

# ST70 Instrument

User reference handbook

**Raymarine<sup>®</sup>**



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## **ENGLISH**

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# Chapter 1: Important information



## **Warning: Product installation and operation**

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



## **Warning: Ensure safe navigation**

This product is intended only as an aid to navigation and must never be used in preference to sound navigational judgment. Only official government charts and notices to mariners contain all the current information needed for safe navigation, and the captain is responsible for their prudent use. It is the user's responsibility to use official government charts, notices to mariners, caution and proper navigational skill when operating this or any other Raymarine product.

## **Caution: Cleaning**

When cleaning this product:

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

## **Caution: Service and maintenance**

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

## **Caution: Use the sun covers**

To protect your product against the damaging effects of ultra violet light, always fit the sun covers when the product is not in use.

## **EMC conformance**

Raymarine equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) regulations for use in the recreational marine environment.

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

## **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.

## Warranty registration

To register your ST70 instrument ownership, please take a few minutes to fill out the warranty registration card found in the box, or visit [www.raymarine.com](http://www.raymarine.com) and register on-line.

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 should stick this label to the warranty registration card.

## Water ingress

### Water ingress disclaimer

Although the waterproof rating capacity of Raymarine products exceeds that called for by the IPX6 standard, water intrusion and subsequent equipment failure may occur if any Raymarine equipment is subjected to commercial high pressure washing. Raymarine will not warrant equipment subjected to high pressure washing.

## Product disposal

Dispose of this product in accordance with the WEEE Directive.



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

# Chapter 2: Introduction

## Chapter contents

- [2.1 Handbook information on page 8](#)
- [2.2 ST70 Introduction on page 9](#)

## 2.1 Handbook information

This handbook describes use and setup of the ST70 Instrument.

It includes information to help you:

- understand and use the features and controls of the ST70 Instrument,
- set up the instrument for use with your sensors, transducers and other data sources, and
- configure the system to suit your own preferences.

### ST70 handbooks

The following handbooks contain information associated with ST70 products.

All documents are available to download as PDFs from [www.raymarine.com](http://www.raymarine.com).

#### ST70 Instrument handbooks

Description	Part number
<b>ST70 Instrument — Installation and commissioning</b> Contains mounting, connection, commissioning, maintenance and troubleshooting	87079
<b>ST70 Instrument — User reference</b> Contains general operation, setup and user preferences	81284
<b>ST70 Instrument — Quick reference</b> A short guide to general operation	86139

#### ST70 Pilot Controller handbooks

Description	Part number
<b>ST70 Pilot Controller — Installation</b> Contains mounting and connection.	87071
<b>ST70 Pilot Controller — Commissioning for SPX autopilot systems</b> Contains system commissioning, maintenance and troubleshooting.	81287
<b>ST70 Pilot Controller — User reference</b> Contains general operation, setup and user preferences.	81288
<b>ST70 Pilot Controller — Quick reference</b> A short guide to general operation.	81289

#### Additional handbooks

Description	Part number
<b>SeaTalk<sup>ng</sup> reference manual</b>	81300

### Before using the ST70

Before using the instrument under way it is important that it is properly set up.

#### First time start — system settings

At first time start up only, ST70 provides on-screen instructions for the initial setup. If your instrument has been installed by a professional installer, this process may already have been carried out.

The first time setup screens will take you through the following:

- Language selection
- Time and date set up
- Boat type selection



The instrument may automatically receive some of these settings from other instruments (if connected) on the network. Anything received in this manner will be omitted from the sequence.

### Calibrate essential data

Before using the ST70 for navigation you must calibrate essential data to ensure that the readings displayed are accurate.

Use the transducer calibration menu to setup:

- Wind
- Speed
- Depth
- Temperature

You should perform the above for any installation affecting the transducers.

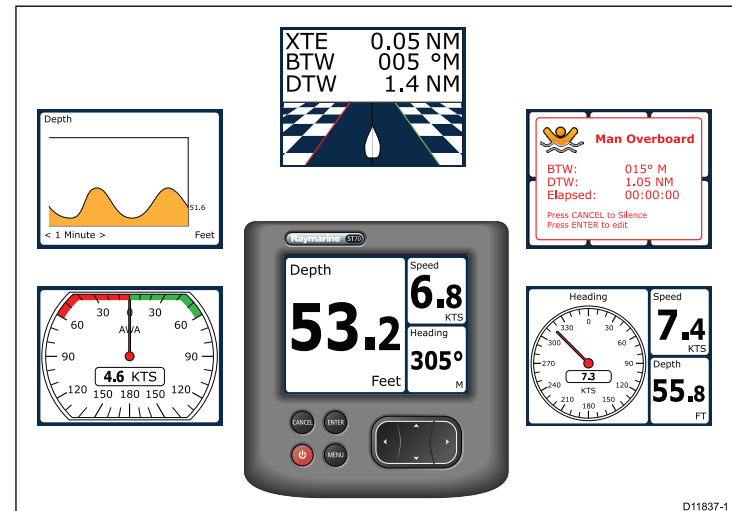
### See also

#### [4.1 Transducer setup](#)

## 2.2 ST70 Introduction

The ST70 Instrument provides multiple marine instrument functions in a single unit.

The instrument displays information received from transducers and other sensors around the boat. There are multiple pages of information available, which you can customize to suit your needs.



