

# i50 Instrument

## INSTALLATION & OPERATION INSTRUCTIONS

English (en-US)

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**Raymarine**<sup>®</sup>  
BY **FLIR**

# Printed Manuals

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# Chapter 1: Important information

## Certified Installation

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: 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: 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: Positive ground systems

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

### 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.



### Warning: Switch off power supply

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



### Warning: High voltage

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

### Caution: Transducer cable

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

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

### 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.

## 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.

## Disclaimer

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

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

## EMC installation guidelines

Raymarine equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) regulations, to minimize electromagnetic interference

between equipment and minimize the effect such interference could have on the performance of your system

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

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

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

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

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

## Suppression ferrites

- Raymarine cables may be pre-fitted or supplied with suppression ferrites. These are important for correct EMC performance. If ferrites are supplied separately to the cables (i.e. not pre-fitted), you must fit the supplied ferrites, using the supplied instructions.
- If a ferrite has to be removed for any purpose (e.g. installation or maintenance), it must be replaced in the original position before the product is used.
- Use only ferrites of the correct type, supplied by Raymarine or its authorized dealers.
- Where an installation requires multiple ferrites to be added to a cable, additional cable clips should be used to prevent stress on the connectors due to the extra weight of the cable.

## Connections to other equipment

Requirement for ferrites on non-Raymarine cables

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

### Caution: Sun covers

- If your product is supplied with a sun cover, to protect against the damaging effects of ultraviolet (UV) light, always fit the sun cover when the product is not in use.
- Sun covers must be removed when travelling at high speed, whether in water or when the vessel is being towed.

### Caution: Product cleaning

When cleaning products:

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

### Caution: Condensation

Certain atmospheric conditions may cause a small amount of condensation to form on the unit's window. This will not damage the unit and will clear after the unit has been switched on for a short period.

## **Warranty registration**

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

## **IMO and SOLAS**

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

## **Technical accuracy**

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

## 2.1 Document information

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


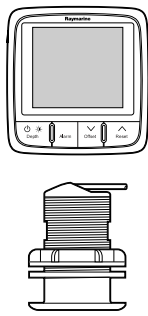

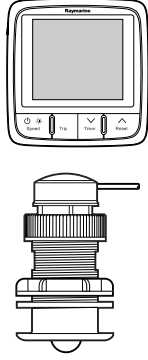

The document includes information to help you:

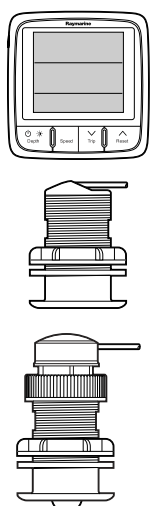
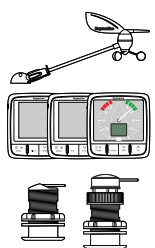
- plan your installation and ensure you have all the necessary equipment;
- install and connect your product as part of a wider system of connected marine electronics;
- troubleshoot problems and obtain technical support if required.

This and other Raymarine product documents are available to download in PDF format.

## Applicable products

This document is applicable to the following products:

Item	Model	Part number	Hardware
	i50 Depth	E70059	i50 Depth SeaTalk <sup>ng</sup> instrument display
	i50 Depth Thru-hull system pack	E70148	<ul style="list-style-type: none"> <li>• i50 Depth SeaTalk<sup>ng</sup> instrument display</li> <li>• P319 Thru-hull Depth transducer</li> </ul>
	i50 Speed	E70058	i50 Speed SeaTalk <sup>ng</sup> instrument display
	i50 Speed Thru-hull system pack	E70147	<ul style="list-style-type: none"> <li>• i50 Speed SeaTalk<sup>ng</sup> instrument display</li> <li>• P120 Thru-hull Speed and Temp transducer</li> </ul>
	i50 Tridata	E70060	i50 Tridata SeaTalk <sup>ng</sup> instrument display

Item	Model	Part number	Hardware
	i50 Tridata Thru-hull system pack	E70149	<ul style="list-style-type: none"> <li>• i50 Tridata SeaTalk<sup>ng</sup> instrument display</li> <li>• P319 Thru-hull Depth transducer</li> <li>• P120 Thru-hull Speed and Temp transducer</li> </ul>
	i50 & i60 Depth, Speed & Wind system pack	E70153	<ul style="list-style-type: none"> <li>• i50 Depth SeaTalk<sup>ng</sup> instrument display</li> <li>• P319 Thru-hull Depth transducer</li> <li>• i50 Speed SeaTalk<sup>ng</sup> instrument display</li> <li>• P120 Thru-hull Speed and Temp transducer</li> <li>• i60 Wind SeaTalk<sup>ng</sup> instrument display</li> <li>• Short arm wind vane transducer</li> </ul>

## 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.



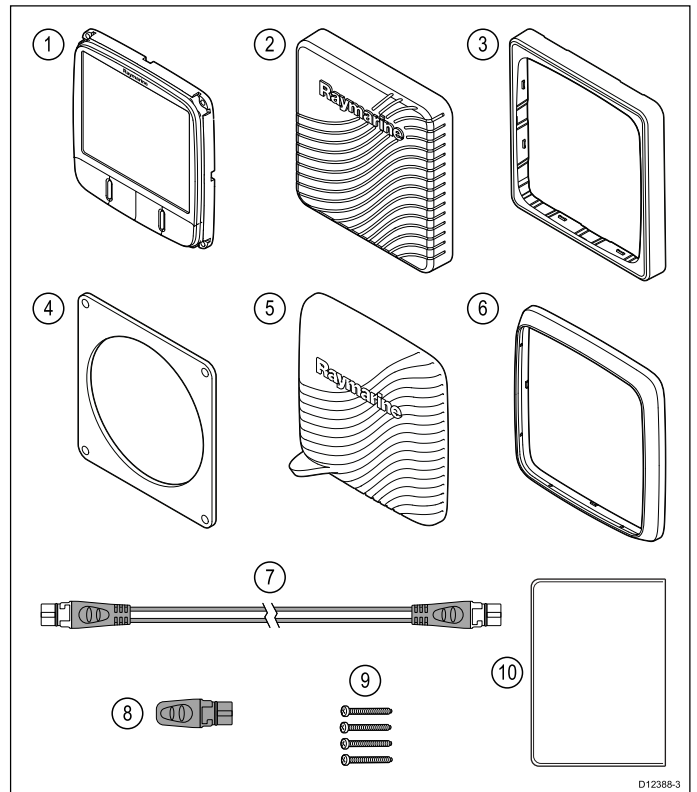
## Product documentation

The following documentation is applicable to your product:

### Handbooks

Description	Part number
<b>i50 Installation and operation instructions</b> Installation and operation instructions for the i50 instrument display	81341 / 88009
<b>i50 Mounting template</b> Surface mounting template for the i50 instrument display	87130
<b>Rotavecta Installation instructions</b> Installation instructions for the Rotavecta wind transducer	87221 / 88036
<b>Short &amp; long arm wind vane Installation instructions</b> Installation instructions for the short and long arm wind vane transducers	87220 / 88035
<b>Depth and Speed Transducer installation instructions</b> Installation instructions for speed and depth transducers, as supplied with your transducer	

## 2.2 Parts supplied

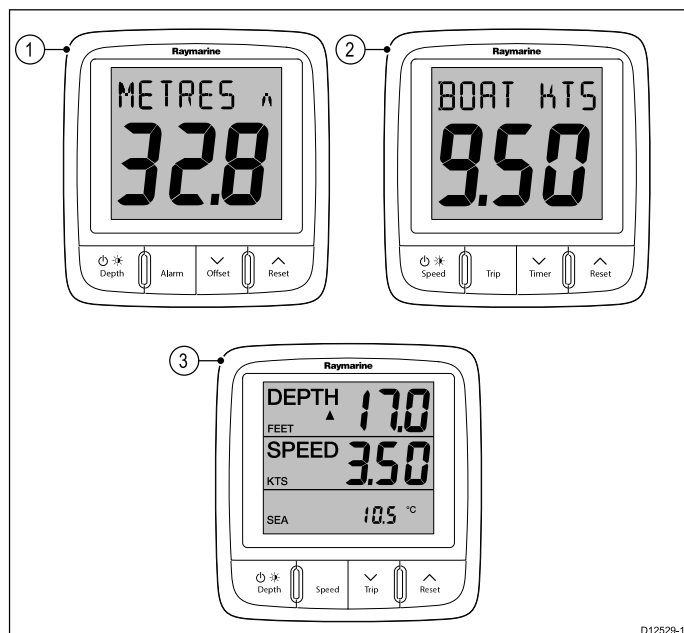


1	Instrument display
2	Suncover (to match i70s, p70s, p70Rs, eS Series)
3	Front bezel (to match i70s, p70s, p70Rs, eS Series)
4	Gasket
5	Suncover (to match a, c, e Series)
6	Front bezel (to match a, c, e Series)
7	SeaTalk <sup>ng</sup> spur cable
8	SeaTalk <sup>ng</sup> blanking plug
9	4 x fixing screws
10	Documentation



## 2.3 i50 Product overview

The i50 range of SeaTalk<sup>ng</sup> instrument displays can be connected directly to the relevant transducers. The data can be transmitted on the SeaTalk<sup>ng</sup> network to other compatible displays.



1. i50 Depth
2. i50 Speed
3. i50 Tridata

The i50 instrument display range offers the following features:

- Integrates with Raymarine autopilots and navigation equipment on the SeaTalk<sup>ng</sup> network
- Surface mountable
- Extra large (28 mm max) digits
- Provides good visibility in all lighting conditions
- Low power consumption

### 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.

### Schematic diagram

A schematic diagram is an essential part of planning any installation. It is also useful for any future additions or maintenance of the system. The diagram should include:

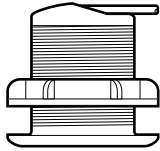
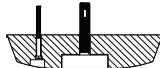
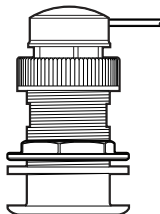
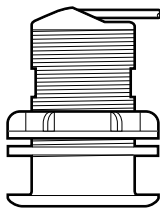
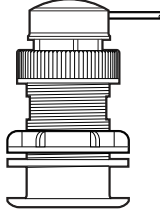
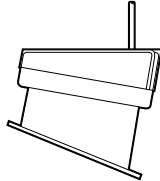
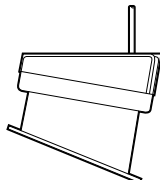
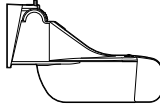
- Location of all components.
- Connectors, cable types, routes and lengths.

### 3.2 Compatible transducers

#### Instrument Depth transducers

The depth transducers listed below are compatible with the following instrument displays:

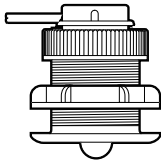
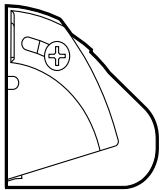
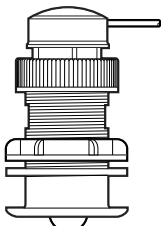
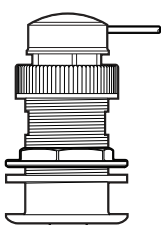
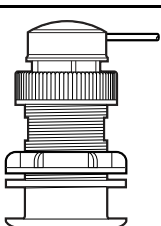
- **i40** Depth / **i40** Bidata
- **i50** Depth / **i50** Tridata
- **i70** / **i70s** via **iTC-5** converter

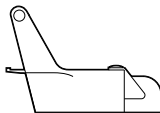
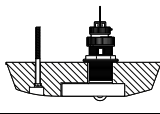
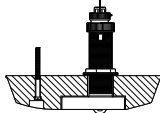
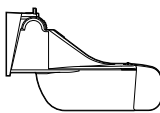
Part number	Image	Mounting	Housing
E26009		Thru-hull	P7
E26019-PZ		Thru-hull	B45 (including fairing block)
M78717		Thru-hull	B17
M78713-PZ		Thru-hull	P319
E26030		Thru-hull	P17
E26001-PZ		In-hull	P79
A80373 T70278 — (includes SeaTalkng adaptor)		In-hull	P79S
E26027-PZ		Transom mount	P66

## Instrument Speed and Temperature transducers

The speed and temperature transducers listed below are compatible with the following instrument displays:

- **i40** Speed / **i40** Bidata
- **i50** Speed / **i50** Tridata
- **i70** / **i70s** via **iTC-5** converter

Part number	Image	Mounting	Housing
E26008		Thru-hull	P371
E26005		Transom mount	ST69
E26031		Thru-hull	P120 / ST800
M78716		Thru-hull	B120
E25025		Thru-hull	P17

Part number	Image	Mounting	Housing
E26006-PZ		Transom mount	P66 / ST40
A26043		Thru-hull	B744V (including fairing block)
A26044		Thru-hull	B744VL (including fairing block)
E26028-PZ		Transom mount	P66

## Instrument Depth, Speed and Temperature (DST) transducers

The DST transducers listed below are compatible with the following instrument displays:

- **i40** Depth / **i40** Speed / **i40** Bidata
- **i50** Depth / **i50** Speed / **i50** Tridata
- **i70** / **i70s** via **iTC-5** converter

## 3.3 System protocols

Your product can be connected to various products and systems to share information and so improve the functionality of the overall system.

These connections may be made using a number of different protocols. Fast and accurate data collection and transfer is achieved by using a combination of the following data protocols:

- **SeaTalkng®**
- **NMEA 2000**
- **SeaTalk**

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

### SeaTalkng®

SeaTalkng® (Next Generation) is an enhanced protocol for connection of compatible marine instruments and equipment. It replaces the older SeaTalk and SeaTalk2 protocols.

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

SeaTalkng® is a proprietary extension to NMEA 2000 and the proven CAN bus technology. Compatible NMEA 2000 and SeaTalk and SeaTalk2 devices can also be connected using the appropriate interfaces or adaptor cables as required.

### NMEA 2000

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

### SeaTalk

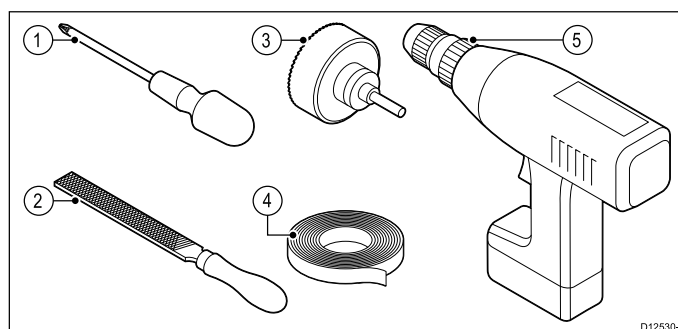
**SeaTalk** is a protocol which enables compatible instruments to connect to each other and share data.

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

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

## 3.4 Tools required

### Tools required for installation



1	Pozi-drive screwdriver
2	File
3	92 mm (3.62 in) hole cutter
4	Adhesive tape
5	Power drill

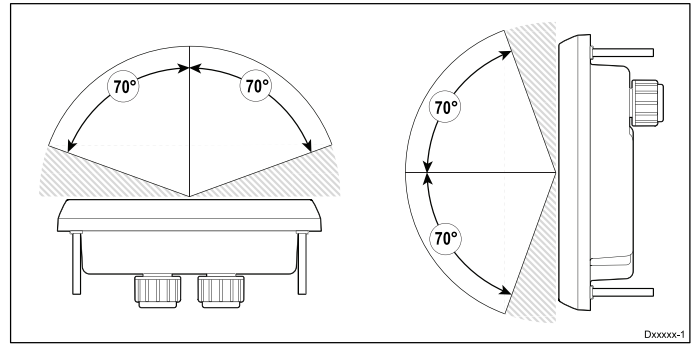
## 3.5 Selecting a display location

### Viewing angle



#### **Warning: Potential ignition source**

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



### General location requirements

When selecting a location for 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.

#### Magnetic compass

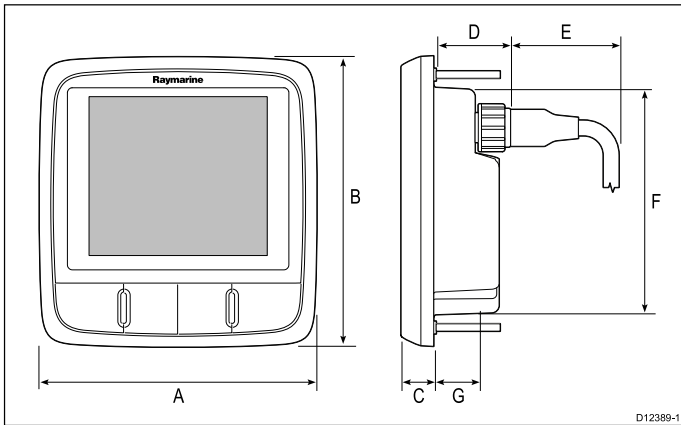
When choosing a suitable location you should aim to maintain the maximum possible distance between the unit and any compasses.

To prevent potential interference with the vessel's magnetic compasses, ensure that a minimum distance of 230 mm (9 in) between the unit and any installed compasses is maintained.

#### Viewing angle considerations

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

### 3.6 Product dimensions



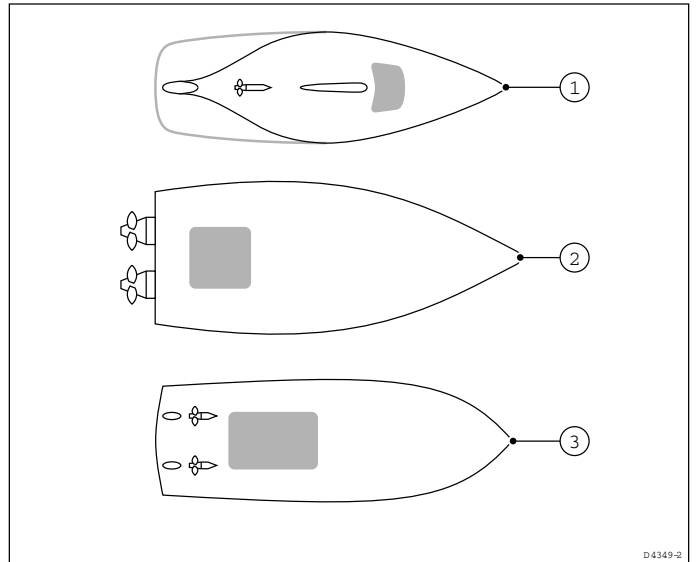
A	110 mm (4.22")
B	115 mm (4.52")
C	14 mm (0.55")
D	30 mm (1.18")
E	35 mm (1.38")
F	90 mm (3.54")
G	17 mm (0.67")

### 3.7 Selecting a transducer location

#### General speed and depth transducer location requirements

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

The transducer should be mounted within the clear water flow areas indicated by the shaded areas in the image below.

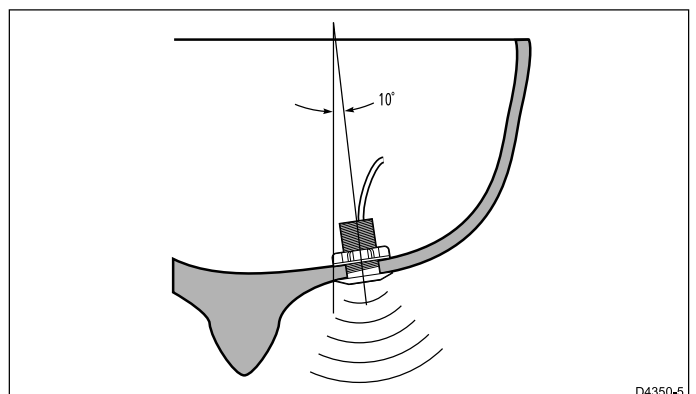


1	Sailing vessel
2	Planing power vessel
3	Displacement power vessel

Each transducer should also:

- Be ahead of the propellers (by a minimum of 10% of the water line length).
- Be at least 150 mm (6 in) away from the keel (ideally ahead of the keel on a sailing yacht).
- Be as near as possible to the center line of the vessel.
- Be clear of other through-hull fittings or projections.
- Have sufficient clearance inside the hull to fit the nut.
- Have 100 mm (4 in) of headroom to allow for withdrawal.

**Note:** In addition to the above requirements, the depth transducer must be mounted within 10° of the vertical.



## 4.1 General cabling guidance

### Cable types and length

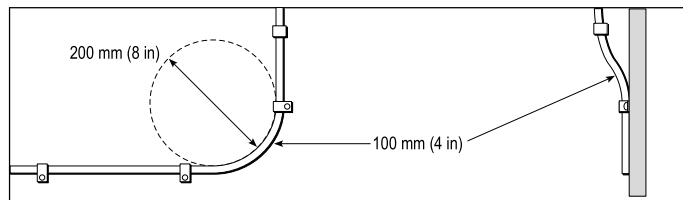
It is important to use cables of the appropriate type and length

- Unless otherwise stated use only standard cables of the correct type, supplied by Raymarine.
- Ensure that any non-Raymarine cables are of the correct quality and gauge. For example, longer power cable runs may require larger wire gauges to minimize voltage drop along the run.

### Routing cables

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

- Do NOT bend cables excessively. Wherever possible, ensure a minimum bend diameter of 200 mm (8 in) / minimum bend radius of 100 mm (4 in).



- Protect all cables from physical damage and exposure to heat. Use trunking or conduit where possible. Do NOT run cables through bilges or doorways, or close to moving or hot objects.
- Secure cables in place using tie-wraps or lacing twine. Coil any extra cable and tie it out of the way.
- Where a cable passes through an exposed bulkhead or deckhead, use a suitable watertight feed-through.
- Do NOT run cables near to engines or fluorescent lights.

Always route data cables as far away as possible from:

- other equipment and cables,
- high current carrying AC and DC power lines,
- antennae.

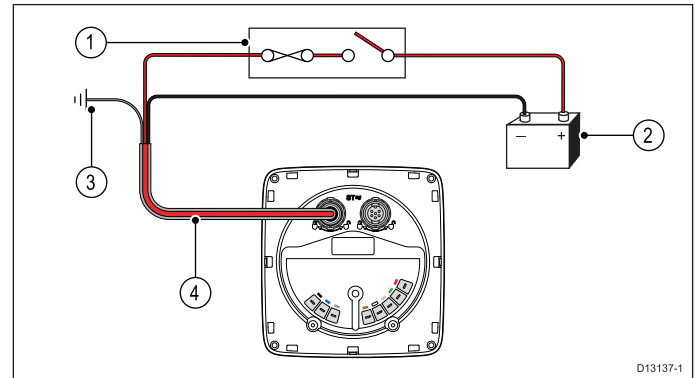
### Strain relief

Ensure adequate strain relief is provided. Protect connectors from strain and ensure they will not pull out under extreme sea conditions.

### Cable shielding

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

## 4.2 Direct Power Connection



1	3 A circuit breaker or fuse
2	12 V dc vessel power supply
3	Vessel's RF ground
4	SeaTalk <sup>ng</sup> power cable (A06049, available separately)



## 4.3 SeaTalkng® power supply

Power is supplied to the product over the SeaTalkng® backbone.

A SeaTalkng® backbone requires only one 12 V dc power supply, connected to the SeaTalkng® backbone. This can be provided by one of the following:

- a battery <sup>(1)</sup>, via the distribution panel;
- an Autopilot Control Unit (ACU)<sup>(2)</sup>;
- an SPX course computer <sup>(2)</sup>;
- for 24 V vessels a 5 amp, regulated, continuous 24 V dc to 12 V dc converter is required.

### Note:

- (1) The battery used for starting the vessel's engine(s) should NOT be used to power the SeaTalkng® backbone, as this can cause sudden voltage drops when the engines are started.
- (2) The ACU-100, ACU-150 or SPX-5 products cannot be used to power the SeaTalkng® backbone.

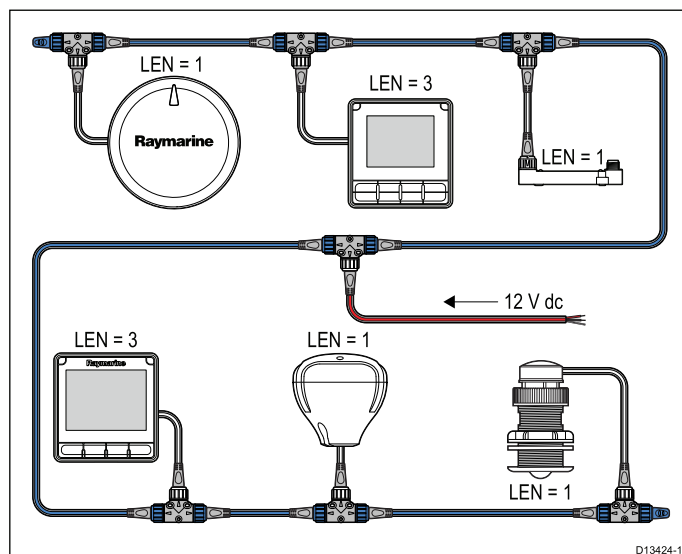
## SeaTalkng® power connection point

### Small systems

If the backbone length is 60 m (197 ft) or less, the power connection point may be connected at any point in the backbone.

### Large systems

If the backbone length is greater than 60 m (197 ft), the power connection point should be connected at a point that creates a balanced current draw from each side of the backbone. The Load Equivalency Number (LEN) is used to determine the power connection point for the system.



In the example above the system has an overall LEN of 10, so the optimum connection point would be to have 5 LEN either side of the connection point.

## In-line fuse and thermal breaker ratings

The SeaTalkng® network's power supply requires an in-line fuse or thermal breaker to be fitted.

In-line fuse rating	Thermal breaker rating
5 A	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.

## SeaTalkng® system loading

The maximum loading / LEN for a SeaTalkng® system depends on the length of the backbone.

Loading type	Backbone length	Total LEN
Unbalanced	20 m (66 ft)	40
Unbalanced	40 m (131 ft)	20
Unbalanced	60 m (197 ft)	14
Balanced	60 m (197 ft) or less	100
Balanced	80 m (262 ft)	84
Balanced	100 m (328 ft)	60
Balanced	120 m (394 ft)	50
Balanced	140 m to 160 m (459 ft to 525 ft)	40
Balanced	180 m to 200 m (591 ft to 656 ft)	32

## Power distribution — SeaTalkng®

Recommendations and best practice.

- Only use approved SeaTalkng® power cables. Do NOT use a power cable designed for, or supplied with, a different product.
- See below for more information on implementation for some common power distribution scenarios.

### Important:

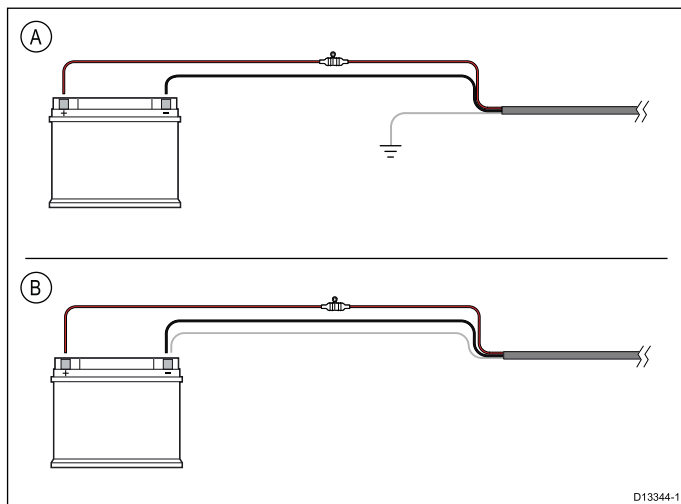
When planning and wiring, take into consideration other products in your system, some of which (e.g. sonar modules) may place large power demand peaks on the vessel's electrical system.

### 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

- SeaTalkng® power cables may be connected directly to the vessel's battery, via a suitably rated fuse or breaker.
- 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, ensure you use suitably rated cable and that sufficient power (12 V dc) is available at the SeaTalkng® backbone's power connection.

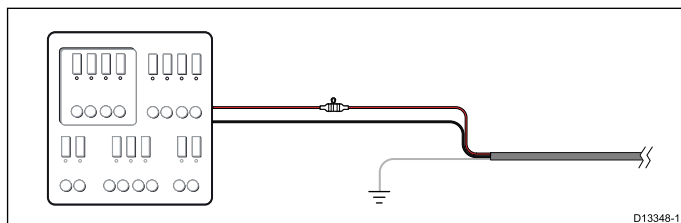


D13344-1

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



D13348-1

- Alternatively, the SeaTalkng® power cable may be connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point.
- The distribution point should be fed from the vessel's primary power source by 8 AWG (8.36 mm<sup>2</sup>) 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, ensure you use suitably rated cable and that sufficient power (12 V dc) is available at the SeaTalkng® backbone's power connection.

### Important:

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

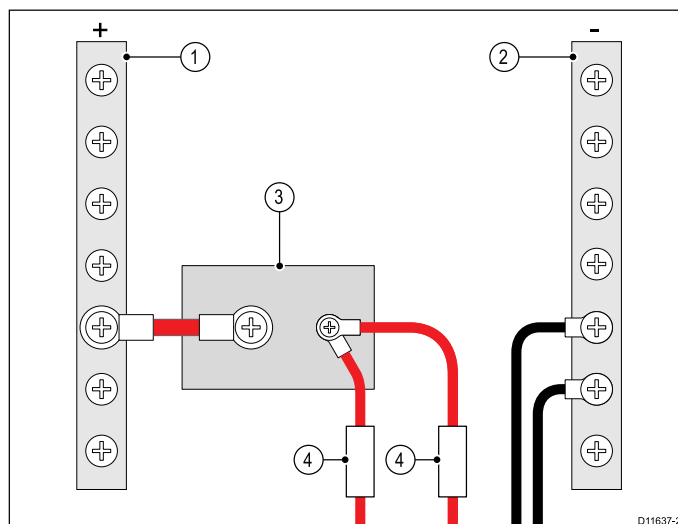
### More information

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

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

### Sharing a breaker

Where more than 1 piece of equipment shares a breaker you must provide protection for the individual circuits. E.g. by connecting an in-line fuse for each power circuit.



