from another transducer	1. Turn off the transducer causing the interference. 2. Reposition the transducers so they are further apart.

11.5 Miscellaneous troubleshooting

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

Problem	Possible causes	Possible solutions
Display behaves erratically: • Frequent unexpected resets. • System crashes or other erratic behavior.	Intermittent problem with power to the display.	Check relevant fuses and breakers.
		Check that the power supply cable is sound and that all connections are tight and free from corrosion.
		Check that the power source is of the correct voltage and sufficient current.
	Ensure you have the latest software.	Check the Raymarine website regularly for software updates for your product www.raymarine.com .
	Corrupt data / other unknown issue.	Perform a Settings and Data Reset. Important: This will result in the loss of any settings and data (such as waypoints) stored on the product. Save any important data to a memory card before resetting.

CHAPTER 12: TECHNICAL SUPPORT

CHAPTER CONTENTS

- 12.1 Raymarine product support and servicing — page 128
- 12.2 Learning resources — page 129

12.1 Raymarine product support and servicing

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

Product information

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

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

You can obtain this product information using the menus within your product.

Servicing and warranty

Raymarine offers dedicated service departments for warranty, service, and repairs. Don't forget to visit the Raymarine website to register your product for extended warranty benefits: <http://www.raymarine.co.uk/display/?id=788>.

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

Web support

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

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

- Software updates — <http://www.raymarine.com/software>

Telephone and e-mail support

Region	Tele-phone	E-mail
United Kingdom (UK), EMEA, and Asia Pacific	+44 (0)1329 246 777	support.uk@raymarine.com
United States (US)	+1 (603) 324 7900 (Toll-free: +800 539 5539)	support@raymarine.com
Australia and New Zealand	+61 2 8977 0300	aus.support@raymarine.com (Raymarine subsidiary)
France	+33 (0)1 46 49 72 30	support.fr@raymarine.com (Raymarine subsidiary)
Germany	+49 (0)40 237 808 0	support.de@raymarine.com (Raymarine subsidiary)
Italy	+39 02 9945 1001	support.it@raymarine.com (Raymarine subsidiary)
Spain	+34 96 2965 102	sat@azimut.es (Authorized Raymarine distributor)
Netherlands	+31 (0)26 3614 905	support.nl@raymarine.com (Raymarine subsidiary)
Sweden	+46 (0)317 633 670	support.se@raymarine.com (Raymarine subsidiary)
Finland	+358 (0)207 619 937	support.fi@raymarine.com (Raymarine subsidiary)
Norway	+47 692 64 600	support.no@raymarine.com (Raymarine subsidiary)

Region	Tele- phone	E-mail
Denmark	+45 437 164 64	support.dk@raymarine.com (Raymarine subsidiary)
Russia	+7 495 788 0508	info@mikstmarine.ru (Authorized Raymarine distributor)

12.2 Learning resources

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

Video tutorials

	Raymarine official channel on YouTube: • http://www.youtube.com/user/RaymarineInc
	Video Gallery: • http://www.raymarine.co.uk/view/?id=2679
	Product Support videos: • http://www.raymarine.co.uk/view/?id=4952

Note:

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

Training courses

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

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

FAQs and Knowledge Base

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

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

Technical support forum

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

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

CHAPTER 13: TECHNICAL SPECIFICATION

CHAPTER CONTENTS

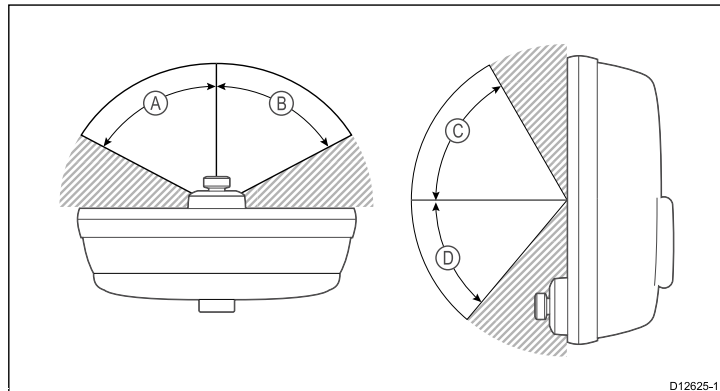
- [13.1 Technical specification — page 132](#)