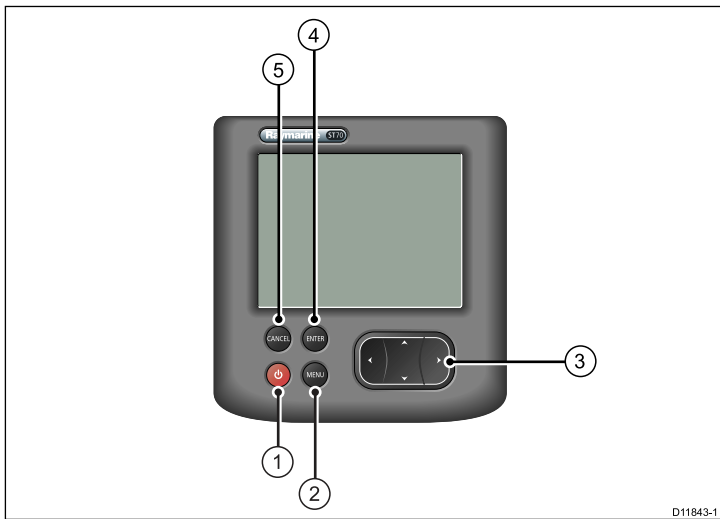


# Chapter 3: Using the ST70

## Chapter contents

- [3.1 ST70 instrument controls on page 12](#)
- [3.2 Instrument pages on page 13](#)
- [3.3 Customizing pages on page 15](#)
- [3.4 ST70 Alarms on page 17](#)

## 3.1 ST70 instrument controls



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1	<b>POWER</b> button — Switch power on and off, and access screen brightness control.
2	<b>MENU</b> button — Access to user preferences and system configuration menus.
3	<b>UP / DOWN</b> arrow buttons: <ul style="list-style-type: none"> <li>• Select between available instrument pages.</li> <li>• Select options within the setup menus.</li> </ul> <b>LEFT / RIGHT</b> arrow buttons: <ul style="list-style-type: none"> <li>• Select options within the setup menus.</li> </ul>

4	<b>ENTER</b> button — Confirm menu selections.
5	<b>CANCEL</b> button: <ul style="list-style-type: none"> <li>• Exit setup without making any changes.</li> <li>• Return to previous setup menu item.</li> </ul>

### Instrument power

#### Powering the ST70 on

1. Press and hold the **POWER** button for 1 second.

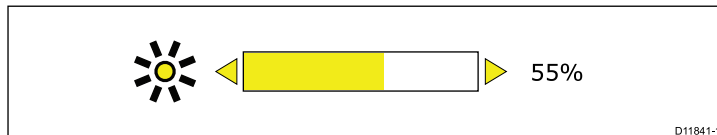
#### Powering the ST70 off

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

### Display brightness and color

#### Setting the screen brightness

1. Press the **POWER** button to display the brightness level.



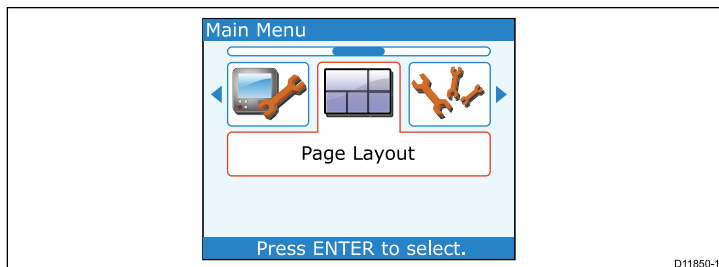
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2. Use the **LEFT / RIGHT** arrows to adjust the screen brightness.
  - A momentary press will increment the brightness by 10%.
  - Press and hold for fine adjustment.
3. Press **ENTER** to accept the new brightness setting.

## Choosing the screen colors

You can choose from a range of screen color palettes, for example to suit changes in the available light during the evening.

1. Press **MENU** button to display the main menu.



2. Use the **LEFT / RIGHT** arrows to select the Display Settings option, then press **ENTER**.



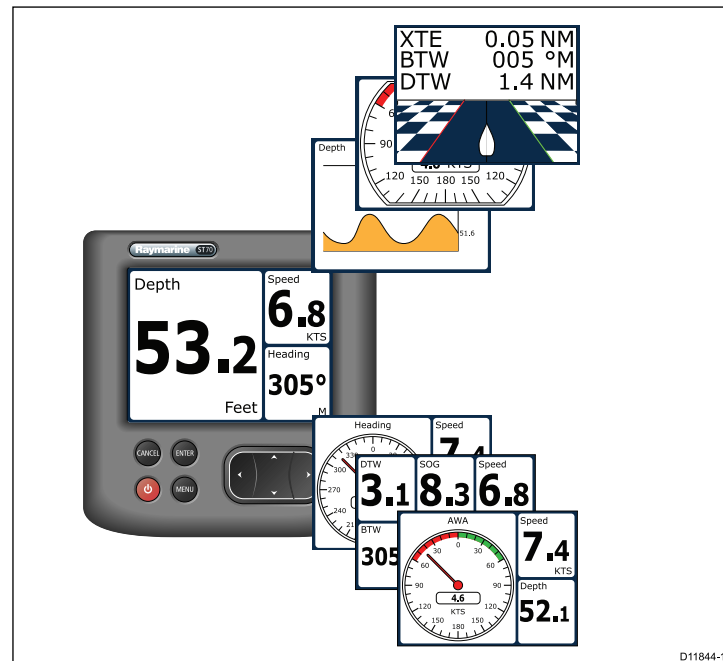
3. Select the Colors option.



4. Select from the following color palette options:
  - Mode 1 - 3 — For general daytime use.
  - Red/Black — For night / low light use.
  - Inverse — High contrast, e.g. for racing and mast mounted instruments.
5. Press **ENTER** to save the selection.
6. Press **CANCEL** to exit the setup menu.

## 3.2 Instrument pages

The ST70 presents instrument data on a series of pages. You have up to 8 pages available, each of which can be set up with different data types and layouts.



### Selecting pages

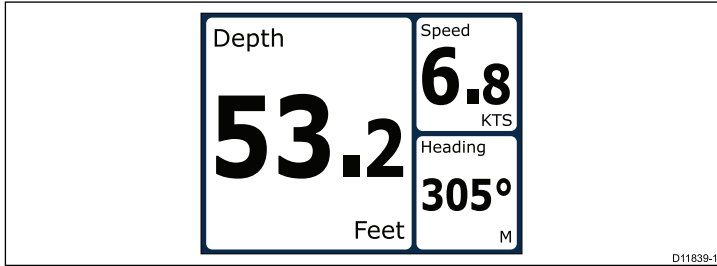
1. Use the **UP / DOWN** arrows to select between the available pages.