D11637-2

1	Positive (+) bar
2	Negative (-) bar
3	Circuit breaker
4	Fuse

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



### Warning: Product grounding

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

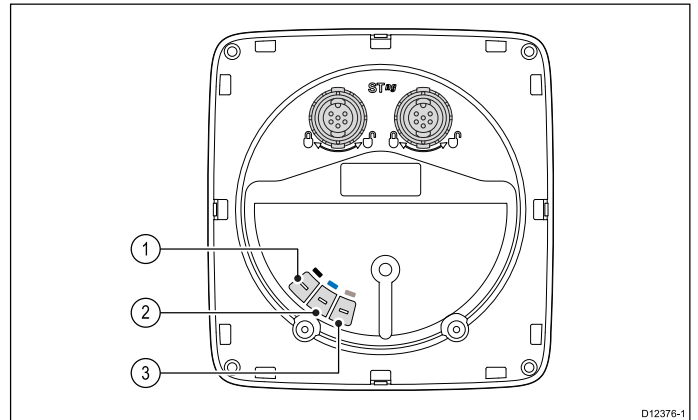


### Warning: Positive ground systems

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

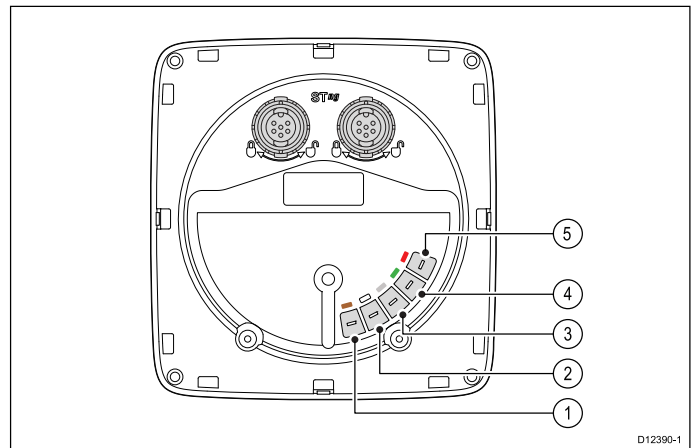
## 4.4 Transducer connections

### i50 Depth connection



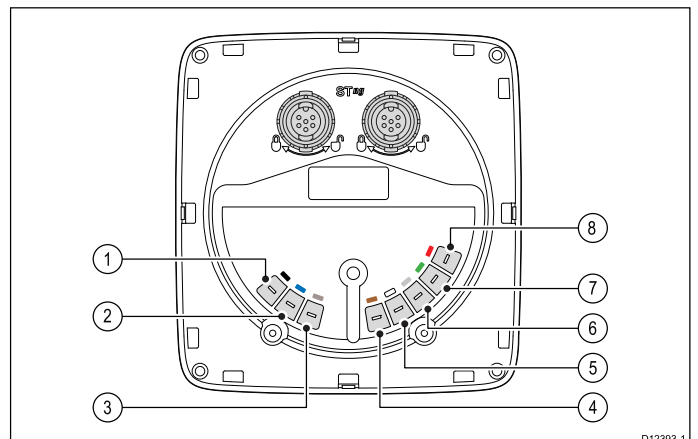
Item	Cable color	Signal name
1	Black	Piezoceramic -
2	Blue	Piezoceramic +
3	Screen	0 V (shield)

### i50 Speed connection



Item	Cable color	Signal name
1	Brown	Temperature 0 V
2	White	Temperature (signal)
3	Screen	Speed 0 V (shield)
4	Green	Speed (signal)
5	Red	Speed V+

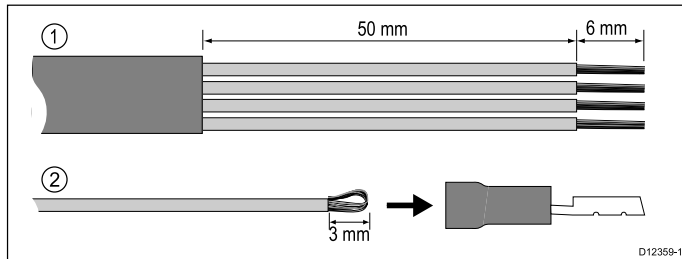
### i50 Tridata connection



Item	Cable color	Signal name
1	Black (Depth)	Piezoceramic -
2	Blue (Depth)	Piezoceramic +
3	Screen (Depth)	0 V (shield)
4	Brown (Speed)	Temperature 0 V
5	White (Speed)	Temperature (signal)
6	Screen (Speed)	Speed 0 V (shield)
7	Green (Speed)	Speed (signal)
8	Red (Speed)	Speed V+

## Making transducer connections

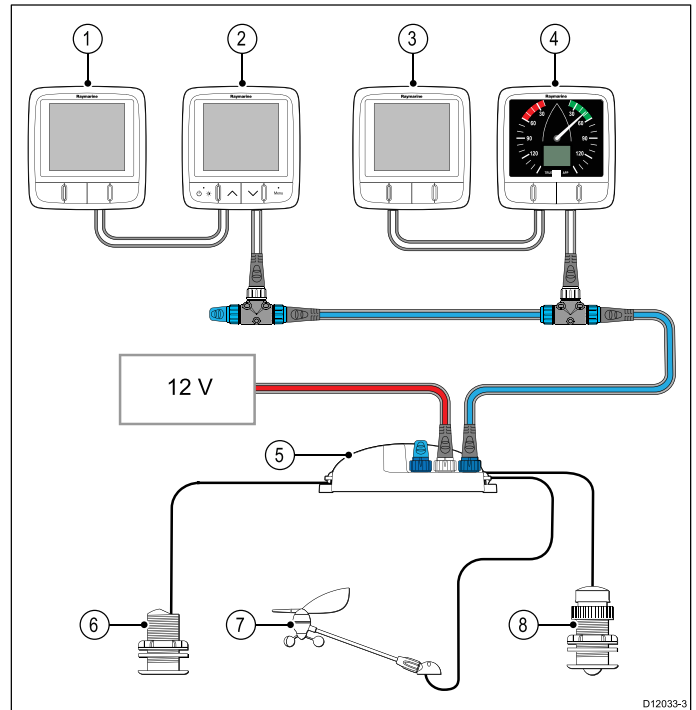
Although the transducer cable is fitted with spade connectors for direct connection to the rear of the unit, it may be necessary to remove these to facilitate installation, e.g. if the cable has to be routed through narrow apertures. 1/8th spade terminals will be required (not supplied), to replace those removed. When fitting the new spade connectors, prepare the cables as detailed below:



1. Prepare the cable as shown in 1 above.
2. Fold back the wire strands and insert into the new spade connector as shown in 2 above.
3. Ensure the wire strands do not extend beyond the rear of the spade connector insulation.
4. Crimp the connector to the wire.

## 4.5 iTC-5 connection

Transducers can be connected to a SeaTalk<sup>ng</sup> network using Raymarine's Instrument transducer converter (iTC-5) and an i70 instrument, the data can then be repeated on an i50 / i60 unit.



1	i50 Depth (Repeater)
2	i70 Instrument (Master)
3	i50 Speed (Repeater)
4	i60 Wind (Repeater)
5	iTC-5
6	Depth transducer
7	Wind vane transducer
8	Speed transducer

**Note:** Transducers connected to the iTC-5 must be calibrated using an i70 (master) unit. Transducers connected to the iTC-5 cannot be calibrated using an i50 / i60.

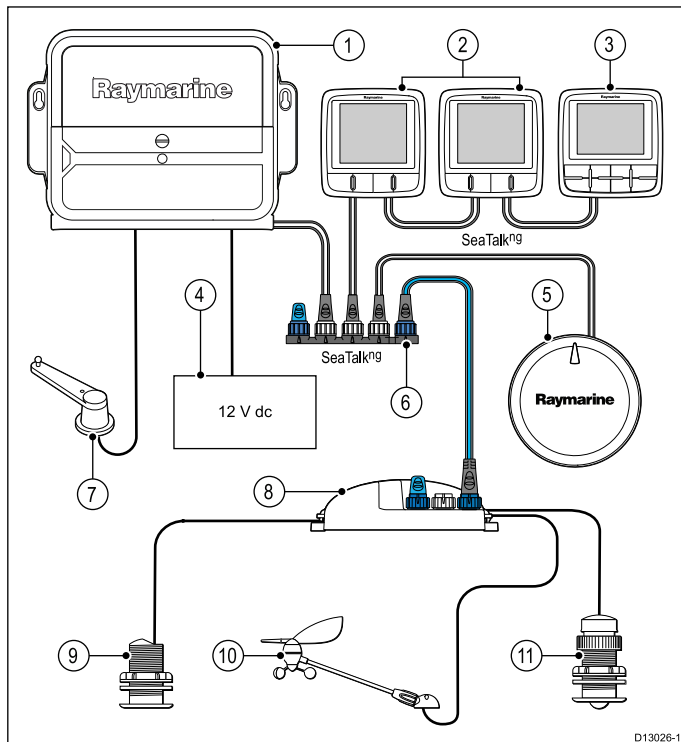
## Making iTC-5 transducer connections

For instructions on connecting transducers to your iTC-5 refer to the iTC-5 handbook.

## 4.6 SeaTalk<sup>ng</sup> connection

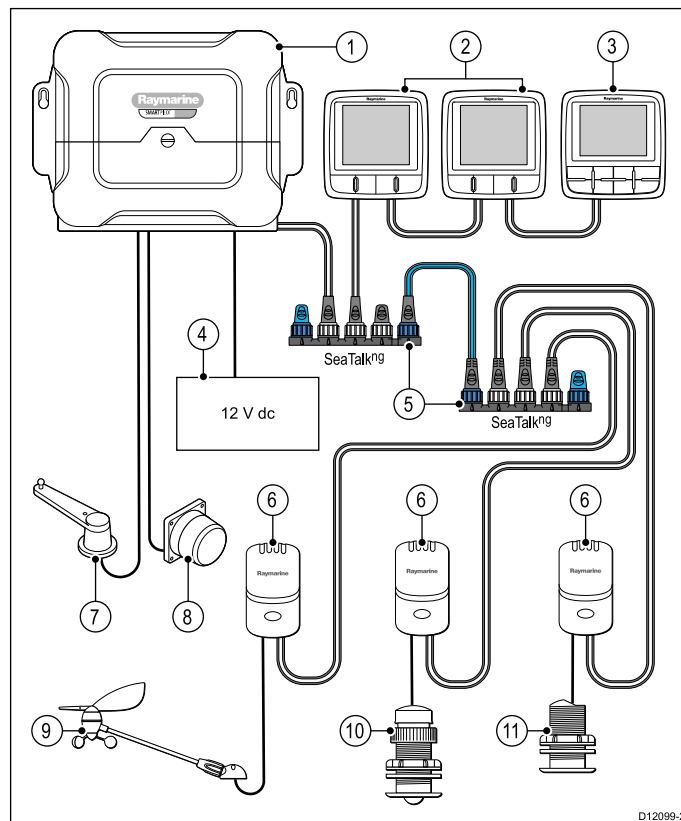
**Note:** In the example below, if an **ACU-100** was used, the SeaTalk<sup>ng</sup> network would require a dedicated 12 V dc power supply because the **ACU-100** does not supply power to the SeaTalk<sup>ng</sup> network.

### Example: SeaTalk<sup>ng</sup> Evolution system with iTC-5



1	ACU unit
2	2 x Instruments
3	Pilot controller
4	Vessel's 12 V dc power supply
5	EV unit
6	SeaTalk <sup>ng</sup> 5-way connector
7	Rudder reference transducer
8	iTC-5 converter
9	Depth transducer
10	Wind transducer
11	Speed transducer

### Example: SeaTalk<sup>ng</sup> SPX system with transducer pods

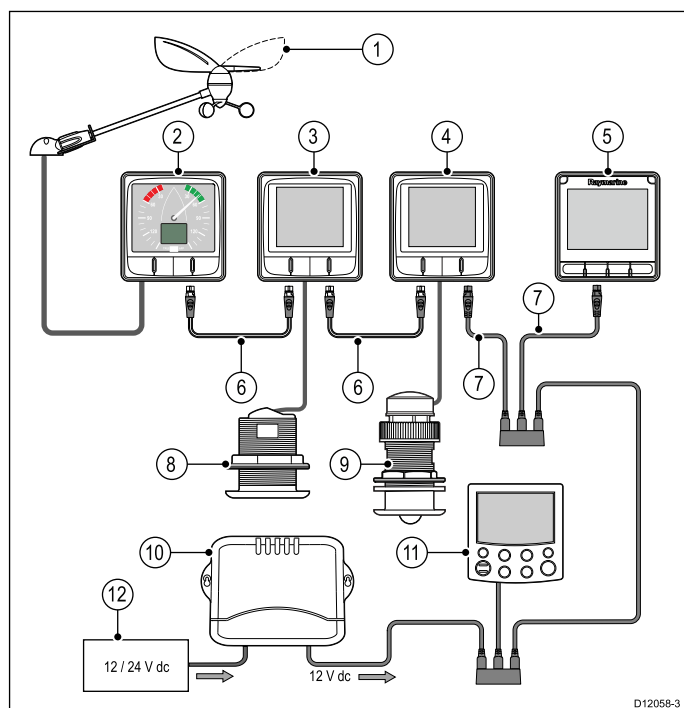


Item	Description
1	SPX (supplying 12V to SeaTalk <sup>ng</sup> network.)
2	2 x Instruments
3	p70 / p70R Pilot controller
4	Vessel's 12 V dc power supply
5	SeaTalk <sup>ng</sup> 5-way connectors with terminators
6	Transducer pods
7	Rudder reference transducer
8	Fluxgate compass
9	Wind transducer
10	Speed transducer
11	Depth transducer

## 4.7 SeaTalk connection

Connections to an existing **SeaTalk** system must be made using a **SeaTalk to SeaTalk<sup>ng</sup>** adaptor cable.

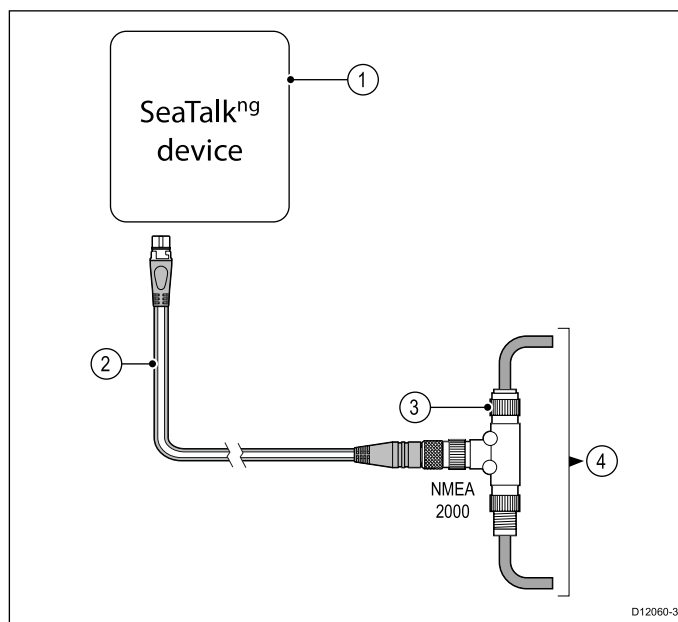
### Basic SeaTalk system example



1	Wind vane transducer
2	i60 Wind ( <b>SeaTalk<sup>ng</sup></b> Wind instrument)
3	i50 Depth ( <b>SeaTalk<sup>ng</sup></b> Depth instrument)
4	i50 Speed ( <b>SeaTalk<sup>ng</sup></b> Speed instrument)
5	i70s ( <b>SeaTalk<sup>ng</sup></b> Multifunctional instrument display)
6	<b>SeaTalk<sup>ng</sup></b> spur cables
7	<b>SeaTalk to SeaTalk<sup>ng</sup></b> adaptor cables
8	Speed transducer
9	Depth transducer
10	<b>SeaTalk</b> Course computer (providing 12 V dc power to <b>SeaTalk</b> network.)
11	<b>ST6002</b> ( <b>SeaTalk</b> pilot controller )
12	12 / 24 V dc power supply

## 4.8 NMEA 2000 network connection

Your **SeaTalk<sup>ng</sup>** device can be connected to a **DeviceNet / NMEA 2000** network.



1. **SeaTalk<sup>ng</sup>** device
2. **SeaTalk<sup>ng</sup>** to **DeviceNet** adaptor cable (A06045)
3. **DeviceNet** T-piece
4. **NMEA 2000** backbone

## SeaTalk power protection

The power supply must be protected by a 5 A fuse or a circuit breaker providing equivalent protection.

Raymarine recommends that the power is connected to a SeaTalk system in such a way that the current drawn on each side of the power connection point is equal.

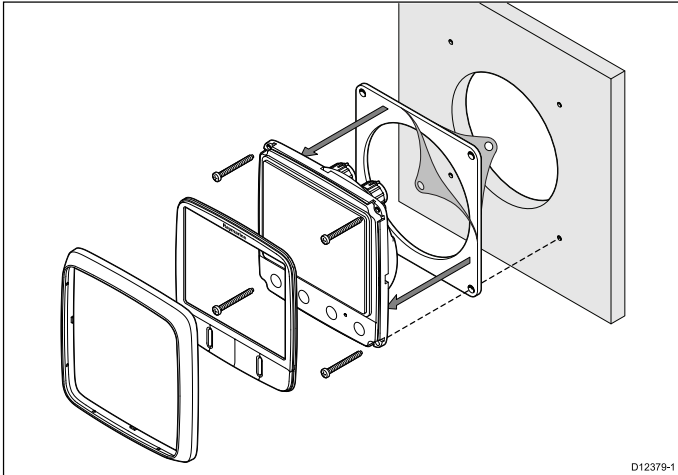
## 5.1 Mounting

### Pre-mounting check

The product is designed to be surface mounted. Before mounting the unit, ensure you have:

- Selected a suitable location.
- Identified the cable connections and route that the cables will take.
- Detached the front bezel.
- Remove the keypad mat.

### Mounting diagram



**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.

### Mounting instructions

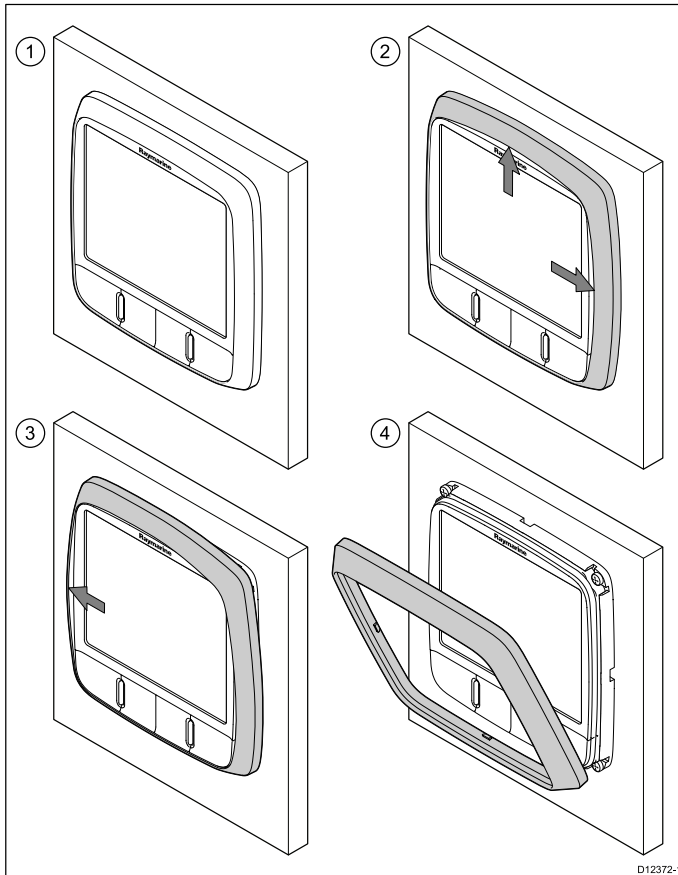
1. Check the selected location for the unit, a clear, flat area with suitable clearance behind the panel is required.
2. Fix the mounting template supplied with the product, to the selected location, using masking or self adhesive tape.
3. If possible use an appropriate size hole cutter and cut out the centre hole cut out area as indicated on the mounting template, or
4. Using a suitable drill bit, make pilot holes in each corner of the cut out area and using a jigsaw cut along the inside edge of the cut out line.
5. Ensure that the unit fits into the removed area and then file around the cut edge until smooth.
6. Drill any required holes as indicated on the mounting template for the mounting fixings.
7. Peel the backing off of the supplied gasket and place the adhesive side of the gasket onto the display unit and press firmly onto the flange.
8. Connect the relevant cables to the unit.
9. Slide the unit into place and secure using the fixings provided.
10. Fit keypad mat and front bezel.

**Note:** Drill, tap size and tightening torques are dependant upon the material type and thickness of the mounting surface.



## 5.2 Front bezel

### Removing the front bezel



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

1. Using your fingers pull the bezel away from the unit at the top and side, as shown in 2.  
The bezel will start to come away from the unit at the top and side.
2. Now pull the bezel away from the unit on the opposite side, as shown in 3.  
The bezel will now come free from the unit, as shown in 4.

## 6.1 i50 Depth operation

When connected to the relevant depth transducer, your i50 depth instrument:

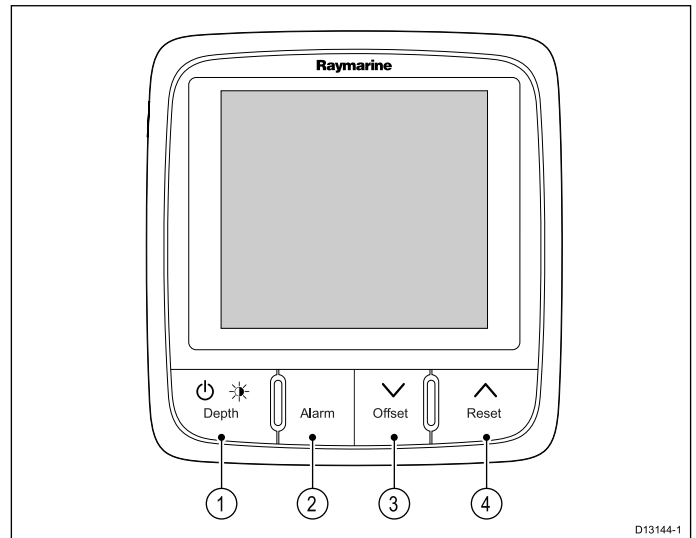
- Provides current depth information, in either feet (ft), metres (M) or fathoms (FA).
- Records the minimum and maximum depth encountered during the period the unit is switched on.
- Enables you to define alarm thresholds for shallow alarm, deep alarm, shallow anchor alarm and deep anchor alarm.
- Enables you to see what offset has been applied to the depth reading.

**Note:** Depth information is obtained from the depth transducer connected to the unit. However, when the instrument is connected to a SeaTalk network, which contains a compatible sonar module (fishfinder) the depth information is provided by the sonar module, whilst it is switched on.

It should be noted that:

- The required depth units are selected during User calibration.
- Up / Down depth-trend arrows are displayed, if the seabed is rising or falling.
- If for any reason depth information is lost, the depth title will flash and the displayed value will be the last known depth reading.

## 6.2 i50 Depth controls



1	<b>Depth / Power</b> — Select to access depth information, adjust backlight, adjust contrast and power the display On and Off
2	<b>Alarm</b> — Select to access alarm levels and alarm settings
3	<b>Offset / Down</b> — Select to access depth offset settings. Use to move down through menu options or to decrease numeric values
4	<b>Reset / Up</b> — Select and hold down for 3 seconds to reset data to current values. Use to move up through menu options or to increase numeric values

## 6.3 Power

### Powering on the unit

The unit will automatically turn on with the system, unless it has previously been powered off using the **Power** button.

With the unit powered off:

1. Press and hold the **Power** button until the screen turns on (approximately 2 seconds).

### Powering off the unit

1. Press and hold the **Power** button until the count down timer reaches zero and the screen turns off.

**Note:** When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

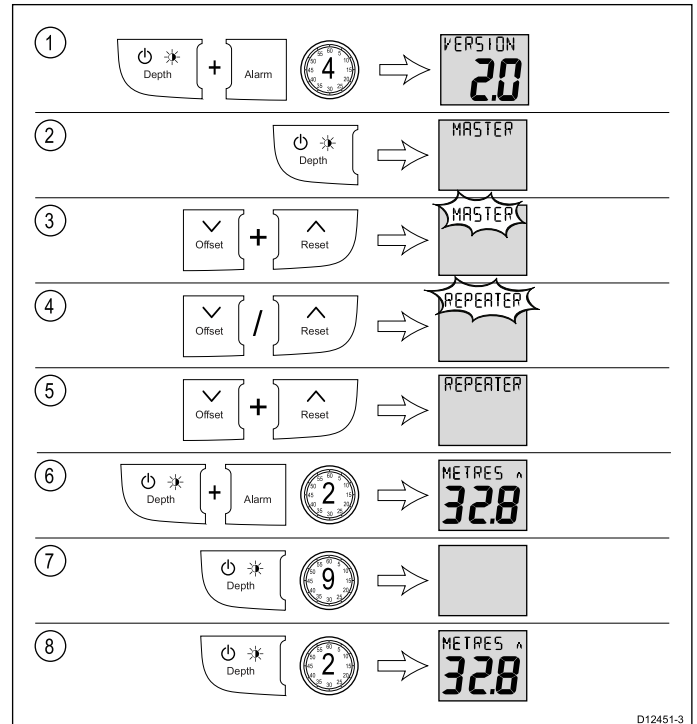
## 6.4 Data master

Where a system contains more than one unit capable of displaying a data type, the unit physically connected to the transducer must be set as the data master and any other units set as a repeater.

### Changing i50 Depth Master / Repeater status

Displays that have a transducer physically attached to them are automatically set as Data Masters. You can set your display to show depth readings from a different source

During normal operation:



1. Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 4 seconds, until the Software Version page is displayed.
2. Press the **Depth** button to display the Master/Repeater Status page.
3. Press the **Offset** and **Reset** buttons at the same time.  
The status will flash.
4. Use the **Offset** or **Reset** button to change the status between Master or Repeater.
5. Press the **Offset** and **Reset** buttons at the same time to confirm the status.
6. Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds to return to normal operation.
7. Power off the display by pressing and holding the **Power** button until the screen turns off.
8. Power the display back on by pressing and holding the **Power** button until the screen turns on (approximately 2 seconds).
9. Check the display's status by repeating steps 1 and 2 above.

## 6.5 Calibration

Before first use the unit must be calibrated to ensure optimum performance.

The calibration settings are grouped into 3 categories: **User Calibration**, **Intermediate Calibration** and **Dealer Calibration**.

Access to the User Calibration menu can be locked from the Dealer Calibration menu.

### Depth Calibration Pages

The Calibration procedures are accessed from the Calibration menus

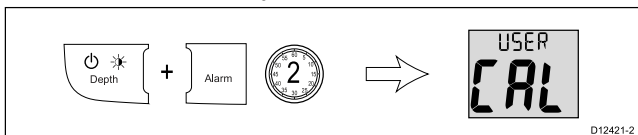
User Calibration	Intermediate Calibration	Dealer Calibration
Depth units	Software Version	User Calibration Menu Access
Depth Offset (1)	Master/Repeater Status	Display Response
		Boat Show Mode
		Factory Reset

**Note:** (1) Settings are only available when the instrument status is set to Master.

### Selecting the unit of measure for depth readings

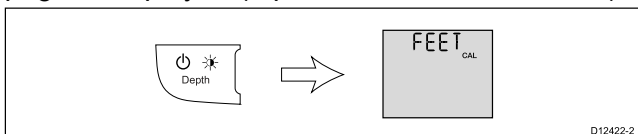
During normal operation:

1. Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Depth** button until the **Depth Units** page is displayed (1 press from the **USER CAL**).



3. Use the **Offset** or **Reset** button to select the required unit of measurement for depth readings. The units of measure available for depth readings are:

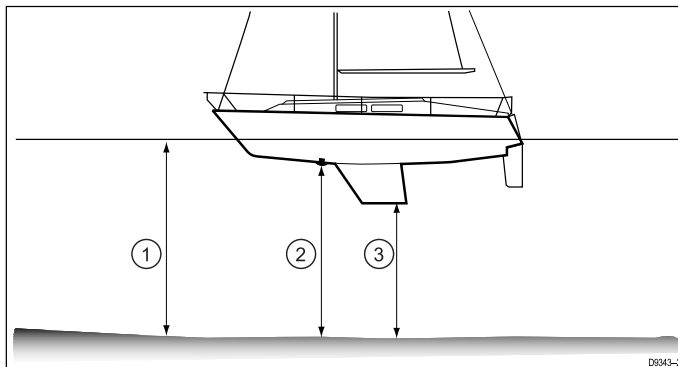
- FEET (default)
- METRES
- FATHOMS

4. You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds.
5. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## 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.

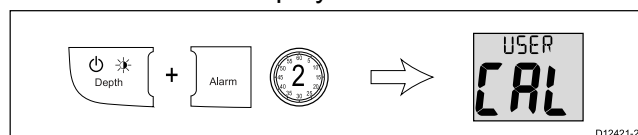


1	Waterline offset	Values greater than zero (Positive values) represent a waterline offset
2	Transducer	Zero offset represents the depth from the transducer's location
3	Keel offset	Values less than zero (Negative values) represent a keel offset

### Applying a Depth Offset

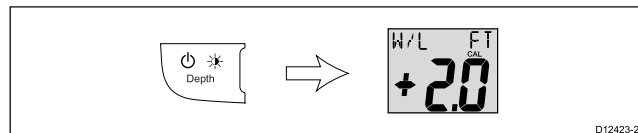
During normal operation:

1. Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds, until the **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Depth** button until the **Depth Offset** page is displayed (2 presses from **USER CAL**).



3. Use the **Offset** or **Reset** button to select the required depth offset value.

The depth offset can be set to the following values:

- Keel — values between  $-9.9$  to  $-0.1$
  - OFFSET (default) (Zero Offset) —  $0.0$
  - W/L (Waterline) — values between  $0.1$  to  $9.9$
4. You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds.

- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Checking the Software Version

To check the software Version of your display follow the steps below.

During normal operation:

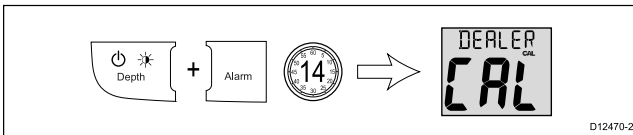
- Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 4 seconds, until **Version** is displayed.

## Locking access to the User Calibration Menu

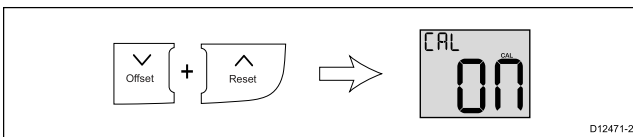
From the Dealer Calibration Menu you can lock access to the User Calibration Menu.

During normal operation:

- Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



- Press the **Offset** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.

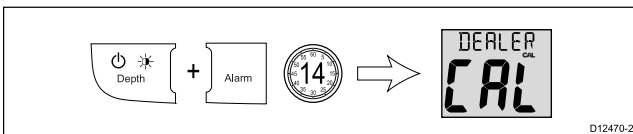


- Use the **Offset** or **Reset** button to switch access to the **User Calibration Menu On** (default) and Off. Selecting Off disables access to the **User Calibration Menu**.
- You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

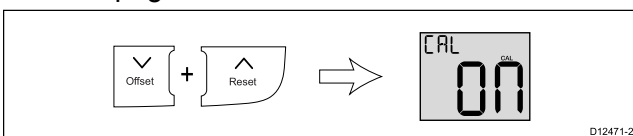
## Setting the response delay for depth readings

During normal operation:

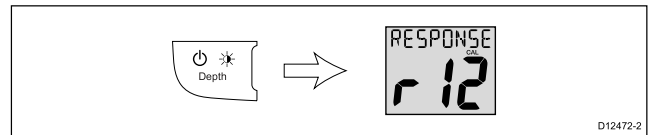
- Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



- Press the **Offset** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



- Press the **Depth** button until the **Depth Response** page is displayed (1 press from the **User Calibration Menu Access** page).



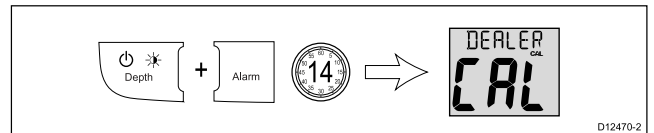
- Use the **Offset** and **Reset** buttons to adjust the depth response to the required level. The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.
- You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Enabling and disabling Boat Show Mode

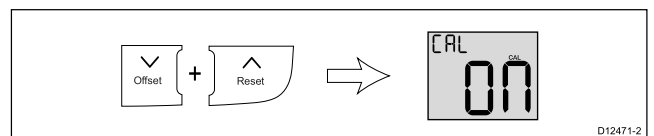
- Boat Show Mode can only be enabled on Repeater displays.
- Boat show mode is only suitable for demonstration purposes and should NOT be enabled whilst your vessel is in use.

During normal operation:

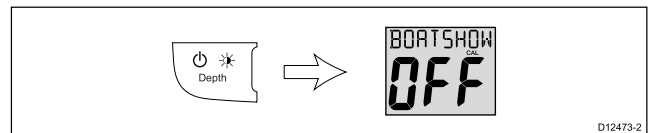
- Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



- Press the **Offset** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



- Press the **Depth** button until the **Boat Show Mode** page is displayed (2 presses from **User Calibration Menu Access** page).

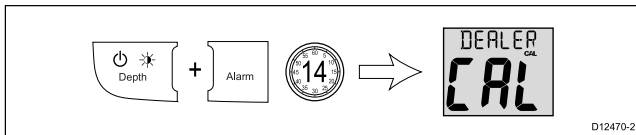


- Use the **Offset** or **Reset** button to switch Boat Show Mode On and Off (default).
- You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

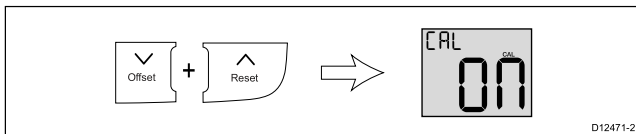
## Resetting the display to factory default settings

During normal operation:

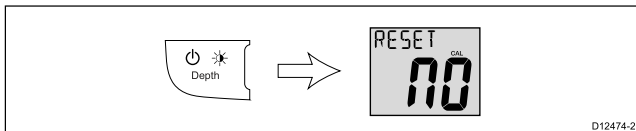
1. Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



2. Press the **Offset** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



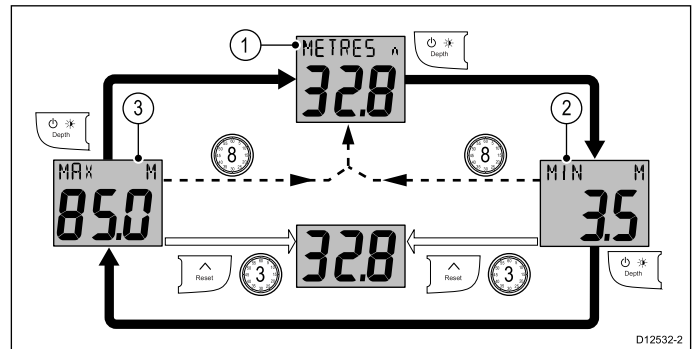
3. Press the **Depth** button until **RESET** is displayed (3 presses from **User Calibration Menu Access** page).



4. To reset the display to factory default settings:
  - i. Use the **Offset** or **Reset** button to change the reset option to Yes.
  - ii. Press the **Depth** button to reset your display to factory default settings.
5. After a reset it is recommended that you check the data master status of the display to ensure it is set correctly. Refer to [6.4 Data master](#) for details.
6. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds.
7. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## 6.6 Using the depth pages

To cycle through the depth pages follow the steps below.



1. Current Depth page
2. \* Minimum Depth page
3. \* Maximum Depth page

**Note:** \* These pages are temporary pages and will revert back to the Current Depth page after 8 seconds of inactivity.

1. Use the **Depth** button to cycle through the available depth pages.
2. From the Minimum Depth or Maximum Depth page, press and hold the **Reset** button for approximately 3 seconds to reset the reading.

## 6.7 Viewing the depth offset

To view the offset value currently applied to your instrument follow the steps below.

During normal operation:

1. Press the **Offset** button to display the **Depth offset** page.

The display shows the value of the offset applied and identifies:

- If a positive offset value is applied **W/L** is displayed to denote a waterline offset.
- If a negative offset value is applied **KEEL** is displayed to denote a keel offset.
- If a zero offset value is applied **OFFSET** is displayed to denote that there is a zero offset from the transducer.