13.1 Technical specification

Display physical specification

	5.7" display	7" display
Dimensions	- Width: 148 mm (5.8 in) - Height (NOT including bracket): 148.3 mm (5.8 in) - Height (including bracket): 203 mm (8 in) - Display depth (NOT including cables): 73 mm (2.9 in) - Display depth (including cables): 163 mm (6.4 in)	- Width: 191 mm (7.5 in) - Height (NOT including bracket): 156 mm (6.1 in) - Height (including bracket): 208 mm (8.2 in) - Display depth (NOT including cables): 78 mm (3 in) - Display depth (including cables): 168 mm (6.6 in)
Weight (unit including cradle)	0.64 kg (1.4 lbs)	0.76 kg (1.68 lbs)

Viewing angle



	Dragonfly®6	Dragonfly®7
A	70°	75°
B	70°	75°
C	70°	75°
D	45°	70°

Note: The viewing angles stated above were taken using internationally agreed standards and should be used for comparison purposes only. Do NOT install the product before testing the viewability in the desired location.

Physical specification — CPT-60 Transducer

Dimensions	- Length: 202.6 mm (8 in) - Height: 117.4 mm (4.6 in)
Cable length	6 m (19.7 ft)
Weight (unit including cradle)	0.60 kg (1.3 lbs)

Display power specification

	Dragonfly® 6	Dragonfly® 7
Nominal supply voltage	12 V dc	12 V dc
Operating voltage range	10.8 V dc to 15.6 V dc	10.8 V dc to 15.6 V dc
Power consumption	8 W Max at full brightness. 4.5 W Max in PowerSave mode.	9.4 W Max at full brightness. 4.8 W Max in PowerSave mode.
Fuse and thermal breaker ratings	5 A — In-line fuse (not supplied). 3 A — Thermal breaker.	5 A — In-line fuse (not supplied). 3 A — Thermal breaker.

Display environmental specification

Environmental specifications below apply to all display variants

Operating temperature	0°C to +55°C (32°F to 131°F)
Storage temperature	-30°C to +70°C (-22°F to 158°F)
Relative humidity	Maximum 75%
Waterproof rating	• IPX6 and IPX7

Transducer environmental specification

Operating temperature	0°C to + 40°C (32°F to 104°F)
Storage temperature	–20°C to + 70°C (23°F to 158°F)
Waterproof rating	• IPX6 and IPX7

Display LCD specification

	5.7" display	7" display
Size	5.7 in	7 in
Type	TFT backlit LED	TFT backlit LED
Color depth	24-bit	24-bit
Resolution	640 x 480 VGA	800 x 480 WVGA
Aspect	4:3	16:9

	5.7" display	7" display
Viewing angle	• Left / Right: 70 degrees • Top / Bottom: 70 / 45 degrees	• Left / Right: 75 degrees • Top / Bottom: 75 / 70 degrees
Maximum allowable wrongly illuminated pixels	5	6

Sonar / DownVision™ specification

The following specification only applies to DownVision™ products.

Channels	2 x CHIRP (1 x traditional sonar and 1 x DownVision™)
Beam coverage	• Sonar — conical beam. • DownVision™ — Wide (port / starboard) and thin (fore / aft) fan beam.
Depth range	0.6 M (2 ft) to 183 m (600 ft). Depending on water conditions, the Sonar channel maybe able to achieve increased depth range over the DownVision™ channel.

Note: The DV and Wi-Fish™ variants are single channel DownVision™ only products.

GPS specification

Channels	50
Cold start	Approximately 35 seconds in optimum conditions
Receiver IC Sensitivity	–159 dBm Tracking

Satellite Based Aiding System (SBAS)	WAAS + EGNOS
Special features	Active Jamming Reduction
Operating frequency	1575.43MHz
Signal Acquisition	Automatic
Almanac Update	Automatic
Geodetic Datum	WGS-84, alternatives available through Raymarine displays.
Refresh Rate	5 Hz
Antenna	Ceramic chip
Accuracy	• Without SBAS: ≤ 15 metres 95% of the time • With SBAS: ≤ 5 metres 95% of the time

CHAPTER 14: SPARES AND ACCESSORIES

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- [14.1 Accessories — page 136](#)

14.1 Accessories

Description	Dragonfly®6 part numbers	Dragonfly®7 part numbers
Carrying case	A80206	N/A
Trolling Motor Mount	A80207	A80207
4 m (13.1 ft) extension cable	A80224	A80224
Surface mount adaptor	A80223	A80287
Sun cover	R70134	A80285
Mounting bracket / cradle	R70135	R70302