Alternatively use the Rollover feature within the setup menu to cycle through the pages automatically.

## Instrument page frames

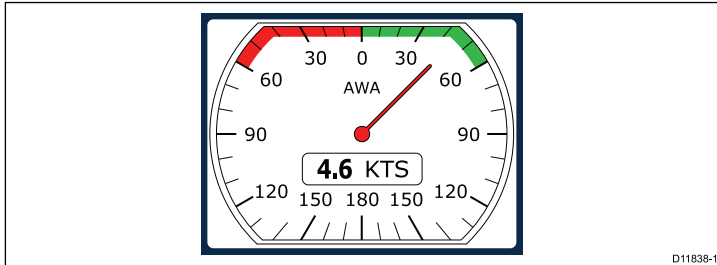
Each piece of information is displayed in a frame within the page. The frames support a number of different styles and formats for presenting the data.

### Digital frames



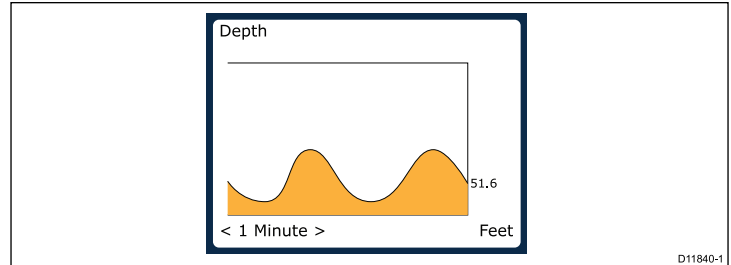
The digital frames provides data in a numerical format.

### Analog frames



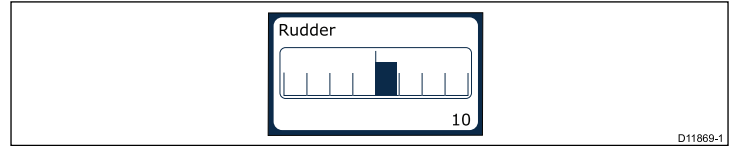
Analog frames provide real-time data in the form of an analog gauge. Analog gauges are only available for full and 2/3 screen frames.

## Graph frames



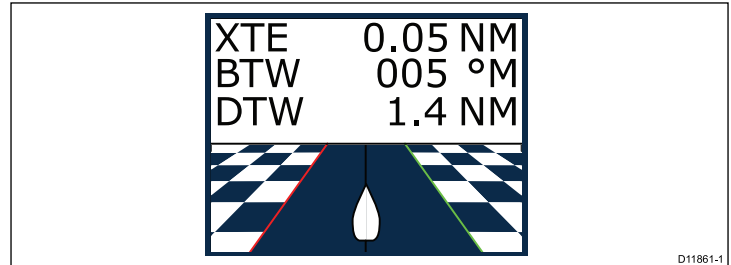
Graphs provide a means of showing how a particular reading has changed over time.

### Bar graph frames



The rudder bar is an example of a bar graph frame.

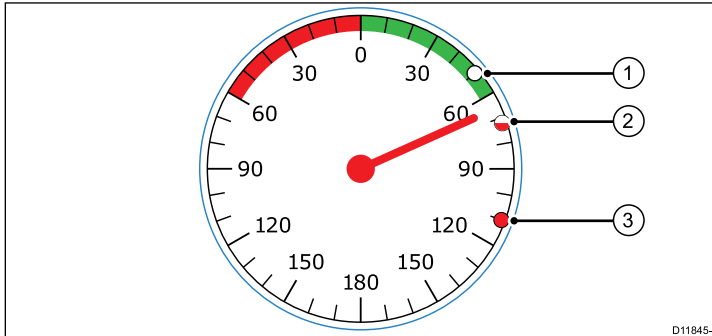
### Rolling road frame



The rolling road provides waypoint and course deviation information.

## Maximum and minimum indicators

Maximum, minimum and average value indicators are displayed on analog speed, wind speed and wind angle screens.



1	Minimum value
2	Average value
3	Maximum value indicator

## Resetting max, min and trip data

The values of some data are accrued over time. These include information such as a trip distance, and maximum and average speed. This type of information can be reset as and when required.

With the data to be reset displayed on the instrument screen:

1. Press **MENU**  
The Reset data message is displayed.
2. Press **ENTER** to reset the required data.

## 3.3 Customizing pages

You can use the Page Layout menu to change any instrument page to suit your requirements. You can:

- Change the type of information displayed on any page.
- Rebuild any page. This allows you to change the layout as well as selecting the type of information displayed.

### Changing the information on a page

Follow these steps to change the information within an instrument page.

1. Press **MENU** button to display the Main Menu.
2. Use the **LEFT / RIGHT** arrows to select the Page Layout option, then press **ENTER**.

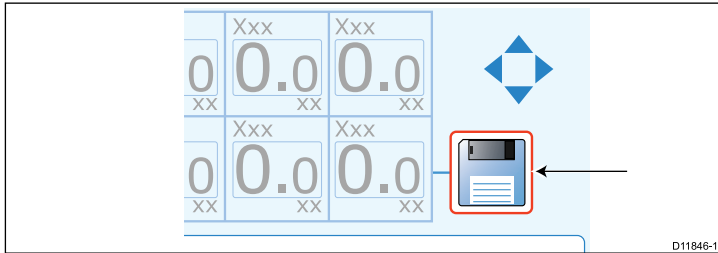


3. Select the page you want to change.
4. Select the Change an item option, then select the required frame within the page.
5. Select a group, from which you will choose the data to be displayed.

The various information available for display is arranged into groups; each group contains several related items.

6. Select the required data item from your chosen group. Data items are available in one or more of the following formats:
  - Analog
  - Digital
  - Graph
7. Press **ENTER** to select the data and return to the frame select screen.

- When you have made all of the required changes, select the disk icon to save and exit.