**Note:** Depth offset information is only available on units set as data masters (see *Data master* section for details).

## 6.8 Alarms

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

You can set up alarms to alert you to certain conditions.

Alarms are raised by system functions, and also external equipment connected to your display.

When an alarm event occurs an audible and visual alarm is activated which indicates the alarm state.

Alarm thresholds can be configured from the relevant alarm page / menu.

### Instrument alarms

The alarms available for the i50 Depth and i50 Tridata are listed below.

- Shallow depth alarm
- Deep depth alarm
- Shallow anchor alarm
- Deep anchor alarm

### Alarm indications

An alarm event is indicated by both audible and visual warnings.

#### Shallow alarm



#### Deep alarm



#### Shallow anchor alarm



#### Deep anchor alarm



Alarms are sounded when the set alarm threshold value is crossed. Alarms will sound until silenced.

### Silencing alarms

1. Press any button to silence an active alarm.

### Enabling / Disabling alarms

Alarms can be enabled or disabled at any time.

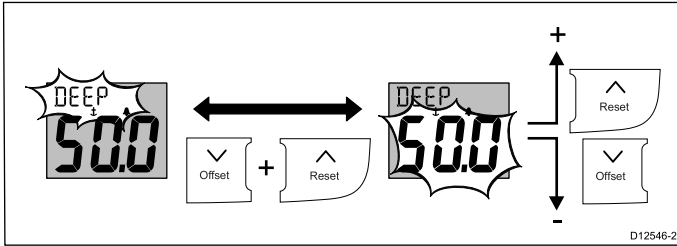
With the relevant alarm page displayed:



1. Press and hold the **Reset** button for 1 second to switch the alarm on or off.

## Setting alarm thresholds — i50 Depth

You can adjust the threshold at which alarms are triggered by following the steps below.



With the relevant alarm page displayed:

1. Press the **Offset** and **Reset** buttons at the same time to change the alarm threshold.  
The current threshold will start to flash.
2. Use the **Reset** button to increase the alarm threshold.
3. Use the **Offset** button to decrease the alarm threshold.
4. The alarm threshold page will time-out after approximately 6 seconds of inactivity, automatically saving the new alarm threshold.

## 6.9 Illumination

### Adjusting the backlight level

The backlighting level can be accessed using the **Power** button.

During normal operation:

1. Press and hold the **Power** button for approximately 2 seconds until **LAMPS** is displayed.
2. Use the **Up** button to increase the backlight setting, or.
3. Use the **Down** button to decrease the backlight setting.

The backlight level can be adjusted from level 1 to level 9 or switched Off (default).

**Note:** The backlight page will time-out after 8 seconds of inactivity.

### Adjusting the contrast

During normal operation:

1. Press and hold the **Power** button for approximately 4 seconds until **CONTRAST** is displayed.
2. Use the **Power** button to cycle through the available contrast levels.

*The contrast level can be adjusted from level 0 (default) to 3.*

**Note:** The contrast page will time-out after 8 seconds of inactivity.

### Group illumination

Group illumination is used to synchronizes and control the backlighting level of multiple units assigned to the same group.

The unit can participate in shared illumination via a SeaTalk network or group illumination via a SeaTalk<sup>ng</sup> network.

When connected on a SeaTalk network all compatible units will share their backlight level (when 1 unit's backlighting level is adjusted all other units backlight level will also change).

When connected on a SeaTalk<sup>ng</sup> network the unit can participate in group illumination and be assigned to a group of units which will share their backlighting levels. Available groups are as follows:

- OFF (default) — Group illumination is switched off
- HL1 — Helm 1
- HL2 — Helm 2
- CPT — Cockpit
- FLY — Flybridge
- NST — Mast
- GP1 to GP5 — User defined groups

When assigned to a group, when the backlighting of 1 unit is adjusted the backlighting level of all units assigned to the same group will also change.

## Assigning the i50 Depth to a group

To assign the i50 Depth as part of a group so that it can participate in group illumination follow the steps below.

During normal operation:

1. Press and hold the **Depth** and **Alarm** buttons at the same time for 6 seconds, until the Group illumination page is displayed.

GROUP CAL is displayed on-screen.

**Note:** The Group illumination entry page is a temporary page and will time-out to the previous page after 8 seconds.

2. Press the **Depth** button to display the **Groups** page.
3. Press the **Offset** and **Reset** buttons at the same time to enable selection of a group.  
The group setting will flash.
4. Use the **Reset** button to cycle upwards through the list of available groups.
5. Use the **Offset** button to cycle back down through the list.
6. Press the **Offset** and **Reset** buttons at the same time to assign the display to the selected group.  
The group setting will stop flashing.
7. Press and hold the **Depth** and **Alarm** buttons at the same time for approximately 2 seconds to return to normal operation.

## 7.1 i50 Speed operation

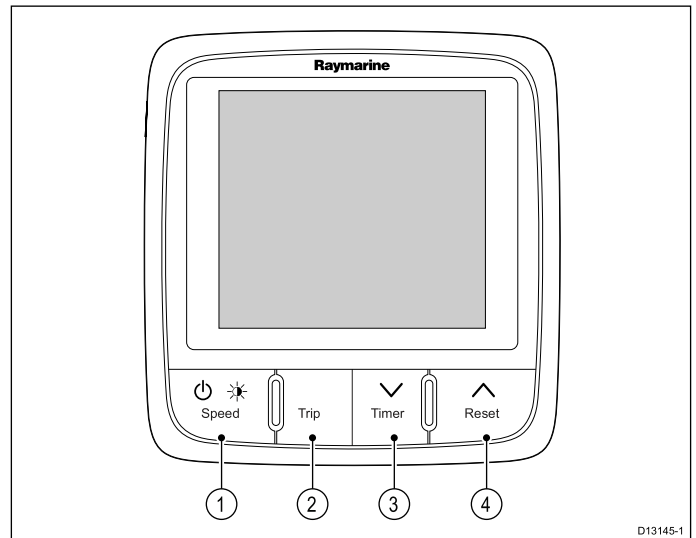
When connected to the relevant speed or speed and temperature transducer, your i50 Speed instrument provides:

- Current, maximum and average speed information, in either knots (KTS), mile per hour (MPH) or kilometers per hour (KPH).
- Log and trip information, in either nautical miles (NM), statute miles (M) or kilometers (KM).
- Water temperature information, in either degrees celsius (°C) or fahrenheit (°F).
- Velocity made good (VMG) information, VMG is only available when connected to SeaTalk or SeaTalk<sup>ng</sup> network which also contains a compatible wind transducer.
- Speed over ground (SOG) information, SOG is only available when connected to SeaTalk or SeaTalk<sup>ng</sup> network which also contains a suitable GPS.
- Count-up and race start timers

It should be noted that:

- The maximum speed, average speed and trip reading are reset to zero at power up.
- The log screen shows the total distance covered by the vessel since the unit was fitted.
- A unit with a transducer physically connected cannot be set as a Repeater display.

## 7.2 i50 Speed controls



1	<b>Speed / Power</b> — Select to access speed information, adjust backlight, adjust contrast and power the display On and Off
2	<b>Trip</b> — Select to access log, trip and water temperature information
3	<b>Timer / Down</b> — Select to access timers. Use to move down through menu options or to decrease numeric values
4	<b>Reset / Up</b> — Select and hold down for 3 seconds to reset data to current values. Use to move up through menu options or to increase numeric values

## 7.3 Power

### Powering on the unit

The unit will automatically turn on with the system, unless it has previously been powered off using the **Power** button.

With the unit powered off:

1. Press and hold the **Power** button until the screen turns on (approximately 2 seconds).

### Powering off the unit

1. Press and hold the **Power** button until the count down timer reaches zero and the screen turns off.

**Note:** When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

## 7.4 Calibration

Before first use the unit must be calibrated to ensure optimum performance.

The calibration settings are grouped into 3 categories: **User Calibration**, **Intermediate Calibration** and **Dealer Calibration**.

Access to the User Calibration menu can be locked from the Dealer Calibration menu.

### Speed Calibration Pages

The Calibration procedures are accessed from the Calibration menus

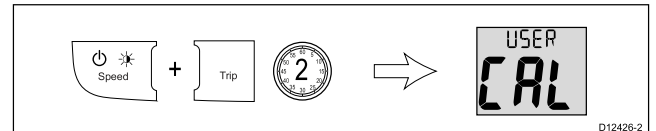
User Calibration	Intermediate Calibration	Dealer Calibration
Speed units	Software Version	User Calibration Menu Access
Speed Resolution	Master/Repeater Status	Display Response — Speed
Log units	Speed Run Calibration	Display Response — VMG
(1) Calibration Factor / SOG		Boat Show Mode
Water Temperature units		Factory Reset
Water Temperature Calibration		
Timer		

**Note:** (1) Settings are only available when the instrument status is set to Master.

### Selecting the unit of measure for speed readings

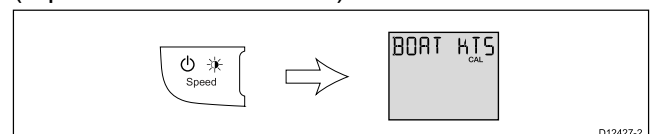
During normal operation:

1. Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Speed** button until **BOAT** is displayed (1 press from **USER CAL**).



3. Use the **Timer** or **Reset** button to select the required unit of measurement for speed readings. The units of measurement available for speed readings are:

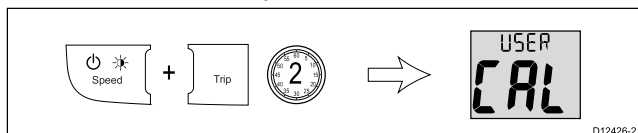
- KTS — Knots (default)

- MPH — Miles Per Hour
  - KMH — Kilometers Per Hour
4. You can exit the User Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
  5. Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## Changing speed resolution

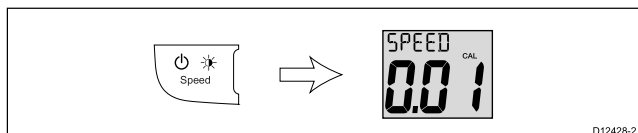
During normal operation:

1. Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Speed** button until **SPEED** is displayed (2 presses from **USER CAL**).

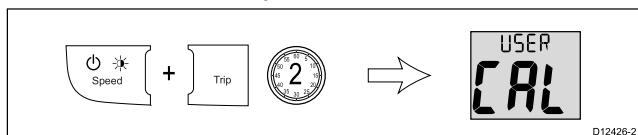


3. Use the **Timer** or **Reset** button to select the required resolution for speed readings. The resolutions available are 0.01 (default) and 0.1.
4. You can exit the User Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
5. Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## Selecting the unit of measure for log readings

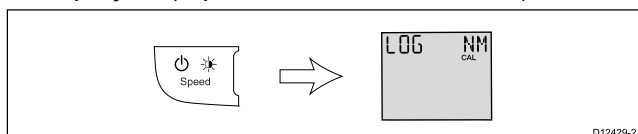
During normal operation:

1. Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Speed** button until the **Log Units** page is displayed (3 presses from **USER CAL**).



3. Use the **Timer** or **Reset** button to select the required unit of measurement for log readings.
  - SM (default) — Statute Miles
  - NM — Nautical Miles
  - KM — Kilometers
4. You can exit the User Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
5. Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## 1 Point Speed Calibration

The display's speed readings can be calibrated using a quick, 1 point calibration process, in most situations this is all that will be required to calibrate your speed readings.

Prerequisites:

- For best results SOG data should be available, or an alternative method of estimating vessel speed must be used (e.g. vessel speed can be estimated using Nautical Measured Mile Markers or similar landmarks of a known distance apart).
- You will need to be underway, with sufficient space to maneuver unhindered.
- In order to achieve accurate results, water conditions must be calm with zero tide and zero current.

During normal operation:

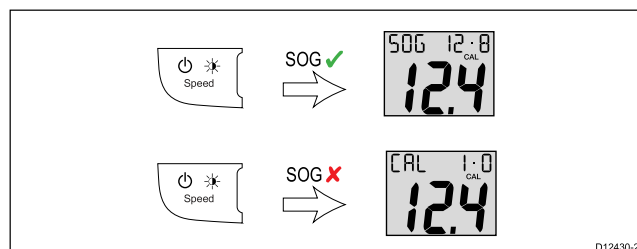
1. Steer your vessel on a steady course at a constant typical speed.
2. Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

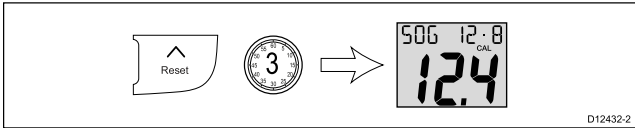
3. Press the **Speed** button until 1 of the Current Speed pages is displayed (4 presses from **USER CAL**).

If SOG data is available over SeaTalk<sup>ng</sup> then the **SOG** page is displayed, if SOG data is not available then the **Calibration Factor** page is displayed.



4. If the **SOG** page is displayed and the water conditions are acceptable, press and hold the **Reset** button for approximately 3 seconds to

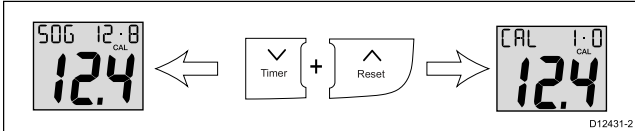
automatically adjust your calibration factor so that your Speed reading is the same as SOG.



- Alternatively, with the Calibration Factor page displayed use the **Timer** and **Reset** buttons to adjust the calibration factor until the displayed speed matches your estimated speed.

The default calibration factor is 1.00. The calibration factor can be set from 0.25 to 2.50.

- If SOG is available you can switch between the **Calibration Factor** and **SOG** pages by pressing the **Timer** and **Reset** buttons at the same time.



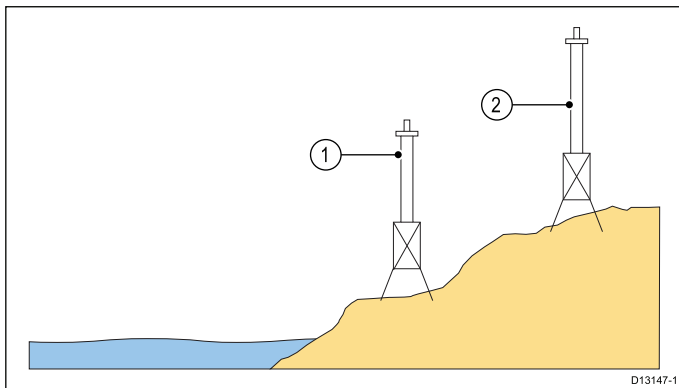
**Note:** To exit the User Calibration Menu, at any time, press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.

## Nautical measured mile markers

When neither SOG data or any other reliable means of estimating Speed Through the Water (STW) is available, Nautical Measured Mile Markers can be used to help calibrate Log Speed. Nautical measured mile markers are identified by two pairs of posts or towers. The distance between each pair of markers is 1 nautical mile.

Each marker in a pair is separated by distance and elevation from its partner. The front marker is closer to the water and shorter than the marker behind it.

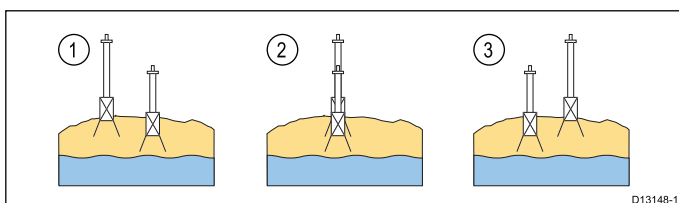
### Markers — side view



- Front marker
- Rear marker

When the 2 markers appear vertically aligned the vessel is on the correct range line to begin a measured mile run.

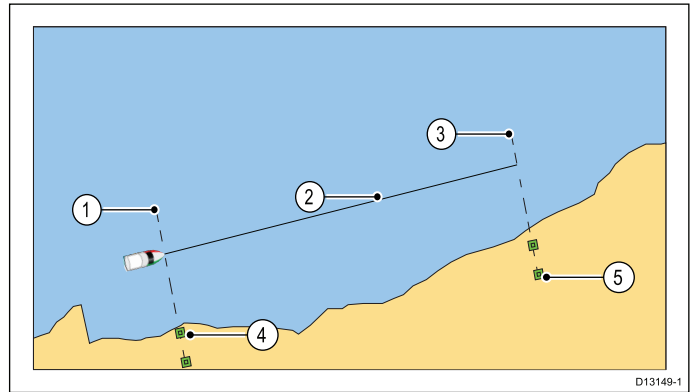
### Marker alignment



- Left of range line
- On range line
- Right of range line

The vessel should already be at top speed and as the first pair of markers appear aligned a stopwatch should be started, when the vessel passes the second pair of aligned markers the stopwatch is stopped.

## Measuring a nautical mile



- Starting point (start stopwatch)
- Measured mile
- End point (stop stopwatch)
- First pair of markers
- Second pair of markers

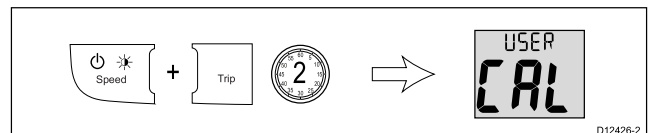
To provide a more accurate reading the vessel should make between 4 to 6 runs in both directions to allow for tide and wind conditions. The average of the time taken over all runs should be used to calculate Log Speed.

The vessel speed can then be worked out by taking the distance travelled (1 nautical mile) and dividing it by the average time taken to perform the run. The resulting calculation is your average speed in knots.

## Selecting unit of measure for water temperature readings

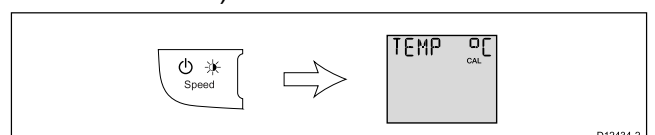
During normal operation:

- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

- Press the **Speed** button until the **Water Temperature Units** page is displayed (5 presses from **USER CAL**).





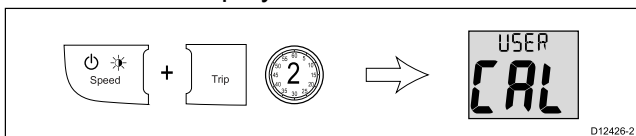
- Use the **Timer** or **Reset** button to select the required unit of measurement for water temperature readings.  
The units of measure available for temperature are:
  - °C (default) — degrees Celsius
  - °F — degrees Fahrenheit
- You can exit the User Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## Calibrating water temperature

You will need a suitable thermometer to measure the water temperature.

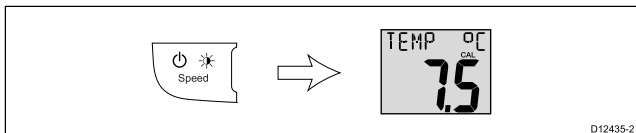
During normal operation:

- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

- Press the **Speed** button until the **Water Temperature Calibration** page is displayed (6 presses from **USER CAL**).

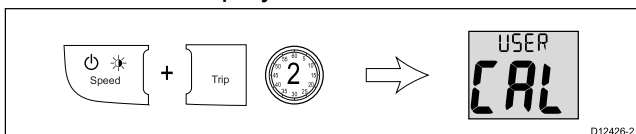


- Use a suitable thermometer to measure the water temperature.
- Use the **Timer** and **Reset** buttons to match the displayed water temperature to the water temperature measured by your thermometer.
- You can exit the User Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## Enabling and disabling the timer buzzers

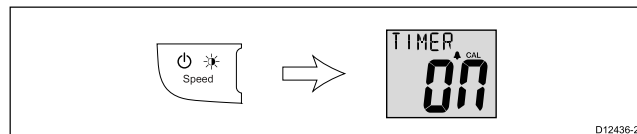
During normal operation:

- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds, until **USER CAL** is displayed.



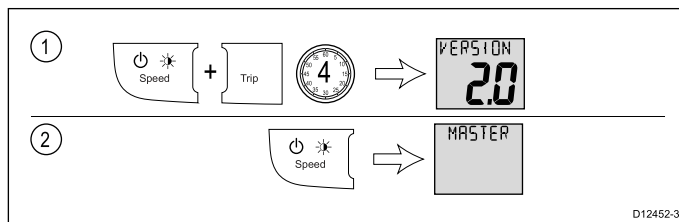
**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

- Press the **Speed** button until **TIMER** is displayed (7 presses from **USER CAL**).



- Use the **Timer** or **Reset** button to switch the timer buzzers On and Off (default).
- You can exit the User Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## Checking i50 Speed Software Version and Master / Repeater status



During normal operation:

- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 4 seconds, until **VERSION** is displayed.
- Press the **Speed** button to display the Master/Repeater Status page.

*The Master/Repeater status cannot be changed, if a transducer is connected to the display then it will be set as a Master, otherwise it will be set as a Repeater.*

- Press the **Speed** button again to begin the Speed Run Calibration.
- To return to normal operation, at any time, press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.

## Performing a Speed Run Calibration

The Speed Run Calibration involves carrying out 2 or more runs, over a measured distance, to enable a calibration factor to be determined. Each run consists of an outward and a return leg which minimizes the effect of tidal drift when the calibration factor is determined.

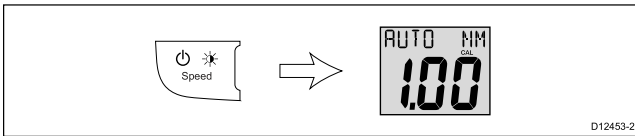
During normal operation:

**Note:** This procedure is not required if the Display's Speed has been adjusted to SOG.

- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 4 seconds, until **VERSION** is displayed.

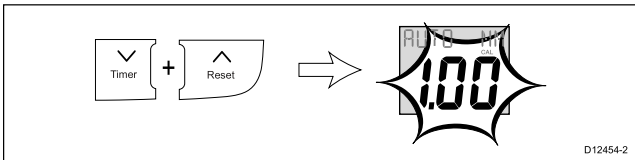


- Press the **Speed** button until you reach the **Speed Run Calibration** page (2 presses from **VERSION**).



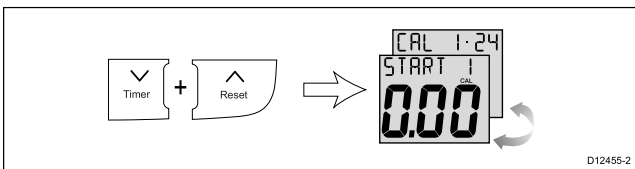
- Press the **Timer** and **Reset** buttons at the same time.

The run length flashes.

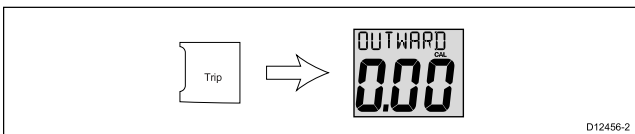


- Use the **Timer** and **Reset** buttons to adjust the run length to the required value. Default value is 1.00, the run length can be set to any value between 0.25 and 2.5.

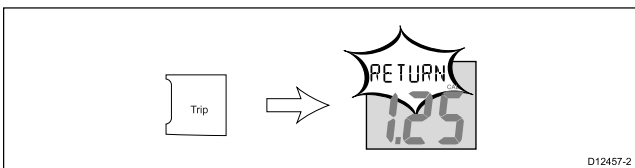
- Press the **Timer** and **Reset** buttons at the same time to commence the Speed Run Calibration. The Calibration Status page is displayed. The text at the top of the page alternates between **START 1** and the Calibration Factor currently applied.



- Start the outward leg of the run and as you pass the start point, press the **Trip** button, so the page shows **OUTWARD** at the top. As the run proceeds, the displayed value will change.



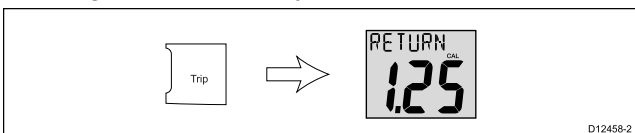
- At the end of the outward leg press **Trip** again.



The text **RETURN** will flash at the top of the page and the displayed distance freezes.

**Note:** At this point the displayed distance may not be the same as the measured distance, due to errors introduced by tidal flow.

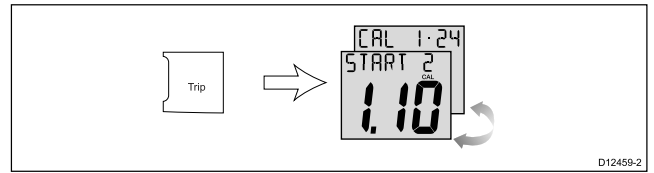
- Turn your vessel round, start the return leg and as you do so, press the **Trip** button so **RETURN** stops flashing and the displayed value increments.



- At the end of the return leg, press the **Trip** button. At this point:

- The text **START 2** alternating with the new Calibration Factor displayed at the top of the page.

- The displayed distance freezes



**Note:** The displayed distance should be very close to the actual (measured) distance of the run.

- If you are satisfied with the results of the first calibration run, press the **Speed** and **Trip** buttons at the same time to save the new Calibration Factor and exit the Speed Run Calibration Menu.

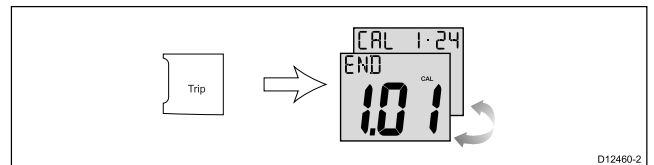
- If you want to carry out a second calibration run, press the **Trip** button.

- Follow steps 5 to 7 above again to complete a second calibration run.

- At the end of the return leg press the **Trip** button. At this point:

- The text **END** alternating with the new Calibration Factor is displayed at the top of the page.

- The displayed distance freezes

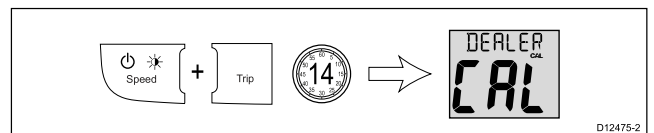


- To exit the **Speed Run Calibration** at any time, press and hold the **Speed** and **Trip** buttons at the same time for 2 seconds.

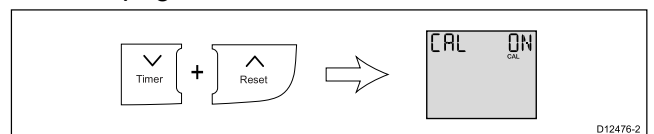
## Locking access to the User Calibration Menu

During normal operation:

- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



- Press the **Timer** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



- Use the **Timer** or **Reset** button to switch access to the **User Calibration Menu On** (default) and **Off**.

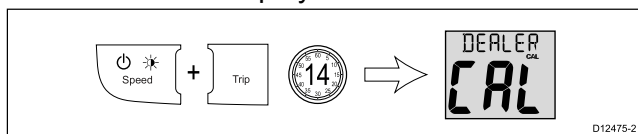
Selecting **Off** disables access to the **User Calibration Menu**.

- You can exit the User Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

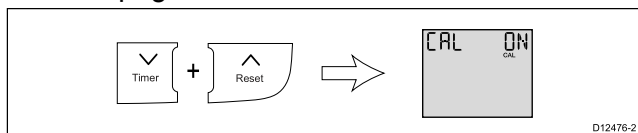
## Setting the response delay for speed readings

During normal operation:

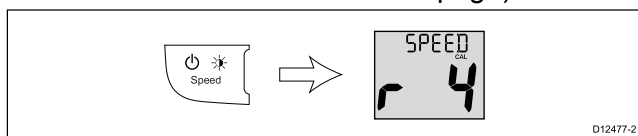
- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



- Press the **Timer** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



- Press the **Speed** button until the **Speed Response** page is displayed (1 press from the **User Calibration Menu Access** page).

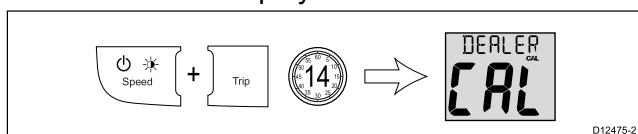


- Use the **Timer** and **Reset** buttons to adjust the speed response to the required level. The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.
- You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

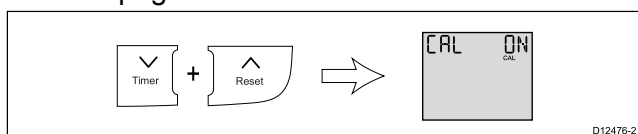
## Setting the response delay for Velocity Made Good (VMG) readings

During normal operation:

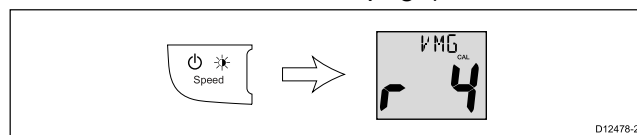
- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



- Press the **Timer** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



- Press the **Speed** button until the **VMG Response** page is displayed (2 presses from the **User Calibration Menu Access** page).



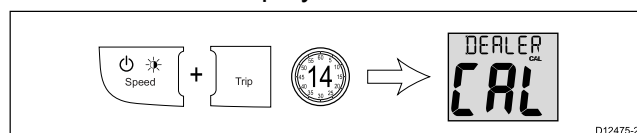
- Use the **Timer** or **Reset** button to adjust the VMG response to the required level. The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.
- You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## Enabling and disabling Boat Show Mode

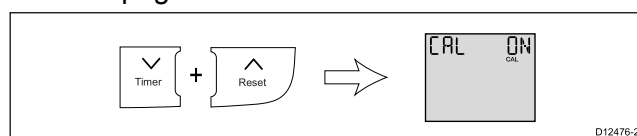
- Boat Show Mode can only be enabled on Repeater displays.
- Boat show mode is only suitable for demonstration purposes and should NOT be enabled whilst your vessel is in use.

During normal operation:

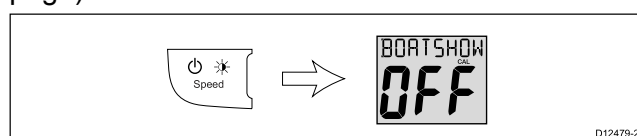
- Press and hold the **Speed** and **Trip** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



- Press the **Timer** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



- Press the **Speed** button until **BOAT** is displayed (3 presses from **User Calibration Menu Access** page).

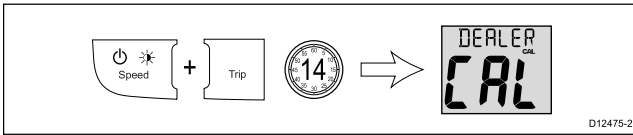


- Use the **Timer** or **Reset** button to switch boat show mode On and Off (default). Selecting On will put the display into boat show mode.
- You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

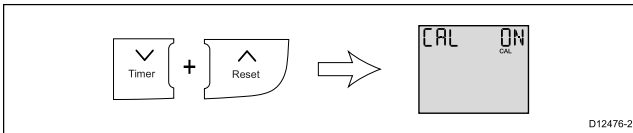
## Resetting the display to factory defaults

During normal operation:

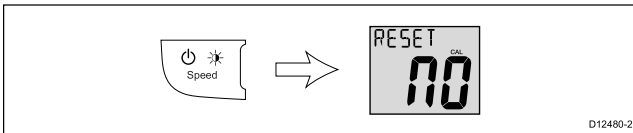
1. Press and hold the **Speed** and **Trip** buttons at the same time for approximately 14 seconds, until **DEALER CAL** is displayed.



2. Press the **Timer** and **Reset** buttons at the same time to display the **User Calibration Menu Access page**.



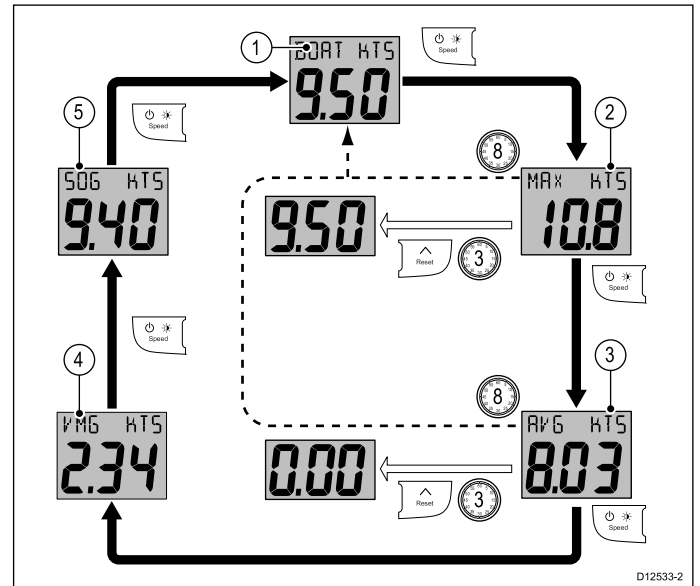
3. Press the **Speed** button until **RESET** is displayed (4 presses from **User Calibration Menu Access page**).



4. To reset the display to factory default settings:
  - i. Use the **Timer** or **Reset** button to change the reset option to Yes.
  - ii. Press the **Speed** button to reset your display to factory default settings.
5. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Speed** and **Trip** buttons at the same time for approximately 2 seconds.
6. Alternatively, you can press the **Speed** button to cycle to the next setting in the menu.

## 7.5 Using the speed pages

To cycle through the speed pages follow the steps below:



1. Current Speed page
2. [1] Maximum Speed page
3. [1] Average Speed page
4. [2] VMG (wind) page
5. [3] SOG page

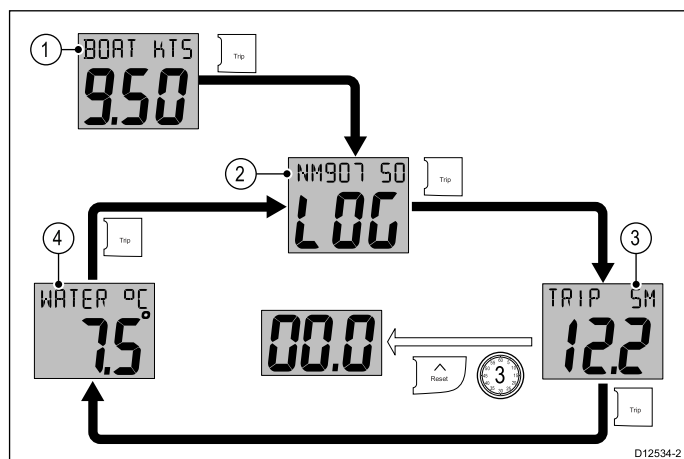
### Note:

- [1] These pages are temporary pages and will revert back to the previous permanent page after 8 seconds of inactivity.
- [2] The VMG (wind) information is only available if your unit is part of a SeaTalk or SeaTalk<sup>ng</sup> network which has a compatible wind instrument and transducer connected.
- [3] SOG information is only available if your unit is part of a SeaTalk or SeaTalk<sup>ng</sup> network which has a suitable GPS connected.

1. Use the **Speed** button to cycle through the available speed pages.
2. From the Maximum Speed page or Average Speed page, press and hold the **Reset** button for approximately 3 seconds to reset the reading.

## 7.6 Using the log, trip and temperature pages

To cycle through the available log, trip and water temperature pages follow the steps below.



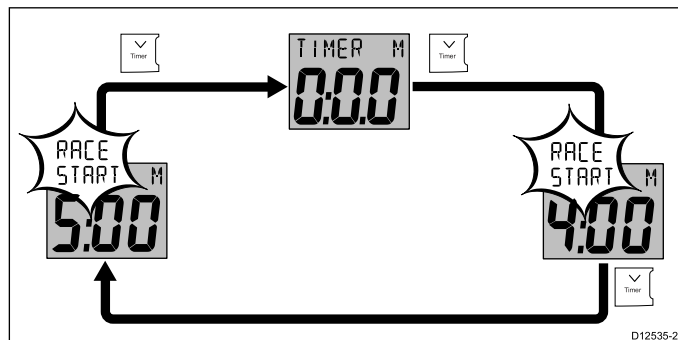
1. Current Speed page
2. Log page
3. Trip page
4. Water temperature page

During normal operation:

1. Use the **Trip** button to cycle through the available pages.
2. From the Trip page, press and hold the **Reset** button for approximately 3 seconds to reset the reading.

## 7.7 Using the timers

To cycle through and use the Race Timer pages and Stop Watch page follow the steps below.



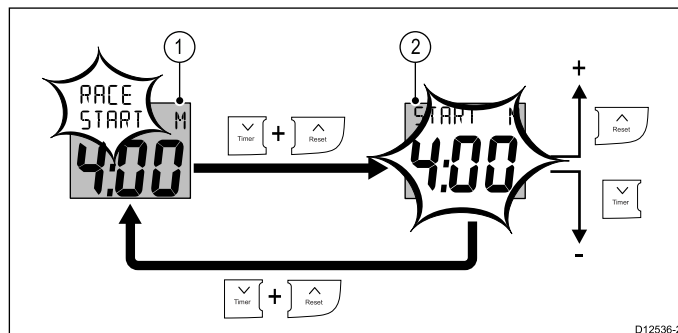
During normal operation:

1. Press the **Timer** button to cycle through the available timers.
2. Press the **Reset** button to start the timer.
3. With the timer running, press the **Reset** button to pause the timer.
4. With the timer running, press and hold the **Reset** button for 1 second to reset the timer.

**Note:** After the race timers have counted down to zero they will reverse (count upwards from zero).

### Setting the race start timer

The race start timers can be set from 1 to 15 minutes.



With a **race timer** displayed

1. Press the **Timer** and **Reset** buttons at the same time to adjust the race timer.  
The set time will flash.
2. To change the race timer:
  - i. Use the **Reset** button to increase the race timer start value, or
  - ii. Use the **Timer** button to decrease the race timer start value.
  - iii. Press the **Timer** and **Reset** buttons at the same time to confirm the new value.

### Timer buzzer

The Timer buzzer is enabled or disabled during calibration; refer to the *User calibration* section. When using a race timer with the timer buzzer enabled, the buzzer will:

- Short double-beep every minute.
- Long beep x3 at the start of the last 30 seconds.
- Short beep once for each of the last 10 seconds.
- Long beep at zero.

## 7.8 Illumination

### Adjusting the backlight level

The backlighting level can be accessed using the **Power** button.

During normal operation:

1. Press and hold the **Power** button for approximately 2 seconds until **LAMPS** is displayed.
2. Use the **Up** button to increase the backlight setting, or.
3. Use the **Down** button to decrease the backlight setting.

The backlight level can be adjusted from level 1 to level 9 or switched Off (default).

**Note:** The backlight page will time-out after 8 seconds of inactivity.

### Adjusting the contrast

During normal operation:

1. Press and hold the **Power** button for approximately 4 seconds until **CONTRAST** is displayed.
2. Use the **Power** button to cycle through the available contrast levels.

*The contrast level can be adjusted from level 0 (default) to 3.*

**Note:** The contrast page will time-out after 8 seconds of inactivity.

### Group illumination

Group illumination is used to synchronizes and control the backlighting level of multiple units assigned to the same group.

The unit can participate in shared illumination via a SeaTalk network or group illumination via a SeaTalk<sup>ng</sup> network.

When connected on a SeaTalk network all compatible units will share their backlight level (when 1 unit's backlighting level is adjusted all other units backlight level will also change).

When connected on a SeaTalk<sup>ng</sup> network the unit can participate in group illumination and be assigned to a group of units which will share their backlighting levels. Available groups are as follows:

- OFF (default) — Group illumination is switched off
- HL1 — Helm 1
- HL2 — Helm 2
- CPt — Cockpit
- FLY — Flybridge
- NST — Mast
- GP1 to GP5 — User defined groups

When assigned to a group, when the backlighting of 1 unit is adjusted the backlighting level of all units assigned to the same group will also change.

### Assigning the i50 Speed to a group

To assign the i50 Speed as part of a group so that it can participate in group illumination follow the steps below.

During normal operation:

1. Press and hold the **Speed** and **Trip** buttons at the same time for 6 seconds, until the Group illumination page is displayed.

GROUP CAL is displayed on-screen.

**Note:** The Group illumination entry page is a temporary page and will time-out to the previous page after 8 seconds.

2. Press the **Speed** button to display the **Groups** page.
3. Press the **Timer** and **Reset** buttons at the same time to enable selection of a group.  
The group setting will flash.
4. Use the **Reset** button to cycle upwards through the list of available groups.
5. Use the **Timer** button to cycle back down through the list.
6. Press the **Timer** and **Reset** buttons at the same time to assign the display to the selected group.  
The group setting will stop flashing.
7. Press and hold the **Speed** and **Trip** buttons at the same time for approximately 2 seconds to return to normal operation.

## 8.1 i50 Tridata operation

When connected to the relevant transducer(s) your i50 Tridata instrument:

- Provides depth information in either feet (FT) or metres (M).
- Enables you to define alarm thresholds for shallow alarm, deep alarm, shallow anchor alarm and deep anchor alarm.
- Provides speed information (current, maximum and average), in either knots (KTS), miles per hour (MPH) or kilometers per hour (KPH).
- Velocity made good (VMG) information, VMG is only available when connected to SeaTalk or SeaTalk<sup>ng</sup> network which also contains a compatible wind transducer.
- Provides log and trip information. These are given in either nautical miles (NM), statute miles (M) or kilometers (KM).
- Provides water temperature information. This is given in either degrees celsius (°C) or degrees fahrenheit (°F).
- Provides count up and race start timer functions.

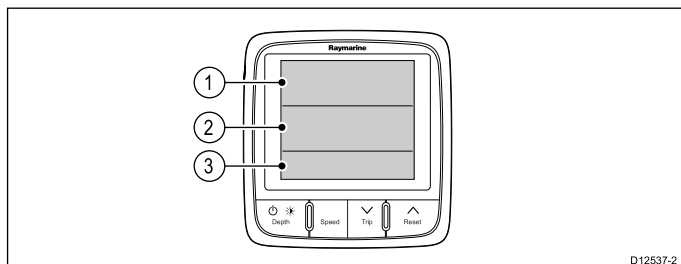
**Note:** Depth information is obtained from the depth transducer connected to the unit. However, when the instrument is connected to a SeaTalk network, which contains a compatible sonar module (fishfinder) the depth information is provided by the sonar module whilst it is switched on.

It should be noted that:

- The required units of measurement are set during User calibration.
- Up / Down depth-trend arrows are displayed, if the seabed is rising or falling at a significant rate.
- The log screen shows the total distance covered by the vessel since the unit was fitted.
- Maximum speed, average speed and trip reading are reset to zero at power up.
- If for any reason depth information is lost, the depth title will flash and the displayed value will be the last known depth reading.

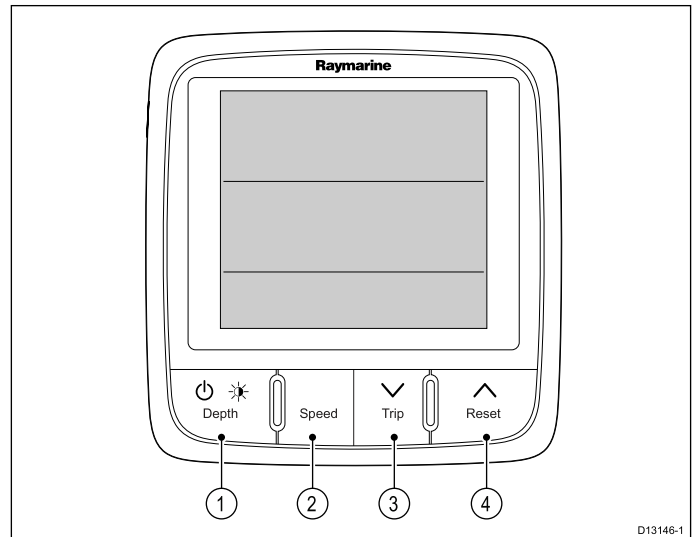
## i50 Tridata display layout

The i50 Tridata display is divided into 3 separate areas, each of which displays a separate type of information, as shown below.



1	Depth information
2	Speed information
3	Trip, log, water temperature and timer

## 8.2 i50 Tridata controls



1	<b>Depth / Power</b> — Select to access Depth information, adjust backlight, adjust contrast and power the display On and Off
2	<b>Speed</b> — Select to access Speed and VMG information
3	<b>Trip / Down</b> — Select to access log, trip and water temperature information. Use to move down through menu options or to decrease numeric values
4	<b>Reset / Up</b> — Select and hold down for 3 seconds to reset data to current values. Use to move up through menu options or to increase numeric values



## 8.3 Power

### Powering on the unit

The unit will automatically turn on with the system, unless it has previously been powered off using the **Power** button.

With the unit powered off:

1. Press and hold the **Power** button until the screen turns on (approximately 2 seconds).

### Powering off the unit

1. Press and hold the **Power** button until the count down timer reaches zero and the screen turns off.

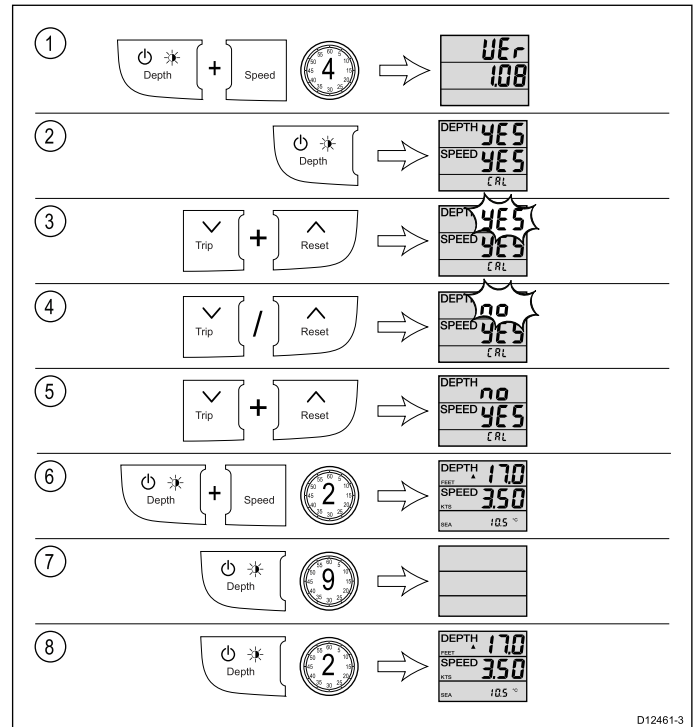
**Note:** When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

## 8.4 Data master

Where a system contains more than one unit capable of displaying a data type, the unit physically connected to the transducer must be set as the data master and any other units set as a repeater.

### Changing i50 Tridata Master / Repeater status

Displays that have a transducer physically attached to them are automatically set as Data Masters. You can set your display to show Depth readings from a different source



During normal operation:

1. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 4 seconds, until **UEr** is displayed.
2. Press the **Depth** button to display the Master/Repeater status page.

*Default: Master (transducer connected) or Repeater (No transducer connected).*

3. Press the **Trip** and **Reset** buttons at the same time.  
The status will start to flash.
4. Use the **Trip** or **Reset** button to switch the status between Master or Repeater.
5. Press the **Trip** and **Reset** buttons at the same time to confirm the status.
6. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 2 seconds to return to normal operation.
7. Power off the display by pressing and holding the **Power** button until the screen turns off.
8. Power the display back on by pressing and holding the **Power** button until the screen turns on (approximately 2 seconds).
9. Check the display's status by repeating steps 1 and 2 above.



## 8.5 Calibration

Before first use the unit must be calibrated to ensure optimum performance.

The calibration settings are grouped into 3 categories: **User Calibration**, **Intermediate Calibration** and **Dealer Calibration**.

Access to the User Calibration menu can be locked from the Dealer Calibration menu.

### Tridata Calibration Pages

The Calibration procedures are accessed from the Calibration menus

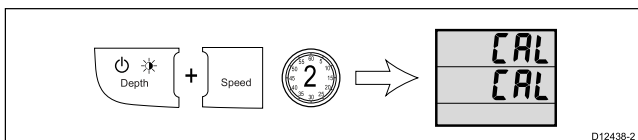
User Calibration	Intermediate Calibration	Dealer Calibration
Depth units	Software Version	User Calibration Menu Access
(1) Depth Offset	Master/Repeater Status	Speed Data Source
Speed units	Speed Run Calibration	Display Response — Speed
Speed Resolution		Display Response — Depth
Log units		Boat Show Mode
(1) Calibration Factor / SOG		Factory Reset
Water Temperature units		
Water Temperature Calibration		
Timer buzzer		

**Note:** (1) Settings are only available when the instrument status is set to Master.

### Selecting the unit of measure for depth readings

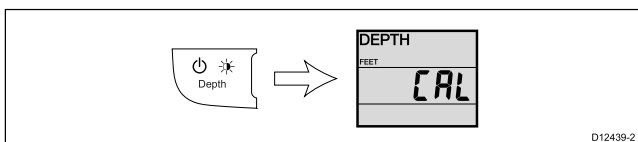
During normal operation:

1. Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Depth** button until the **Depth Units** page is displayed (1 press from **CAL**).



3. Use the **Trip** and **Reset** buttons to select the required units of measurement for depth readings.

The units of measure available for depth readings are:

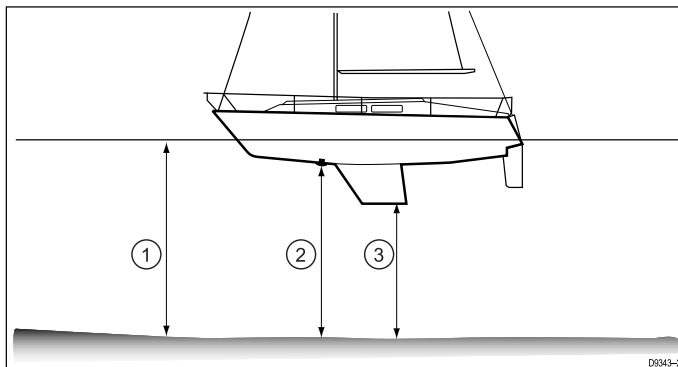
- FEET (default)
- METRES

4. You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
5. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

### 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.

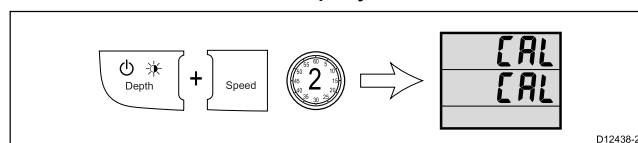


1	Waterline offset	Values greater than zero (Positive values) represent a waterline offset
2	Transducer	Zero offset represents the depth from the transducer's location
3	Keel offset	Values less than zero (Negative values) represent a keel offset

### Applying a Depth Offset

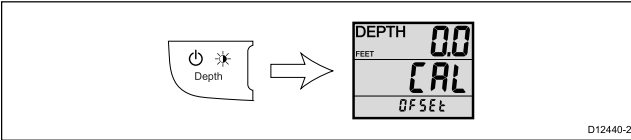
During normal operation:

1. Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

- Press the **Depth** button until the **Depth Offset** page is displayed (2 presses from **CAL**).

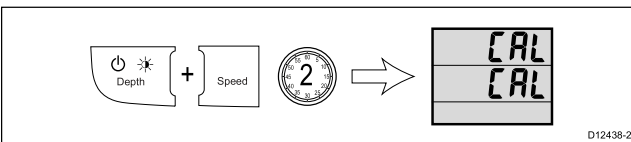


- Use the **Trip** and **Reset** buttons to adjust the depth offset to the required value.
- You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Selecting the unit of measure for speed readings

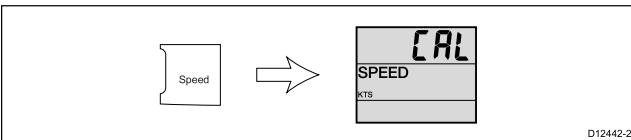
During normal operation:

- Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

- Press the **Speed** button until the **Speed Units** page is displayed (1 press from **CAL**).

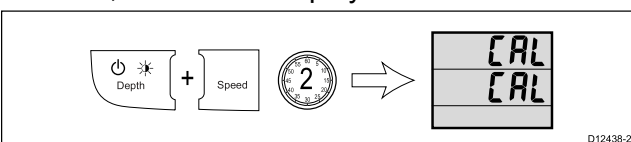


- Use the **Trip** or **Reset** button to select the required unit of measurement for speed readings. The units of measure available for speed readings are:
  - KTS — Knots (default)
  - MPH — Miles Per Hour
  - KMH — Kilometers Per Hour
- You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Selecting a resolution for speed readings

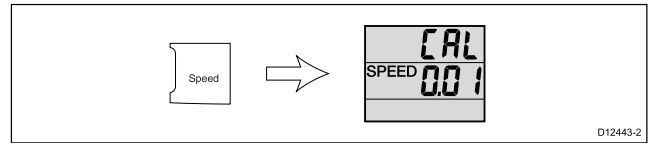
During normal operation:

- Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

- Press the **Speed** button until the **Speed Resolution** page is displayed (2 presses from **CAL**).

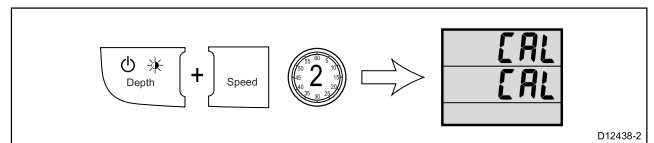


- Use the **Trip** or **Reset** button to select the required resolution for speed readings. The resolutions available are 0.01 (default) and 0.1.
- You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Selecting the unit of measure for log readings

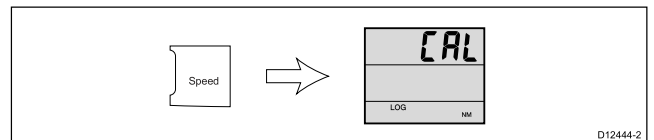
During normal operation:

- Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

- Press the **Speed** button until the **Log Units** page is displayed (3 presses from **CAL**).



- Use the **Trip** or **Reset** button to select the required unit of measurement for log readings.
  - KM (default) — Kilometers
  - SM — Statute Miles
  - NM — Nautical Miles
- You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## 1 point speed calibration

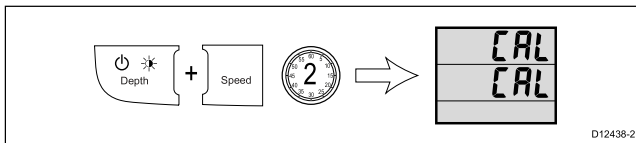
The display's speed readings can be calibrated using a quick, 1 point calibration process, in most situations this is all that will be required to calibrate your speed readings.

Prerequisites:

- For best results SOG data should be available, or an alternative method of estimating vessel speed must be used (e.g. vessel speed can be estimated using Nautical Measured Mile Markers or similar landmarks of a known distance apart).
- You will need to be underway, with sufficient space to maneuver unhindered.
- In order to achieve accurate results, water conditions must be calm with zero tide and zero current.

During normal operation:

1. Steer your vessel on a steady course at a constant typical speed.
2. Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



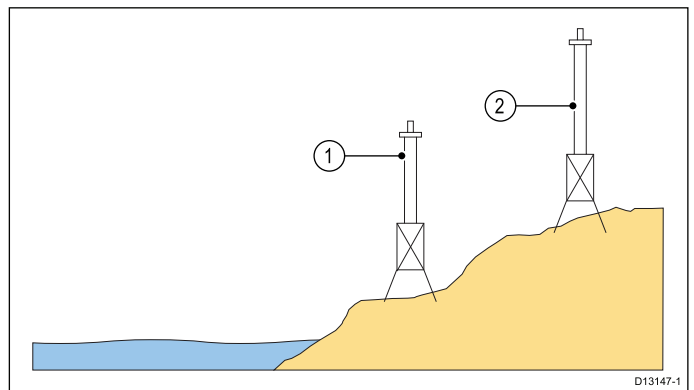
**Note:** To exit the User Calibration Menu at any time, press and hold the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.

## Nautical measured mile markers

When neither SOG data or any other reliable means of estimating Speed Through the Water (STW) is available, Nautical Measured Mile Markers can be used to help calibrate Log Speed. Nautical measured mile markers are identified by two pairs of posts or towers. The distance between each pair of markers is 1 nautical mile.

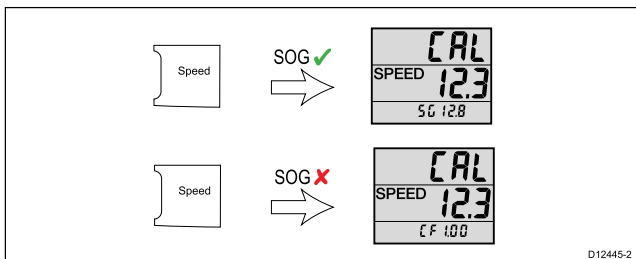
Each marker in a pair is separated by distance and elevation from its partner. The front marker is closer to the water and shorter than the marker behind it.

### Markers — side view



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

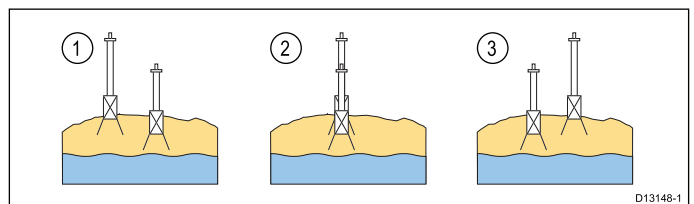
3. Press the **Speed** button until 1 of the Current Speed pages is displayed (4 presses from **CAL**). If SOG data is available over SeaTalk<sup>ng</sup> then the **SOG** page is displayed, if SOG data is not available then the **Calibration Factor** page is displayed.



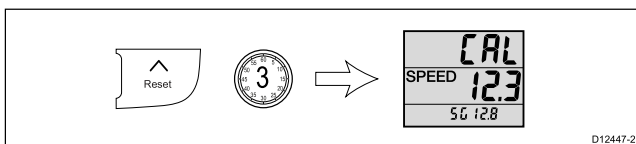
1. Front marker
2. Rear marker

When the 2 markers appear vertically aligned the vessel is on the correct range line to begin a measured mile run.

### Marker alignment



4. If the **SOG** page is displayed and the water conditions are acceptable, press and hold the **Reset** button for approximately 3 seconds to automatically adjust your calibration factor so that your Speed reading is the same as SOG.



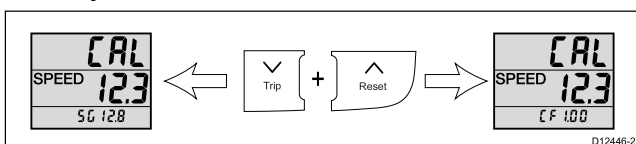
1. Left of range line
2. On range line
3. Right of range line

The vessel should already be at top speed and as the first pair of markers appear aligned a stopwatch should be started, when the vessel passes the second pair of aligned markers the stopwatch is stopped.

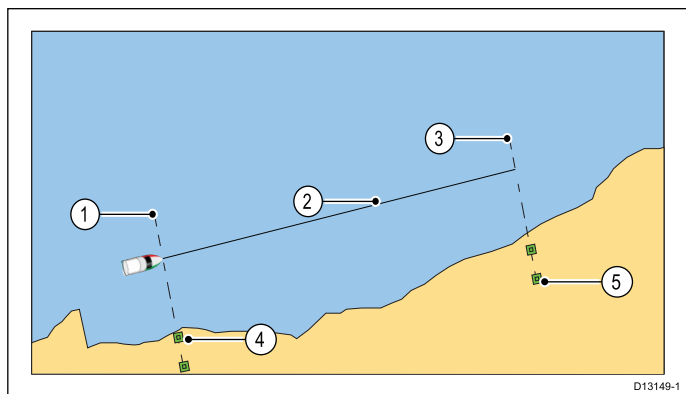
5. Alternatively, with the Calibration Factor page displayed use the **Trip** and **Reset** buttons to adjust the calibration factor until the displayed speed matches your estimated speed.

The default calibration factor is 1.00. The calibration factor can be set from 0.25 to 2.50.

6. If SOG is available you can switch between the **Calibration Factor** and **SOG** pages by pressing the **Trip** and **Reset** buttons at the same time.



## Measuring a nautical mile



1. Starting point (start stopwatch)
2. Measured mile
3. End point (stop stopwatch)
4. First pair of markers
5. Second pair of markers

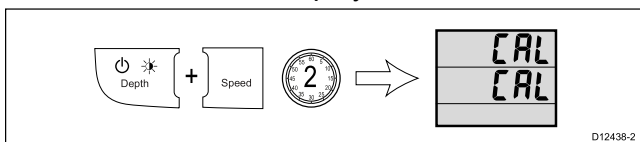
To provide a more accurate reading the vessel should make between 4 to 6 runs in both directions to allow for tide and wind conditions. The average of the time taken over all runs should be used to calculate Log Speed.

The vessel speed can then be worked out by taking the distance travelled (1 nautical mile) and dividing it by the average time taken to perform the run. The resulting calculation is your average speed in knots.

## Selecting unit of measure for water temperature readings

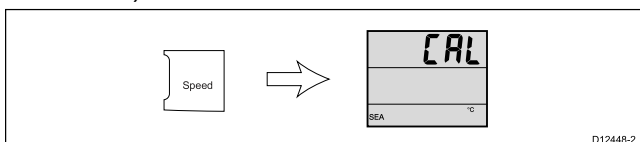
During normal operation:

1. Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Speed** button until the **Water Temperature Units** page is displayed (5 presses from **CAL**).



3. Use the **Trip** or **Reset** button to select the required unit of measurement for water temperature readings.

The units of measure available for temperature are:

- °C (default) — degrees Celsius
- °F — degrees Fahrenheit

4. You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.

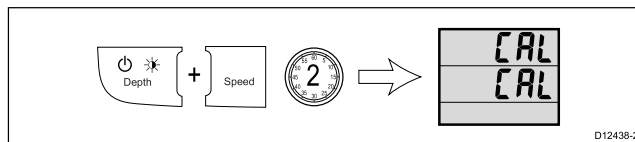
5. Alternatively, you can press the **Speed** or the **Depth** button to cycle to the next setting in the menu.

## Calibrating water temperature

You will need a suitable thermometer to measure the water temperature.

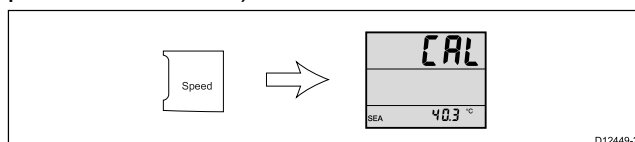
During normal operation:

1. Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Speed** button until the **Water Temperature Calibration** page is displayed (6 presses from **CAL**).

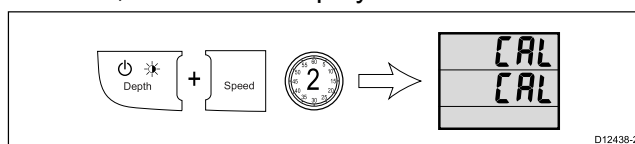


3. Use a suitable thermometer to measure the water temperature.
4. Use the **Trip** and **Reset** buttons to match the displayed water temperature to the water temperature measured by your thermometer.
5. You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
6. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Enabling and disabling timer buzzers

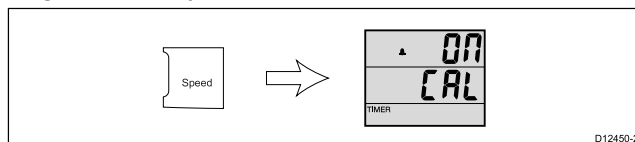
During normal operation:

1. Press and hold down the **Depth** and **Speed** buttons at the same time for approximately 2 seconds, until **CAL** is displayed.



**Note:** The User Calibration Menu will time-out after 8 seconds of inactivity.

2. Press the **Speed** button until the **Timer buzzer** page is displayed (7 presses from **CAL**).



3. Use the **Trip** or **Reset** button to switch the timer's buzzer On and Off (default).
4. You can exit the User Calibration Menu, at any time by pressing and holding the **Depth** and

**Speed** buttons at the same time for approximately 2 seconds.

- Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Checking the Software Version

To check the software Version of your display follow the steps below.

During normal operation:

- Press and hold the **Depth** and **Speed** buttons at the same time for approximately 4 seconds, until **Version** is displayed.

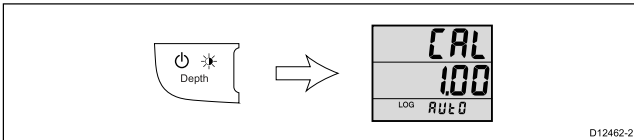
## Performing Speed Run Calibration

The Speed Run Calibration involves carrying out 2 or more runs, over a measured distance, to enable a calibration factor to be determined. Each run consists of an outward and a return leg which minimizes the effect of tidal drift when the calibration factor is determined.

**Note:** This procedure is not required if current speed is set to SOG.

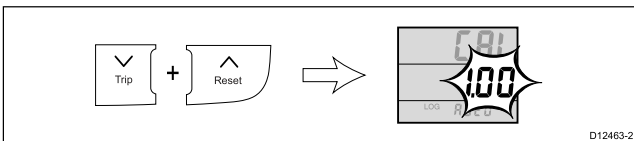
During normal operation:

- Press and hold the **Depth** and **Speed** buttons at the same time for approximately 4 seconds, until **UEr** is displayed.
- Press the **Depth** button until you reach the **Calibration Run** page (2 presses from the Software Version page).



- Press the **Trip** and **Reset** buttons at the same time.

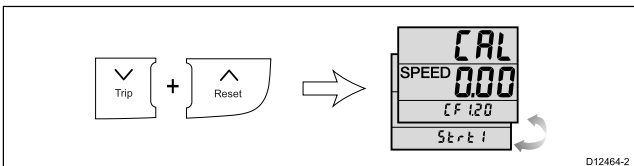
The run length will flash.



- Use the **Trip** and **Reset** buttons to adjust the run length to the required value.

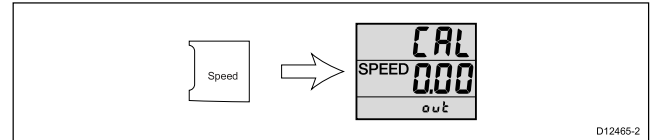
The default value is 1.00 (default) the setting can be adjusted from 0.25 to 2.50).

- Press the **Trip** and **Reset** buttons at the same time to commence the Speed Run Calibration. The text in the bottom section of the screen alternates between **Strt 1** and the current Calibration Factor.