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## Changing the layout of a page

The following steps show how to use the **Rebuild page** menu option to change a page layout and the displayed information.

- Press **MENU** button to display the Main Menu.
- Use the **LEFT / RIGHT** arrows to select the Page Layout option, then press enter.



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- Select the Rebuild page option, then press **ENTER**.
- Select the required page template.

Each template is a predefined arrangement of between 1 and 6 instrument fields.

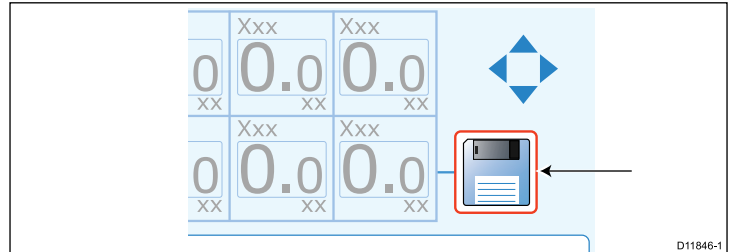
- Use the arrow buttons to select a frame within the page being built.
- Select a group, from which you will choose the data to be displayed.

The various information available for display is arranged into groups; each group contains several related items.

- Select the required data item from your chosen group. Some data items are available in more than one of the following formats:

- Analog dial
- Numeric value
- Graph

- Press **ENTER** to select the data and return to the frame select screen.
- Set up other frames as required.
- When you have made all of the required changes, select the disk icon to save and exit.



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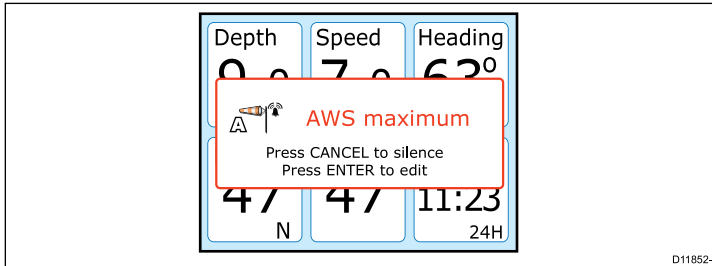
## 3.4 ST70 Alarms

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

Some examples of alarms are:

- Anchor alarm — Used under anchor, this alerts you to a change in depth which could mean that the chain length requires adjusting.
- Depth and speed alarms — These alarms alert you when the depth or speed exceeds a specified limit, for example a minimum depth.
- MOB (Man Overboard) alarm — Received from an MOB system.

When an alarm occurs, a message is displayed and an audible alarm may sound.



You can either:

- Silence the alarm, or
- edit the alarm settings.

## Man Overboard alarm

In the event of a Man Overboard (MOB) alarm, the instrument provides a range of information to help find the MOB target.



- BTW: Bearing to MOB waypoint.
- DTW: Distance to MOB waypoint.
- Elapsed: Time since start of MOB alarm.

BTW and DTW require data from other sources such as a GPS and multifunction display. If these are not available then only the elapsed time is displayed.



# Chapter 4: Transducer calibration

## Chapter contents

- 4.1 Transducer setup on page 20
- 4.2 Depth Offset on page 20
- 4.3 Calibrating water temperature on page 21
- 4.4 Wind setup on page 22
- 4.5 Speed calibration on page 22

## 4.1 Transducer setup

Wind, Depth, Speed and Temperature data are derived from transducers and sensors around the boat. You should check the accuracy of the displayed readings and calibrate as necessary. This should be done whenever you install a new instrument or transducer as part of the commissioning process.

### Setting up transducers

The Transducer setup menu is used to calibrate the transducers and sensors which are the source of much of the instrument data.

1. Press **MENU**.
2. Select **Advanced options > Transducer setup**.  
The ST70 will search for transducers connected to the system and display the results of the search as a list.
3. Press **ENTER** to proceed and setup the parameters for the transducers found.

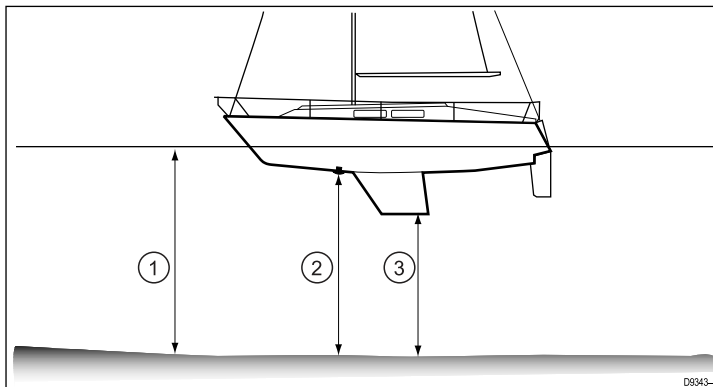
There are settings available for:

- Depth
- Speed
- Wind
- Temperature
- DST (Depth Speed, Temperature smart transducers)
- DT (Depth, Temperature smart transducers)

## 4.2 Depth Offset

Depths are measured from the transducer to the sea bed, but you can apply an offset value to the depth data, so that the displayed depth reading represents the depth to the sea bed from either the keel or the waterline.

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 the keel on your vessel, as appropriate. Then use the depth instrument to set the appropriate offset value.



1	Waterline offset
2	Zero offset
3	Keel offset

If an offset is not applied, displayed depth readings represent the distance from the transducer to the sea bed.

## Setting the depth 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 the keel on your vessel, as appropriate.

With the list of transducers available displayed from the **Transducer Setup** menu.

1. Press **ENTER** to proceed to the transducer setup options.
2. Select either:
  - **Depth**, for a conventional depth transducer,
  - **DST** or **DT** for a smart transducer.
3. Select from the following choices:
  - Waterline
  - Keel
4. Use the arrow buttons to select the required offset.

This is the vertical distance from the transducer to the Keel or Waterline as required.