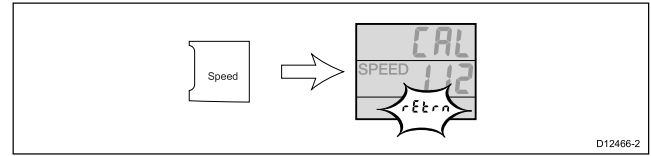
- Start the outward leg of the calibration run and as you pass the start point, press the **Speed**

button, so the page shows **OUt** at the bottom of the screen.



As the calibration run proceeds, the displayed value will change.

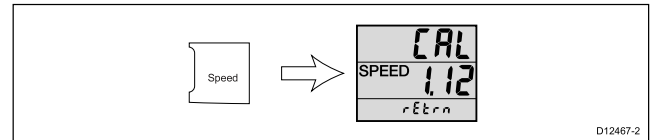
- At the end of the outward leg press the **Speed** button again.



The text **rEtrn** will flash at the bottom of the screen and the displayed distance freezes.

**Note:** At this point the displayed distance may not be the same as the measured distance, due to errors introduced by tidal flow.

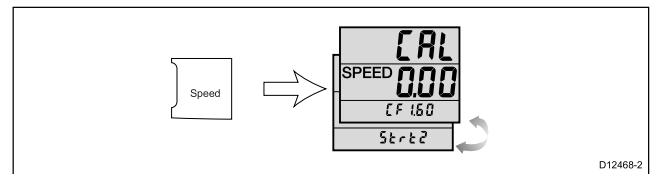
- Turn your vessel round, start the return leg and as you do so, press the **Speed** button so **rEtrn** stops flashing and the displayed value increments.



- At the end of the return leg, press the **Speed** button.

At this point:

- The text **START 2** alternating with the new Calibration Factor is displayed at the top of the page.
- The displayed distance freezes



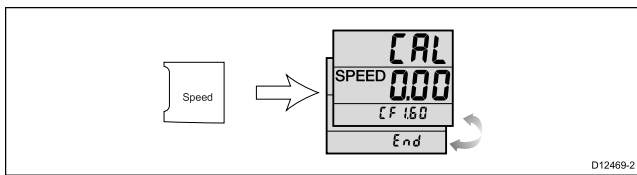
**Note:** The displayed distance should be very close to the actual (measured) distance of the run.

- If you are satisfied with the results of the first calibration run, press the **Depth** and **Speed** buttons at the same time for approximately 2 seconds to save the new Calibration Factor, exit speed calibration and return to normal operation.
- If you want to carry out a second run, press the **Speed** button.
- Follow steps 5 to 7 above again to complete a second calibration run.
- At the end of the return leg press the **Speed** button

At this point:

- The text **END** alternating with the new Calibration Factor is displayed at the top of the page.
- The displayed distance freezes.





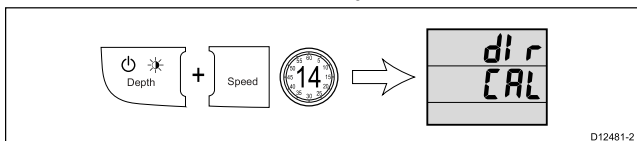
14. To exit the Speed Run Calibration, at any time, press and hold the **Depth** and **Speed** buttons for approximately 4 seconds.

## Locking access to the User Calibration Menu

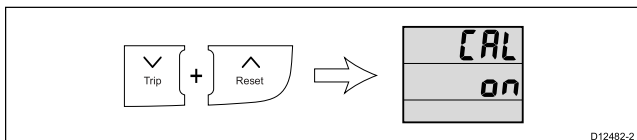
From the Dealer Calibration Menu you can lock access to the User Calibration Menu.

During normal operation:

1. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 14 seconds, until the **d1r CAL** is displayed.



2. Press the **Trip** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



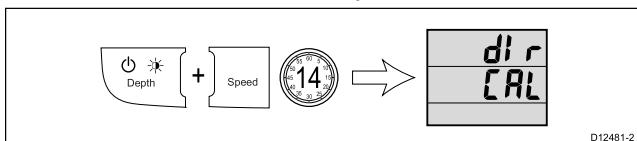
3. Use the **Trip** or **Reset** button to switch access to the **User Calibration Menu On** (default) and Off. Selecting Off disables access to the **User Calibration Menu**.
4. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
5. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Setting speed to SOG

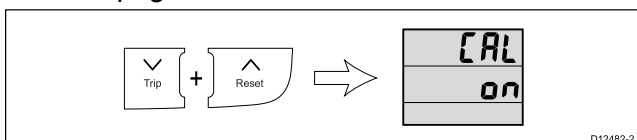
Your Display can be configured to use SOG data, if available, as the source for speed data instead of a speed transducer.

During normal operation:

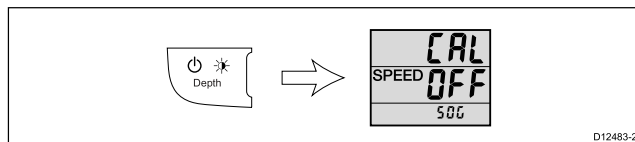
1. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 14 seconds, until the **d1r CAL** is displayed.



2. Press the **Trip** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Depth** button until the Speed Source page is displayed (1 press from the **User Calibration Menu Access** page).

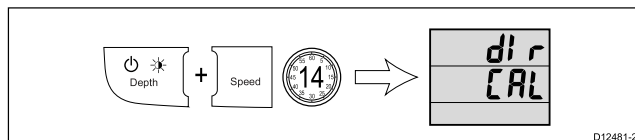


4. Use the **Trip** or **Reset** button to switch the speed data source On and Off (default). Selecting On will display SOG reading instead of speed transducer readings.
5. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
6. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

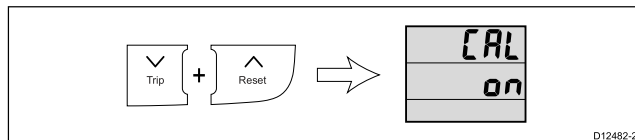
## Setting the response delay for speed readings

During normal operation:

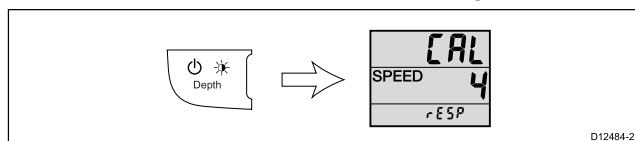
1. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 14 seconds, until the **d1r CAL** is displayed.



2. Press the **Trip** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Depth** button until the **Speed Response** page is displayed (1 press from the **User Calibration Menu Access** page).

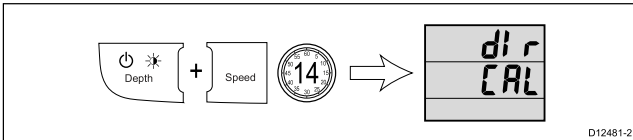


4. Use the **Trip** and **Reset** buttons to adjust the speed response to the required level. The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.
5. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
6. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

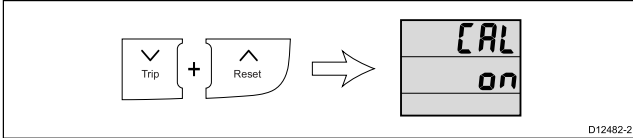
## Setting the response delay for depth readings

During normal operation:

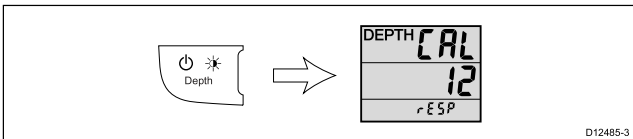
1. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 14 seconds, until the **d1r CAL** is displayed.



2. Press the **Trip** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Depth** button until the **Depth Response** page is displayed (3 presses from the **User Calibration Menu Access** page).



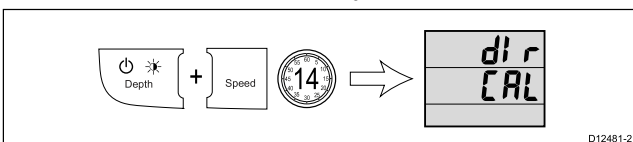
4. Use the **Trip** and **Reset** buttons to adjust the depth response to the required level.  
The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.
5. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
6. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

## Enabling and disabling Boat Show Mode

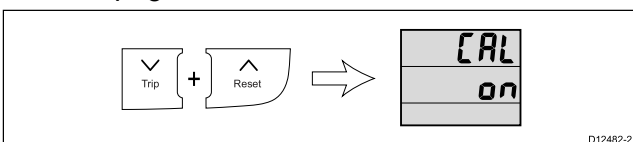
- Boat Show Mode can only be enabled on Repeater displays.
- Boat show mode is only suitable for demonstration purposes and should NOT be enabled whilst your vessel is in use.

During normal operation:

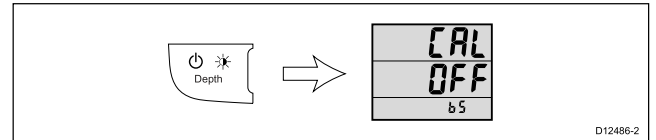
1. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 14 seconds, until the **d1r CAL** is displayed.



2. Press the **Trip** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Depth** button until the **Boat Show Mode** page is displayed (4 presses from **User Calibration Menu Access** page).

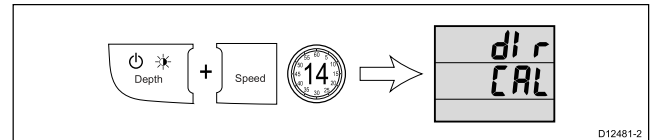


4. Use the **Trip** or **Reset** button to switch boat show mode On and Off (default).
5. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
6. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.

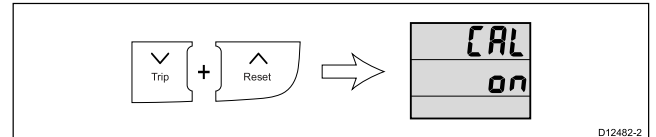
## Resetting the display to factory defaults

During normal operation:

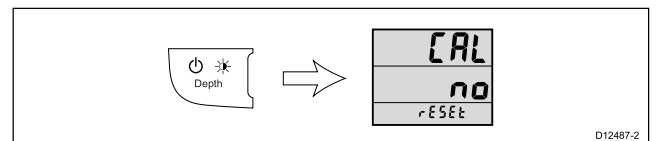
1. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 14 seconds, until the **d1r CAL** is displayed.



2. Press the **Trip** and **Reset** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Depth** button until **rESEt** is displayed (5 presses from **User Calibration Menu Access** page).

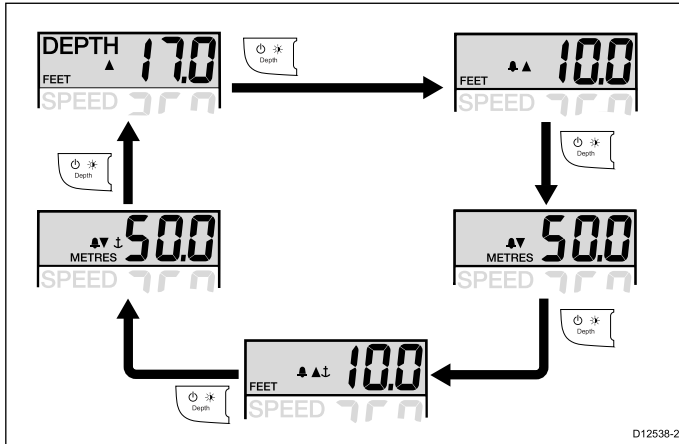


4. To reset the display to factory default settings:
  - i. Use the **Trip** or **Reset** button to change the reset option to Yes.
  - ii. Press the **Depth** button to reset your display to factory default settings.
5. After a reset it is recommended that you check the data master status of the display to ensure it is set correctly. Refer to 8.4 **Data master** for details.
6. You can exit the Dealer Calibration Menu, at any time by pressing and holding the **Depth** and **Speed** buttons at the same time for approximately 2 seconds.
7. Alternatively, you can press the **Depth** button to cycle to the next setting in the menu.



## 8.6 Using Tridata depth pages

To cycle through the depth pages follow the steps below.



1. Use the **Depth** button to cycle through the available depth pages.

Available depth pages are:

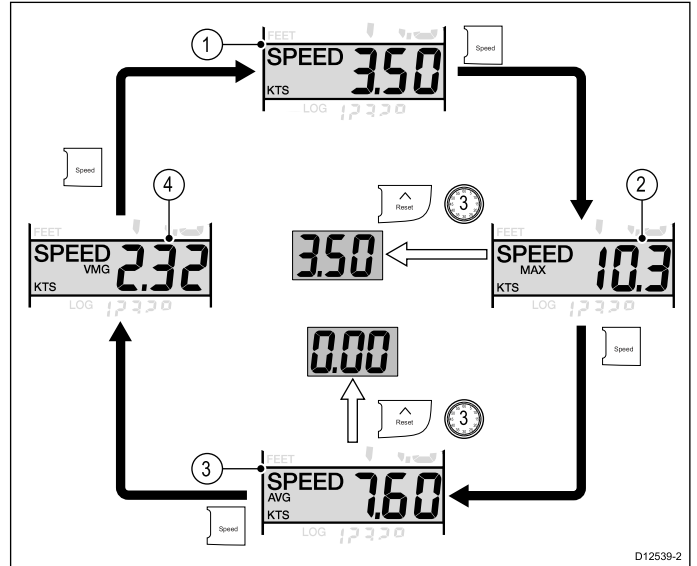
- Current depth
- Shallow depth alarm
- Deep depth alarm
- Shallow anchor alarm
- Deep anchor alarm

**Note:** Alarm pages are temporary pages will time-out after 8 seconds and revert to the **Current depth** page.

To enable / disable alarms or to adjust alarm thresholds please refer to the *Alarms* section.

## 8.7 Using Tridata speed pages.

To cycle through the speed pages follow the steps below.



1. Current Speed page
2. [1] Maximum Speed page
3. [1] Average Speed page
4. [2] VMG page

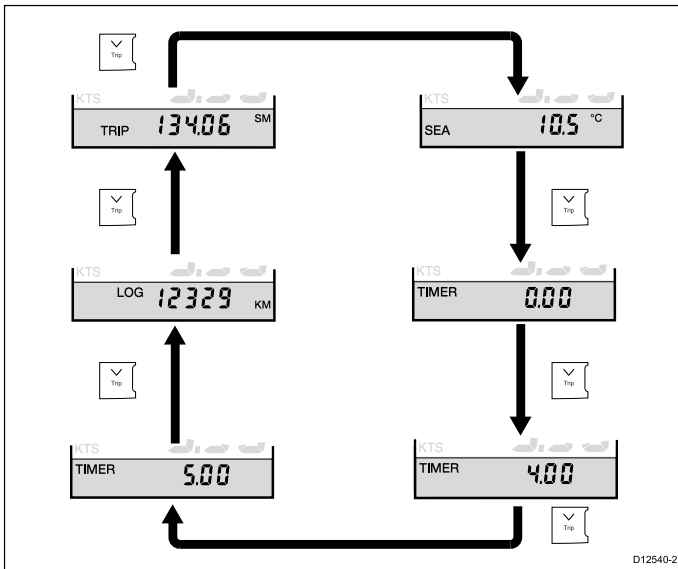
### Note:

- [1] These pages are temporary pages and will revert back to the previous permanent page after 8 seconds of inactivity.
- [2] The VMG information is only available if your unit is part of a SeaTalk or SeaTalk<sup>ng</sup> network which has a compatible wind instrument and transducer connected.

1. Use the **Speed** button to cycle through the available speed pages.
2. From the Maximum Speed page or Average Speed page, press and hold the **Reset** button for approximately 3 seconds to reset the reading.

## 8.8 Using Tridata trip, log, temp and timer pages

To cycle through the trip, log, water temperature and timer pages follow the steps below.



1. Press the **Trip** button to cycle through the **Trip**, **Log**, **Water temperature** and **Timer** pages.

## 8.9 Using the timers

To cycle through and use the Race Timer pages and Stop Watch page follow the steps below.

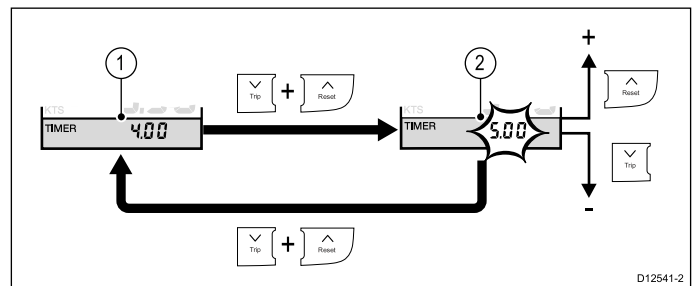
With a timer page displayed:

1. Press the **Reset** button to start the timer.
2. With the timer running, press the **Reset** button to pause the timer.
3. With the timer running, press and hold the **Reset** button for approximately 1 second to reset the timer.

**Note:** After the race timers have counted down to zero they will reverse (count upwards from zero).

### Setting the race timer

There are 2 race (count-down) timers. The race timers can be set from 1 to 15 minutes.



With a Race Timer displayed:

1. Press the **Trip** and **Reset** buttons at the same time to edit the timer.
2. Use the **Reset** button to increment the race timer start value, or
3. Use the **Trip** button to decrease the race timer start value.
4. Press the **Trip** and **Reset** buttons at the same time to confirm the new value.

**Note:** After a Race Timer has counted down to zero it will then start to count up.

### Timer buzzer

The Timer buzzer is enabled or disabled during calibration; refer to the *User calibration* section. When using a race timer with the timer buzzer enabled, the buzzer will:

- Short double-beep every minute.
- Long beep x3 at the start of the last 30 seconds.
- Short beep once for each of the last 10 seconds.
- Long beep at zero.

## 8.10 Alarms

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

You can set up alarms to alert you to certain conditions.

Alarms are raised by system functions, and also external equipment connected to your display.

When an alarm event occurs an audible and visual alarm is activated which indicates the alarm state.

Alarm thresholds can be configured from the relevant alarm page / menu.

### Instrument alarms

The alarms available for the i50 Depth and i50 Tridata are listed below.

- Shallow depth alarm
- Deep depth alarm
- Shallow anchor alarm
- Deep anchor alarm

### Alarm indications

An alarm event is indicated by both audible and visual warnings.

#### Shallow alarm



#### Deep alarm



#### Shallow anchor alarm



#### Deep anchor alarm



Alarms are sounded when the set alarm threshold value is crossed. Alarms will sound until silenced.

### Silencing alarms

1. Press any button to silence an active alarm.

### Enabling / Disabling alarms

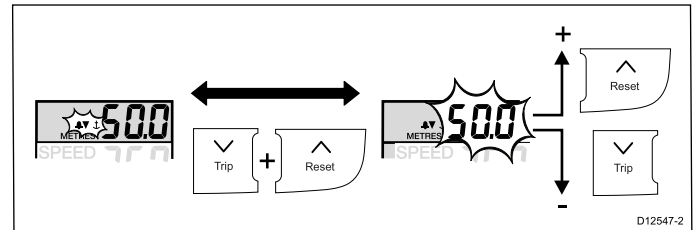
Alarms can be enabled or disabled at any time.

With the relevant alarm page displayed:

1. Press and hold the **Reset** button for 1 second to switch the alarm on or off.

### Setting alarm thresholds

You can adjust the threshold at which alarms are triggered by following the steps below.



With the relevant alarm page displayed:

1. Press the **Trip** and **Reset** buttons at the same time.  
The current alarm threshold will start to flash.
2. Use the **Reset** button to increase the alarm threshold.
3. Use the **Trip** button to decrease the alarm threshold.
4. The alarm threshold page will time-out after approximately 6 seconds of inactivity, automatically saving the new alarm threshold.

## 8.11 Illumination

### Adjusting the backlight level

The backlighting level can be accessed using the **Power** button.

During normal operation:

1. Press and hold the **Power** button for approximately 2 seconds to display the Backlight page.

*L* is displayed on-screen and the current backlight level.

2. Use the **Up** button to increase the backlight setting to the required level.
3. Use the **Down** button to decrease the backlight setting to the required level.

The backlight level can be adjusted from level 1 to 9 or switched Off (default).

**Note:** The backlight page will time-out after 8 seconds of inactivity.

### Adjusting the contrast

The contrast level can be accessed using the **Power** button.

During normal operation:

1. Press and hold the **Power** button for approximately 4 seconds until **CONTRAST** is displayed.
2. Use the **Power** button to cycle through the available contrast levels.

The contrast level can be adjusted from level 0 (default) to 3.

**Note:** The contrast page will time-out after 8 seconds of inactivity.

### Group illumination

Group illumination is used to synchronize and control the backlighting level of multiple units assigned to the same group.

The unit can participate in shared illumination via a SeaTalk network or group illumination via a SeaTalk<sup>ng</sup> network.

When connected on a SeaTalk network all compatible units will share their backlight level (when 1 unit's backlighting level is adjusted all other units backlight level will also change).

When connected on a SeaTalk<sup>ng</sup> network the unit can participate in group illumination and be assigned to a group of units which will share their backlighting levels. Available groups are as follows:

- **OFF** (default) — Group illumination is switched off
- **HL1** — Helm 1
- **HL2** — Helm 2
- **CPT** — Cockpit

- **FLY** — Flybridge
- **NST** — Mast
- **GP1 to GP5** — User defined groups

When assigned to a group, when the backlighting of 1 unit is adjusted the backlighting level of all units assigned to the same group will also change.

### Assigning the i50 Tridata to a group

To assign the i50 Tridata as part of a group so that it can participate in group illumination follow the steps below.

During normal operation:

1. Press and hold the **Depth** and **Speed** buttons at the same time for 6 seconds, until the Group illumination page is displayed.

**GROUP CAL** is displayed on-screen.

**Note:** The Group illumination entry page is a temporary page and will time-out to the previous page after 8 seconds.

2. Press the **Depth** button to display the **Groups** page.
3. Press the **Trip** and **Reset** buttons at the same time to enable selection of a group.  
The group setting will flash.
4. Use the **Reset** button to cycle upwards through the list of available groups.
5. Use the **Trip** button to cycle back down through the list.
6. Press the **Trip** and **Reset** buttons at the same time to assign the display to the selected group.  
The group setting will stop flashing.
7. Press and hold the **Depth** and **Speed** buttons at the same time for approximately 2 seconds to return to normal operation.

## 9.1 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.

## 9.2 Condensation

Certain atmospheric conditions may cause a small amount of condensation to form on the unit's window. This will not damage the unit and will clear after the unit has been switched on for a short period.

## 9.3 Routine equipment checks

It is recommended that you perform the following routine checks, on a regular basis, to ensure the correct and reliable operation of your equipment:

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

## 9.5 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.

## 9.4 Product cleaning

Best cleaning practices.

When cleaning products:

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

## 9.6 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).

## 10.1 Troubleshooting

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

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

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

## 10.2 Instrument troubleshooting

Fault	Cause	Action
Blank display.	No power supply.	<ul style="list-style-type: none"><li>• Check fuse / circuit breaker.</li><li>• Check power supply.</li><li>• Check SeaTalk / SeaTalk<sup>ng</sup> cabling and connector security.</li></ul>
SeaTalk / SeaTalk <sup>ng</sup> information not being transferred between instruments.	SeaTalk / SeaTalk <sup>ng</sup> cabling or connector fault.	<ul style="list-style-type: none"><li>• Check security of SeaTalk / SeaTalk<sup>ng</sup> connections between units.</li><li>• Check condition of SeaTalk / SeaTalk<sup>ng</sup> cables.</li><li>• Isolate faulty unit by disconnecting units one by one.</li></ul>
A group of SeaTalk / SeaTalk <sup>ng</sup> units not working.	SeaTalk / SeaTalk <sup>ng</sup> cabling or connector fault.	<ul style="list-style-type: none"><li>• Check the security of SeaTalk / SeaTalk<sup>ng</sup> connectors between functioning and non-functioning units.</li><li>• Check the condition of SeaTalk / SeaTalk<sup>ng</sup> cable between functioning and non-functioning units.</li></ul>
<b>LAST</b> flashing or dashes displayed continuously (depth greater than 3 feet).	Transducer cable or connector fault.	<ul style="list-style-type: none"><li>• Check condition of the transducer cable(s) and the security of the connections.</li></ul>
<b>LAST</b> flashes when under way.	Aerated water due to vessel wakes, propeller wash etc.	<ul style="list-style-type: none"><li>• Ensure reading stabilizes when clear of disturbed water.</li></ul>

## 10.3 Power up troubleshooting

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

### Product does not turn on or keeps turning off

Possible causes	Possible solutions
Blown fuse / tripped breaker	<ol style="list-style-type: none"> <li>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.)</li> <li>2. If fuse keeps blowing check for cable damage, broken connector pins or incorrect wiring.</li> </ol>
Poor / damaged / insecure power supply cable / connections	<ol style="list-style-type: none"> <li>1. Check that the power cable connector is fully inserted into the unit and locked in position.</li> <li>2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary.</li> <li>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.</li> <li>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.</li> <li>5. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc, replace if necessary.</li> </ol>
Incorrect power connection	The power supply may be wired incorrectly, ensure the installation instructions have been followed.
Power source insufficient	With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible to establish actual voltage when the current is flowing. (Refer to the <i>Technical Specification</i> section of your product's installation instructions for power supply requirements.)

### Product will not boot up (re-boot loop)

Possible causes	Possible solutions
Power supply and connection	See possible solutions from 'Products does not turn on or keeps turning off' above.
Software corruption	<ol style="list-style-type: none"> <li>1. In the unlikely event that the products software has become corrupted please try re-flashing the latest software from the Raymarine website.</li> <li>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.</li> </ol>



## 10.4 Miscellaneous troubleshooting

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

Problem	Possible causes	Possible solutions
Display behaves erratically: <ul style="list-style-type: none"> <li>• Frequent unexpected resets.</li> <li>• System crashes or other erratic behavior.</li> </ul>	Intermittent problem with power to the display.	Check relevant fuses and breakers.
		Check that the power supply cable is sound and that all connections are tight and free from corrosion.
		Check that the power source is of the correct voltage and sufficient current.
	Software mismatch on system (upgrade required).	
	Corrupt data / other unknown issue.	Perform a factory reset. <div style="border: 1px solid black; padding: 5px;"> <p><b>Important:</b> This will result in the loss of any settings and data (such as waypoints) stored on the product. Save any important data to a memory card before resetting.</p> </div>

## 11.1 Technical specification

Nominal supply voltage	12 V dc
Operating voltage range	10 V dc to 16 V dc
Power consumption	<ul style="list-style-type: none"> <li>• &lt; 1 W Typical (Display only)</li> <li>• 2.4 W Maximum (Transducer connected)</li> </ul>
Current	<ul style="list-style-type: none"> <li>• 45 to 65 mA Typical (Display only)</li> <li>• 200 mA Maximum (Transducer connected)</li> </ul>
LEN (Refer to SeaTalk <sup>ng</sup> reference manual for further information.)	4
Environmental	Operating temperature: -20°C to +55°C Storage temperature: -30°C to +70°C Relative humidity: 93% Water proofing: IPX6
Connections	<ul style="list-style-type: none"> <li>• 2 x SeaTalk<sup>ng</sup> connections (compliant with SeaTalk)</li> <li>• Transducer connections</li> </ul>
Conformance	Europe 2004/108/EC

## 12.1 Spares and Accessories

### Spares

Description	Part number
i50 / i60 / i70 Front bezel	R22168
i50 / i60 / i70 Suncover	R22169
i50 Depth keypad	R70131
i50 Speed keypad	R70130
i50 Tridata keypad	R70132

### Accessories

Description	Part number
i50 / i60 / i70 Front bezel Black (eS style)	A80355
i50 / i60 / i70 Front bezel Gunmetal (eS style)	A80356
i50 / i60 / i70 Suncover (for eS style bezel)	A80357

## 12.2 SeaTalk<sup>ng</sup>® cables and accessories

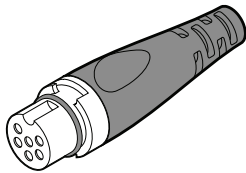

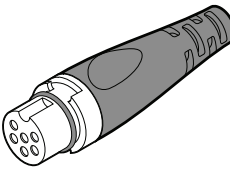
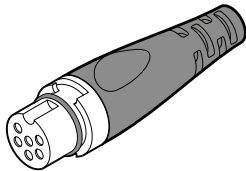
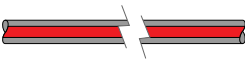
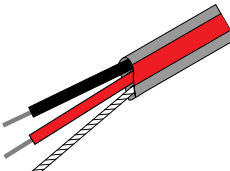
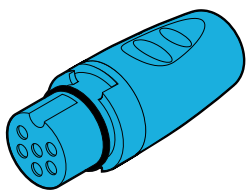
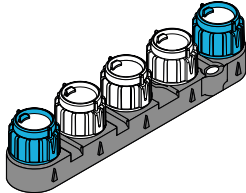
SeaTalk<sup>ng</sup> cables and accessories for use with compatible products.

Part No	Description	Notes
T70134	SeaTalk <sup>ng</sup> starter kit	Includes: <ul style="list-style-type: none"> <li>• 1 x 5 Way connector (A06064)</li> <li>• 2 x Backbone terminator (A06031)</li> <li>• 1 x 3 m (9.8 ft) spur cable (A06040)</li> <li>• 1 x Power cable (A06049)</li> </ul>
A25062	SeaTalk <sup>ng</sup> Backbone Kit	Includes: <ul style="list-style-type: none"> <li>• 2 x 5 m (16.4 ft) Backbone cable (A06036)</li> <li>• 1 x 20 m (65.6 ft) Backbone cable (A06037)</li> <li>• 4 x T-piece (A06028)</li> <li>• 2 x Backbone terminator (A06031)</li> <li>• 1 x Power cable (A06049)</li> </ul>
A06038	SeaTalk <sup>ng</sup> 0.4 m (1.3 ft) spur	
A06039	SeaTalk <sup>ng</sup> 1 m (3.3 ft) spur	
A06040	SeaTalk <sup>ng</sup> 3 m (9.8 ft) spur	
A06041	SeaTalk <sup>ng</sup> 5 m (16.4 ft) spur	
A06042	SeaTalk <sup>ng</sup> 0.4 m (1.3 ft) elbow spur	
A06033	SeaTalk <sup>ng</sup> 0.4 m (1.3 ft) backbone	
A06034	SeaTalk <sup>ng</sup> 1 m (3.3 ft) backbone	
A06035	SeaTalk <sup>ng</sup> 3 m (9.8 ft) backbone	
A06036	SeaTalk <sup>ng</sup> 5 m (16.4 ft) backbone	
A06068	SeaTalk <sup>ng</sup> 9 m (29.5 ft) backbone	
A06037	SeaTalk <sup>ng</sup> 20 m (65.6 ft) backbone	

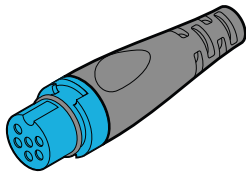

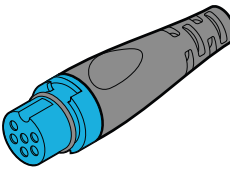
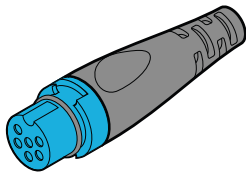

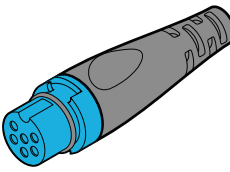
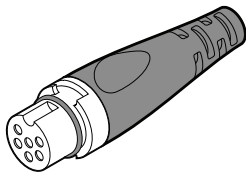

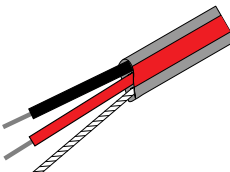
Part No	Description	Notes
A06043	SeaTalk <sup>ng</sup> to bare ends 1 m (3.3 ft) spur	
A06044	SeaTalk <sup>ng</sup> to bare ends 3 m (9.8 ft) spur	
A06049	SeaTalk <sup>ng</sup> Power cable	
A06031	SeaTalk <sup>ng</sup> Terminator	
A06028	SeaTalk <sup>ng</sup> T-piece	Provides 1 x spur connection
A06064	SeaTalk <sup>ng</sup> 5-way connector	Provides 3 x spur connections
A06030	SeaTalk <sup>ng</sup> backbone extender	
E22158	SeaTalk to SeaTalk <sup>ng</sup> converter kit	Allows the connection of SeaTalk devices to a SeaTalk <sup>ng</sup> system.
A80001	SeaTalk <sup>ng</sup> Inline terminator	Provides direct connection of a spur cable to the end of a backbone cable. No T-piece required.
A06032	SeaTalk <sup>ng</sup> Blanking plug	
R12112	ACU / SPX SeaTalk <sup>ng</sup> spur cable 0.3 m (1.0 ft)	Connects an SPX course computer or an ACU to a SeaTalk <sup>ng</sup> backbone.
A06047	SeaTalk (3 pin) to SeaTalk <sup>ng</sup> adaptor cable 0.4 m (1.3 ft)	
A22164	SeaTalk to SeaTalk <sup>ng</sup> spur 1 m (3.3 ft) spur	
A06048	SeaTalk2 (5 pin) to SeaTalk <sup>ng</sup> adaptor cable 0.4 m (1.3 ft)	
A06045	DeviceNet adaptor cable (Female)	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.
A06046	DeviceNet adaptor cable (Male)	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.
E05026	DeviceNet adaptor cable (Female) to bare ends.	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.
E05027	DeviceNet adaptor cable (Male) to bare ends.	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.

## 12.3 SeaTalk<sup>ng</sup> cable kits

### SeaTalk<sup>ng</sup> starter kit (T70134)

Parts included	Quantity	Connector A	Cable	Connector B	Length
Spur cable (A06040)	1				3 m (9.8 ft)
Power cable (A06049)	1				1 m (3.3 ft)
Backbone terminator (A06031)	2		N/A	N/A	N/A
5-way connector (A06064). Each connector block allows the connection of up to 3 compatible devices. When correctly terminated, a connector block forms a complete backbone. Multiple connector blocks can be daisy-chained together.	1		N/A	N/A	N/A

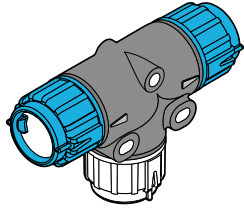
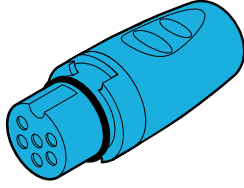
### SeaTalk<sup>ng</sup> Backbone kit (A25062)

Parts included	Quantity	Connector A	Cable	Connector B	Length
Backbone cable ((A06036))	2				5 m (16.4 ft)
Backbone cable ((A06037))	1				20 m (65.6 ft)
Power cable (A06049)	1				1 m (3.3 ft)

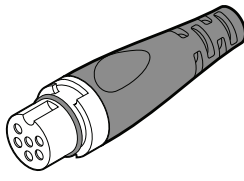

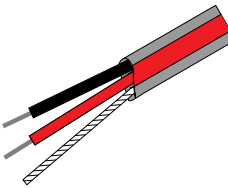
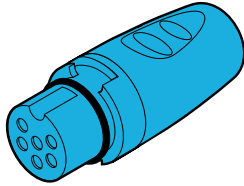
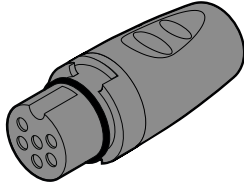
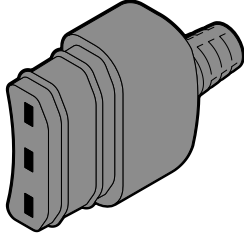

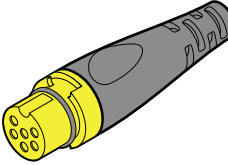
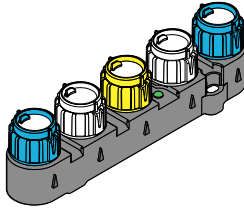
Parts included	Quantity	Connector A	Cable	Connector B	Length
T-piece (A06028)	4		N/A	N/A	N/A
Backbone terminator (A06031)	2		N/A	N/A	N/A

**SeaTalk<sup>ng</sup> Evolution cable kit (R70160)**

Parts included	Quantity	Connector A	Cable	Connector B	Length
Backbone cable (A06036)	2				5 m (16.4 ft)
Power cable (A06049)	1				1 m (3.3 ft)
Spur cable (A06040)	1				1 m (3.3 ft)
ACU / SPX power cable (R12112) (for powering the SeaTalk <sup>ng</sup> backbone from the autopilot system.	1				0.3 m (1.0 ft)
5-way connector (A06064). Each connector block allows the connection of up to 3 compatible devices. When correctly terminated, a connector block forms a complete backbone. Multiple connector blocks can be daisy-chained together.	1		N/A	N/A	N/A

Parts included	Quantity	Connector A	Cable	Connector B	Length
T-piece (A06028)	2		N/A	N/A	N/A
Backbone terminator (A06031)	2		N/A	N/A	N/A

**SeaTalk<sup>ng</sup> converter kit (E22158)**

Parts included	Quantity	Connector A	Cable	Connector B	Length
Power cable (A06049)	1				1 m (3.3 ft)
Backbone terminator (A06031)	2		N/A	N/A	N/A
Blanking plug (A06032)			N/A	N/A	N/A
SeaTalk (3 pin) adapter cable (A06047)	1				0.4 m (1.3 ft)
SeaTalk to SeaTalk <sup>ng</sup> converter (E22158). Enables the connection of SeaTalk devices to a SeaTalk <sup>ng</sup> system.	1		N/A	N/A	N/A

## Appendix A NMEA 2000 sentences

The i50 instrument range supports the following NMEA 2000 Parameter Group Number (PGN) sentences.

PG name	PGN	i50 Depth Transmit	i50 Depth Receive	i50 Speed Transmit	i50 Speed Receive	i50 Tridata Transmit	i50 Tridata Receive
ISO Acknowledgement	59392	•		•		•	
ISO Request	59904		•		•		•
ISO Address claim	60928	•	•	•	•	•	•
ISO Commanded address	65240		•		•		•
NMEA Request group function	126208		•		•		•
NMEA Command group function	126208		•	•	•	•	•
NMEA Acknowledge group function	126208	•		•	•	•	•
PGN list — Transmit PGN's group function	126464	•		•		•	
PGN list — Received PGN's groupfunction	126464	•		•		•	
Product information	126996	•	•	•	•	•	•
Speed	128259			•	•	•	•
Water depth	128267	•	•			•	•
Distance log	128275			•	•	•	•
COG & SOG rapid update	129026				•		•
GNSS Position data	129029				•		•
Wind data	130306				•		•
Environmental parameters	130310			•	•	•	•
Environmental parameters	130311				•		•
Temperature	130312			•	•	•	•



# i60 Instrument

## INSTALLATION & OPERATION INSTRUCTIONS

English (en-US)

Date: 06-2017

Document number: 81342-4

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BY **FLIR**

# Printed Manuals

Would you prefer a printed version of this document?

Full documentation for your product is always provided as a free download on the Raymarine website, but some customers prefer manuals in a printed format.



Raymarine provides a Print Shop service which enables you to purchase a printed manual (paperback book), delivered to your door.

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# Chapter 1: Important information

## Certified Installation

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: 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: 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: Positive ground systems

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

### 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.



### Warning: Switch off power supply

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



### Warning: High voltage

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

### Caution: Transducer cable

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

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

### 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.

## 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.

## Disclaimer

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

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

## EMC installation guidelines

Raymarine equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) regulations, to minimize electromagnetic interference

between equipment and minimize the effect such interference could have on the performance of your system

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

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

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

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

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

## Suppression ferrites

- Raymarine cables may be pre-fitted or supplied with suppression ferrites. These are important for correct EMC performance. If ferrites are supplied separately to the cables (i.e. not pre-fitted), you must fit the supplied ferrites, using the supplied instructions.
- If a ferrite has to be removed for any purpose (e.g. installation or maintenance), it must be replaced in the original position before the product is used.
- Use only ferrites of the correct type, supplied by Raymarine or its authorized dealers.
- Where an installation requires multiple ferrites to be added to a cable, additional cable clips should be used to prevent stress on the connectors due to the extra weight of the cable.

## Connections to other equipment

Requirement for ferrites on non-Raymarine cables

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

### Caution: Sun covers

- If your product is supplied with a sun cover, to protect against the damaging effects of ultraviolet (UV) light, always fit the sun cover when the product is not in use.
- Sun covers must be removed when travelling at high speed, whether in water or when the vessel is being towed.

### Caution: Product cleaning

When cleaning products:

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

### Caution: Condensation

Certain atmospheric conditions may cause a small amount of condensation to form on the unit's window. This will not damage the unit and will clear after the unit has been switched on for a short period.

## 2.1 Document information

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

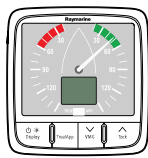

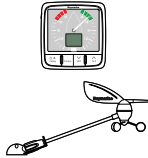
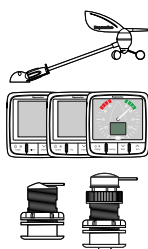
The document includes information to help you:

- 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.

## Applicable products

This document is applicable to the following products:

Item	Model	Part number	Hardware
	i60 Wind	E70061	i60 Wind SeaTalk <sup>ng</sup> instrument display
	i60 Close Hauled Wind	E70062	i60 Close Hauled Wind SeaTalk <sup>ng</sup> instrument display (repeater)
	i60 Wind system pack	E70150	<ul style="list-style-type: none"> <li>• i60 Wind SeaTalk<sup>ng</sup> instrument display</li> <li>• Short arm wind vane transducer</li> </ul>
	i50 & i60 Depth, Speed & Wind system pack	E70153	<ul style="list-style-type: none"> <li>• i50 Depth SeaTalk<sup>ng</sup> instrument display</li> <li>• P319 Thru-hull Depth transducer</li> <li>• i50 Speed SeaTalk<sup>ng</sup> instrument display</li> <li>• P120 Thru-hull Speed and Temp transducer</li> <li>• i60 Wind SeaTalk<sup>ng</sup> instrument display</li> <li>• Short arm wind vane transducer</li> </ul>

## 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.

## Product documentation

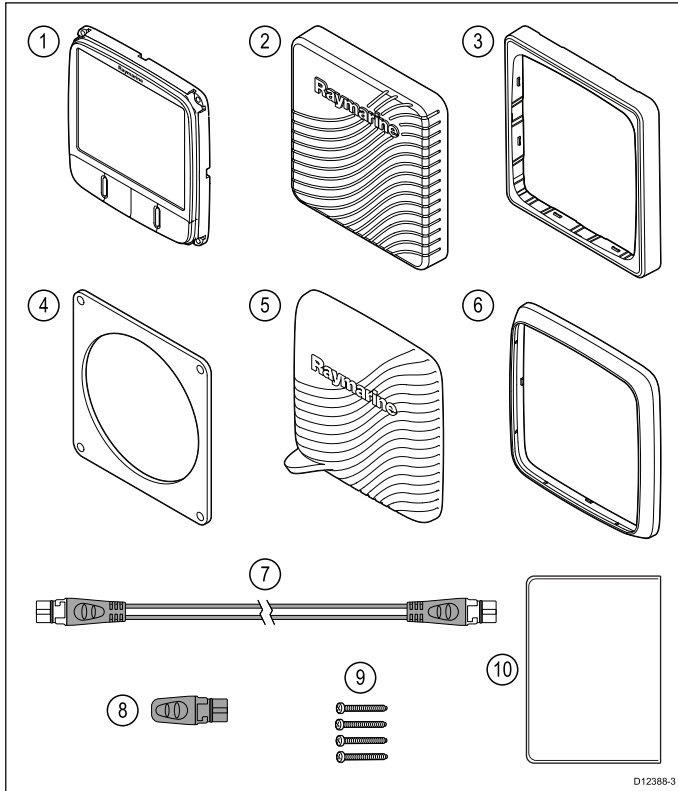
The following handbooks are applicable to your product:

### Handbooks

Description	Part number
<b>i60 Installation and operation instructions</b> Installation and operation instructions for the i60 instrument display	81342 / 88010
<b>i60 Mounting template</b> Surface mounting template for the i60 instrument display	87130
<b>Rotavecta Installation instructions</b> Installation instructions for the Rotavecta wind transducer	87221 / 88036
<b>Short &amp; long arm wind vane Installation instructions</b> Installation instructions for the short and long arm wind vane transducers	87220 / 88035



## 2.2 Parts supplied

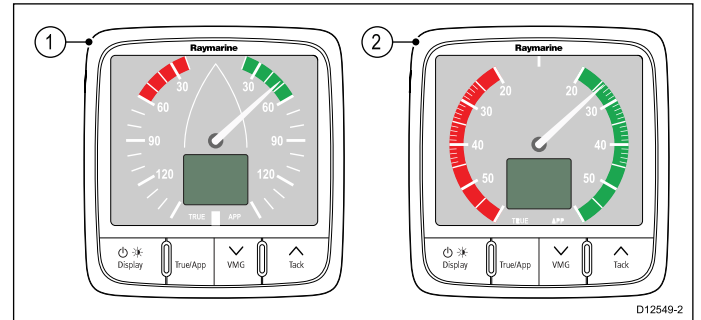


1	Instrument display
2	Suncover (to match i70s, p70s, p70Rs, eS Series)
3	Front bezel (to match i70s, p70s, p70Rs, eS Series)
4	Gasket
5	Suncover (to match a, c, e Series)
6	Front bezel (to match a, c, e Series)
7	SeaTalk <sup>ng</sup> spur cable
8	SeaTalk <sup>ng</sup> blanking plug
9	4 x fixing screws
10	Documentation

## 2.3 i60 Product overview

The i60 range of SeaTalk<sup>ng</sup> instrument displays can be connected directly to the compatible wind transducers. The data can be transmitted on the SeaTalk<sup>ng</sup> network to other compatible displays.

Raymarine's i60 instrument range consists of the following variants:



- i60 Wind** — The i60 Wind instrument provides a 360° wind direction scale and can be used as a stand alone unit or as part of a SeaTalk or SeaTalk<sup>ng</sup> network.
- i60 Close Hauled (CH) Wind** — The i60 Close hauled wind instrument is a repeater display which provides an expanded indication from 20° to +60° about the bow and stern of the vessel. The i60 Close hauled repeats wind data available on the SeaTalk or SeaTalk<sup>ng</sup> network.

The i60 instrument display range offers the following features:

- Integrates with Raymarine autopilots and navigation equipment on the SeaTalk<sup>ng</sup> network
- Analogue and digital display read outs.
- Surface mountable
- Provides good visibility in all lighting conditions
- Low power consumption



### 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.

### Schematic diagram

A schematic diagram is an essential part of planning any installation. It is also useful for any future additions or maintenance of the system. The diagram should include:


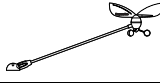
- Location of all components.
- Connectors, cable types, routes and lengths.

### 3.2 Compatible transducers

#### Instrument Wind Vane transducer

The wind vane transducers listed below are compatible with the following instrument displays:

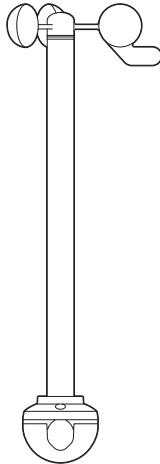
- **i60** Wind
- **i70 / i70s** via **iTC-5** converter

Part number	Image	Housing	Mounting
E22078		Short arm wind vane	Surface mount
E22079		Long arm wind vane	Surface mount

#### Instrument Rotavecta transducer

The wind transducers listed below are compatible with the following instrument displays:

- **i40** Wind
- **i60** Wind
- **i70 / i70s** via **iTC-5** converter

Part number	Image	Housing	Mounting
Z195		Rotavecta transducer	Surface mount

### 3.3 System protocols

Your product can be connected to various products and systems to share information and so improve the functionality of the overall system.

These connections may be made using a number of different protocols. Fast and accurate data collection and transfer is achieved by using a combination of the following data protocols:

- **SeaTalkng®**
- **NMEA 2000**
- **SeaTalk**

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

### SeaTalkng®

SeaTalkng® (Next Generation) is an enhanced protocol for connection of compatible marine instruments and equipment. It replaces the older SeaTalk and SeaTalk2 protocols.

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

SeaTalkng® is a proprietary extension to NMEA 2000 and the proven CAN bus technology. Compatible NMEA 2000 and SeaTalk and SeaTalk2 devices can also be connected using the appropriate interfaces or adaptor cables as required.

### NMEA 2000

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

### SeaTalk

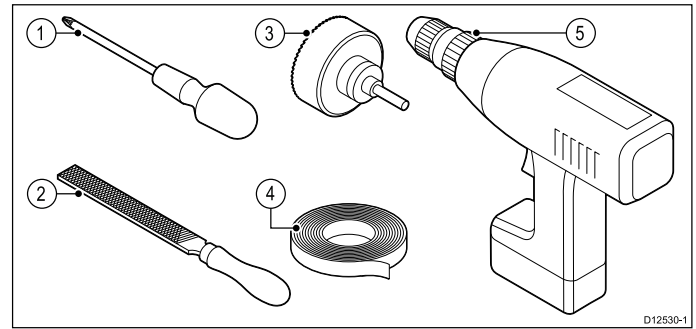
**SeaTalk** is a protocol which enables compatible instruments to connect to each other and share data.

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

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

### 3.4 Tools required

#### Tools required for installation



1	Pozi-drive screwdriver
2	File
3	92 mm (3.62 in) hole cutter
4	Adhesive tape
5	Power drill

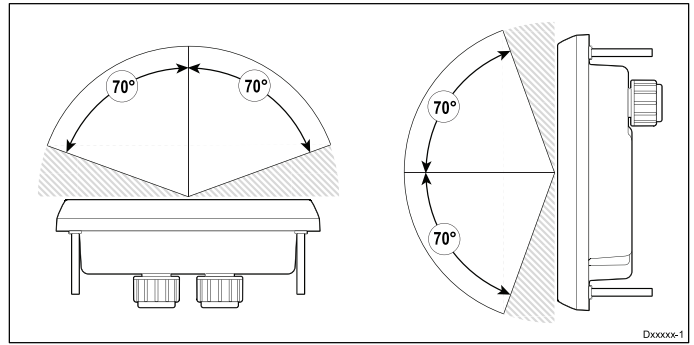
## 3.5 Selecting a display location



### Warning: Potential ignition source

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

### Viewing angle



### 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.

#### Magnetic compass

When choosing a suitable location you should aim to maintain the maximum possible distance between the unit and any compasses.

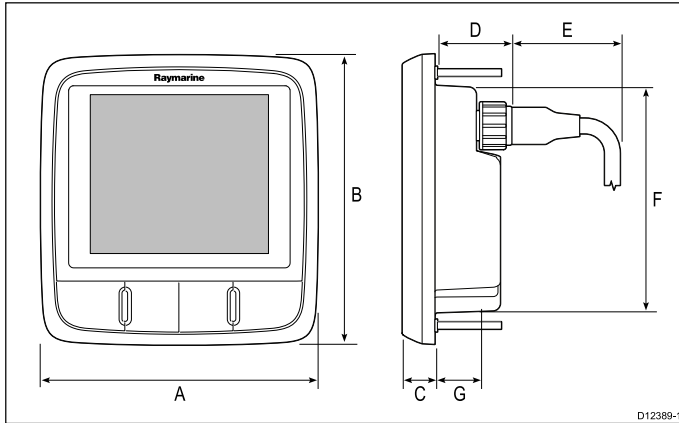
To prevent potential interference with the vessel's magnetic compasses, ensure that a minimum distance of 230 mm (9 in) between the unit and any installed compasses is maintained.

#### Viewing angle considerations

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

Refer to Chapter 13 **Technical specification** for viewing angles for your product.

### 3.6 Product dimensions



A	110 mm (4.22")
B	115 mm (4.52")
C	14 mm (0.55")
D	30 mm (1.18")
E	35 mm (1.38")
F	90 mm (3.54")
G	17 mm (0.67")

### 3.7 Wind vane transducer / rotavecta location requirements

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

The transducer's location must:

- Allow reasonable access for installation and servicing.
- Be as high as possible and away from any equipment which may shield the transducer or otherwise disturb the air flow.
- Provide a horizontal mounting surface. If a surface (e.g. mast top) is otherwise suitable but not horizontal, make up a suitable wedged packing piece to provide the necessary horizontal surface.
- There must also be a viable route for the transducer cable to be routed to the product it is to be connected to (i.e. display or converter).

#### Wind vane transducer and rotavecta mounting

Ensure that the wind transducer or rotavecta is installed in accordance with the instructions supplied with the unit.

## 4.1 General cabling guidance

### Cable types and length

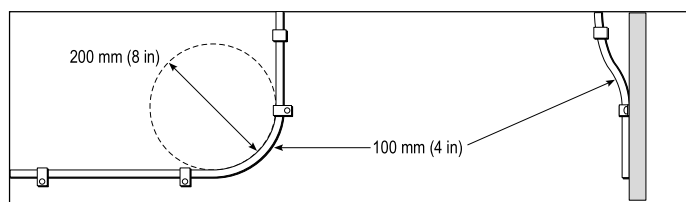
It is important to use cables of the appropriate type and length

- Unless otherwise stated use only standard cables of the correct type, supplied by Raymarine.
- Ensure that any non-Raymarine cables are of the correct quality and gauge. For example, longer power cable runs may require larger wire gauges to minimize voltage drop along the run.

### Routing cables

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

- Do NOT bend cables excessively. Wherever possible, ensure a minimum bend diameter of 200 mm (8 in) / minimum bend radius of 100 mm (4 in).



- Protect all cables from physical damage and exposure to heat. Use trunking or conduit where possible. Do NOT run cables through bilges or doorways, or close to moving or hot objects.
- Secure cables in place using tie-wraps or lacing twine. Coil any extra cable and tie it out of the way.
- Where a cable passes through an exposed bulkhead or deckhead, use a suitable watertight feed-through.
- Do NOT run cables near to engines or fluorescent lights.

Always route data cables as far away as possible from:

- other equipment and cables,
- high current carrying AC and DC power lines,
- antennae.

### Strain relief


Ensure adequate strain relief is provided. Protect connectors from strain and ensure they will not pull out under extreme sea conditions.

### Cable shielding

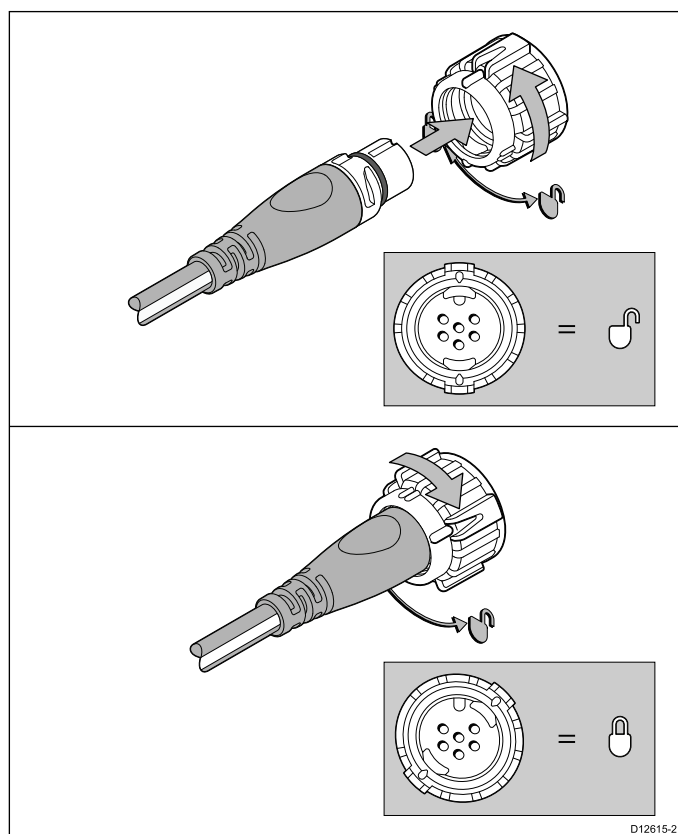
Ensure that all data cables are properly shielded that the cable shielding is intact (e.g. hasn't been scraped off by being squeezed through a tight area).

## 4.2 Connections overview

Use the following information to help you identify the connections on your product.

Connector	Qty	Connects to:	Suitable cables
	2	<ol style="list-style-type: none"> <li>1. SeaTalkng® backbone</li> <li>2. NMEA 2000 backbone</li> <li>3. SeaTalk backbone</li> <li>4. SeaTalkng® device</li> </ol>	<ol style="list-style-type: none"> <li>1. SeaTalkng® spur cables</li> <li>2. SeaTalkng® to DeviceNet adaptor cable (A06045)</li> <li>3. SeaTalk to SeaTalkng® adaptor cable (A06073)</li> </ol>

### Connecting SeaTalkng® cables



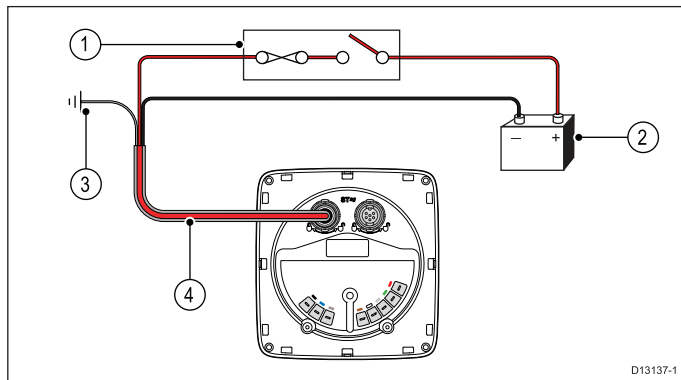
1. Rotate the locking collar on the unit to the unlocked position.
2. Ensure the cable's connector is correctly oriented.
3. Fully insert the cable connector.
4. Rotate locking collar clockwise (2 clicks) until it is in the locked position.

### SeaTalkng® product loading

The number of products that can be connected to a SeaTalkng® backbone depends on the power consumption of each product and the physical overall length of the backbone.

SeaTalkng® products have a Load Equivalency Number (LEN), which indicates the product's power consumption. The LEN for each product can be found in the product's Technical Specification.

## 4.3 Direct Power Connection



D13137-1

1	3 A circuit breaker or fuse
2	12 V dc vessel power supply
3	Vessel's RF ground
4	SeaTalk <sup>ng</sup> power cable (A06049, available separately)

## 4.4 SeaTalkng® power supply

Power is supplied to the product over the SeaTalkng® backbone.

A SeaTalkng® backbone requires only one 12 V dc power supply, connected to the SeaTalkng® backbone. This can be provided by one of the following:

- a battery (1), via the distribution panel;
- an Autopilot Control Unit (ACU)(2);
- an SPX course computer (2);
- for 24 V vessels a 5 amp, regulated, continuous 24 V dc to 12 V dc converter is required.

### Note:

- (1) The battery used for starting the vessel's engine(s) should NOT be used to power the SeaTalkng® backbone, as this can cause sudden voltage drops when the engines are started.
- (2) The ACU-100, ACU-150 or SPX-5 products cannot be used to power the SeaTalkng® backbone.

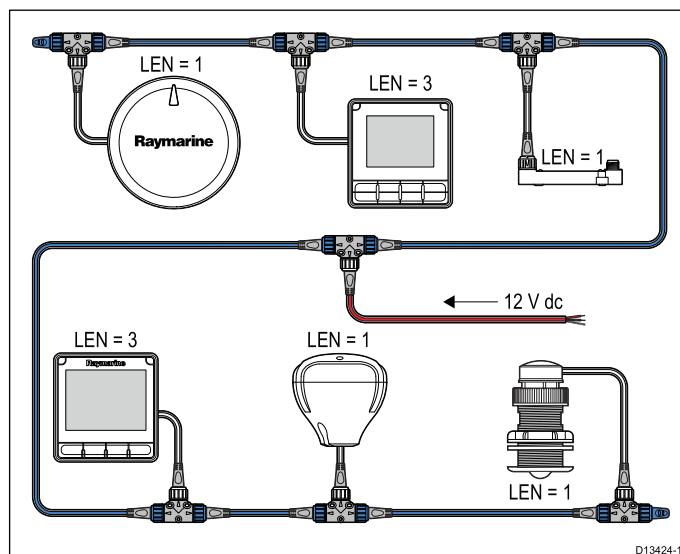
## SeaTalkng® power connection point

### Small systems

If the backbone length is 60 m (197 ft) or less, the power connection point may be connected at any point in the backbone.

### Large systems

If the backbone length is greater than 60 m (197 ft), the power connection point should be connected at a point that creates a balanced current draw from each side of the backbone. The Load Equivalency Number (LEN) is used to determine the power connection point for the system.



D13424-1

In the example above the system has an overall LEN of 10, so the optimum connection point would be to have 5 LEN either side of the connection point.

## In-line fuse and thermal breaker ratings

The SeaTalkng® network's power supply requires an in-line fuse or thermal breaker to be fitted.

In-line fuse rating	Thermal breaker rating
5 A	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.

## SeaTalkng® system loading

The maximum loading / LEN for a SeaTalkng® system depends on the length of the backbone.

Loading type	Backbone length	Total LEN
Unbalanced	20 m (66 ft)	40
Unbalanced	40 m (131 ft)	20
Unbalanced	60 m (197 ft)	14
Balanced	60 m (197 ft) or less	100
Balanced	80 m (262 ft)	84
Balanced	100 m (328 ft)	60
Balanced	120 m (394 ft)	50
Balanced	140 m to 160 m (459 ft to 525 ft)	40
Balanced	180 m to 200 m (591 ft to 656 ft)	32

## Power distribution — SeaTalkng®

Recommendations and best practice.

- Only use approved SeaTalkng® power cables. Do NOT use a power cable designed for, or supplied with, a different product.
- See below for more information on implementation for some common power distribution scenarios.

### Important:

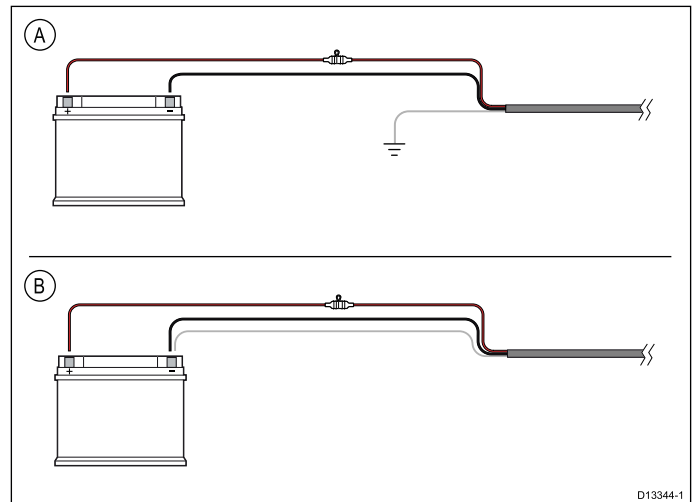
When planning and wiring, take into consideration other products in your system, some of which (e.g. sonar modules) may place large power demand peaks on the vessel's electrical system.

### 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.

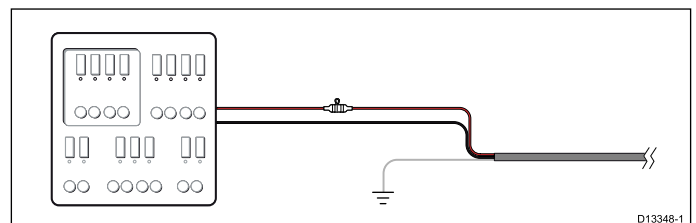
## Implementation — direct connection to battery

- SeaTalkng® power cables may be connected directly to the vessel's battery, via a suitably rated fuse or breaker.
- 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, ensure you use suitably rated cable and that sufficient power (12 V dc) is available at the SeaTalkng® backbone's power connection.



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 SeaTalkng® power cable may be connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point.
- The distribution point should be fed from the vessel's primary power source by 8 AWG (8.36 mm<sup>2</sup>) 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, ensure you use suitably rated cable and that sufficient power (12 V dc) is available at the SeaTalkng® backbone's power connection.

**Important:**

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

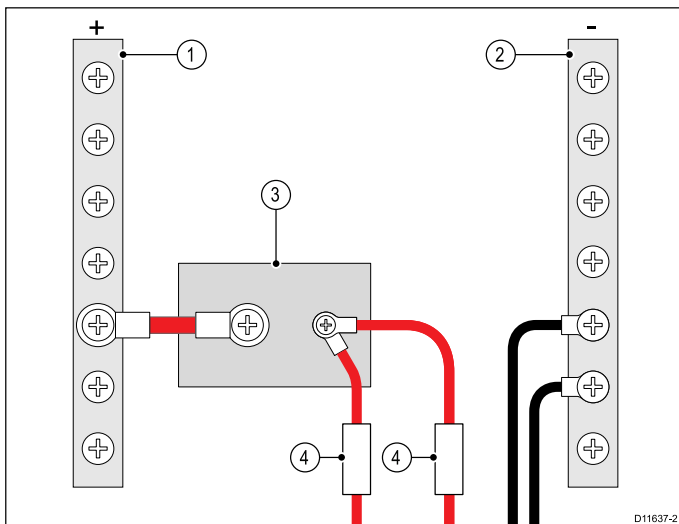
**More information**

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

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

**Sharing a breaker**

Where more than 1 piece of equipment shares a breaker you must provide protection for the individual circuits. E.g. by connecting an in-line fuse for each power circuit.



1	Positive (+) bar
2	Negative (-) bar
3	Circuit breaker
4	Fuse

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



**Warning: Product grounding**

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



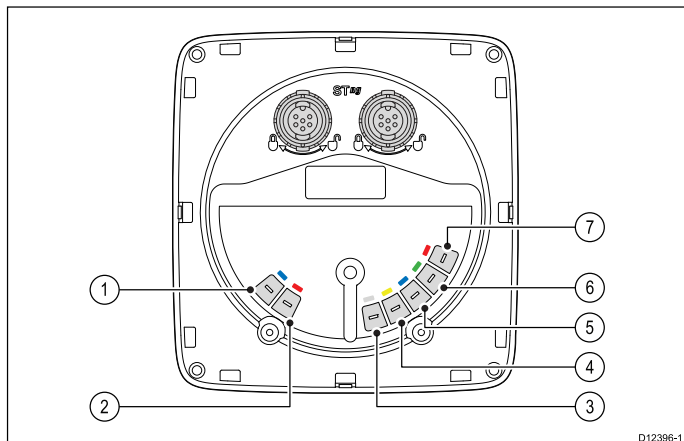
**Warning: Positive ground systems**

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

## 4.5 Transducer connections

Transducer connections only apply to the i60 Wind instrument, the i60 Close hauled wind does not include transducer connections as it is a repeater display.