5. Press **ENTER** to save the offset value.
6. Press **CANCEL** to exit the **Transducer Setup** menu.

## 4.3 Calibrating water temperature

You can calibrate the water temperature reading. This is done by matching the temperature displayed by the instrument to a separate reading taken with a thermometer.

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

With the list of transducers available displayed from the **Transducer Setup** menu.

1. Press **ENTER** to proceed to the transducer setup options.
2. Select either:
  - **Speed**, for a conventional depth transducer,
  - **DST** or **DT** for a smart transducer.
3. Select the **Temperature Offset** option.
4. Use a suitable thermometer to measure the water temperature.
5. Use the arrow buttons to match the displayed temperature at the instrument to that measured by the thermometer.
6. Press **ENTER** to save the setting.
7. Press **CANCEL** to exit the **Transducer Setup** menu.

## 4.4 Wind setup

### Calibrating wind speed

- You will need to be underway, with sufficient space to turn in a large slow circle unhindered.
- Conditions should be calm or slight water and a steady breeze.

With the list of transducers available displayed from the **Transducer Setup** menu.

1. Press **ENTER** to proceed to the transducer setup options.
2. Select **Wind** then **Calibrate Vane** from the available options.
3. Press **ENTER** and follow the on-screen instructions to complete the calibration.

### Aligning the wind vane

Aligning the wind vane ensures that the wind angle reading is accurate.

- You will need to be underway, with sufficient space to maneuver unhindered.
- Conditions should be calm or slight water and a steady breeze.

Head directly into the wind, then follow the instructions below.

With the list of transducers available displayed from the **Transducer Setup** menu:

1. Press **ENTER** to proceed to the transducer setup options.
2. Select **Wind** then **Align Vane** from the available options.
3. Check that you are still heading directly into the wind, then press **ENTER** to accept the alignment and return to the Wind transducer setup menu.

## 4.5 Speed calibration

Speed calibration involves aligning the log speed (Speed Through Water) to the Speed over ground (SOG), under zero tide conditions.

The object of speed calibration is to ensure that the speed readings at the instruments are true indications of the boat speed.

Speed transducer performance is affected by its position and water-flow characteristics at different speeds. It is advisable to carry out calibration at various speeds across the range of your boat.

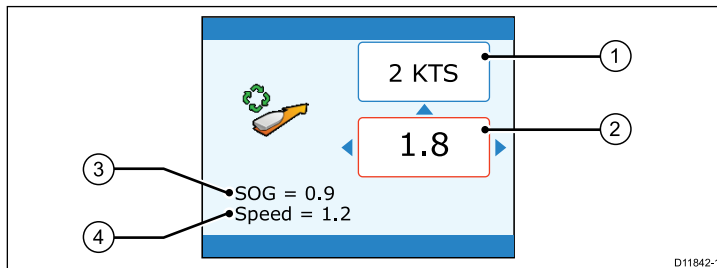
### Calibrating speed (conventional transducers)

- You will need an accurate speed over ground (SOG) value, e.g. determined from a GPS connected into your SeaTalk system.
- You will need to be underway, with sufficient space to maneuver unhindered.
- Conditions should be calm water with a slack tide.

**Note:** It is important that there is no tide. The affect of tidal current would be to prevent an accurate speed calibration.

With the list of transducers available displayed from the **Transducer Setup** menu:

1. Press **ENTER** to proceed to the transducer setup options.
2. Select **Speed** then **Calibration** from the available options.
3. Calibrate each speed as follows, starting with the lowest:



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1	Selected calibration speed
2	Current calibration factor
3	SOG
4	Speed reading (calculated using log speed and calibration factor)

- i. Use the arrow keys to select the required calibration speed.
- ii. Adjust your boat speed until the SOG is at the desired calibration speed.
- iii. Adjust the calibration factor, until the SOG and Speed reading are the same.
- iv. Repeat this for each calibration speed valid for your boat.

Speeds which fall outside your boat's capability need not be calibrated.

4. When complete press **ENTER** to save the settings and return to the transducer setup menu.

## Calibrating speed (smart transducers)

A DST (Depth, Speed, Temperature) smart transducer has a default calibration setting which provides acceptable transducer performance in most circumstances. However you can perform your own calibration to suit your boat.

- You will need an accurate Speed over ground (SOG) value, e.g. determined from a GPS connected into your SeaTalk system.
- You will need to be underway, with sufficient space to maneuver unhindered.
- Conditions should be calm water with a slack tide.

**Note:** It is important that there is no tide. The affect of tidal current would be to prevent an accurate speed calibration.

You can set up to 8 calibration points across the full speed range for your boat.

With the list of transducers available displayed from the **Transducer Setup** menu:

1. Press **ENTER** to proceed to the transducer setup options.
2. Select **Speed Calibration** from the available options.

The screen will display a list of speeds to which the DST800 transducer is calibrated.

1	0.6 Hz	0.5 Kts
2	5.1 Hz	1.5 Kts
3	11.9 Hz	2.8 Kts
4	21.9 Hz	4.8 Kts
5	49.2 Hz	10.6 Kts
6	371.8 Hz	80 Kts

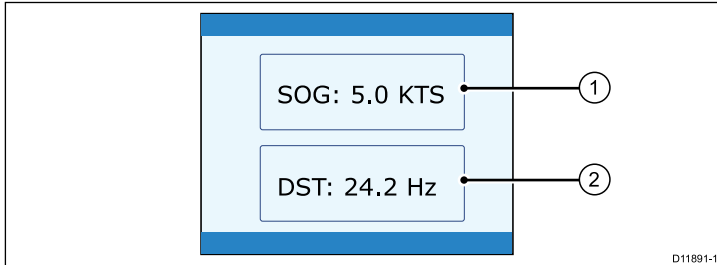
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3. Press **ENTER** to display the Speed Calibration menu. This gives the following options:
  - Add point — To add a speed value to the list of calibration speeds.

- Delete point — To remove a speed value from the list of calibration speeds.
- Factory Reset — To reset the calibration to its factory default.