### i60 transducer connections

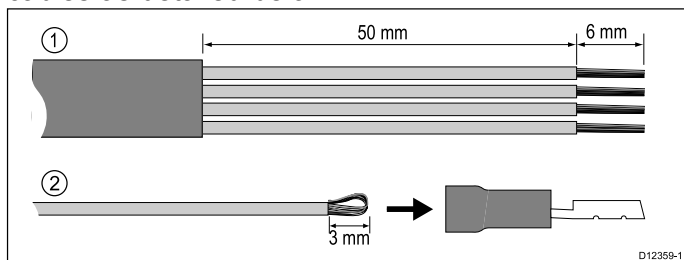


1	Blue	Rotor + (Rotavecta)
2	Red	Rotor - (Rotavecta)
3	Grey	Wind 0 V (Shield)
4	Yellow	Anemometer (signal)
5	Blue	Cosine wind direction
6	Green	Sine wind direction
7	Red	Wind V+

**Note:** Connectors 1 and 2 are rotavecta connections, connectors 3 to 7 are for wind transducers.

### Making transducer connections

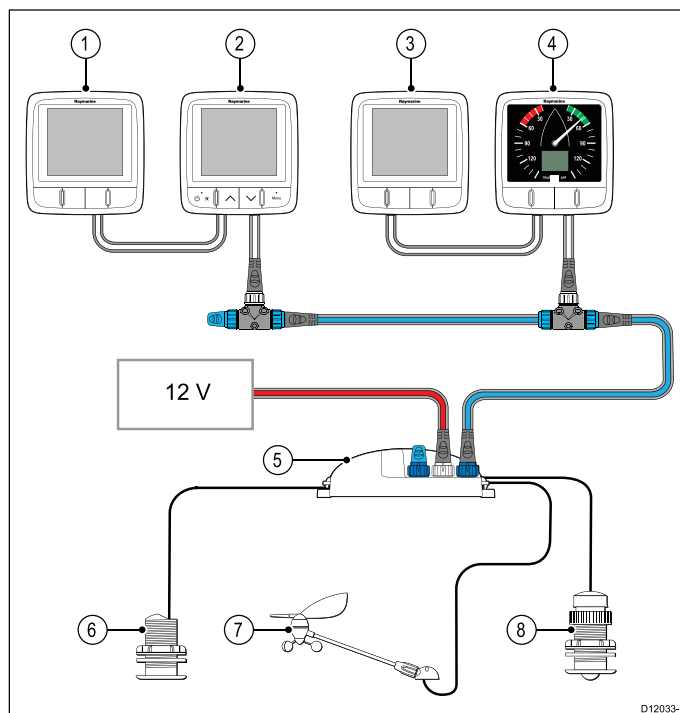
Although the transducer cable is fitted with spade connectors for direct connection to the rear of the unit, it may be necessary to remove these to facilitate installation, e.g. if the cable has to be routed through narrow apertures. 1/8th spade terminals will be required (not supplied), to replace those removed. When fitting the new spade connectors, prepare the cables as detailed below:



1. Prepare the cable as shown in 1 above.
2. Fold back the wire strands and insert into the new spade connector as shown in 2 above.
3. Ensure the wire strands do not extend beyond the rear of the spade connector insulation.
4. Crimp the connector to the wire.

## 4.6 iTC-5 connection

Transducers can be connected to a SeaTalk<sup>ng</sup> network using Raymarine's Instrument transducer converter (iTC-5) and an i70 instrument, the data can then be repeated on an i50 / i60 unit.



1	i50 Depth (Repeater)
2	i70 Instrument (Master)
3	i50 Speed (Repeater)
4	i60 Wind (Repeater)
5	iTC-5
6	Depth transducer
7	Wind vane transducer
8	Speed transducer

**Note:** Transducers connected to the iTC-5 must be calibrated using an i70 (master) unit. Transducers connected to the iTC-5 cannot be calibrated using an i50 / i60.

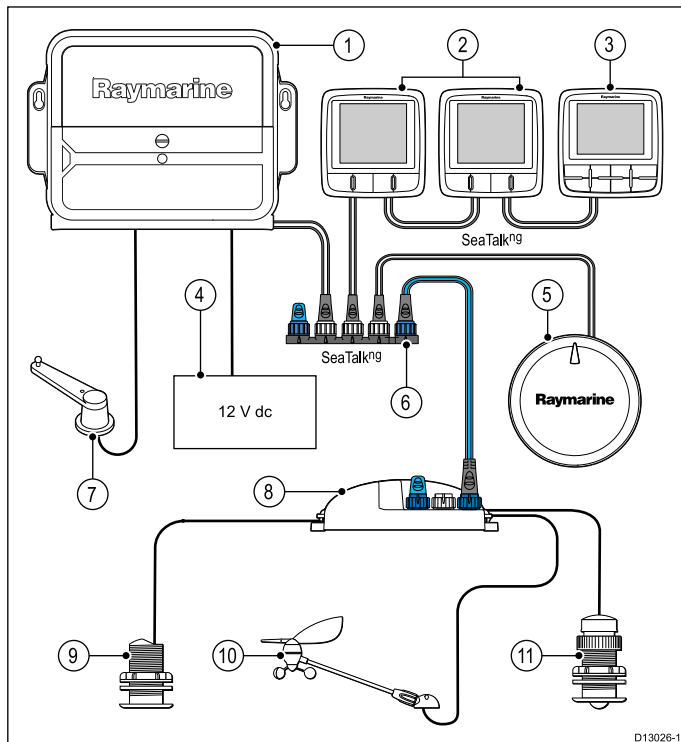
### Making iTC-5 transducer connections

For instructions on connecting transducers to your iTC-5 refer to the iTC-5 handbook.

## 4.7 SeaTalk<sup>ng</sup> connection

**Note:** In the example below, if an **ACU-100** was used, the SeaTalk<sup>ng</sup> network would require a dedicated 12 V dc power supply because the **ACU-100** does not supply power to the SeaTalk<sup>ng</sup> network.

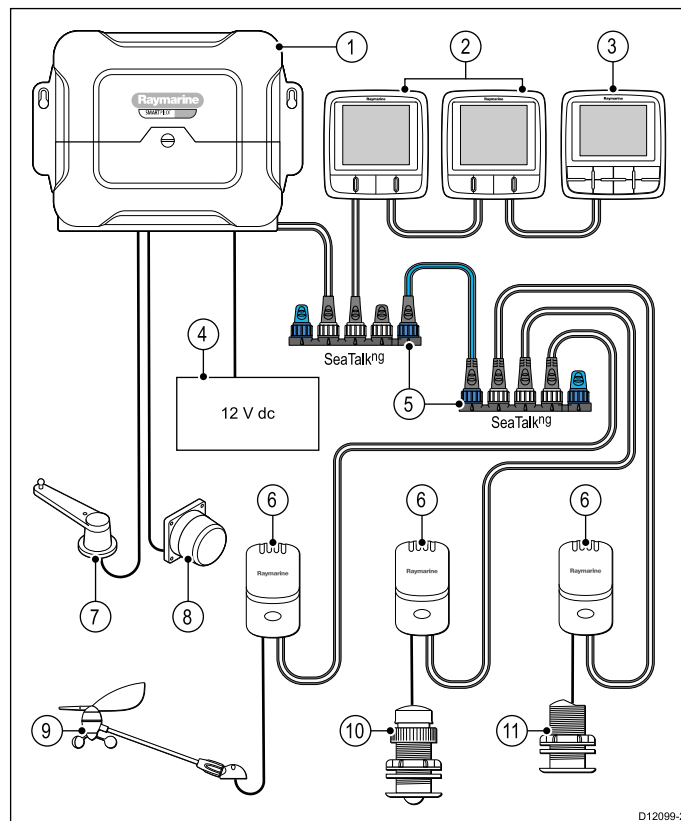
### Example: SeaTalk<sup>ng</sup> Evolution system with iTC-5



D13026-1

1	ACU unit
2	2 x Instruments
3	Pilot controller
4	Vessel's 12 V dc power supply
5	EV unit
6	SeaTalk <sup>ng</sup> 5-way connector
7	Rudder reference transducer
8	iTC-5 converter
9	Depth transducer
10	Wind transducer
11	Speed transducer

### Example: SeaTalk<sup>ng</sup> SPX system with transducer pods



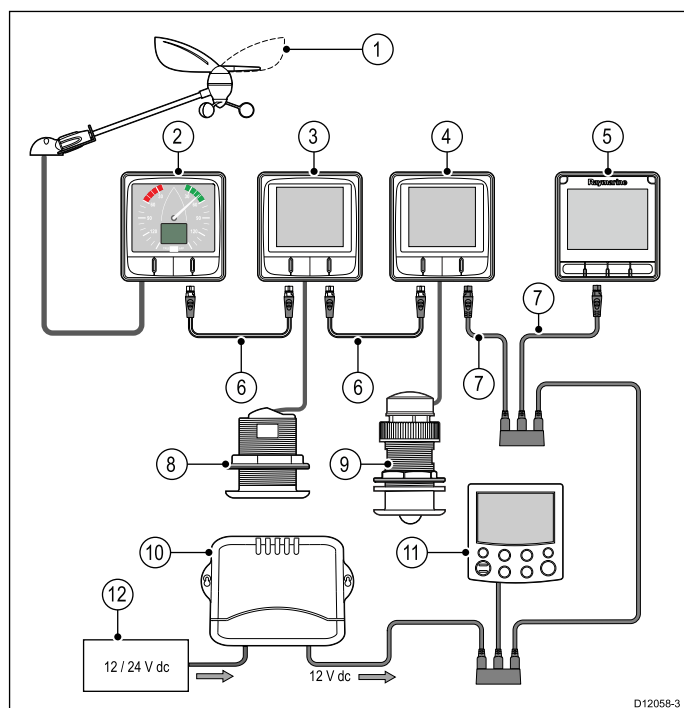
D12099-2

Item	Description
1	SPX (supplying 12V to SeaTalk <sup>ng</sup> network.)
2	2 x Instruments
3	p70 / p70R Pilot controller
4	Vessel's 12 V dc power supply
5	SeaTalk <sup>ng</sup> 5-way connectors with terminators
6	Transducer pods
7	Rudder reference transducer
8	Fluxgate compass
9	Wind transducer
10	Speed transducer
11	Depth transducer

## 4.8 SeaTalk connection

Connections to an existing **SeaTalk** system must be made using a **SeaTalk to SeaTalk<sup>ng</sup>** adaptor cable.

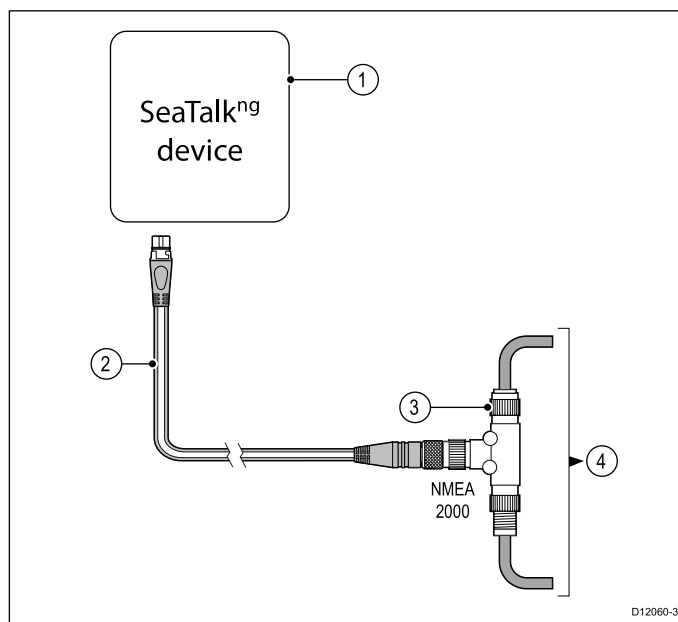
### Basic SeaTalk system example



1	Wind vane transducer
2	<b>i60 Wind (SeaTalk<sup>ng</sup> Wind instrument)</b>
3	<b>i50 Depth (SeaTalk<sup>ng</sup> Depth instrument)</b>
4	<b>i50 Speed (SeaTalk<sup>ng</sup> Speed instrument)</b>
5	<b>i70s (SeaTalk<sup>ng</sup> Multifunctional instrument display)</b>
6	<b>SeaTalk<sup>ng</sup> spur cables</b>
7	<b>SeaTalk to SeaTalk<sup>ng</sup> adaptor cables</b>
8	Speed transducer
9	Depth transducer
10	<b>SeaTalk Course computer (providing 12 V dc power to SeaTalk network.)</b>
11	<b>ST6002(SeaTalk pilot controller )</b>
12	12 / 24 V dc power supply

## 4.9 NMEA 2000 network connection

Your **SeaTalk<sup>ng</sup>** device can be connected to a **DeviceNet / NMEA 2000** network.



1. **SeaTalk<sup>ng</sup>** device
2. **SeaTalk<sup>ng</sup> to DeviceNet** adaptor cable (A06045)
3. **DeviceNet T-piece**
4. **NMEA 2000** backbone

## SeaTalk power protection

The power supply must be protected by a 5 A fuse or a circuit breaker providing equivalent protection.

Raymarine recommends that the power is connected to a SeaTalk system in such a way that the current drawn on each side of the power connection point is equal.

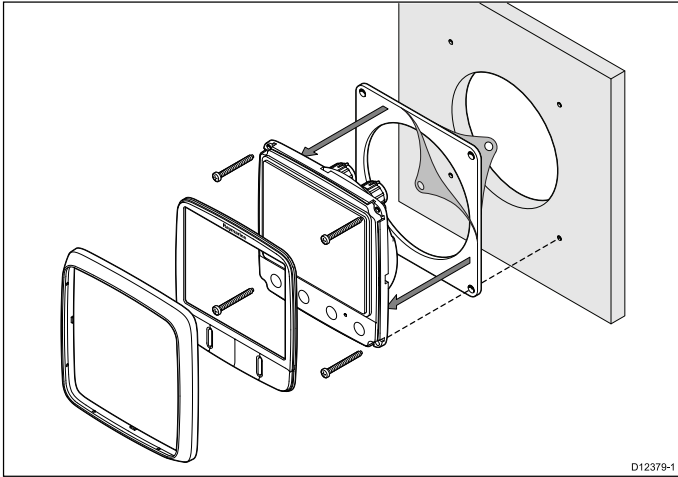
## 5.1 Mounting

### Pre-mounting check

The product is designed to be surface mounted. Before mounting the unit, ensure you have:

- Selected a suitable location.
- Identified the cable connections and route that the cables will take.
- Detached the front bezel.
- Remove the keypad mat.

### Mounting diagram



**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.

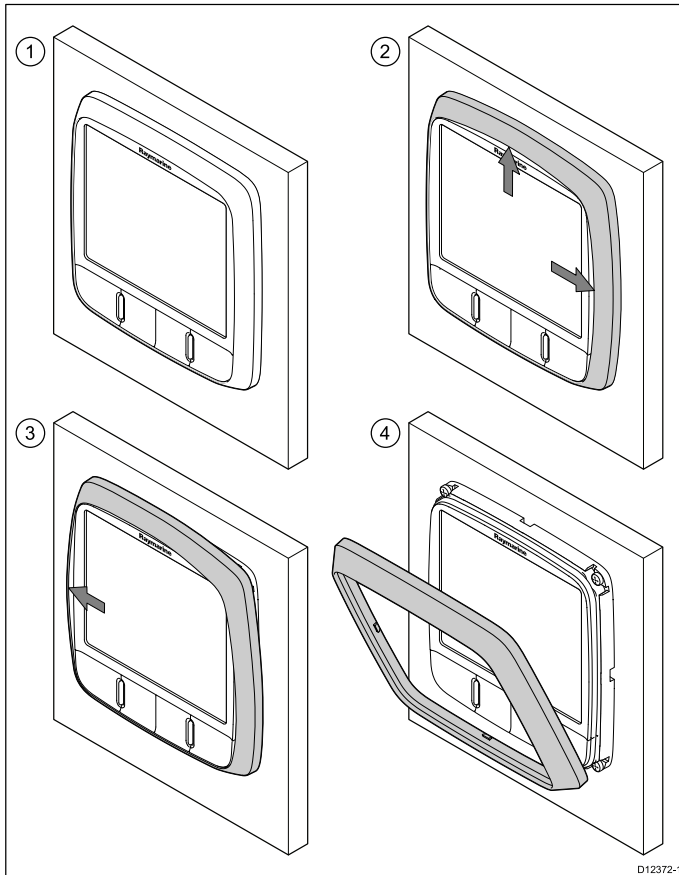
### Mounting instructions

1. Check the selected location for the unit, a clear, flat area with suitable clearance behind the panel is required.
2. Fix the mounting template supplied with the product, to the selected location, using masking or self adhesive tape.
3. If possible use an appropriate size hole cutter and cut out the centre hole cut out area as indicated on the mounting template, or
4. Using a suitable drill bit, make pilot holes in each corner of the cut out area and using a jigsaw cut along the inside edge of the cut out line.
5. Ensure that the unit fits into the removed area and then file around the cut edge until smooth.
6. Drill any required holes as indicated on the mounting template for the mounting fixings.
7. Peel the backing off of the supplied gasket and place the adhesive side of the gasket onto the display unit and press firmly onto the flange.
8. Connect the relevant cables to the unit.
9. Slide the unit into place and secure using the fixings provided.
10. Fit keypad mat and front bezel.

**Note:** Drill, tap size and tightening torques are dependant upon the material type and thickness of the mounting surface.

## 5.2 Front bezel

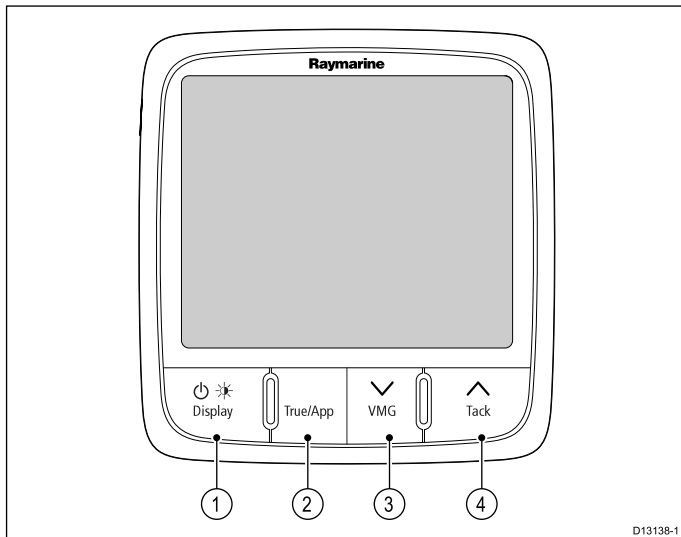
### Removing the front bezel



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

1. Using your fingers pull the bezel away from the unit at the top and side, as shown in 2.  
The bezel will start to come away from the unit at the top and side.
2. Now pull the bezel away from the unit on the opposite side, as shown in 3.  
The bezel will now come free from the unit, as shown in 4.

## 6.1 Controls



1	<b>Display / Power</b> — Select to access Depth information on the digital display, adjust backlight, adjust contrast and power the display On and Off
2	<b>True / App</b> — Switch between true and apparent wind direction
3	<b>VMG / Down</b> — Display Velocity made good. Use to move down through menu options or to decrease numeric values
4	<b>Tack / Up</b> — Tack heading. Use to move up through menu options or to increase numeric values

## 6.2 Power

### Powering on the unit

The unit will automatically turn on with the system, unless it has previously been powered off using the **Power** button.

With the unit powered off:

1. Press and hold the **Power** button until the screen turns on (approximately 2 seconds).

### Powering off the unit

1. Press and hold the **Power** button until the count down timer reaches zero and the screen turns off.

**Note:** When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

### Calibration alert

If the **CAL** legend on the digital display flashes for the first 30 seconds after power up, refer to the *Calibration* section to calibrate your unit.



## 6.3 Data master

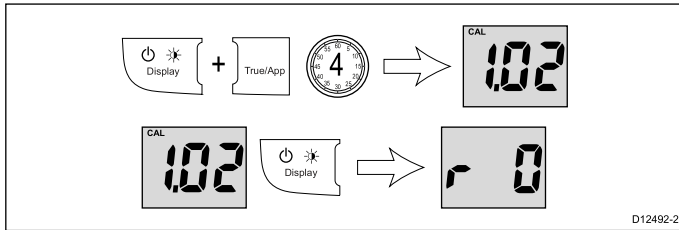
Where a system contains more than one unit capable of displaying a data type, the unit physically connected to the transducer must be set as the data master and any other units set as a repeater.

### Checking the software version and instrument status

You can check the instrument display's software version and status by following the steps below.

**Note:** The i60 CH Wind instrument is a repeater display. You cannot check or change the instrument status of an i60 CH Wind display

From the software version page:



During normal operation:

1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 4 seconds, until the Software Version page is displayed.
2. Press the **Display** button to show the Instrument Status page.  
The instrument status is displayed (r 0 = master and r 1 = repeater).

**Note:** The Software Version and Instrument Status pages are temporary pages and will time-out automatically after 8 seconds of inactivity.

## 7.1 Calibration

Before first use the unit must be calibrated to ensure optimum performance.

The calibration settings are grouped into 3 categories: **User Calibration**, **Intermediate Calibration** and **Dealer Calibration**.

Access to the User Calibration menu can be locked from the Dealer Calibration menu.

## 7.2 User calibration

The i60 CH instrument display is a repeater display and as such does not require calibration, the steps below apply to the calibration of the i60 Wind instrument only.

User calibration options include:

- Wind angle offset — Assigns an offset to the wind angle readings.
- Units for Wind speed readings — Assigns the unit of measure used for wind speed related readings

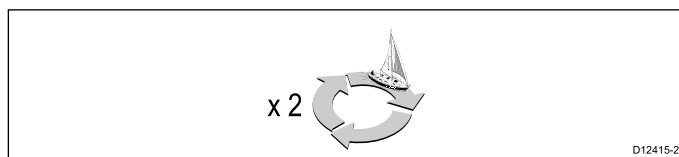
### Automatic Linearization

The wind transducer can linearize itself automatically under certain conditions.

For Automatic Linearization to be performed **CAL** must be flashing on the digital display. **CAL** is displayed for approximately 30 seconds after power on under the following conditions:

- At first power on, after installation
- At power on, after a factory reset.

To perform the automatic linearization the vessel will need to be underway, with sufficient space to turn in large circles unhindered. The wind speed must be sufficient to hold the vane to wind whilst the vessel is turning. The vessel must be turned slowly through at least 2 complete circles.

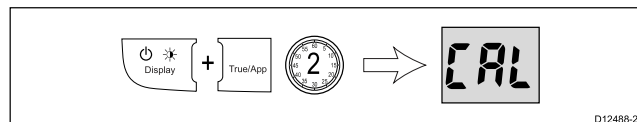


This procedure automatically linearizes the wind vane. A successful linearization is indicated by the digital display flashing and a buzzer sounding three beeps

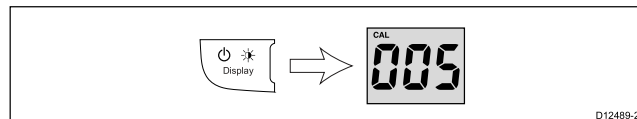
### Aligning the wind transducer

During normal operation:

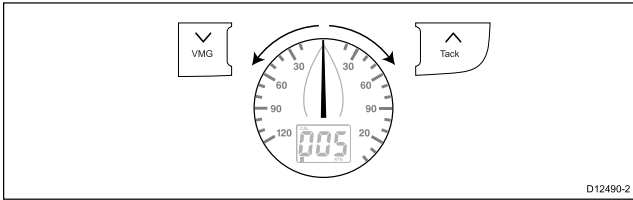
1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds, until the User Calibration page is displayed.



2. Press the **Display** button until the **Wind Angle Offset** page is displayed (1 press from the **User Calibration** page).



- Sail your vessel directly into the wind and adjust the analog pointer to zero, using the **VMG** and **Tack** buttons.



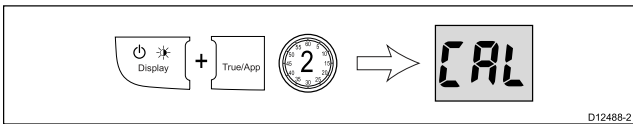
The VMG button will decrease the current value and the Tack button will increase the current value. As you do this, the wind angle offset shows the amount of correction you have applied.

- To exit the User Calibration Menu at any time press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds.

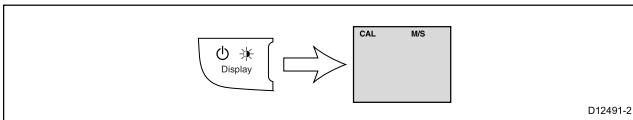
## Selecting the unit of measure for wind speed readings

During normal operation:

- Press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds, until the User Calibration page is displayed.



- Press the **Display** button until the **Wind Speed Units** page is displayed (2 presses from the **User Calibration** page).



- Use the **VMG** or **Tack** buttons to select the required unit of measure for wind speed readings. The available units of measure for wind speed are:

- KTS (default) — Knots
- M/S — Meters per second

- To exit the **User Calibration** pages at any time press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds.

## 7.3 Intermediate calibration

Intermediate calibration allows you to:

- Check instrument software version
- \* Check the instrument status (either master or repeater)

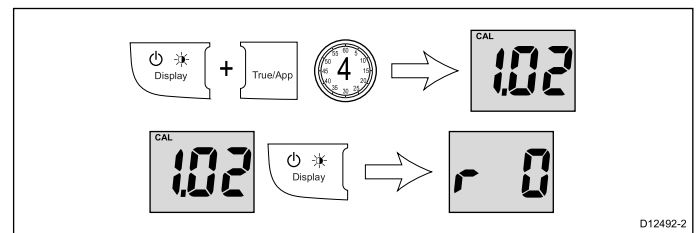
**Note:** \* Not available on i60 CH Wind.

### Checking the software version and instrument status

You can check the instrument display's software version and status by following the steps below.

**Note:** The i60 CH Wind instrument is a repeater display. You cannot check or change the instrument status of an i60 CH Wind display

From the software version page:



During normal operation:

- Press and hold the **Display** and **True / App** buttons at the same time for approximately 4 seconds, until the Software Version page is displayed.
- Press the **Display** button to show the Instrument Status page.  
The instrument status is displayed (r 0 = master and r 1 = repeater).

**Note:** The Software Version and Instrument Status pages are temporary pages and will time-out automatically after 8 seconds of inactivity.

## 7.4 Dealer calibration

The dealer calibration procedures include:

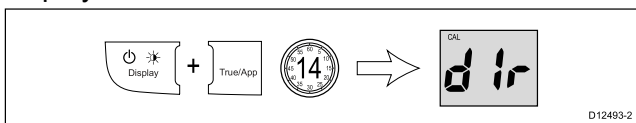
- User calibration menu access On (default) and Off.
- Display Response for wind angle readings — Dictates the rate at which the instrument display responds to changes in wind angle data.
- Display Response for wind speed readings — Dictates the rate at which the instrument display responds to changes in wind speed data.
- Display Response for VMG readings — Dictates the rate at which the instrument display responds to changes in VMG data.
- \* Boat show mode On and Off (default) (Boat show mode is only available on displays set as repeaters).
- Reset to factory defaults.

**Note:** Not available on the i60 CH wind instrument.

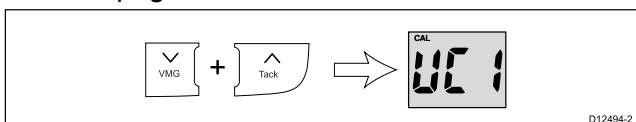
### Setting access to the User Calibration Menu - i60

During normal operation:

1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 14 seconds, until the **Dealer Calibration** page is displayed.



2. Press the **VMG** and **Tack** buttons at the same time to display the **User Calibration Menu Access** page.



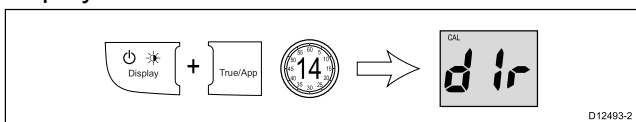
3. Use the **VMG** or **Tack** buttons to switch access to the **User Calibration Menu On and Off**.
  - UC1 (default) — User Calibration menu enabled
  - UC0 — User Calibration menu disabled

**Note:** To exit the Dealer Calibration pages at any time, press and hold the **Display** and **True/App** buttons at the same time for approximately 2 seconds.

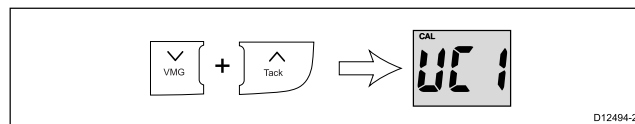
### Setting the response delay for Wind Angle readings

During normal operation:

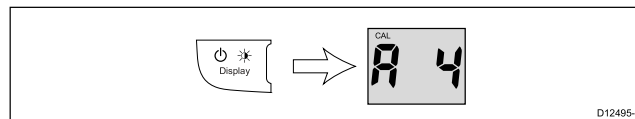
1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 14 seconds, until the **Dealer Calibration** page is displayed.



2. Press the **VMG** and **Tack** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Display** button until the **Wind Angle Response** page is displayed (1 press from the **User Calibration Access Menu** page).



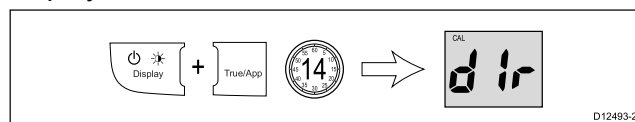
4. Use the **VMG** and **Tack** buttons to set the required level for Wind Angle Response. The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.

**Note:** To exit the Dealer Calibration pages at any time, press and hold the **Display** and **True/App** buttons at the same time for approximately 2 seconds.

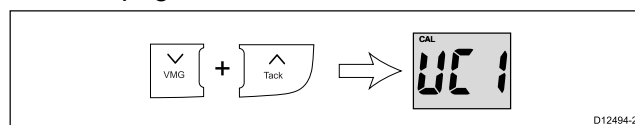
### Setting the response delay for Wind Speed readings

During normal operation:

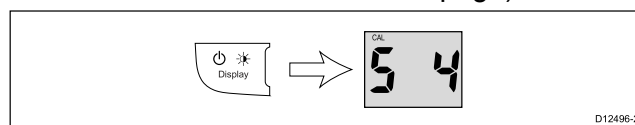
1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 14 seconds, until the **Dealer Calibration** page is displayed.



2. Press the **VMG** and **Tack** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Display** button until the **Wind Speed Response** page is displayed (2 presses from the **User Calibration Access Menu** page).



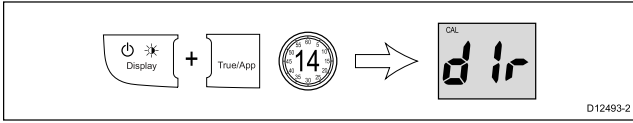
4. Use the **VMG** and **Tack** buttons to set the required level for Wind Speed Response. The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.

**Note:** To exit the Dealer Calibration pages at any time, press and hold the **Display** and **True/App** buttons at the same time for approximately 2 seconds.

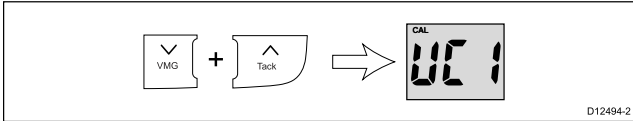
## Setting the response delay for VMG readings

During normal operation:

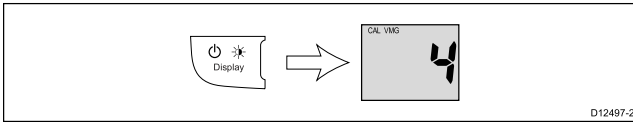
1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 14 seconds, until the **Dealer Calibration** page is displayed.



2. Press the **VMG** and **Tack** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Display** button until the **VMG Response** page is displayed (3 presses from **User Calibration Menu Access** page).



4. Use the **VMG** or **Tack** buttons to set the required level for VMG response.

The default level is 12. The levels available are 1 to 15 with level 1 being the slowest update rate and level 15 the quickest.

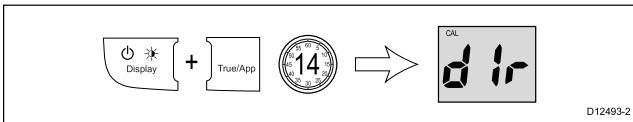
**Note:** To exit the Dealer Calibration pages at any time, press and hold the **Display** and **True/App** buttons at the same time for approximately 2 seconds.

## Setting the wind speed Calibration Factor

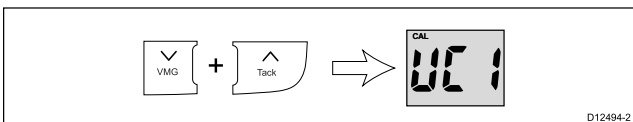
If you find that your wind speed readings deviate from a referenced wind speed source then a Calibration Factor can be applied to reduce the deviation.