4. Delete and add points as necessary.

When adding a point you will see the following:



1	Current boat speed over ground (SOG)
2	DST Frequency (provided for information only)

- Adjust your boat speed until the SOG is at the desired calibration speed.
  - Press **ENTER** to confirm the calibration speed entry.
  - Repeat this for each calibration speed appropriate for your boat.
5. When you have completed the speed calibration, press **CANCEL** to return back through the menus.



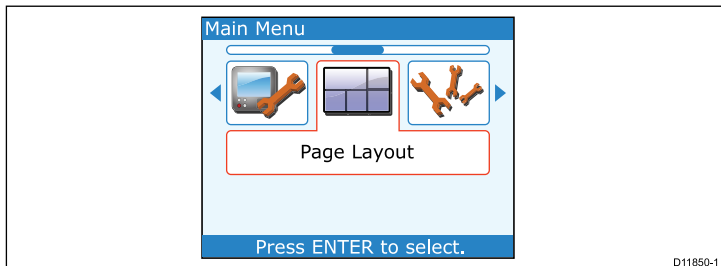
# Chapter 5: ST70 Settings

## Chapter contents

- [5.1 Setup menu on page 26](#)
- [5.2 Display settings on page 27](#)
- [5.3 Page settings on page 28](#)
- [5.4 Advanced options on page 32](#)
- [5.5 Alarms setup on page 34](#)
- [5.6 Diagnostics menu on page 36](#)

## 5.1 Setup menu

The setup menu provides a range of tools and settings to configure the ST70 instrument.



### Menu controls

	<b>MENU</b> button — Access to user preferences and system configuration menus.
	<b>LEFT / RIGHT</b> arrow buttons: <ul style="list-style-type: none"> <li>• Navigate through menus and sub-menus</li> </ul> <b>UP / DOWN</b> arrow buttons: <ul style="list-style-type: none"> <li>• Select options within the setup menus.</li> </ul>
	<b>ENTER</b> button — Confirm and save settings.
	<b>CANCEL</b> button: <ul style="list-style-type: none"> <li>• Exit setup without making any changes.</li> <li>• Return to previous setup menu item.</li> </ul>

### Menus available

	Display settings Brightness, color, units and other settings associated with the display.
	Page settings Customize the page layouts and information displayed.
	Advanced options Language and system settings.
	Alarms Settings associated with supported alarm messages.
	Diagnostics Instrument information and diagnostics.

## 5.2 Display settings



### MENU > Display Settings

Menu item / Description	Settings / Operation
<b>Units.</b> Set units of measure	
Speed	KTS, MPH, KM/H
Distance	NM, KM, SM
Depth	FEET, FATHOMS, METRES
Wind Speed	KTS, M/S
Heading	TRUE, MAG
Flow Rate	G/H (UK), G/H (US), LTR/H
Temperature	°F, °C
Pressure	PSI, BAR, KPA
Volume	GAL (US), GAL(UK), LTR
Engines	Number of engines, 1-5
Batteries	Number of batteries, 1-5
Fuel Tanks	Number of fuel tanks, 1-5

Menu item / Description	Settings / Operation
<b>Response</b> Affects the sensitivity of the instrument to rapid changes. This can help to stabilise (damp) the display if readings are fluctuating rapidly.	<ul style="list-style-type: none"> <li>• Speed</li> <li>• Depth</li> <li>• Wind Speed</li> <li>• Wind Angle</li> <li>• Heading</li> </ul>
<b>Rollover</b> Rollover will automatically cycle the instrument display between the available pages.	<ul style="list-style-type: none"> <li>• Off.</li> <li>• 1 to 10 seconds.</li> </ul>
<b>Timer</b> (Alarm clock)	<b>Alarm Clock.</b> <ul style="list-style-type: none"> <li>• On / Off</li> <li>• Alarm time</li> </ul>
<b>Time and date</b>	<ul style="list-style-type: none"> <li>• Time Offset. Local time expressed as hours ± UTC.</li> <li>• Time Format</li> <li>• Date Format</li> </ul>
<b>Brightness</b>	Set the display brightness level

Menu item / Description	Settings / Operation
<b>System brightness/Color</b> Control brightness and color settings for all connected ST70 and ST70+ units.	<ul style="list-style-type: none"> <li>• This display — Color and brightness settings affect this unit only.</li> <li>• All displays — Color and brightness settings affect all connected ST70 and ST70+ units.</li> <li>• Group names — Groups associated with ST70+ instruments.</li> </ul>
<b>Colors</b>	Select from the available color palettes: <ul style="list-style-type: none"> <li>• Mode 1, 2 and 3</li> <li>• Red/Black</li> <li>• Inverse</li> </ul>

## 5.3 Page settings



### MENU > Page Settings

Menu item / Description	Settings / Operation
Turn Page On / Off	For each page, set either On or Off
Change an Item	For each page, select the data displayed
Rebuild	For each page: <ul style="list-style-type: none"> <li>• select the page template</li> <li>• select the data displayed</li> </ul>

## Data supported

The ST70 supports the data listed below. Please note that the data is dependent on the configuration of your system, so some items may not be applicable to your boat.

Data	Group
Air Temperature	ENVIRONMENTAL
Alarm deep anchor	DEPTH
Alarm High Apparent Wind Angle	WIND
Alarm High Apparent Wind Speed	WIND
Alarm High sea temperature	ENVIRONMENTAL
Alarm High speed	SPEED
Alarm High True Wind Angle	WIND

Data	Group
Alarm High True Wind Speed	WIND
Alarm Low Apparent Wind Angle	WIND
Alarm Low Apparent Wind Speed	WIND
Alarm Low sea temperature	ENVIRONMENTAL
Alarm Low speed	SPEED
Alarm Low True Wind Angle	WIND
Alarm Low True Wind Speed	WIND
Alarm maximum depth	DEPTH
Alarm minimum depth (shallow alarm)	DEPTH
Alarm off-course	HEADING
Alarm shallow anchor	DEPTH
Alarm silence	ALARM
Alarm waypoint arrival	NAVIGATION
Apparent wind angle	WIND
Apparent wind speed	WIND
Apparent wind speed maximum	WIND
Apparent wind speed minimum	WIND
Average course error	HEADING
Average heading	HEADING
Average speed	SPEED
Barometric pressure	ENVIRONMENTAL