During normal operation:

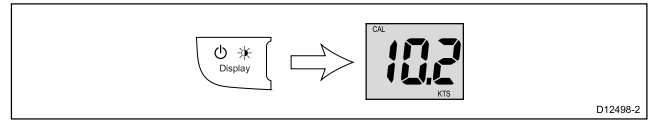
1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 14 seconds, until the **Dealer Calibration** page is displayed.



2. Press the **VMG** and **Tack** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Display** button until the **Current Wind Speed** page is displayed (4 presses from the **User Calibration Menu Access** page).



4. Use the **VMG** and **Tack** buttons to adjust the Calibration Factor to the desired value.

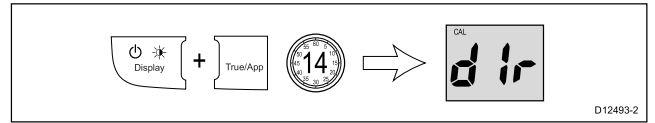
*When the **VMG** and **TACK** buttons are not being pressed the screen will revert back to **Current Wind Speed** page to enable you to see what change the Calibration Factor has on the display's Wind Speed reading.*

**Note:** To exit the dealer calibration pages at any time press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds.

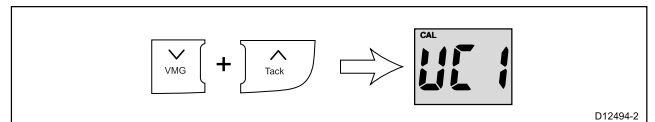
## Enabling and disabling Boat Show Mode - i60

During normal operation:

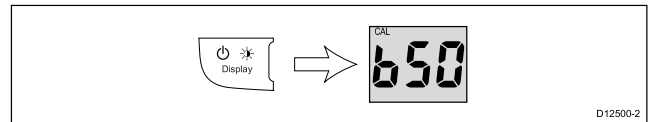
1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 14 seconds, until the **Dealer Calibration** page is displayed.



2. Press the **VMG** and **Tack** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Display** button until the **Boat Show Mode** page is displayed (5 presses from the **User Calibration Menu Access** page).



4. Use the **VMG** or **Tack** buttons to switch the Boat Show Mode On and Off (default).

Selecting On will put the display into boat show mode.

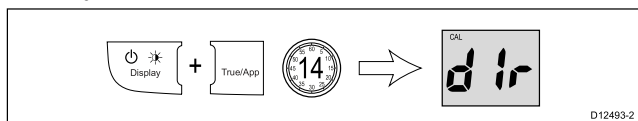
**Note:** Boat show mode is only suitable for demonstration purposes and should NOT be used whilst your vessel is in use.

**Note:** To exit the dealer calibration pages at any time press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds.

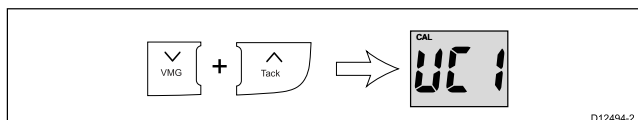
## Resetting the display to factory defaults - i60

During normal operation:

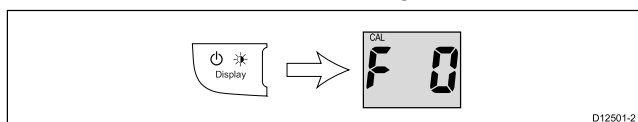
1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 14 seconds, until the **Dealer Calibration** page is displayed.



2. Press the **VMG** and **Tack** buttons at the same time to display the **User Calibration Menu Access** page.



3. Press the **Display** button until the **Factory Reset** page is displayed (5 presses from the **User Calibration Menu Access** page).



4. To reset the display to factory default settings:
  - i. Use the **VMG** or **Tack** buttons to change the reset option to F 1 (default).
  - ii. Press the **Display** button to reset your display to factory default settings.

**Note:** To exit the dealer calibration pages at any time press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds.

## 8.1 Pages

The pages available depend on the display variant and are shown in the table below:

i60 Wind	i60 Close hauled wind
Wind speed	Wind speed
*Beaufort wind speed	*Maximum wind speed
*Maximum wind speed	VMG
*Maximum true wind speed alarm	Tack
*Low true wind speed alarm	
*High apparent wind angle alarm	
*Low apparent wind angle alarm	
VMG	
Tack	

**Note:** \*These pages are temporary pages and will time-out to the previous permanent page after 8 seconds of inactivity.

## Changing pages

During normal operation:

1. Press either the **Display** button to cycle through the wind pages.
2. Press the **VMG** button to display VMG information.
3. Press the **Tack** button to display tack information.

## 8.2 i60 Wind operation

When connected to a relevant rotavecta or wind vane transducer the i60 provides:

- True and apparent wind direction and speed. Wind speed is displayed either in knots, meters per second or as Beaufort scale values.
- Velocity made good (VMG) information, when vessel speed information is available on the network.
- Tack angle, when heading information is available on the network.
- Maximum wind speed.
- High and low true wind speed alarms.
- High and low apparent wind angle alarms.

**Note:** Alarms are only available on the i60 Wind instrument, when set as a master unit. No alarms are available on the i60 Close hauled wind instrument.

## i60 display information

The i60 instrument's display consists of an analogue pointer and digital display.

### Analogue display

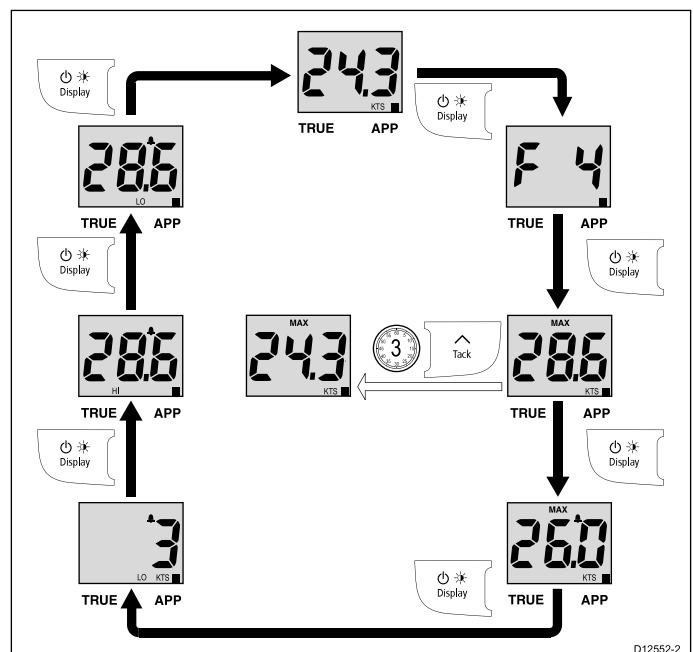
The analogue display pointer shows either true or apparent wind direction (Depending on setting).

### Digital display

The digital display LCD shows the following wind information.

- Beaufort wind speed
- True / apparent wind speed
- Velocity made good (VMG)
- Tack heading
- Maximum wind speed
- Wind alarm data

## Using the display button



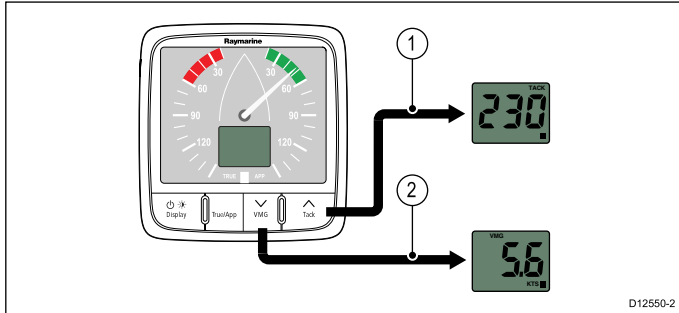


During normal operation:

1. Use the **Display** button to cycle through the available pages.
2. Press and hold the **Tack** button for 3 seconds to reset the maximum wind speed to the current wind speed values.

**Note:** All pages except for the **Current wind speed** page are temporary and will time-out after 8 seconds.

## Using Tack and VMG buttons



During normal operation:

1. Press the **VMG** button to show the **VMG** page on the digital display.

**Note:** **VMG** information is only available when vessel speed information is available.

2. Press the **Tack** button to show the **Tack** page on the digital display.

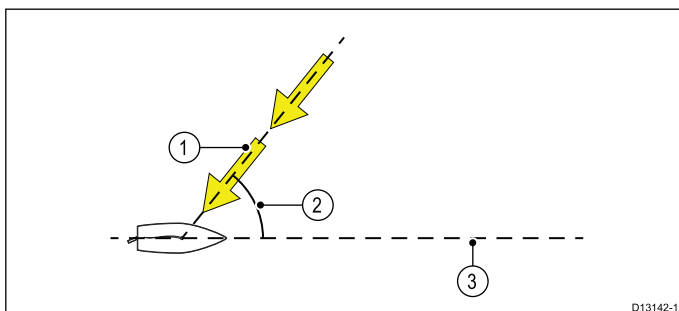
**Note:** **Tack** information is only available when vessel heading and speed information is available.

## True and Apparent wind

Wind angle, direction and speed are reported as either 'True' or 'Apparent' wind measurements.

- **True wind** — True wind measurements assume the vessel is motionless in the water. True wind readings are calculated using Apparent Wind and STW values.
- **Apparent wind** — Apparent wind is the wind felt on deck when the vessel is in motion which is affected by vessel angle and speed.

With the vessel tied along side, True and Apparent wind readings should be identical.



1. Wind direction (specified using compass points)**True Wind Direction (TWD)** — The compass direction that wind would appear to be blowing across the vessel if it was not making

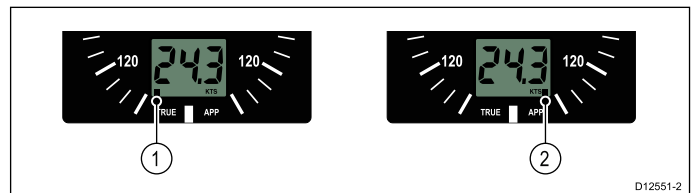
any way.**Apparent Wind Direction (AWD)** — The compass direction that wind would appear to be blowing across the vessel when it is making way.

2. Wind angle (specified in degrees)**True Wind Angle (TWA)** — The angle between the TWD and the center line of the vessel.**Apparent Wind Angle (AWA)** — The angle between the AWD and the center line of the vessel.
3. Wind speed (specified in the chosen speed units)**True Wind Speed (TWS)** — The speed that the wind would appear to be blowing across the vessel if it was not making any way.**Apparent Wind Speed (AWS)** — The speed that the wind would appear to be blowing across the vessel when it is making way.

**Note:** True Wind readings require Speed Through Water (STW) data to be available.

## Switching between true and apparent wind information

You can switch the unit between displaying True or Apparent wind information.



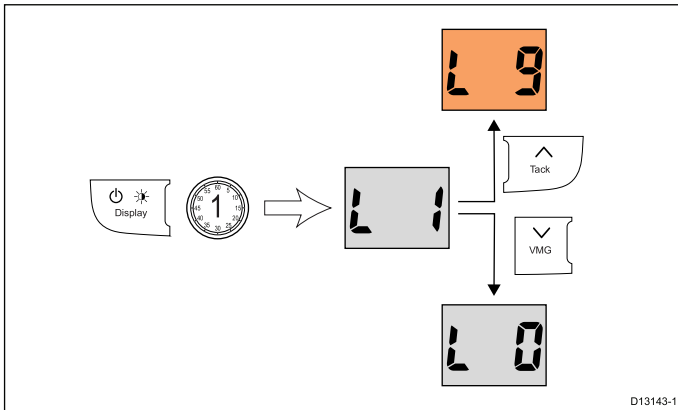
During normal operation:

1. Press the **True / App** button to switch between true or apparent wind information.
  - In **True** mode the indicator shown in 1 above will be displayed.
  - In **Apparent** mode the indicator shown in 2 above will be displayed.

## 8.3 Illumination

### Adjusting the backlight level

The backlighting can be adjusted using the power button.



During normal operation:

1. Press and hold the **Display** button for approximately 1 second until the backlight page is displayed.  
L and the current illumination level is displayed.
2. Use the **VMG** button to decrease the illumination level.
3. Use the **Tack** button to increase the illumination level.

The illumination level can be adjusted from 0 (default) (Off) to 9 (Max)

**Note:** The backlight page will time-out after 8 seconds of inactivity.

### Adjusting the contrast — i60

The contrast level can be accessed using the Speed button.

During normal operation:

1. Press and hold the **Display** button for approximately 4 seconds to display the Contrast page.

*C is displayed on-screen and the current contrast level.*

2. Use the **Display** button to cycle through the available contrast levels.

The contrast level can be adjusted from level 0 (default) to 3.

**Note:** The contrast page will time-out after 8 seconds of inactivity.

### Group illumination

Group illumination is used to synchronizes and control the backlighting level of multiple units assigned to the same group.

The unit can participate in shared illumination via a SeaTalk network or group illumination via a SeaTalk<sup>ng</sup> network.

When connected on a SeaTalk network all compatible units will share their backlight level (when 1 unit's backlighting level is adjusted all other units backlight level will also change).

When connected on a SeaTalk<sup>ng</sup> network the unit can participate in group illumination and be assigned to a group of units which will share their backlighting levels. Available groups are as follows:

- OFF (default) — Group illumination is switched off
- HL1 — Helm 1
- HL2 — Helm 2
- CPt — Cockpit
- FLY — Flybridge
- NST — Mast
- GP1 to GP5 — User defined groups

When assigned to a group, when the backlighting of 1 unit is adjusted the backlighting level of all units assigned to the same group will also change.

#### Assigning the unit to a group

To assign the unit as part of a group so that it can participate in group illumination follow the steps below.

During normal operation:

1. Press and hold the **Display** and **True / App** buttons at the same time for approximately 6 seconds, until the Group Illumination page is displayed.

GrP is displayed on-screen

**Note:** The Group Illumination page is a temporary page and will time-out to the previous page after 8 seconds.

2. Press the **Display** button to display the current group illumination setting.
3. Press the **VMG** and **Tack** buttons at the same time to change the current setting.  
The current group setting will flash.
4. Use the **Tack** button to cycle upwards through the list of available groups.
5. Use the **VMG** button to cycle back down through the list.
6. Press the **VMG** and **Tack** buttons at the same time to assign the display to the selected group.  
The group setting will stop flashing.
7. Press and hold the **Display** and **True / App** buttons at the same time for approximately 2 seconds to return to normal operation.

## 9.1 Alarms

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

You can set up alarms to alert you to certain conditions.

Alarms are raised by system functions, and also external equipment connected to your display.

When an alarm event occurs an audible and visual alarm is activated which indicates the alarm state.

Alarm thresholds can be configured from the relevant alarm page / menu.

### Instrument alarms

Alarms available on the i60 Wind are listed below.

- High true wind speed
- Low true wind speed
- High apparent wind angle
- Low apparent wind angle

**Note:** Alarms are not available on the i60 Close Hauled wind.

### Alarm indications

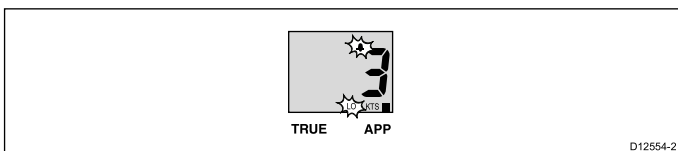
An alarm event is indicated by both audible and visual warnings.

#### High true wind speed alarm



The **High true wind speed alarm** sounds when the true wind speed is equal to or more than the **High true wind speed threshold**. The alarm sounds until silenced manually.

#### Low true wind speed alarm



The **Low true wind speed alarm** sounds when the true wind speed is equal to or less than the **Low true wind speed threshold**. The alarm sounds until silenced manually.

#### High apparent wind angle alarm



The **High apparent wind angle alarm** sounds when the apparent wind angle equal to or more than the **High apparent wind angle threshold**. The alarm sounds until silenced manually.

#### Low apparent wind angle alarm



The **Low apparent wind angle alarm** sounds when the apparent wind angle is equal to or less than the **Low apparent wind angle threshold**. The alarm sounds until silenced manually.

### Silencing alarms

1. Press any button to silence an active alarm.

### Enabling / Disabling alarms

Alarms can be enabled or disabled at any time.

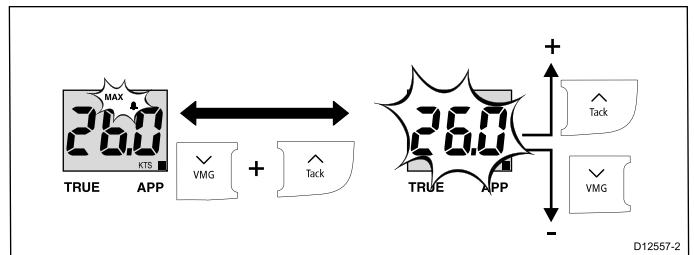
With the relevant alarm page displayed:

1. Press and hold the **Tack** button for 1 second to switch the alarm on or off.

When the alarm is on the alarm threshold is displayed.

### Setting alarm thresholds

You can adjust the threshold at which alarms are triggered by following the steps below.



With the relevant alarm page displayed:

1. Press the **VMG** and **Tack** buttons at the same time to enter adjust mode.  
The current threshold will start to flash.
2. Use the **Tack** button to increase the alarm threshold.
3. Use the **VMG** button to decrease the alarm threshold.
4. Press the **VMG** and **Tack** buttons at the same time to save the new alarm threshold and exit adjust mode.

**Note:** The illustration above is an example depicting setting the Maximum true wind speed alarm threshold.

## 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.

## 10.3 Routine equipment checks

It is recommended that you perform the following routine checks, on a regular basis, to ensure the correct and reliable operation of your equipment:

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

## 10.5 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.

## 10.2 Condensation

Certain atmospheric conditions may cause a small amount of condensation to form on the unit's window. This will not damage the unit and will clear after the unit has been switched on for a short period.

## 10.4 Product cleaning

Best cleaning practices.

When cleaning products:

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

## 10.6 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).

## 11.1 Troubleshooting

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

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

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

## 11.2 Instrument troubleshooting

Fault	Cause	Action
Blank display.	No power supply.	<ul style="list-style-type: none"><li>• Check fuse / circuit breaker.</li><li>• Check power supply.</li><li>• Check SeaTalk / SeaTalk<sup>ng</sup> cabling and connector security.</li></ul>
SeaTalk / SeaTalk <sup>ng</sup> information not being transferred between instruments.	SeaTalk / SeaTalk <sup>ng</sup> cabling or connector fault.	<ul style="list-style-type: none"><li>• Check security of SeaTalk / SeaTalk<sup>ng</sup> connections between units.</li><li>• Check condition of SeaTalk / SeaTalk<sup>ng</sup> cables.</li><li>• Isolate faulty unit by disconnecting units one by one.</li></ul>
A group of SeaTalk / SeaTalk <sup>ng</sup> units not working.	SeaTalk / SeaTalk <sup>ng</sup> cabling or connector fault.	<ul style="list-style-type: none"><li>• Check the security of SeaTalk / SeaTalk<sup>ng</sup> connectors between functioning and non-functioning units.</li><li>• Check the condition of SeaTalk / SeaTalk<sup>ng</sup> cable between functioning and non-functioning units.</li></ul>

## 11.3 Power up troubleshooting

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

### Product does not turn on or keeps turning off

Possible causes	Possible solutions
Blown fuse / tripped breaker	<ol style="list-style-type: none"> <li>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.)</li> <li>2. If fuse keeps blowing check for cable damage, broken connector pins or incorrect wiring.</li> </ol>
Poor / damaged / insecure power supply cable / connections	<ol style="list-style-type: none"> <li>1. Check that the power cable connector is fully inserted into the unit and locked in position.</li> <li>2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary.</li> <li>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.</li> <li>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.</li> <li>5. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc, replace if necessary.</li> </ol>
Incorrect power connection	The power supply may be wired incorrectly, ensure the installation instructions have been followed.
Power source insufficient	With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible to establish actual voltage when the current is flowing. (Refer to the <i>Technical Specification</i> section of your product's installation instructions for power supply requirements.)

### Product will not boot up (re-boot loop)

Possible causes	Possible solutions
Power supply and connection	See possible solutions from 'Products does not turn on or keeps turning off' above.
Software corruption	<ol style="list-style-type: none"> <li>1. In the unlikely event that the products software has become corrupted please try re-flashing the latest software from the Raymarine website.</li> <li>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.</li> </ol>

## 11.4 Miscellaneous troubleshooting

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

Problem	Possible causes	Possible solutions
Display behaves erratically: <ul style="list-style-type: none"> <li>• Frequent unexpected resets.</li> <li>• System crashes or other erratic behavior.</li> </ul>	Intermittent problem with power to the display.	Check relevant fuses and breakers. Check that the power supply cable is sound and that all connections are tight and free from corrosion. Check that the power source is of the correct voltage and sufficient current.
	Software mismatch on system (upgrade required).	
	Corrupt data / other unknown issue.	Perform a factory reset. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p><b>Important:</b> This will result in the loss of any settings and data (such as waypoints) stored on the product. Save any important data to a memory card before resetting.</p> </div>



## 13.1 Technical specification

Nominal supply voltage	12 V dc
Operating voltage range	10 V dc to 16 V dc
Power consumption	<ul style="list-style-type: none"><li>• &lt; 1 W Typical (Display only)</li><li>• 2.4 W Maximum (Transducer connected)</li></ul>
Current	<ul style="list-style-type: none"><li>• 45 to 65 mA Typical (Display only)</li><li>• 200 mA Maximum (Transducer connected)</li></ul>
LEN (Refer to SeaTalk <sup>ng</sup> reference manual for further information.)	4
Environmental	Operating temperature: -20°C to +55°C Storage temperature: -30°C to +70°C Relative humidity: 93% Water proofing: IPX6
Connections	<ul style="list-style-type: none"><li>• 2 x SeaTalk<sup>ng</sup> connections (compliant with SeaTalk)</li><li>• Transducer connections</li></ul>
Conformance	Europe 2004/108/EC

## 14.1 Spares and Accessories

### Spares

Description	Part number
i50 / i60 / i70 front bezel	R22168
i50 / i60 / i70 Sun cover	R22169
i60 Keypad	R70133

### Accessories

Description	Part number
i50 / i60 / i70 Front bezel Black (eS style)	A80355
i50 / i60 / i70 Front bezel Gunmetal (eS style)	A80356
i50 / i60 / i70 Suncover (for eS style bezel)	A80357

## 14.2 SeaTalk<sup>ng</sup>® cables and accessories

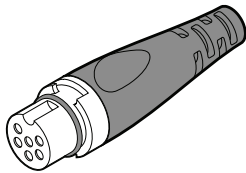

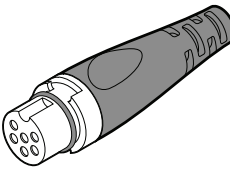
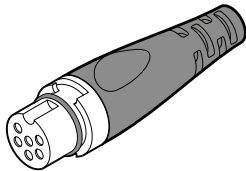
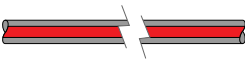
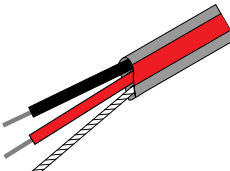
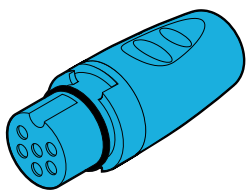
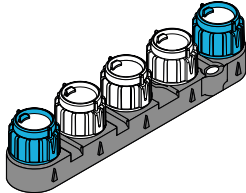
SeaTalk<sup>ng</sup> cables and accessories for use with compatible products.

Part No	Description	Notes
T70134	SeaTalk <sup>ng</sup> starter kit	Includes: <ul style="list-style-type: none"> <li>• 1 x 5 Way connector (A06064)</li> <li>• 2 x Backbone terminator (A06031)</li> <li>• 1 x 3 m (9.8 ft) spur cable (A06040)</li> <li>• 1 x Power cable (A06049)</li> </ul>
A25062	SeaTalk <sup>ng</sup> Backbone Kit	Includes: <ul style="list-style-type: none"> <li>• 2 x 5 m (16.4 ft) Backbone cable (A06036)</li> <li>• 1 x 20 m (65.6 ft) Backbone cable (A06037)</li> <li>• 4 x T-piece (A06028)</li> <li>• 2 x Backbone terminator (A06031)</li> <li>• 1 x Power cable (A06049)</li> </ul>
A06038	SeaTalk <sup>ng</sup> 0.4 m (1.3 ft) spur	
A06039	SeaTalk <sup>ng</sup> 1 m (3.3 ft) spur	
A06040	SeaTalk <sup>ng</sup> 3 m (9.8 ft) spur	
A06041	SeaTalk <sup>ng</sup> 5 m (16.4 ft) spur	
A06042	SeaTalk <sup>ng</sup> 0.4 m (1.3 ft) elbow spur	
A06033	SeaTalk <sup>ng</sup> 0.4 m (1.3 ft) backbone	
A06034	SeaTalk <sup>ng</sup> 1 m (3.3 ft) backbone	
A06035	SeaTalk <sup>ng</sup> 3 m (9.8 ft) backbone	
A06036	SeaTalk <sup>ng</sup> 5 m (16.4 ft) backbone	
A06068	SeaTalk <sup>ng</sup> 9 m (29.5 ft) backbone	
A06037	SeaTalk <sup>ng</sup> 20 m (65.6 ft) backbone	

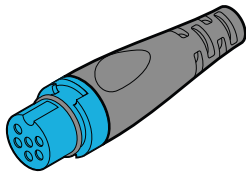

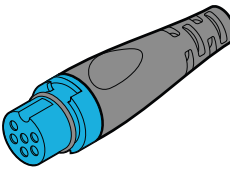
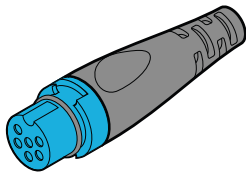

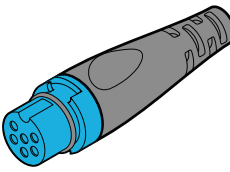
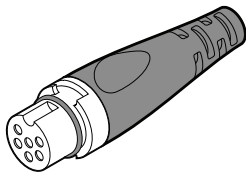

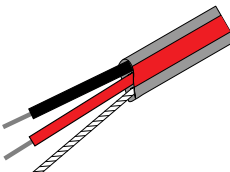
Part No	Description	Notes
A06043	SeaTalk <sup>ng</sup> to bare ends 1 m (3.3 ft) spur	
A06044	SeaTalk <sup>ng</sup> to bare ends 3 m (9.8 ft) spur	
A06049	SeaTalk <sup>ng</sup> Power cable	
A06031	SeaTalk <sup>ng</sup> Terminator	
A06028	SeaTalk <sup>ng</sup> T-piece	Provides 1 x spur connection
A06064	SeaTalk <sup>ng</sup> 5-way connector	Provides 3 x spur connections
A06030	SeaTalk <sup>ng</sup> backbone extender	
E22158	SeaTalk to SeaTalk <sup>ng</sup> converter kit	Allows the connection of SeaTalk devices to a SeaTalk <sup>ng</sup> system.
A80001	SeaTalk <sup>ng</sup> Inline terminator	Provides direct connection of a spur cable to the end of a backbone cable. No T-piece required.
A06032	SeaTalk <sup>ng</sup> Blanking plug	
R12112	ACU / SPX SeaTalk <sup>ng</sup> spur cable 0.3 m (1.0 ft)	Connects an SPX course computer or an ACU to a SeaTalk <sup>ng</sup> backbone.
A06047	SeaTalk (3 pin) to SeaTalk <sup>ng</sup> adaptor cable 0.4 m (1.3 ft)	
A22164	SeaTalk to SeaTalk <sup>ng</sup> spur 1 m (3.3 ft) spur	
A06048	SeaTalk2 (5 pin) to SeaTalk <sup>ng</sup> adaptor cable 0.4 m (1.3 ft)	
A06045	DeviceNet adaptor cable (Female)	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.
A06046	DeviceNet adaptor cable (Male)	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.
E05026	DeviceNet adaptor cable (Female) to bare ends.	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.
E05027	DeviceNet adaptor cable (Male) to bare ends.	Allows the connection of NMEA 2000 devices to a SeaTalk <sup>ng</sup> system.

## 14.3 SeaTalk<sup>ng</sup> cable kits

### SeaTalk<sup>ng</sup> starter kit (T70134)

Parts included	Quantity	Connector A	Cable	Connector B	Length
Spur cable (A06040)	1				3 m (9.8 ft)
Power cable (A06049)	1				1 m (3.3 ft)
Backbone terminator (A06031)	2		N/A	N/A	N/A
5-way connector (A06064). Each connector block allows the connection of up to 3 compatible devices. When correctly terminated, a connector block forms a complete backbone. Multiple connector blocks can be daisy-chained together.	1		N/A	N/A	N/A

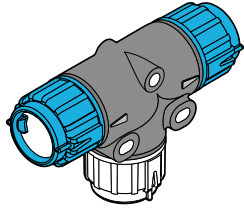
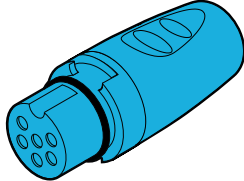
### SeaTalk<sup>ng</sup> Backbone kit (A25062)

Parts included	Quantity	Connector A	Cable	Connector B	Length
Backbone cable ((A06036))	2				5 m (16.4 ft)
Backbone cable ((A06037))	1				20 m (65.6 ft)
Power cable (A06049)	1				1 m (3.3 ft)

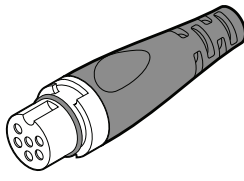

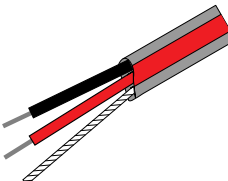
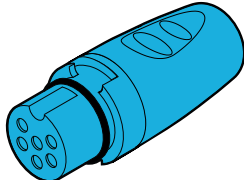
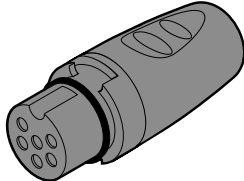
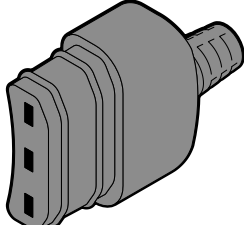

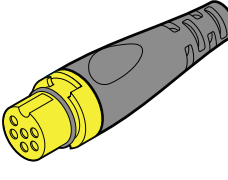
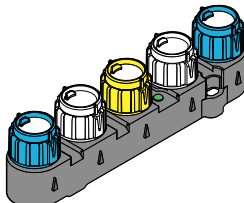
Parts included	Quantity	Connector A	Cable	Connector B	Length
T-piece (A06028)	4		N/A	N/A	N/A
Backbone terminator (A06031)	2		N/A	N/A	N/A

**SeaTalk<sup>ng</sup> Evolution cable kit (R70160)**

Parts included	Quantity	Connector A	Cable	Connector B	Length
Backbone cable (A06036)	2				5 m (16.4 ft)
Power cable (A06049)	1				1 m (3.3 ft)
Spur cable (A06040)	1				1 m (3.3 ft)
ACU / SPX power cable (R12112) (for powering the SeaTalk <sup>ng</sup> backbone from the autopilot system.	1				0.3 m (1.0 ft)
5-way connector (A06064). Each connector block allows the connection of up to 3 compatible devices. When correctly terminated, a connector block forms a complete backbone. Multiple connector blocks can be daisy-chained together.	1		N/A	N/A	N/A

Parts included	Quantity	Connector A	Cable	Connector B	Length
T-piece (A06028)	2		N/A	N/A	N/A
Backbone terminator (A06031)	2		N/A	N/A	N/A

**SeaTalk<sup>ng</sup> converter kit (E22158)**

Parts included	Quantity	Connector A	Cable	Connector B	Length
Power cable (A06049)	1				1 m (3.3 ft)
Backbone terminator (A06031)	2		N/A	N/A	N/A
Blanking plug (A06032)			N/A	N/A	N/A
SeaTalk (3 pin) adapter cable (A06047)	1				0.4 m (1.3 ft)
SeaTalk to SeaTalk <sup>ng</sup> converter (E22158). Enables the connection of SeaTalk devices to a SeaTalk <sup>ng</sup> system.	1		N/A	N/A	N/A

## Appendix A NMEA 2000 sentences

The i60 instrument range supports the following NMEA 2000 Parameter Group Number (PGN) sentences.

PG name	PGN	i60 Wind Transmit	i60 Wind Receive
ISO Acknowledgement	59392	•	
ISO Request	59904		•
ISO Address claim	60928	•	•
ISO Commanded address	65240		•
NMEA Request group function	126208		•
NMEA Command group function	126208		•
NMEA Acknowledge group function	126208	•	
PGN list — Transmit PGN's group function	126464	•	
PGN list — Received PGN's groupfunction	126464	•	
Product information	126996	•	•
Heading / Tack	127237		•
Vessel heading	127250		•
Magnetic variation	127258		•
Speed	128259		•
COG & SOG rapid update	129026		•
GNSS Position data	129029		•
Wind data	130306	•	•