Data	Group
Battery Amps	ENGINE
Battery temperature	ENGINE
Battery voltage	ENGINE
Beaufort	WIND
Boost Pressure	ENGINE
Bearing to waypoint	NAVIGATION
Calibration lock	WIND
Calibration lock	DEPTH
Cardinal	WIND
Course made good	HEADING
Course over ground	GPS
Course over ground + Speed over ground	GPS
Coolant pressure	ENGINE
Coolant Temperature	ENGINE
Course to steer	PILOT
Cross track error	NAVIGATION
Depth	DEPTH
Depth Offset	DEPTH
Depth response	DEPTH
Depth units	DEPTH

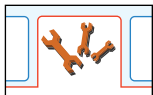
Data	Group
Deviation	HEADING
Dew point	ENVIRONMENTAL
Distance made good	HEADING
Distance made good + Course made good	HEADING
Distance to empty	FUEL
Drift	ENVIRONMENTAL
Distance to waypoint	NAVIGATION
Economy	FUEL
Engine hours	ENGINE
Engine RPM	ENGINE
Engine Trim Position	ENGINE
Estimated time of arrival	NAVIGATION
Fuel Flow	ENGINE
Fuel Level	ENGINE
Fuel remaining	FUEL
GWD	WIND
HDOP	GPS
Heading	HEADING
Heading response	HEADING
Humidity	ENVIRONMENTAL

Data	Group
Illumination	SYSTEM
LAT	GPS
Local date	TIME
Local time	TIME
Local time + date	TIME
Locked heading	HEADING
Log	SPEED
LON	GPS
Magnetic or true	HEADING
Max depth	DEPTH
Max speed	SPEED
Maximum air temperature	ENVIRONMENTAL
Maximum sea temperature	ENVIRONMENTAL
Minimum depth	DEPTH
Minimum air temperature	ENVIRONMENTAL
Minimum sea temperature	ENVIRONMENTAL
MOB	MOB
Oil Pressure	ENGINE
Oil Temperature	ENGINE
Rate of turn	BOAT
SATS	GPS

Data	Group
SATS + HDOP	GPS
Sea temperature	ENVIRONMENTAL
Serial number	DIAGNOSTIC
Set	ENVIRONMENTAL
Software version	DIAGNOSTIC
Speed over ground	GPS
Speed	SPEED
Speed adjust	SPEED
Speed response	SPEED
Speed through water + Speed over ground	GPS
Sunset / Sunrise	ENVIRONMENTAL
Tack heading	HEADING
Temperature offset	ENVIRONMENTAL
Temperature units	ENVIRONMENTAL
Tilt	BOAT
Trip	DISTANCE
Variation	HEADING
VMG to waypoint	SPEED
VMG to windward	SPEED
True wind angle	WIND

Data	Group
True wind speed	WIND
Wind angle response	WIND
Wind chill apparent	ENVIRONMENTAL
Wind chill true	ENVIRONMENTAL
Wind speed response	WIND

## 5.4 Advanced options



### MENU > Advanced Options

Menu item / Description	Settings / Operation
<b>Setup Wizard</b>	<p>This option initiates the Setup Wizard and will guide you through first time set up procedures, including:</p> <ul style="list-style-type: none"> <li>• Language</li> <li>• Boat Type</li> <li>• Time and Date</li> </ul>
<b>Transducer Setup</b>	
Provides options to calibrate and set up transducers and sensors connected to the system. This is normally carried out during the commissioning of a system.	
Wind	<ul style="list-style-type: none"> <li>• Calibrate Vane — Calibrate wind speed (Commissioning Sea Trial).</li> <li>• Align vane — Calibrate wind direction (Commissioning Sea Trial).</li> <li>• Vane adjust — Apply manual offset to wind direction.</li> </ul>
Depth	<p>Depth Offset.</p> <ul style="list-style-type: none"> <li>• Waterline</li> <li>• Keel</li> <li>• Transducer</li> </ul>

Menu item / Description	Settings / Operation
Speed	<ul style="list-style-type: none"> <li>• Speed calibration. (Commissioning Sea Trial). Calibrate the transducer at predefined speeds of: 2, 4, 8, 16 and 32 KTS.</li> <li>• Temperature offset. Apply an offset to the temperature reading.</li> </ul>
DST (Depth, Speed Temperature smart transducer)	<ul style="list-style-type: none"> <li>• Depth offset. Specify an offset value to either the waterline or Keel.</li> <li>• Speed calibration. Calibrate the transducer across a range of speeds for the vessel. (up to 8 calibration points can be used)</li> <li>• Temperature offset. Apply an offset to the temperature reading.</li> </ul>
DT (Depth, Temperature smart transducer)	<ul style="list-style-type: none"> <li>• Depth offset. Specify an offset value to either the Waterline or Keel.</li> <li>• Temperature offset. Apply an offset to the temperature reading.</li> </ul>

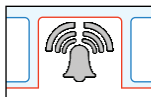


Menu item / Description	Settings / Operation
<b>Language</b>	<ul style="list-style-type: none"> <li>• English (UK)</li> <li>• English (US)</li> <li>• Finnish</li> <li>• French</li> <li>• Danish</li> <li>• Dutch</li> <li>• German</li> <li>• Italian</li> <li>• Norwegian</li> <li>• Polish</li> <li>• Portuguese</li> <li>• Spanish</li> <li>• Swedish</li> </ul>

Menu item / Description	Settings / Operation
<b>Vessel Type</b> This applies standard units settings, suitable for the boat type specified.	<ul style="list-style-type: none"> <li>• RACE / SAIL</li> <li>• SAIL CRUISER</li> <li>• CATAMARAN</li> <li>• WORKBOAT</li> <li>• RIB</li> <li>• OUTBOARD SPEED BOAT</li> <li>• INBOARD SPEED BOAT</li> <li>• POWER CRUISER 1 (Up to 12 KTS)</li> <li>• POWER CRUISER 2 (UP to 30 KTS)</li> <li>• POWER CRUISER 3 (30KTS +)</li> <li>• SPORT FISHING</li> <li>• PRO FISHING</li> </ul>
<b>Boat Show Mode</b> Demonstration mode using simulated data.	On / Off
<b>Ground Wind</b> The wind speed / direction relative to a body at rest.	<ul style="list-style-type: none"> <li>• SOG — Ground wind is relative to zero speed over ground.</li> <li>• STW — Ground wind is relative to zero speed through water.</li> </ul>

Menu item / Description	Settings / Operation
<b>Variation</b>	<ul style="list-style-type: none"> <li>• On — Magnetic variation will be applied to heading</li> <li>• Off — Magnetic variation is not applied</li> <li>• Slave — Magnetic variation is taken from network.</li> <li>• Value — Enter a value <math>\pm 30^\circ</math></li> </ul>
<b>Master ship</b> Allow the ST70 to bridge data between SeaTalk and SeaTalk <sup>ng</sup> networks.	<ul style="list-style-type: none"> <li>• On — The ST70 will bridge data between SeaTalk and SeaTalk<sup>ng</sup>.</li> <li>• Off — The ST70 will not bridge data between SeaTalk and SeaTalk<sup>ng</sup>.</li> </ul>
<b>Factory Reset</b>	Reset the unit to its factory default settings

## 5.5 Alarms setup



### MENU > Alarms

Most alarms are generated locally using specified thresholds. They are also transmitted to the SeaTalk and SeaTalk<sup>ng</sup> networks for display at other compatible devices.

Menu item / Description	Settings / Operation
<b>AWA High</b> Apparent Wind Angle high	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. apparent wind angle</li> </ul>
<b>AWA Low</b> Apparent Wind Angle low	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min. apparent wind angle</li> </ul>
<b>AWS High</b> Apparent Wind Speed high	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. apparent wind speed</li> </ul>
<b>AWS Low</b> Apparent Wind Speed low	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min. apparent wind speed</li> </ul>
<b>TWA High</b> True Wind Angle high	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. true wind angle</li> </ul>
<b>TWA Low</b> True Wind Angle low	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min. true wind angle</li> </ul>
<b>TWS High</b> True Wind Speed high	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. true wind speed</li> </ul>

Menu item / Description	Settings / Operation
<b>TWS Low</b> True Wind Speed low	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min. true wind speed</li> </ul>
<b>Boat speed high</b>	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. boat speed</li> </ul>
<b>Boat speed low</b>	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min. boat speed</li> </ul>
<b>Deep</b> Deep water alarm	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. water depth</li> </ul>
<b>Shallow</b> Shallow water alarm	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min water depth</li> </ul>
<b>Deep Anchor</b> Deep water anchor alarm	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. water depth (when anchored)</li> </ul>
<b>Shallow Anchor</b> Shallow water anchor alarm	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min. water depth (when anchored)</li> </ul>
<b>MOB</b> Man Overboard	(Receive only, from MOB system or multifunction display) <ul style="list-style-type: none"> <li>• On / Off</li> </ul>
<b>Off course</b>	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. off course angle</li> </ul>
<b>Sea Temp High</b>	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Max. sea temperature</li> </ul>

Menu item / Description	Settings / Operation
<b>Sea Temp Low</b>	<ul style="list-style-type: none"> <li>• On / Off</li> <li>• Min. Sea temperature</li> </ul>
<b>Battery Low</b>	Local alarm only, not transmitted to network. <ul style="list-style-type: none"> <li>• On / Off</li> </ul>

## 5.6 Diagnostics menu



### MENU > Diagnostics

Menu item / Description	Settings / Operation
<b>About display</b>	Provides a range of information regarding the display status.
<b>Self Test</b>	Factory test sequence. Do not use, unless instructed by a Raymarine support technician.

# Chapter 6: Maintenance and support

## Chapter contents

- [6.1 Cleaning the display screen on page 38](#)
- [6.2 Raymarine technical support on page 38](#)

## 6.1 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).

## 6.2 Raymarine technical support

Raymarine provides a comprehensive customer support service, on the world wide web, through our worldwide dealer network and by telephone help line. If you are unable to resolve a problem, please use any of these facilities to obtain additional help.

### Web support

Please visit the customer support area of our website at:

[www.raymarine.com](http://www.raymarine.com)

This contains Frequently Asked Questions, servicing information, e-mail access to the Raymarine Technical Support Department and details of worldwide Raymarine agents.

### Telephone support

In the USA call:

+1 603 881 5200 extension 2444

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

+44 (0)23 9271 4713

### Product information

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

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

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

## Appendix A Abbreviations

This is a list terms associated with Raymarine products. Please note that not all terms will be applicable to all products.

Term	Description
AWA	Apparent Wind Angle
AWS	Apparent Wind Speed
Apparent Wind	The wind felt on a boat as it moves
True Wind	The wind as it would be felt on a boat moving only with the tide. (i.e. stationary in the water).
Ground Wind	The wind as it would be felt on a stationary object. Usually this is taken to be at rest with respect to the land (i.e a vessel with zero speed over ground), however some prefer this to stationary in the water (i.e a vessel with zero speed through water).
COG	Course Over Ground
DSC	Digital Selective Calling
DSM	Digital Sounder Module
EBL	Electronic Bearing Line
Field	A piece of information displayed or stored.
GPS	Global Positioning System
GWD	Ground Wind
HDOP	Horizontal Dilution Of Position
LAT	Latitude
LON	Longitude
MOB	Man Overboard

Term	Description
SOG	Speed Over Ground
STW	Speed Through Water
TWA	True Wind Angle
TWS	True Wind Speed
VMG	Velocity Made Good
XTE	Cross Track Error







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